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VISUAL POLLUTION CAN HAVE A DEEP DEGRADING EFFECT ON URBAN AND SUB-URBAN COMMUNITY: A STUDY IN FEW PLACES OF BENGAL, INDIA, WITH SPECIAL REFERENCE TO UNORGANIZED BILLBOARDS

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Abstract

When we look around, our first impression of any environment is the visual environment. This is a conglomeration of some constructed forms intermingled with the natural surroundings. In recent times, the term pollution signifies an inclusion of those affecting in a subtle way such as visual pollution. This kind of pollution affects the overall well-being and thus the quality of life of a community, reduces aesthetic appeal, economic health and civic-sense. This may incite a psychological aversion and thus affect mental and physical health of neighbouring residents. Visual pollution, thus, may be defined as the whole of irregular formations, represents unorganized dumping of litters, billboards, cables, wires, worn-out buildings, heaped construction materials, graffiti etc. that affects a person's ability to enjoy a view or vista. This work aims at drawing attention to the hazardous and penetrating effects of the visual pollutants with special reference to unorganized billboards and to make realize that the visual environment is no less significant a part of the fabric of communities as clean water or air and animal habitat. Different places of Kolkata (South and North) and of Barrackpore and Barasat of 24-Paraganas (N) district, West-Bengal, India, were explored for abundance of visual pollutants, especially the ubiquitous billboards appearing like ghosts all around the cities and townships. Possibilities of some associated hazards were observed too. A comparison was done between areas that were visually pleasant and unpleasant. The psyche of people was followed and their innate instinct regarding visual quality of an environment was asked. The social civility and the behavior of people around solid waste were observed. It was found that in the cityscape

visual pollutants were omnipresent, billboards misarranged, torn, with bare skeletons looming large in almost all nook and corner. They were found in residential areas as well as in front of social institutions like school, hospital, church, and temple. This unsightly presence creates deep displeasure, aesthetic-appeal, thus civic sense, aesthetic appeal of the community declines and hence psychological health is bound to be affected. This is compounded with indispensible apprehension of general health hazards of different dimensions including diseases and problems like asthma, diarrohoea etc around solid waste, cause infection to animals hovering around it, driver's problem, missing of traffic signal by dazzling billboards, health problems caused by magnetic-field around cables, may create a short-circuit problem which may be extremely dangerous on water-logged roads. Some birds get electrocuted often due to exposed cables. The most vital aspect is, since this type of pollution is an aesthetic issue and have not been paid heed to earlier, hence the impact of its effect on society as a whole have remained largely undocumented. There is no denial of the fact that the sight of a beautiful natural environment stimulates human beings, soothes their soul. Conversely, the ugly sight triggers irritability. Children growing up in its vicinity get used to it losing their ability to understand the need for correcting it. This results in character-changing effects, the unique identity of the community is homogenized and entire life-style is deteriorated.

Keywords: Visual pollution, Billboards, West Bengal, aesthetic-appeal, psychological-health

Introduction

Ever since pollution has raised public concern, many types of pollution have been classified Pollutions have negative effects on our daily lives in various ways. Apart from the most talked-about land, air and water pollution, there are some other types of pollution that affect us in a subtle yet significant way. One such example is visual pollution which is relatively newer and unconventional concept [i].

Our first impression of a community is its visual environment that entails a mosaic of built and natural forms. Visual pollution is defined as the whole of irregular formations, [i], may refer to everything altered by human-activities that are unattractive and affects people's ability to enjoy or appreciate the view and vista.

Anything that interferes with the "pretty scenes" and other defacement may become a cause of visual pollution. It may consist of garbage (solid waste) thrown in different places, cables or wires running in the urban areas in quite an unorganized way, billboards ill-arranged and dazzling, old dilapidated buildings, dumped construction materials, utility

poles, skywriting etc. They are subjective and literally, depend on the eye of the beholder. But this eye, that is, the senses gets modified on exposure to such pollutants for long.

Visual blight and visual clutter are two terms of relevance here. Visual blight may refer to dazzling billboards, power lines, ugly buildings etc. Visual clutter can be experienced in daily life in a messy desk to a congested street. It may impair a person's ability to find certain objects in such environments or in finding a person we are trying to meet in the street [ii].

Causes may be multifarious, including administrative negligence, excessive advertisement, vandalism. Local public administration loses control over what is built or assembled in public spaces, it does not know what and where is displayed, does not solve the problem of buildings in ruins no matter who the owner is. Excessive advertisement is literally suffocating because not even the green areas (trees, land, parks, etc.) are spared in the desire to ensure good visibility. The existence of disorganized, torn, unequal and giant billboards creates a visual menace. Though advertisement does inform the consumers about different products but the social and cultural implications of excessive advertisement remains unclear and have stirred intellectual attention in many circles. There is this confusion between perception and interpretation. Vandalism ranges from the Graffiti to offensive messages, obscenities, street markings of different groups, all made without the owner's consent of course. It can cause an intrusion into the intimacy of a person or in a group territory [iii].

The effects of exposure to visual pollution may be vast and penetrating. They include: distraction, decreases in opinion diversity, and loss of identity [iv], traffic congestion, health hazards of diverse kinds [i], irritability and psychological disturbances, eye fatigue [v], loss of sense of hygiene and aesthetics, feeling of civility, thus overall loss of quality of life of the residing community. Children closely associated with visual pollution from childhood are generally bereft of subtle aesthetics and they get used to this unsightly surroundings, even lose their natural desire to correct it [vi]. When almost all urban and sub-urban areas are infested with the same kind of visual pollution, it naturally eliminates the uniqueness of each place and causes homogenization of our communities [i].

Areas free from visual clutter, like a huge lawn, a picturesque landscape, a forest, hill, greeneries etc. are visually soothing, they help to re-energize us, soothe our pains and restore our productivity. Thus, though we feel that the visual environment is integral to our daily experience of the built and natural worlds yet, the altering of this visual environment is often taken for granted [i].

Theorists of modern psychology state that identity is a very special case that is peculiar to the individuals or society, that it is evolved not from the being itself but from its interaction with others, and that it is something that can be described by comparing it with others [iv]. Such uniqueness is hardly perceptible in urban areas with such exhibition of similar visual clutter. Kolkata and Bengal in India too is often under-rated and the vibrance of the citizens overshadowed in the face of such visual hazards.

This pollution is comparatively recent concept with some worldwide uproar. Many cities worldwide are taking various measures to minimize this pollution.

In this report, the aspect of visual pollution is selected and analyzed by survey and simple experimentation and its impact after acute and chronic exposure, on health, on society, on psychology as a whole is indicated.

Material and Methods

Documentation through photography

Photographs were taken of different visual pollutants like the garbage heaps, billboards, electric cable in areas of different places of North and South Kolkata, Barasat, Barrackpore using Nikon D5000 camera.

A survey with respondents

A structured questionnaire was developed and persons selected randomly were interviewed. The respondents were through different ages across all sexes.

Visual comparison

Visual comparison was done between places with visual pollutants and the areas which were free from it and were visually pleasing.

Experiments on visual clutter

It was done using a box (length 35cm, width 25cm and height 6.3cm), where 20 different items were placed in four different manners (20-unarranged & arranged and 10-unarranged & arranged) and a particular object was asked to be located.

Statistical analysis

Different parameters were statistically analyzed. The ratings given by respondents of the survey were represented using a point which reflected the relative importance value index. The data is represented here as histograms and pie charts. In some diagrams percentage was calculated of the different options as preferred by the respondents.

Results

Visual Pollution from different sources

The following pictures clearly depict the hazardous visual environment where the clutter and confusion creates a state of continuous displeasure.

Billboards:

Fig-1a

Fig-1b

Fig-1c

Fig-1d

Fig – 1e

Fig – 1f

Fig 1-<u>Billboards of different areas</u>

Fig-1a – In North Kolkata

Fig-1b – In South Kolkata

Fig- 1c – Near Barasat area, a district town

Fig- 1d – Side of B.T. Road, a highway

Fig -1e and f – An electronic billboard near a traffic signal in South Kolkata,

(Red ring show the traffic signal, its vicinity to the electronic billboard is to be noted)

Other sources:

Fig 2-Other sources of visual pollution in our study area

Fig-2a – Garbage spills on the roadside in South Kolkata
Fig-2b – Cables before a hospital in South Kolkata
Fig- 2c – Garbage heaps beside a Church
Fig- 2d – Garbage heaps overlooking a boundary wall of a school
Fig -2e – Skyline in a district town
Fig-2f – A dilapidated ancient building in a district town

These show the glimpses of different visual pollutant and reveals how all-pervading is their unpleasant effect on the entire visual horizon in an urban or sub-urban set-up. They are omni-present even in vicinity of such social institutions as a hospital or school or Church etc (Figure 2). The threat is that they become a part and parcel of the urban life which actually degrades the quality of environment in several subtle yet significant ways which will be clearer as we proceed to the later sections.

Some relevant queries

Some basic questions were raised to our survey respondents and the result was compiled. When asked whether there is any visual pollution in Bengal, almost 95.55% of them vote for high visual pollution (Figure 3a). The respondents have also placed highest importance value to garbage followed next by billboards (Figure 3b).

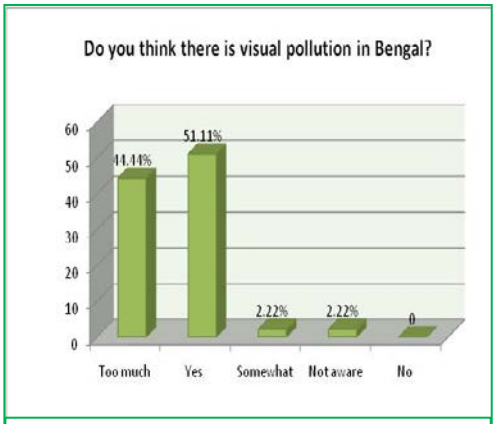

Fig- 3a- Perception about status of visual pollution

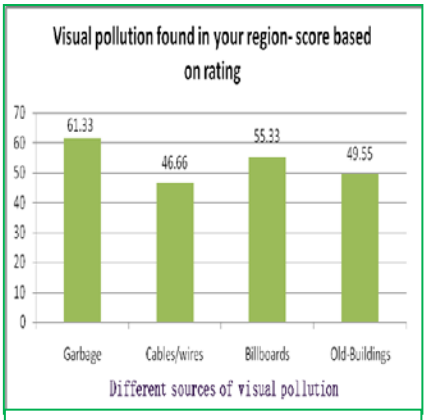

Fig -3b- Perception about different sources of visual pollution

Associated hazards related to visual pollution

Each visual pollutant comes with some associated hazards, as has been pointed out by our respondents in the survey (Data not shown). The summarized conclusions include health hazards to community, to the residents and the animals alike, electromagnetic-waves related effects (that remains largely undocumented), electrocution of birds, odour pollution, traffic congestions etc. those especially related to billboards have been depicted in Figure 4. The dazzling billboards may distract the attention of the drivers and this aspect has been given the maximum importance, also electronic billboards may create a problem in paying proper attention to traffic singalling when such signals lie in close vicinity to such hoardings. The same has been demonstrated in Figure 1e and 1f.

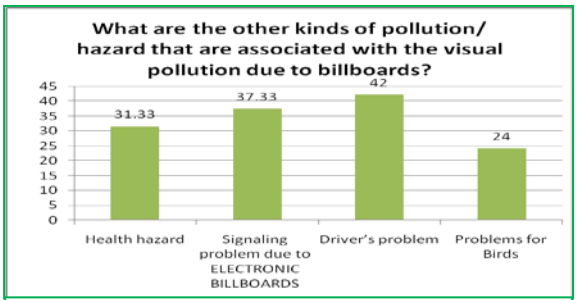

Fig- 4: Associated pollution due to Billboards

Social behavior around solid waste

Respondents were asked regarding their perceptions on some acute and chronic effects on social behavior of the inhabitants or passers-by in response to garbage heaps over the city areas (Data not shown). It was found

that there are certain immediate reactions like extreme unpleasantness of sight, experience of nauseating smell, throwing of more garbage on garbage heaps, spitting, etc. But chronic effects are far more penetrating. The most harmful being that people getting used to such environment and stopping to react. That can further create havoc in changing their aesthetic sense, sense of cleanliness etc. which will make a character-changing impact on the community as a whole, further paving the way for loss of quality of life.

Comparison between visually pleasant and unpleasant area

Of the total stretch covered including those covered in South Kolkata, North Kolkata, Barasat and Barrackpore, only 23% of the total distance covered showed good visual quality. The Eco-park, Rajarhat stretch which is newly built area of Kolkata, the cantonment area of Barrackpore etc are areas which were comparatively clutter-free (Figure 5a). It indicates that newly developed area with proper planning may culminate to a visually pleasant environment. Some more civil laws may be introduced, sources of visual pollution may be properly managed, to create a good vista. Simultaneously steps may be adopted by the civic bodies to clean up visual pollution of the older parts of urban and suburban areas so that the inhabitants feel the beauty of living in a pleasant environment.

When in another observation, a stretch especially covered for observation of only the arrangement of Billboards in that area was 29.3 Km in a part of Kolkata. Of this only a stretch of 0.8 km was found to be visually pleasant with arranged billboards, that is, only 3% of the area covered was found to have arranged billboards by the roadside (Figure 5b).

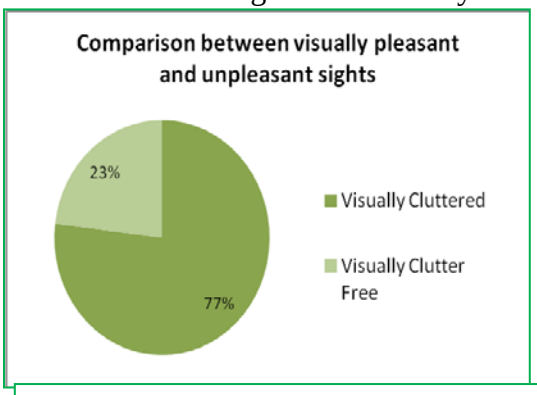

Fig – 5a – Proportion of area covered which were visually pleasant and unpleasant

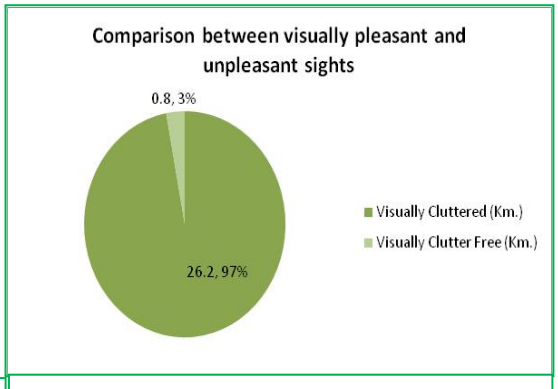

Fig – 5b – Proportion of area covered which were visually pleasant and unpleasant (in respect to

Fig 6-<u>Comparison between visually pleasant and unpleasant areas</u>

Fig-6a- Garbage dumps in Santracgachhi jheel (in a district town, a place once known for abode of bird-migration)

Fig 6b- A lake in Eco tourism park in Rajarhat (a newer part of the city Kolkata)

Fig-6c- Unorganised billboards in proper Kolkata (south)

Fig-6d – Ugly iron framework for hoarding lying naked by the roadside in Kolkata

Fig- 6e – A part of a Fly-over with comparatively well-arranged series of billboards on both sides

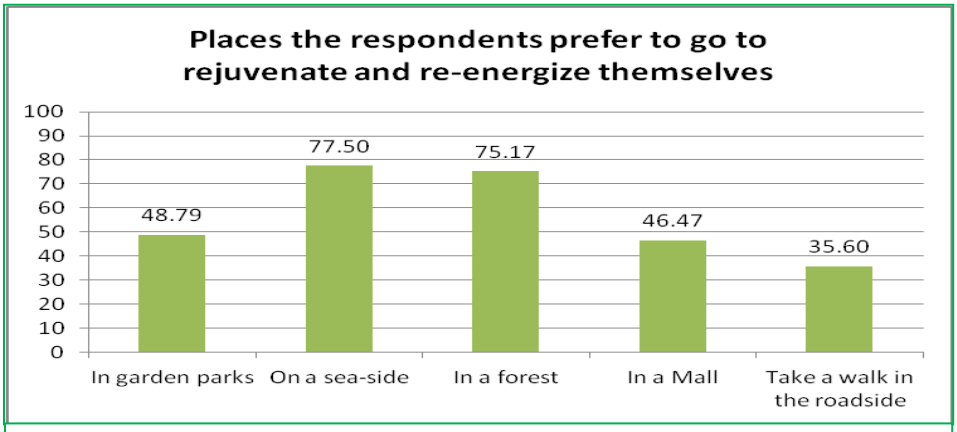

Fig- 7- Places the respondents prefer to rejuvenate and re-energize themselves

Trends showing psychological longing (from survey results)

When our respondents were asked where they would prefer to visit for travelling, to re-energize themselves, they gave much more importance to a forest, a seaside, garden parks which are supposedly visually and aesthetically pleasing, as compared to visiting a mall or walking by roadside (Figure 7). Additionally, majority of respondents also preferred to construct their residences in areas with greeneries (Data not shown). Thus, though basically we imbibe the need to live in visually pleasant environment deep within, yet we tend to apparently ignore this significant fact.

Experiment on visual clutter

The relationship between the number of objects in a display and the time needed to find a target, have long served as the gold standard for characterizing the efficiency of visual search. From the many studies using this manipulation, it has been learnt that search efficiency often degrades roughly linearly as non-target objects are added to a display the increased load arising from these added distractors makes it harder to find the search target [vii].

In this section, experiment was performed to test how visual clutter affects the people to search a given item. When the subjects were asked to locate a certain item among 10 arranged and unarranged items, it was found that in all cases the time taken to find that item has been much less when the things were arranged ranging from two times to ten times more time needed to search an item from among cluttered objects as compared to find the same from arranged ones (Figure 8). Similar observation was there with 20 arranged and unarranged articles (Data not shown). This can be conceived as a test to exemplify how visual pollutants, especially the billboards, can

distract the drivers and the pedestrians to concentrate on traffic signals or to find a person they are supposed to meet or to find their proper way to destination in a congested city.

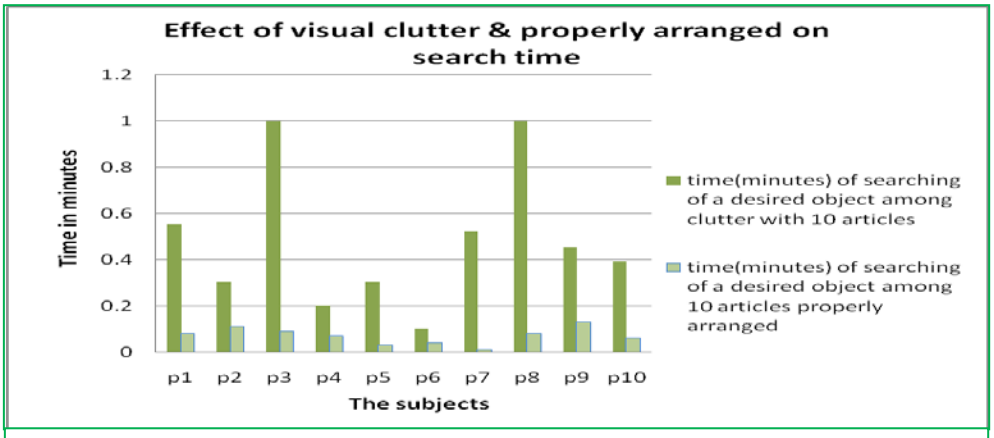

Fig -8- Effect of visual clutters & properly arranged on search time

Some relevant questions

Despite all the above discussions regarding visual pollution, the aspect remains incomplete if certain questions remain untouched. One such question was asked to our respondents, that whether the issue of visual pollution is a luxury for a third world country like India, where several people are forced to live in slums and spread their wet clothes in the dividers or on the roadside. People have been largely found to be divided among their opinions (Figure 9). So the dilemma and the debate continue.

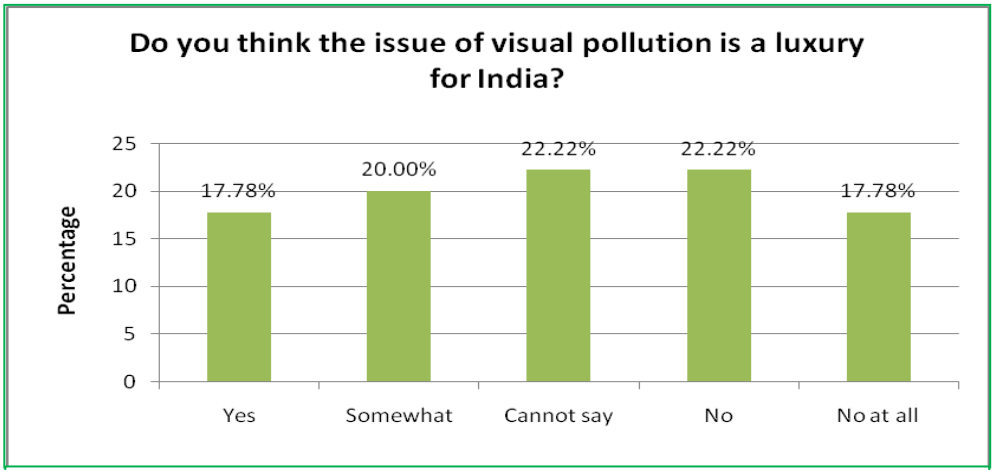

Fig – 9- Whether Visual Pollution is a Luxury in India

In this regard, however, arguments can be placed that there are communities among poorer section of the society, certain races and tribes, who despite their financial condition, live in a decorated home and strive to make their surroundings beautiful. Many folk arts that are visually pleasing have their origin in a very poor community. This habit inwardly caters to innate happiness and health in a subtle way that may go a far way in maintaining the basic quality of lifestyle in a locality.

Conclusion and Discussion

From the above discussion it is clearly indicated that visual pollution that impairs a person's purview to enjoy a pleasant environment, is creating a hazardous condition in a civic society. Among the different sources people perceive garbage, billboards, dumping of electric wires are considered to be the greatest source of visual pollution. Each brings several other associated hazards to the society. The mitigation efforts maybe either localized in certain belts or have not reached to a level where the citizens can perceive the change.

This pollution leads to a loss of sense of identity and homogenizes the community due to the presence of similar visual pollutant in many urban cities and towns. It may lead to deterioration of the civic sense, aesthetic appeal and other civic behavior of the population. Chronic effects have deeper impact and may culminate to character-changing effects on the inhabitants. Children growing up being used to such unpleasant sites may have their aesthetic senses blunted and may not feel the need to stay in a pleasant environment. Such exposure may lead to the destruction of the centers of human aesthetical taste. These children may not grow their minds programmed correctly nor scheduled to deal with a lot of maturity problems. These cause a chronic degradation in the way of life [iii].

Additionally, visual pollution can cause value degradation of property. It can deter establishment of business centres at certain places. This can cause a reduction in economic value of a place.

Healthy visual environment promotes the values of those who live there, promotes civic pride and economic health of the community because all human beings are part of natural environment. The inhabitants show an innate instinct to experience a good feeling when integrated with the beautiful Nature, which is reflected in the opinion of the respondents that they would prefer to visit to the pleasant picturesque places of natural beauty free from visually unpleasant sight to re-energize and relieve stress. Doctors explains emotions that result from a negative visual influence as an increase in the secretion of adrenaline, which raises the acidity of the stomach and rapid the heart rate, and thus speed irritability. They also explain emotions that result from a positive visual influence like, a sense of beauty, increases

the secretion of cortisone in the body, and this natural cortisone reduces the feeling of pain, especially for those who suffer from rheumatic diseases. Some studies was also done regarding where the concentration of visual pollutants is more, how concept good visual environment is used commercially, what can be different causes, in a third world country like India what would be the fate of such visual pollution and what are the different objects that we can call visual pollutant, which kind of visual pollution is increasing etc. and few other questions were asked too (Data not shown).

The pollution with gross and acute effect attracts immediate attention. Unlike such acute attention, visual pollution usually goes unnoticed, unaddressed, and overlooked. Many countries globally, for example, Seoul, Beijing, states of USA, Norway, Moscow, Czech Republic, Brazil and others, however, have recently taken this issue seriously and have incurred several restrictions to reduce visual pollution [iii]. But here it may be pointed out that the kind of visual pollution in a developed country may not match with the visual pollution in a developing country, neither the consciousness of the inhabitants in these two types can have equal bearing. For example, in developing countries garbage may be a menace of much larger magnitude than in developed country whereas in a developed nation the sources of visual pollution may be of different types.

Some future studies can be designed where different other places can be examined, a comparative account can be created between the status of visual pollution of different cities in India as well as of different countries. Some pollutants that are still not under attention can be taken into consideration and studied further. New innovative and feasible ways may be planned to mitigate this kind of all-pervading unpleasantness in the urban and sub-urban environment.

This discussion reveals the subconscious truth we all feel, that the visual environment is as indispensible as clean water or fresh air in weaving the pleasant mosaic of a healthy environment. Hence there should be joint effort from different organizations and institutions of the society, namely the government, the concerned authorities as well as the public at large. Efforts should be taken to raise awareness among them.

To thrive in a beautiful environment where there is a pleasant mosaic of natural and built forms is a dire urge of our soul and the health of our psyche. Such environment inspires creativity and productivity.

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GLOBAL HEALTH CRISIS: FINDING THE IMPERATIVE SOLUTIONS

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Abstract

The earth is currently the only known planet that is sure to sustain life, with no other heavenly body seeming feasible. We, the humans have been oblivious to this fact and carried out activities that have slowly created a situation that has left us staring at a future which poses issues that are detrimental to the sustainability of our own species. Various human acts have affected in ways that are not intelligible to the community. Although, the realisation started long ago, the measures definitely demand a constant scrutiny to make sure that they are well-equipped to stem the decline to an extent that recovery becomes possible. This paper attempts to gauge the enormity of the situation of health deterioration around the world and identify the causes for it. A discussion of the current initiatives has been done and the measures that require change have been identified based on how they have been faring. Suggestions, in the form of improved solutions based on the need of the hour and with a specific aim of human health improvement have been presented in a bid to utilise the slim possibility of a reversal of states.

Keywords: Trans-boundary, health consequences, institutionalised policies, enforcement regulation

Introduction

Human health is defined by the World Health Organization as a state of complete physical, mental and social well-being. Global health impact studies in today's time identify hundreds of sources of threat and assess and calculate the mortality figures for each of them. This leads to an unorganised approach for redress. Instead, some core issues need to be identified which are the most prevalent and lead to other highly specific issues relating to one of physical, mental and social well-being. Looking for the solutions of these core issues will also lead to remediation for a number of other issues emanating from these core issues and lead to overall improvement of human health. These core hazards range from the already well under concern

hazards like climate change and stratospheric ozone depletion to the relatively new and less recognised threats of chemical contamination.

These threats have both direct effects on humans as well as indirect effects in the form of other small-scale and specific issues arising from them. Recognition of the scale of influence of these problems requires a fresh perspective which takes into account the complexity of the network of earth systems and society.

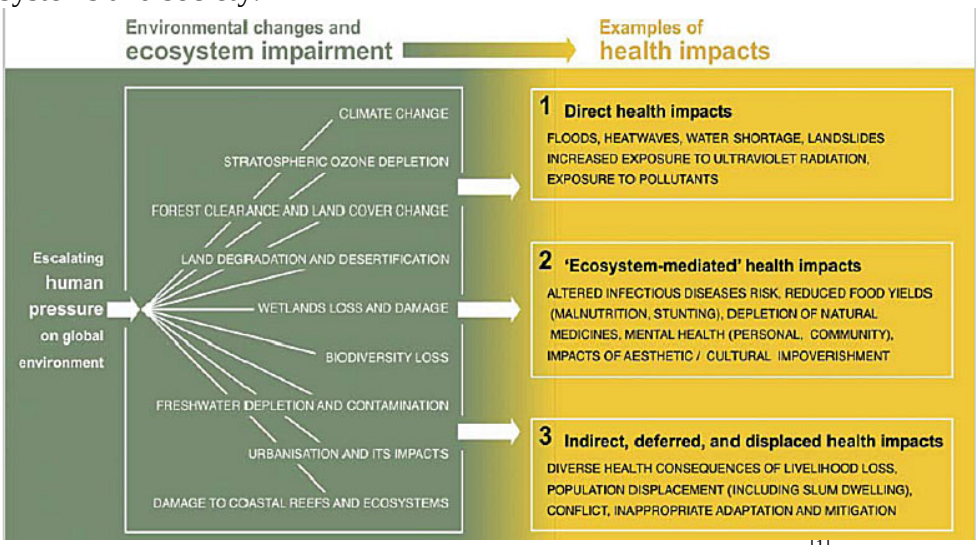

Fig.1: Harmful effects of ecosystem change on human health [1].

Some of the aforementioned factors have been discussed at length along with some issues which have remained unattended and which demand an increase in the recuperative measures. The sources of the creation of these issues and the consequential health problems have been identified and the measures have been analysed. Also, tips for possible improvements have been provided.

The global health issue - causes and current situation

The trends of growing exploitation of the biosphere leading to their declining condition is unsustainable and most likely irreversible, as it seems that we are on the cusp of crossing the threshold for reversibility. Reduction or complete abolition of the anthropogenic impacts is the only way to break this resilience.

"Health risks are no longer merely a result of localized exposures to "traditional" forms of pollution – although these still certainly exist. They are also a result of broader pressures on ecosystems, from depletion and degradation of freshwater resources, to the impacts of global climate change on natural disasters and agricultural production. Like more traditional risks, the harmful effects of the degradation of ecosystem services are being borne disproportionately by the poor.- LEE Jong-wook Former Director-General of World Health Organization"[1].

A large chunk of the population affected by these ecosystem changes is highly vulnerable and no longer capable of withstanding them further. They lack adequate safe water supplies and face declining agricultural yields and therefore are at the risk of malnutrition.

The factors range from climate change to wars and disasters etc. They have been discussed in detail further.

Factors responsible – their sources and effects

Climate change and greenhouse effect

Human produced greenhouse gases are the major culprit behind global warming. Anthropogenic sources amount to an annual 7.9 billion tonnes of carbon dioxide emission to the atmosphere [1]. The climate change thus induced leads to rising sea levels, increased temperatures and higher precipitation. In the last 100 years, the world has warmed by approximately 0.75^{o}C. Each of the last 3 decades has been successively warmer than any preceding decade since 1850[2]. Rising sea levels can make the salt water seep into the groundwater tables and mar the drinking supply. They can also displace populations from low-lying areas and displacement almost always goes hand in hand with poor basic living environment.

A constant climate is also a fundamental need for human sustainability, or for that matter, any species. Heat waves resulting from climate change can lead to heat related deaths. Beyond this, other risks include dwindling crop yield, droughts, and dry conditions or subsequently wildfires. Wildfires are a cause for deforestation and lesser trees relate to lesser absorption of the excess carbon dioxide in the atmosphere. Thus, fewer trees mean higher levels of greenhouse gases in the atmosphere which perpetuates the cycle in which temperatures keep increasing and wildfires occur. Global warming can also cause heavy rains and subsequent disasters in the form of floods and landslides.

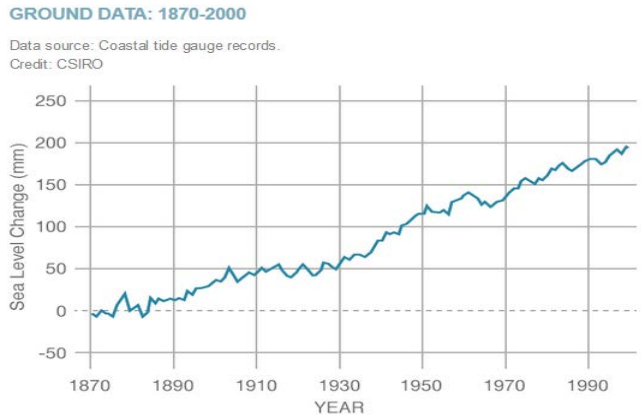

Fig. 3: Ground data for sea level change (Source: *climate.nasa.gov/vital-signs/sea-level*)

Deforestation and Desertification

Removal of trees and vegetation for various purposes leaves the land partially or completely exposed. The effects of this well-known process of deforestation on the ecological well-being of the earth are even better known. Local climate change because of CO_2 sinks lost and reduced resistance to floods and landslides are some of the consequences. It is a prime perpetrator of desertification which is the degradation of productive land to the extent that it no longer produces food or sustains life.

About 1 billion people are affected by land degradation created through soil erosion, waterlogging or increased salinity of irrigated land [1]. At present, Africa is the worst threatened continent with land degradation affecting almost 46% of the population. Asia lies at the crest of severity in terms of number of people affected [3].

Populations in these drylands are often marginalized and powerless in improving their well-being, which aggravates their vulnerability. They depend on the ecosystem for their basic needs, which take a toll due to the declining water availability and harsh climatic conditions. Agricultural productivity is lost. Wild plants that provide nutritional supplements are also lost and so is traditional medicine which relies on wild plants and is important when modern medicines are unavailable. Large dust clouds formed as a result are responsible for respiratory problems as far as thousand miles away. Women are heavily stressed to search for food, water and fuel till far-away places. Malnutrition becomes imminent in such situations. Infectious diseases also manifest owing to the lack of water for hygiene. The crisis forced use of heavily polluted water presents an enormous possibility of epidemics occurring.

Deforestation indirectly acts as the portent of infectious diseases. Reduction in the habitat of wild fauna modifies the ecosystem boundaries and shifts the vector breeding sites. Species lost due to this habitat destruction are the predators of these vectors. Proximity and contact with the vectors increases and diseases spread e.g. Malaria in Latin America, Nipah virus spread in Malaysia.

Ozone depletion and ultraviolet radiation

The ozone layer in the stratosphere provides shielding from the incoming solar ultraviolet radiation. Industrial halogenated chemicals like chlorofluorocarbons (CFCs, used in refrigeration, spray cans etc.) are inert at ambient temperatures but react with ozone in the extreme cold of the polar areas of stratosphere. According to the U.S. Environmental Protection Agency, one atom of chlorine can destroy more than a hundred thousand ozone molecules. The solar ultraviolet radiation photolytically destroys gases such as CFCs, methyl bromide and nitrous oxide and generates reactive “free

radicals" that again destroy the ozone. UV radiation has been found to be responsible for immune inhibition as well as skin cancer. Within the UV radiation band, the highest risk of skin cancer is from the UVB exposure. UVB contributes about 80% towards sunburn while UVA contributes 20% [4]. Other disorders attributed to UV radiation include cataracts and premature aging of the skin.

	DALYs (000)		Deaths	
Disease	**Upper estimate**	**Lower estimate**	**Upper estimate**	**Lower estimate**
CMM	621.2	345.1	58 645	32 581
SCC of skin	82.7	59.1	9 474	6 767
BCC of skin	52.1	29.0	2 921	1 623
Solar keratoses	8.3	8.3	0	0
Sunburn	293.6	293.6	0	0
Cortical cataract	529.2	529.2	0	0
Pterygium	34.6	19.7	0	0
SCCC	1.7	1.2	0	0
RHL	68.3	34.1	0	0
Total	**1691.9**	**1319.4**	**71 039**	**40 970**
Total (excluding sunburn and RHL)	**1330.1**	**991.7**	**71 039**	**40 970**

CMM: Cutaneous malignant melanoma; SCC: Squamous cell carcinoma; BCC: Basal cell carcinoma; SCCC: Squamous cell carcinomas of the cornea and conjunctiva; RHL: Reactivation of herpes labialis

Fig. 2: Disease burden due to excessive UVR exposure, Disability-Adjusted Life Years (000) and deaths [5].

Acid Precipitation

Acid precipitation or acid rain as it is commonly known has recently cropped up as one of the serious environmental issues with significantly harmful effects on the freshwater and terrestrial ecosystems.

Sulfur and Nitrogen are the principal elements responsible for the harmful effects of acid rain. Despite natural sources of acid existing in the atmosphere, emissions of sulfur dioxide (SO_2) and nitrous oxide (N_2O) from electric utilities, burning fossil fuels, especially coal are the prime contributors to acid rain. These get converted to sulfuric acid and nitric acid in the atmosphere respectively and are carried by the winds for many miles, till precipitated. Volatile organic compounds (VOCs) form another class of causes. These carbon-containing chemicals easily vaporise. Examples include paint thinners, degreasers, and other solvents. Sulfur and nitrate emissions lead to the formation of small particles (PM2.5) which are too small to settle down and can go deep into the lungs or even bloodstream. Many species of fish are not able to survive in acidic water. Forest vegetation and soils are also affected. The trees' natural defences are weakened, making them more vulnerable. The nitrous acid deposits lead to excess nitrogen in the soil which may cause eutrophication leading to unwanted algae. Acid rain reacts with the soil aluminium to form aluminium sulfate or aluminium nitrate which are adversaries that can be absorbed by the trees.

Disasters

Apart from the usual known casualties of disasters, there are possibilities of chronic illnesses and psychological effects which do not just span the duration of the disaster.

Some direct effects of disasters include physical damage to hospitals, food shortages and disruption of water supply and sewerage systems. Moreover, the personnel involved in these may also be victimized, thus aggravating the public misery. Not only are these medical services essential for disaster victims but also for primary healthcare services needed perennially, including immunization.

The basic public infrastructure is damaged leading to disruption of basic living conditions. This is something that sets the foundation for infectious diseases to ensue and probably turn into an epidemic. Displacement of animals near human settlements brings in the threat of disease transmission from these animals.

Incidents have been reported where people don't follow the disaster management authorities' instructions and stick to their personal decisions which prove to be detrimental to themselves and the interests of the community. According to a study by the Japanese Government, during the 2011 tsunami, only 58 percent of people in Miyagi and Fukushima headed for higher ground immediately after the earthquake [6].

Wars & Conflicts

Armed conflicts involve destruction of families, communities or even entire cultures. The facilities meant for medical care and other health and social services are disrupted. People are forced to leave their homes and become internally displaced persons or refugees. The physical environment is degraded and a huge amount of non-renewable resources are used up in the preparation as well as during the war.

Since long, wars have had casualties in the form of not only armed personnel but civilians as well in large numbers. Armed violence is the fourth leading death cause for those between the ages of 15 and 44 worldwide [7]. Thus, a large blow is being dealt to the youth population. The majority of deaths occur due to non-conflict armed violence including small or large-scale criminally or politically motivated armed violence. The year 2004 alone, witnessed more than 490,000 homicides [7]. WHO estimated 0.70% of the global disease burden in 2000 to be due to conflict, including life years lost and those lived with disability [8].

The wealth of a nation is inversely related to the chances of having a civil war. According to past records, a country with a GDP per capita of US$250 has a 15% probability of war in the next five years where as

countries with per-capita income of more than US$5000 have less than a 1% probability[9].

The destruction of the societal setup, food and water supply systems, healthcare, sewage system, and power and communication systems forces large-scale migration. Malnutrition results and so do diseases which may also be infectious in nature and get aggravated owing to the poor hygiene facilities used by the displaced in the refugee camps. At least 200,000 people—and perhaps many thousands more have died each year in conflict zones from non-violent causes (such as malnutrition, dysentery, or other easily preventable diseases) that resulted from the effects of war on populations [7]. Water bodies, land and the air are polluted both during testing and during the war. People exposed to the smoke start suffering from respiratory ailments. Ionising radiation from the production, testing, use and disposal of nuclear and radioactive weapons are highly toxic. These along with the bioweapons which may be used to mar the human supplies through destruction of food and livestock, possess enormous possibility of making damage to the commoners throughout generations, however controlled their use may be. Even for the workers involved in the production, transport and storage of these weapons and the communities living nearby, there lies a huge risk. Wars also leave behind another great risk of hidden landmines which may cause damage years after things are over. Approximately 80 million landmines are still deployed worldwide in at least 78 countries [9].

Trans-boundary Movement of Hazardous Wastes

Over the years, as countries have become industrialized, there has been a spur in the amount of wastes, a significant part of which are hazardous. Alongside, concern has grown and stricter regulations for the handling of these wastes have come up. This has forced the developed countries to move towards the poor and developing countries for easy and unregulated ways for disposal. This has led to surfacing of much greater environmental concerns for the generally overpopulated poor countries where the disposal is carried out using improper procedures in small workshops. Organization for Economic Co-operation and Development (OECD) has put the estimate of movement at about 4 million tonnes per year, with not all being legitimate.

Landfills composing of these wastes lead to land degradation and water contamination. Incineration also contaminates the air and subsequently land and water through precipitation. The exact scale of the hazard is difficult to determine owing to indeterminacy of exact waste composition which may also have some lethal radioactive fraction. Also, the bacterial and viral content which may result in infectious diseases is difficult to determine. Countries have tried to specify what means hazardous to them and are trying

to control their spread. However the exact quantification needs to be done quickly as the effects may become a global concern, anytime soon.

Global Chemical Contamination

The by-products of industrialization and manufacturing pose hazardous risks to human health and the environment. Apart from sporadic cases of catastrophic contamination caused by industry, subtle impacts on human health owing to low levels of exposure are possible. The indispensable pesticide in agriculture on a long-term low dose can lead to various cancers, immune suppression, hormonal issues, birth defects, and developmental defects. The costs of injury from pesticide poisoning in 37 sub-Saharan African countries, due to lost work days, medical treatment and hospitalization amounted to USD 4.4 billion in 2005[10].

A by-product of manufacturing, dioxins can accumulate in fats and degrade over time. This contaminates the food chain. It belongs to a group of chemicals which are persistent organic pollutants (POPs), known as the "dirty-dozen". These do not degrade and remain in the environment and exert their effects. Consumer products today have benefits with side effects. The chemicals used in their production are harmful e.g. Bisphenol A (BPA) used in hard plastic bottles and metal cans. Pharmaceuticals, diagnostic equipment and other interventions are also probable contaminants. Medical waste incinerators are the largest source of anthropogenic emissions of mercury, a substance which can cause lifelong behavioural and cognitive issues or even cancer. The current world chemical output is estimated at 20 million metric tonnes by the UN Environment Programme, about a third of which is thought to be toxic or carcinogenic. The growth rate of this output is about 3% per year.

The harm which is dependent on the level and duration of exposure is mostly negligible but as these activities go on unchecked, the situation surely warrants attention.

Type of required measures

The whole global issue of human health requires a comprehensive approach aiming for development which is ecologically sustainable. Such an approach requires efforts from stakeholders across different sectors and to use the resources at their disposal in a perennially ecologically minded way.

Overall, the strategies expected from these stakeholders can be of various categories. Mitigation strategies which can reduce the effects of the underlying causes and improve the human health are desperately needed. The human diaspora also needs to adapt to the already occurring ill-effects of the change and devise new methods of quickly resurrecting itself against the loss in any major disaster, epidemic or other environmental change. These

aforementioned methods cannot be successful without integration with assessments of the suspected fore bearings of any human action, be it for the betterment of earth or not, followed by preparation of certain indicators for better management of the course of action. Global capacity-building initiatives are necessary and the knowledge thus acquired by the participants should be disseminated world over.

Present measures and desired future actions

Measures for addressal of each of the hazards are being separately thought out across the world and being put into action. Improvement has been a constant throughout the years and is the prime ingredient for enabling the efforts to considerably resurrect a healthy world.

The depletion of ozone layer is an issue which has been involved in climate change as well. The reconstitution of the ozone layer to its earlier state in 1980 will take some time. Reduction in the chemicals responsible is already in action through the force of laws. Abolishing manufacture and use of CFCs will be a shot in the arm. Being greenhouse gases, their removal will also arrest global warming and climate change. Technology for assessing the impact is being continually improved and can be shared across national boundaries. Satellites are a kind of technological tool which can be used for risk assessment and the richer countries should provide assistance to the poorer countries which are not capability of launching own space missions. The international organizations have a great role to play in development of greener development strategies. The UN-REDD programme is helping countries develop national strategies, financing approaches, and institutions that reduce emissions from deforestation and forest degradation to fight climate change.

Sustainable agricultural innovations are the key to successfully combating desertification. Traditional practices and local know-how can help a lot. Today, most measures try to check sand movement. Instead, they should be targeted at the root causes of land degradation such as overgrazing, unsustainable farming and deforestation.

For the case of hazardous wastes, conventions have been formed. The Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal is one such convention. Formed in 1992, it currently has over 170 Parties. However, the regulations laid down by these conventions are not strictly adhered to. Trans-boundary travel of wastes should be properly scrutinised. False information on containers is a common ploy used by the defaulters. Moreover, countries that are not party to these conventions have almost no regulations in this regard. In such cases, illegal movement becomes rampant and without any trace which removes the possibility of punishment later on as well. Various disguises are used, such

as relief material for expired medicines and raw materials for waste chemicals. Different countries have different definitions for waste and this frequently, leaves the waste (asbestos, tyres etc.) lying without treatment and posing a hazard. A unified law with stricter enforcements and logical solutions for disagreements is the need of the hour. Waste should be transported only after ensuring that the importer has facilities for proper disposal. The documentation of each transaction should be more informative and complete for necessary legal actions and future studies. Long distance travel increases the risk of accidents during transit. Thus, development of disposal facilities in countries lacking these should be encouraged and assisted by international organizations. Countries need to develop mechanisms to prevent flow of any hazardous waste through their territory. The general public should encourage construction of waste disposal facilities and not protest against construction near their dwelling, as has been seen in various situations. Recycling and waste disposal facilities also help to create jobs. The economic benefits of the growing waste market should be carefully weighed against the health losses before making new laws for waste movement.

Organizations have been actively working to solve the problem of chemical contamination. The United Nations Industrial Development Organization (UNIDO) checks the use of chemicals through its Energy and Environment Programme . The Food and Agriculture Organization of the United Nations (FAO) has been actively working in the field of pesticides. The Stockholm Convention on Persistent Organic Pollutants, which entered into force in 2004, is a global treaty whose purpose is to safeguard human health and the environment from highly harmful chemicals that persist in the environment and affect the well-being of humans as well as wildlife [11]. Better research is required to address the issue of global chemical contamination. Knowledge of the pathways and the extent of circulation of contaminants followed by establishment of scientifically correct limits are necessary. Better knowledge of these pollutants can lead to identification of improvement areas and production and manufacturing in greener ways.

Civil registration systems are shut down in most wars hampering the quantification of the deaths due to natural reasons and those due to the war. Media reports have widely differing numbers and are unreliable. More reliable data through surveys and pre-war and post-war census can better identify the health effects of wars. Better forecasts of war can enable the public health sector to better prepare for refugees and other public health consequences. This will also lead to an informed foreign policy where in countries assess their loss beforehand and make decisions for the public good. As the best solution, international treaties should be ratified and pre-emptive war, like the one in Iraq, should be rejected. Though the prevention

of the onset of war is the best solution, but if war is unavoidable, extra care should be ensured for vulnerable groups such as women and children.

Epidemics are a probable consequence of almost all the hazards. There should open distribution of knowledge of infectants, their laboratory samples and known treatments. The authorities should ensure treatments and vaccines are equally accessible to all, across the geographical and economical strata. Nations should strengthen themselves to sense hazards and be prepared to efficiently tide over it. This, if requires help from other nations or other stakeholders of the society, should be helped with.

In the face of disasters, sources of emergency supplies should be ready and a rapid assessment of the damage should be done to identify the needs. If a shortage crops up, required assistance should be asked for. However, such donations must be ensured by the donor for being safe and best suited for the need. Relief supply should be free from political and social influence and equally available for all the affected people.

There should global cooperation between governments in the surveillance, alerting and the response procedures. This cooperation must incorporate organizations like the United Nations, private industries, professionals, academia, media and the civil society.

Collaboration across sectors is required. Health, agriculture, trade and tourism should be well-informed of others' decisions and should be careful in forecasting the results of their actions before actually acting. Agenda 21, the international action plan adopted in 1992 at the United Nations Conference on Environment and Development (Earth Summit) describes a comprehensive approach to ecologically sustainable development which incorporates cross-sectoral policies [1]. Proper labelling of multi-hazardous regions combined with preparedness for each of the hazard is necessary. The disaster mitigation systems can be installed during the reconstruction period for future prevention. There should be increased stress on creating global and national resources for the improvement of public health facilities, advancement of surveillance procedures, responsiveness of relief networks, and organisation of public education campaigns. The priorities should be set for redressing health issues through parameters such as DALYs and burden-of-disease and work done should have the included aim of reducing the health disparity and bring the whole population at an equal, acceptable state of health.

Conclusion

People and ecosystems are involved in a dynamic interaction growing at a rapid scale. Though there has been an expanding understanding of these issues, the near future of this linkage is clouded by complexity and uncertainty. The efforts made till date have been instrumental in the healing

process, e.g. As a result of various measures being taken, it is expected that the ozone layer will naturally heal in about 50 yrs. [12]. However, the threat is far from over. Quantification of the threat is the problem in most of the cases. Improved methods need to be discovered to determine the exact level of threat so that appropriate measures of the required level can be put in place. Humans are the receiving end in all the situations, suffering through epidemics, malnutrition, contamination etc. The impetus should be on improving basic health infrastructure and primary health and making the people capable to tide over health disasters. A host of measures with an all-inclusive approach and a clear aim of improvement of human health and the environment are the need of the hour to preserve the 'most intelligent' species on earth for ages on.

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CLIMATE CHANGE AND LIVELIHOOD PROBLEM OF FISHING COMMUNITIES WHO ARE LIVING IN LARGEST WETLAND OF ASSAM NAMED AS SONE BEEL

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Abstract

Sone beel is the largest wetland in Assam. Ecological degradation of North-East India in general and of Sone beel of Barak Valley region of Assam in particular causes survival problem of the people who are directly dependent on it for their livelihood. A vast majority of people of Sone beel belonging to Kaibarta and Patni community who are in threat for earning livelihood due to gradual ecological change. This paper highlights how they are accepting the challenges for survival due to ecological change.

Keywords: Ecology, Environment, wetland, livelihood and challenges for survival

Introduction

Poorly attended by the academicians and alike, *Sone beel* represents the case of theological degradation and the challenges of livelihood faced by the communities of people who are dependent on it. Situated in the southern Assam of India's North-East it depicts the harsh reality of degradation of wetland due to anthropogenic and other factors causing siltation, drying up of wetlands and loss of bio-diversity. The two major communities i.e *Kaibartta* and *Patni* whose livelihood is dependent on this water body are now struggling to adapt to this changing ecological circumstances. The present paper thus tries to focus on the degradation of the wetland and the mode of adaptation of the people surrounding it.

Materials and Method

The study is qualitative in nature. Both primary and secondary data are collected for the study. Primary data is collected from field through indepth interview. Oral history of different communities living in *Sone beel*

is also collected for the study. Secondary data on *Sone beel* is collected from books, journals, news papers.

Understanding Ecology of North-East India

The North-Eastern India is the land of rising sun in the Indian sub-continent. Assam and other seven sisters including Sikkim consist the whole landmass of the North-East India. The entire region is endowed with green forest where bulk of tribal people is residing. The entire North-East region is rich in natural resources like oil, natural gas, minerals and most importantly valuable forests. The world's largest river island '*Majuli*' is located in the heart of river *Bramhaputra*[viii].

The region is highly prone to the consequences of climate change. The annual mean temperature of the region is rising at the rate of 0.04c per decade. Assam is a part of this highly warming trend. A significant change in seasonal rainfall is observed in different parts of North-East India including Assam. The summer monsoon rainfall is found to be decreasing at an approximate rate of 11mm per decade. Several districts of Assam were badly affected due to drought like situation in 2005 and 2006. Wetlands of Assam are drying up due to global warming and shortage of rainfall[ix].

Most of the wetlands of North-East are located in Assam and Manipur. There are total 11178 wetlands, including all variety of wetlands like rivers, lakes, ponds and others, in Assam as estimated by Indian Space Research Oganisation. Dibrugarh district of Assam is having highest number of wetlands where wetlands occupy around 21.43% of geographic area of the district. Barak valley region of Assam is having vast wetlands. Around 19459 ha of land is occupied by wetlands in Barak valley[x].

Ecology and environment of North-East India is gradually changing. Global warming is one of major reasons of ecological change. Forests and hills of North-East are continuously misused by people. Soil erosion, silt deposition and rising of the river beds level have been accelerated due to the changes taking place in the hills. Increase in population growth and its ever rising demand for basic necessities for survival as well as for other comforts of life necessitated expansion of jhum lands in the hills. Besides settled agriculture in the valleys, industrial growth, road construction, mining, urbanization etc, added to the problem. The decreasing jhum cycles, land slides, the hill features have started to take a new and unaesthetic and ecologically unfriendly look. The significance of soil erosion and resultant siltation in the river beds is manifold. There is a vertical and a horizontal increase in river beds and increasing frequency and intensity of floods is the perennial problems of plains of north east. There is a marked deterioration in the water quality, increase in turbidity or opacity, reduction in plant life at the bottom, qualitative changes in the physio-chemical environment of the

water, disturbance in the benthic environment of the river, disturbance in spawning / breeding areas of aquatic fauna and so on. Hence there is an overall depletion in the quantity and quality of aquatic life. It has been seen that before 1950, the rate of siltation was very rapid and it has been observed that within a few years, the river bed rose by three meters in several areas. The situation has been aggravated due to further cutting of trees in the catchment areas resulting into washing away of the soil to the Brahmaputra river. Again water pollution in the region also shows a marked[xi].

Along with other parts of North-East India ecology and environment of Barak Valley region is also gradually changing. Shortage of rainfall and continuous deforestation are assumed by ecologists as major determinants of ecological change in this region. Water bodies of Barak valley are loosing depth day by day. The low lying lands of the region are gradually filled with humus. People's dependence on water body is gradually turning into dependence on land for cultivation and other occupations. A vast majority of fish firming community is gradually adapting with changing ecological and environmental situations[xii].

Livelihood issue in North-East

People of North-East India are depended on the environment for their livelihood. They are depended on land, forest and water resources. Employment generation in the secondary sector is very low in the region. In 1996 its seven States together had 214 major and medium industries, 166 of them in Assam against 374 in the industrially "backward" Orissa. Some of them have been closed down since then and no new unit has been opened. Its result is the predominance of the primary and tertiary sectors. In 1996, 75.26% of the Nagaland workforce, 74.81% of Meghalaya, 73.99% of Assam and 70% of Manipur was in this sector against an All India average of 67.53%. The secondary sector employed around 4% of the workforce in five States and 8% in the remaining two, against an All India average of 11.97%. The tertiary sector employed around 24% of the workforce in Arunachal Pradesh followed by 20.45% of Assam, 21.46% of Meghalaya, 21.26% in Nagaland and 29% in Mizoram against an All India average of 20.5%. These sectors are saturated and cannot employ many more.

High dependence on land, forest and water causes backwardness of North-East vis-a-vis immigration induced tension and conflict from colonial age which subsequently laid the foundation of the Bodo-Adibasi and Bodo-Assamese conflict and tension with the Muslims. Land loss was the result of the coming of the East Pakistani refugees in 1947. Nepali and Bangladeshi immigrants later captured plain and forest land. Most of them displaced the local people by encroaching on their land, forests and water resources. Though focus today is on the Bangladeshis but in reality around two thirds of

the immigrants are from the Gangetic plains. They flee from the feudal system and lack of land reforms in their region to encroach on the sustenance of the people in this region. Some tribes like Chakma and Hajong who migrated to Arunachal Pradesh after being displaced by the Kaptai dam in the erstwhile East Pakistan. All immigrants captured land of the original inhabitants who subsequently started movement for their land. The shortage of the natural resources resulted in the hardening of ethnic identities and exclusive claims to livelihood to the exclusion of all others[xiii].

Ecology of Sone Beel

Sone beel is the largest wetland in Assam having an area of 3458.12 ha. During winter season water level of this wetland shrinks to an area of 409.37 ha. Length of the *beel* is around 13.2 km and breadth is 4.2 km[xiv]. The *beel* is mainly fed by river *Singla*. The *beel* is bounded by Chargola of Karimganj district towards north, Kalibari bazar towards east Basantapur and other villages towards south and hillocks of Dhohalia hill range and villages towards west. There are around twenty four villages situated in all sides of the beel.

The ecology of this region has direct influence on life and livelihood of the people of *sone beel* and its surrounding localities. Ecological situation of this region couple of years back was not similar with the contemporary situation. *Sone beel* is connected with two major rivers of the valley namely *singhla* and *kochua*. Other small rivers and cannels are also connected. But the river *Singla* contributes almost eighty percent of water of *Sone beel*. Depth of river *Singhla* is gradually decreasing due to deforestation, soil erosion and land sliding in the hills of Mizoram from where it originates. Consequently low lying land of the river basin including *Sone beel* is getting filled with sand and humus. Flood caused by overflow of river water in summer was a major problem of this region few decades back which was partially controlled by government through embankment and other alternative measures. From 1998's onwards severe flood caused by overflow of river water is not witnessed by people of this locality. But the problem which most of the people of southern part of *Sone beel* have been experiencing since recent past is problem of water logging in the cultivable field during summer. Rain water gets logged due to mismanagement of cannels by local people and lack of maintenance of river embankment.

Depth of *Sone beel* is decreasing day by day due to several reasons. Siltation is one of the major factors followed by dumping of garbage and disposal of sewage which causes reduction of depth of the *beel*. Huge amount of sand and humus is getting deposited by the river *Singla* in the *beel*. Moreover, due to shortage of rainfall, water does not remain in entire *beel* through out the year. During winter water level reaches to the deepest

part of the *beel* and the upper part becomes a vast cultivable land. There are number of small *beel fisheries* in the deepest part which does not remain common property of fishermen in winter. These small *beels* fisheries are either government fisheries or private fisheries under possession of rich people. Government *beel* fisheries are under control of an organisation named as Sone Beel Fishermen co-operative Society Limited (SFCSL). The registered members of this organisation can fish any where in the government *beel* fisheries. SFCSL takes lease of the *beel* fisheries from Assam Fishery Development corporation, government of Assam. In summer season the entire *Sone beel* is filled with river water and the entire *Sone beel* becomes common property of the fishermen. Fishing is now a seasonal occupation for most of the fishermen. They search for other alternative occupations in dry season.

Due to changing ecological situation, many flora and fauna are getting extinct day by day. Different variety of fish, for which *Sone beel* was popular in the locality earlier, are not available now a days. Two varieties of fish locally known as *lacho* fish (cirrhinus reba) and *chapila* fish (gudusia chapra) are hardly found now. Variety as well as the quantity of fish is gradually decreasing. Bushses of plants were visible earlier but these are not available now a days. Variety of grasses were available earlier for which the farmers from distant places used to migrate temporarily with their cattle and buffalo in dry season. But now grass is not available like earlier and migrants are also not coming for rearing cattle in the field. Trees named as *hijol* (baringtonia actangula) were available in huge number through out entire Sone beel but these are very rare now. Migratory birds particularly Siberian birds used to visit *Sone beel* during winter but these are hardly found at present.

Social history of People

Majority of the people living at *sonbeel* are *Kaibartta* who belong to scheduled caste community. *Patni,* another scheduled caste community, is also found in surrounding villages. *Patni* is settled mainly in three villages of east part of Sone beel viz Anandapur, Devaddar and Gamaria. Patni settled in these villages during British period. They were brought from Jaldhup locality of undivided Bangladesh by the than Zamindar Kumar Bahadur. Their traditional occupation was boating and fishing. Gradually they started agriculture in the unused land of upper part of the *Sone beel*.

Kaibartta migrated to Barak Valley from Bangladesh during partition of India and a bulk proportion of their population settled at *Sonbeel.* To prevent their settlement in this region several social unrests and violent protests were done by the local people who mainly belong to muslim community. As per the oral history, just after their settlement at *Sone beel*,

Kaibartta started to torture local Muslim people living in surrounding villages. They were not only plundering their rice, vegetables, pets and other resources. They also tried to hit on religious sentiment of Muslims. It is said that a severe riot took place between Hindu and Muslim when *Kaibartta* tortured a Muslim pious man of the near by village *Kudali*. When the news was spread in the locality a severe communal riot took place. After immediate intervention of local police station as well as district administration the riot was controlled. Many Muslim families could not reside in that locality after that riots. They shifted to villages far distant away. It is also said that Muslim families of *Kudali* village left their land and resources which was later on captured by *Kaibartta*.

Kaibartta faced lot of difficulties in the initial stage of their settlement. Initially they were helped by other Hindus particularly *Patni* and *Namasudra* residing in surrounding villages. *Kaibarttas* were expert in fishing but they immediately did not get fish market in locality because local people used to catch fish for their own consumption. Therefore, in the initial stage of their settlement, they were in tremendous need and support of local people. Patni, *Namasudra* and other Hindus helped them with some resources needed for their livelihood. They also got government support to cope with the new situation. *Kaibartta* started fishing and worked hard for selling fish in nearby markets. Gradually fishing becomes their permanent occupation.

Muslim fishermen, Hindus other than *Patni* and *Kaibartta are also residing in Sone beel. Namasudra,* another scheduled caste community is found in some of the villages. Upper caste Hindus are very rare and mainly residing in near by markets.

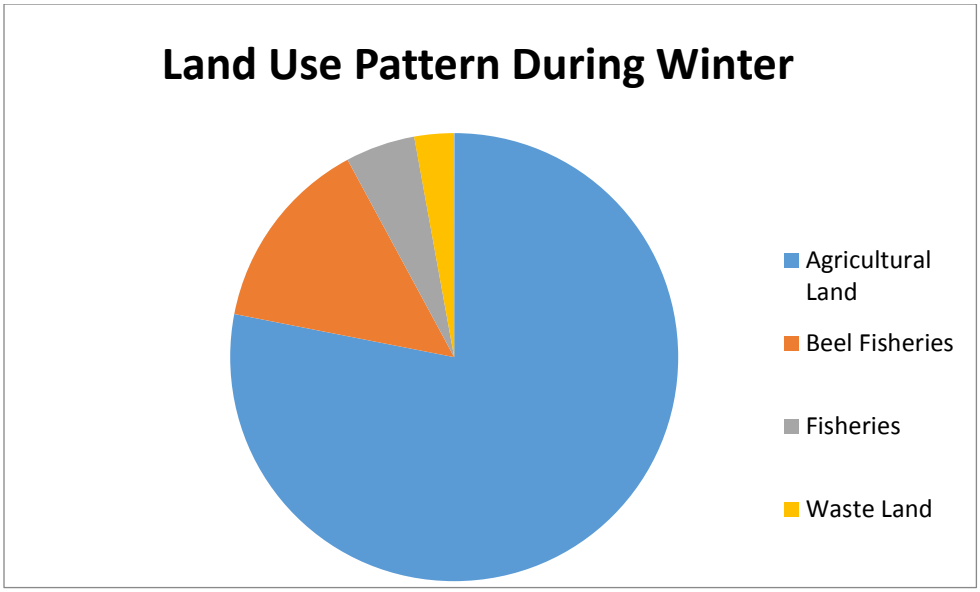
Challenges for Livelihood

Kaibartta settled on all sides of *Sone beel* and they were solely depended on it for their livelihood. Fishing was the principal source of livelihood for majority of the villagers. People engaged themselves in fishing from the month of April and they used to continue this profession up to the month of November or december in every year. From the month of January water completely got disappeared and *Sone beel* became a vast cultivable land favourable for producing paddy. People used to cultivate a special variety of paddy, locally known as *buro*, during winter season and harvested it in the end of spring. Harvesting of *buro* depended on nature. Farmers could not harvest properly if excess of rainfall and thunderstorm started early in the end of March. Around 40 percent of the farmers whose land was comparatively at better height could harvest their crops before beginning of continuous rainfall. Rest of the people's fate was decided by nature.

There was a folk magical practice, which is also prevalent now, in this region for saving crops from rainfall and thunderstorm. A popular belief prevailing among farmers of *Sone beel* is that beginning of rainfall can be delayed and thunderstorm can be displaced to another region by a magician who is locally known as *zeeral or hiral.* A *zeeral or hiral* is believed as enough powerful man who has control over cloud, rainfall and storm. Every year he uses to perform magical activities to delay rainfall and storm. He dances in the open field without dress and chants magical words when black cloud is seen in the sky. He keeps on continuing magical practices till the cloud disappears. During rainfall also he performs magical activity to decrease the intensity of rain. *Ban,* a special magical activity is done for avoiding or displacing storm from the sky over their field. *Zeeral* is highly honoured and paid by all the farmers if harvesting is safely done.

Land of *Sone beel* is used for fishing and agriculture. Fishing is done during summer. During summer the entire *beel* becomes vast wetland which is used as common property of people. The vast water body is used for purposes of fishing and communication. Different variety of nets are used for catching fish. Even very small fishes are caught by using a special nets. Communication becomes better in summer for people of east and north part of *Sone beel*. People of one part can easily reach to another part by machine boat. Some boats are run manually by boatmen. People of east part suffers a lot to reach their district town Karimganj during winter. But during summer they reach to district town via Fakua Gram railway station situated in west part of the *Sone beel*.

When water reaches to the lowest part of the *beel* during winter the entire *beel* becomes private property of people who claims their rights on cultivable land, fisheries and *beel* fisheries. Total estimated area of *Sone beel* is around 3458 hectors. Most of the land becomes cultivable land during winter. The land use pattern is shown below.



Out of total 3458 hectors of land, quantity of cultivable land during winter is around 2700 hectors followed by *beel* fisheries 485 hectors, fisheries 174 hectors and waste land 99 hectors. Above table shows that contribution of cultivable land during winter to the total area of *Sone beel* is around 78% followed by *beel* fisheries 14%, fisheries 5% and waste land 3%.

Impact of ecological change is almost same in all parts but people of different parts of *Sone beel* are adjusting with the changing situation in different ways. The villages in west and south bank are comparatively in better position than the villages of east and north bank due to better transportation and communication. Most of the villages of east and north sides are backward. Some villages in the east side are badly affected by river *Singla* due to excess of sand deposition on their land. They can not grow any crop in all seasons. People of these villages are poor and illiterate. They are in serious problem of livelihood. Due to poor socio-economic background, poor means of transportation and communication they are not able to move forward in search of alternative means of livelihood. Majority of them are still engaged in fishing and work as day labourer or agricultural labourer in dry season. However, few villages of the east bank, which are located in comparatively high land, are getting some added advantage of humus deposition. They are not solely depended on fishing because they can produce crops twice in a year in their field. They are self sufficient within their village despite of backward transportation and communication.

Villages in the west and south part, because of their location nearby railway station, are in better position. Villagers are not only engaged in

fishing but also continuing other subsidiary occupations. Most of them have occupied land in forest behind the village and engage themselves in forest based occupations also. Many people of these villages are going to town for work in the morning and coming back by train at night. Ladies sell dry fish, firewood and puffed rice in the district town. People are also sending their children to near by schools and after schooling they are going to district town easily for higher education. People of the west sides are highly mobilised. Number of government employees are increasing day by day. From the survey conducted in 5 villages of west part it is observed that these villages have produced 4 university teachers, 3 colleges teachers, 8 subject teachers of higher secondary schools, around 30 graduate and diploma engineers, 2 doctors and many other government employees. Opportunity for self employment is more in these villages. Good number of retail shops are found in a market which is built in the centre of villages. Unemployment is not a burning problem for them. A significant number of educated youths are working in private sector in metropolitan cities like Bangalore, Delhi and Mumbai. Educated youths are also participating in local politics. A good number of rural political elites have emerged in these villages after implementation of three tier system of Panchayat Raj. They have a strong hold in their local politics but their participation in state and national politics is not so significant. Electricity is available in almost all households. Supply water plants are available but all households are still not covered with the scheme. Good number of tube wells and ring wells are available. But people are not satisfied with the role of local politicians in the socio-economic development of the villagers. Benefit of government schemes are not properly percolating down to the beneficiaries. Local panchayat leaders are manipulating most of the schemes including housing, rural roads and drainage for their personal interest.

Government policies and programmes are formulated to safeguard the people of *Sone beel* but these programmes are not properly implemented for the betterment of people. The people are not organised to overcome their problems. Few social organisations are working with people but their effort is not sufficient to facilitate the poor people of *Sone beel*.

Conclusion

People of *Sone beel* are completely depended on nature for their livelihood. As a result of climate change livelihood becomes a burning problem for them. They are struggling hard for survival. The two fishing communities *Patni* and *Kaibartta* who are solely depended on this *beel* are having long tradition of poverty, illiteracy and backwardness. They are in vicious circle of poverty and it is almost impossible on their part to overcome this situation. Their problem should be studied with keen interest

by the academicians, bureaucrats and political leaders to save them from destruction caused by nature.

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ADOPTION OF SOCIABLE GREEN ENGINEERING FOR SUSTAINABLE DEVELOPMENT

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Abstract

India is striding ahead to become a world leader in manufacturing of ferrous metals & alloys. Rapid globalization has driven up-gradation to its ultra-modern infra-structure. It has contributed to India's sustainable industrial growth in auto, infra, mining, petrochemicals, and power sectors. Hence over the decade, its per capita consumption of ferrous products has vastly increased. Existing units of iron and steel manufacturing industries emit the greenhouse gases (GHG) with variable life span with multiple and Global Warming Potential (GWP). These are responsible for the global climate changes. Global Warming & negligence of integrated impact of enviro-scoio-human-economic factors while achieving technological progress has today become the greatest challenge to the human endeavor for its continued and dignified existence on this planet. Clean Development Mechanism (CDM), which is multistage knowledge process is one of the ways identified under the KYOTO Protocol, for developed countries to offset their carbon emissions, is fast becoming the preferred way.Moreover, KYOTO protocol based market driven generation, registration, valuation of carbon credit and its subsequent trading leads to penalize the polluting and reward the clean industries. Consequently, authors have attempted to create awareness among the ferrous metal manufacturing industries to minimize the hazardous impact of GHG by investing in modernization of various sections, machineries and process of the integrated plants by discussing a few case studies and methodologies adopted to translate controlling carbon emission into a profit churning venture. Implementing alternative, appropriate, innovative, resource conserving, safe & green technology will lead to sustainable development.

Keywords: GHG, GWP, Carbon credit, Kyoto, CDM, Sustainable

Indian Steel Industry Overview

Consumption of heavily embedded chemicals enriched unhealthy agricultural produce, greed of business tycoons to acquire overnight fame & richness, subsurface support of politicians, nexus of criminals in mining resources, scrap, import of unsafety, obsolete, overpriced, energy inefficient raw materials & technology, never ending overseas dependency on fossil fuel and associated skyrocketed cost of logistic, moral corruption of governing authorities, lack of knowledge of quality consciousness, standards, best practices etc. among consumers who compromise on cheaper product and services etc. are some of the vital parameters leading to catastrophic industrial disaster, uncontrolled epidemic diseases, impairing human DNA & inviting life style diseases, creating a superficially rosy but illusive picture of growing economy. However, the said parameters and lack of global efforts to address those issues will severely affect wellbeing of the entire mankind. India a nation with its rich spiritual, cultural heritage, unity with diversity of masses, functioning democracy, enterprising skills of its majority hardworking honest common man who is also equipped with rocket science knowledge can certainly play a visionary's role as torch bearer to save the world from anarchy by all the aforesaid stake holders.

India in its quest to achieve the status of `developed' nation by 2020 needs to maintain its current golden growth rate which is surging has driven demand for coal, oil, electricity and water. However, on the darker side, uncontrolled, unplanned usage of them is alarming higher emission of green house gases, quantum jump in production of waste, and sinking level of water table. Hence, as per the National Action Plan on Climate Change (NAPCC), Indian industrialist, NGOs, academicians, Private Public Sectors, Government *i.e.* the stake holders in India's success story have to work in co-ordination towards 'Mission of Sustainable Growth (MSG)'. Only this approach will enable India to conserve its natural resources, maintain bio-diversity, decrease carbon foot prints and implement higher discharge standard. Futuristic green certified products will have to be manufactured in "Green Factory" in strong compliance with universally approved Green Process Standard using Green raw materials. Accordingly, manufacturing of steel, polymers, ceramic, rubber, glass, paper, textiles, composite material etc. will undergo sea changes.

India has about 140 million tonne steel capacity, projected by the year 2016-17. During the current year the three Public Sector Units: SAIL, RINL and NMDC have planned to invest nearly Rs. 15,000 plus crore in their ongoing capex and plant modernization projects.

In the 3rd quarter of the FY 2014-15, Globally India stands 4th amongst steel producing nations [1]. Steel is crucial to the development of any modern economy and is considered to be the backbone of the human

civilization. The level of per capita consumption of steel is treated as one of the important indicators of socio-economic development and living standard of the people in any country. It is a product of large and technologically complex industry having strong forward and backward linkages in terms of material flow and income generation. All major industrial economies are characterized by the existence of a strong steel industry and the growth of many of these economies has been largely shaped by the strength of their steel industries in their initial stages of development.

As per the survey and news report:

- *The Indian steel industry have entered into a new development stage from 2005-06, riding high on the resurgent economy and rising demand for steel. Rapid rise in production has resulted in India becoming the 2nd largest amongst Asian producer of steel [2].*
- *It has been estimated by certain major investment houses, such as Credit Suisse[3] that, India's steel consumption will continue to grow at nearly 16% rate annually, till 2012, fuelled by demand for construction projects worth US$ 1 trillion. The scope for raising the total consumption of steel is huge, given that per capita steel consumption is only 40 kg – compared to219 kg across the world and 545 kg in China.*
- *The National Steel Policy [4] has envisaged steel production to reach 110 million tons by 2019-20. However, based on the assessment of the current ongoing projects, both in Greenfield and Brownfield, Ministry of Steel has projected that the steel capacity in the county is likely to be 140 million tonne by 2016-17. Further, based on the status of MOUs signed by the private producers with the various State Governments, it is expected that India's steel capacity would be nearly 293 million ton by 2020.*
- *India, has become the 4th largest producer of crude steel in the world, it is also net exporter of pig iron and finally it is the world's largest producer of sponge iron with a host of coal based units [5]*

Green House Gases (GHG)

Currently along with the economic slowdown, crisis of trust and cross-border terrorism overshadowed a big challenge faced by the governments of carious nations around the globe. Climate change is affecting fluctuation in Monsoon based Indian economy, increase in sea water level, periodic and sever shift in season, spreading of infectious diseases *etc.* However, climate change is as much a business issue as it is an issue for the Government and civil society. Corporations worldwide control more than half of the means of anthropogenic GHG emissions. Dual Challenge of each country are (a) Decrease GHG emissions from their exponential growth curve (b) Easing of impact of climate change

Greenhouse gases (GHGs) are trace gases that control energy flows in the Earth's atmosphere by absorbing infra-red radiation leading to global warming. Now if we talk about the Emission pattern from the different scopes, the sector-wise Green House Gases (GHG) *e.g.* CO_2, CH_4, N_2O, Hydroflorocarbons (HFCs), Perflorocarbons (PFCs), Sulphur Hexafluoride (SF_6) [6] emissions in India are as follows: Thus, steel industry is one of the energy intensive sectors and also a big emitter of GHGs, almost 15% of the total emissions counted by this sector [7].

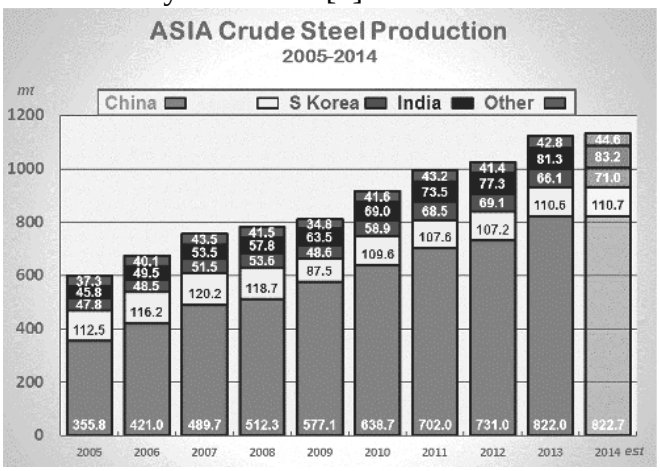


Figure 1: The production of steel in India for the past decade [5],

Table 1: Statistic of Production, Import & Export of Steel – Indian Scenario

Production of steel (Million tons) in India						
Category	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15*
Pig Iron	5.88	5.68	5.371	6.870	7.950	6.081 (5.868)
Sponge Iron	24.33	25.08	19.63	14.33	18.20	13.276 (13.413)
Total Finished Steel (alloy + non alloy)	60.62	68.62	75.70	81.68	87.67	65.197 (64.190)
Indian steel industry: Imports (in million tons)						
Total Finished Steel (alloy + non alloy)	7.38	6.66	6.86	7.93	5.45	6.492 (4.122)
Indian steel industry: Exports (in million tons)						
Total Finished Steel (alloy + non alloy)	3.25	3.64	4.59	5.37	5.98	4.066 (4.355)

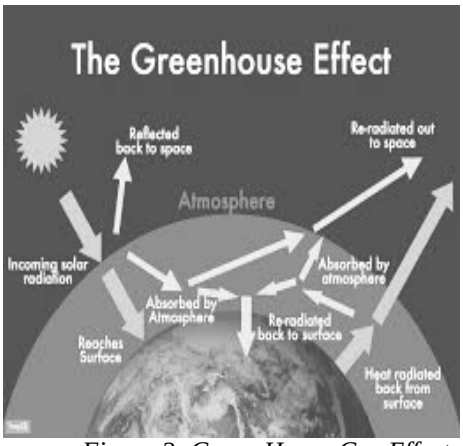


Figure 2: Green House Gas Effect

Table -2 Industry Wise GHG

Sr.	*Industry*	*% GHG*
1	Power	*51*
2	Steel	*15*
3	Transport	*13*
4	Cement	*03*
5	Chemicals	*03*
6	Others	*15*

Therefore it really draws attention to find some scopes in the Steel industry to take measures for energy efficiency and thereby reducing its GHG emission.

Every greenhouse gas has a Global Warming Potential (GWP), a measurement of the impact that particular gas has on 'radiative forcing'; that is, the additional heat/energy, which is retained in the Earth's ecosystem through the addition of this gas to the atmosphere. This allows the greenhouse gases regulated under the Kyoto Protocol to be converted to the common base reference unit of CO_2 equivalent valid for the next 100 years [8].

Table -3 Global Warming Potential (GWP) of Various GHG

Sr. No.	***Green House Gas (GHG)***	***Lifetime (years)***	***Global Warming Potential (GWP)***
1	***Carbon dioxide (CO_2)***	***Variable***	***1***
2	***Methane (CH_4)***	***12-15***	***21***
3	***Nitrous oxide (N_2O)***	***120***	***310***
4	***Hydrofluorcarbons (HFCs)***	***100***	***150 –11700***
5	***Perfluorcarbons (PFCs)***	***12.1***	***6500 –9 200***
6	***Tetrafluromethane (CF_4)***	***50000***	***5700***
7	***Sulphur hexafluoride (SF_6)***	***3200***	***23 900***

Carbon Credits

Carbon credits [9] are a measure devised by the Kyoto Protocol [10] which is is an agreement made under the United Nations Framework Convention on Climate Change (UNFCCC) [11] to reduce world Greenhouse Gas emissions (*5.2% compared to the year 1990),* and hence

fight climate change. Through the carbon market and by means of a provision of the Kyoto protocol called the "Clean Development Mechanism," people, companies and states can claim to reduce their emissions by investing in carbon-friendly projects in poorer countries [11-12]

CDM gives carbon credits or certified emission reduction (CER) units to clean energy projects in a developing country. These credits can be sold to companies in industrialized countries. The National CDM Authority is a single window clearance for such projects. One carbon credit or CER is equivalent to one tonne of GHG emission reduced and will approximately fetch Rs.1000 in Indian market [13].

CDM Opportunities in Iron & Steel Industry

Clean Development Mechanism (CDM), one of the ways identified under the Kyoto Protocol, for developed countries to offset their carbon emissions, is fast becoming the preferred way over other carbon offsetting mechanisms. CDM is is an arrangement under the Kyoto Protocol that allows developed countries to invest in emission reducing projects in developing countries when they are unable to reduce them in their own countries. A project in India which helps in reduction of GHG emission could be a potential CDM project and CERs generated from such project could be traded in the international market.

Concerning with the GHGs emissions, all the steel industries are now looking for efficient operations in production. Various technologies are now in hand to go with energy saving measures and efficiency improvement. With the implementation of such new technologies it becomes possible to conserve energy as well as to reduce the conventional emissions from the industry. But in taking such measures towards the environment benefits and help mitigating the global climatic issues, huge investments are required. Therefore financial support towards implementing new efficient technology is a core need for such industries. In this regards Carbon credits supports from CDM can provide them a new roadway to adopt new technology and thus to help mitigating the global emissions [14-15].

Various Stages in CDM Process

(a) Project Design Document (PDD) and Monitoring Plan preparation
Cost: 15,000 Euro (with approved methodology) Cost: 45,000 Euro (new methodology)
Host country approval
Cost: 4,000-25,000 Euro

(b) Validation
Cost - 7000-15,000 Euro

(c) Verification

(d) Approval of Baseline Methodology by CDM –EB/Meth Panel
(e) Project Registration
(f) Monitoring and verification
(g) Issuance of CERs

Figure 3 provides estimate on the time each step of the project cycle consumes. It is based on work of the World Bank Prototype Carbon Fund. It therefore includes extra steps like the negotiations with the project entity and a slightly different wording [16].

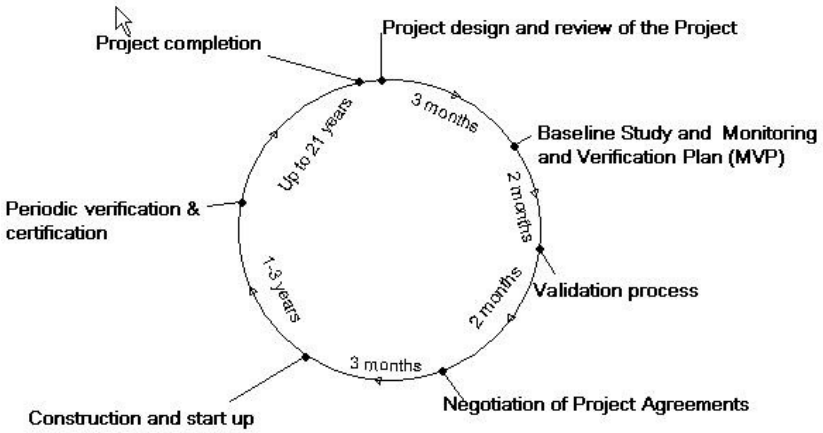


Figure 3: Time line for various stages to acquire carbon credit certificate

Opportunities for emission reduction

India's per capita greenhouse gas (GHG) emission, the main cause of global warming, continues to be less than the global average and even in 2031 it will be below the world average of 2005,

- **Energy efficiency improvement:**
  (a) Energy efficiency improvement through power factor improvement,
  (b) Steam system efficiency improvement,
  (c) Batch casting replaced by continuous casting,
  (d) Optimization of motor size,
  (e) Variable Frequency Drive installation,
  (f) Lighting system efficiency improvement,
  (g) Optimization of material handling system,
  (h) Cooling tower efficiency improvement etc.
- **Fuel switch**
  Fuel switchover from fossil fuel to renewable fuel, in CPP
- **Waste heat recovery**

The highest possibility of bringing down the emissions from this industry is to enhance the recovery of the gases and utilize them in the captive power generation.

This would replace the electricity from the fossil fuel based grid electricity. Hence capture of the waste gas from these plants become a very feasible measure to bring about emission reductions. Also the temperature of these gases go upto 950 ^{o}C. This temperature can be used to meet the heat requirements of the plant for steam generation.

Potential CDM Areas in Ferrous Industry

As the agreement builds for comprehensive reductions in greenhouse gas (GHG) emissions across international boundaries and industries, there is a growing need to understand the role that materials play in achieving a low carbon society. Companies are designing the innovative economically sustainable business model.

Steel industry has made significant reductions in its energy usage and is committed to take positive action to achieve further reductions in CO_2 emissions.[17]. Through the use of eco-products it has also guided other sectors to tackle the problem of rising GHG emissions.

New Steel Grades in Vehicles

New grades of Advanced High-Strength Steel (AHSS) have replaced conventional steels for a vehicle's body structure or body-in-white (BIW), resulting in typical weight savings of 25%.[18]. This corresponds to an estimated total vehicle weight reduction of 9%, with an impressive reduction in fuel consumption. One example is the introduction of lighter components for vehicles using higher strength grades of steels.

Automotive GHG Emissions

Active legislation relevant to the automotive sector has focused on the need to reduce use phase (tailpipe) emissions during the driving life of vehicles, and this is commonly achieved through mass reduction. However, tailpipe emissions do not tell the complete story, and competitive materials selected for use phase emissions reduction may not be the optimum choice for reducing overall energy use and the impact on the environment.

The Life Cycle Benefits Of AHSS

Life Cycle Assessment (LCA) has been adopted by the steel industry as a means to comprehensively evaluate material choices, and their effect on life cycle GHGs. Major Automakers are also adopting LCA as a tool for design and material selection decisions. LCA models developed by the University of California at Santa Barbara have enabled comparisons of

automotive materials and their associated GHGs across all phases of the vehicle life cycle.[19]. From these models, we have determined that:

- *For every 1 Kg of AHSS used in the vehicle there is a total life cycle saving of 8 Kg CO_2 equivalents.*
- *If all vehicle bodies produced globally were fabricated with AHSS the annual emissions savings is estimated to be 156 million tones of CO_2.*
- *Material choice becomes more significant for vehicles using advanced power trains and fuel sources.*

Other Steel Solutions

The use of AHSS in vehicles is just one example of where steel is contributing to a reduction in the use of fossil fuels. An efficient transport infrastructure is also heavily dependent on steel bridges and rail networks to reduce transport times and distances without compromising fuel consumption. Renewable energy technologies, such as wind turbines, benefit from the strength of steel to reach heights where there are greater wind speeds and, as a consequence, produce more wind power[20].

- *Energy used in the construction of a wind turbine is typically recovered within six to nine months of the turbine operating.*
- *The weight of steel towers has been reduced by 50% over the last 10 years.*

Green Manufacturing of Steel

Steel production process uses carbon feedstock as thermo-reduction agents in the form of coke. Globally it, is obtained by dry distillation of coal which is one the most carbon intensive fossil fuels. The Brazilian steel sector, however, it is the only one globally that uses charcoal as a reducing agent. Given that charcoal is a renewable fuel source, the charcoal-based steel can therefore be considered 'carbon neutral'[21].

V & M Tubes is the only steel pipe manufacturer in the world to use 100% renewable energy for the production of pig iron and steel. Its forestry division, V & M Florestal, is responsible for the production of all charcoal required by its mills. The project consists of investments to ensure the use of sustainably-produced charcoal for steel manufacture in Brazil, avoiding the use of coal. It is estimated that this will result in the reduction of 45 million tonnes of CO_2 emissions during the next 27 years. V&M tubes projects plan to adapt their existing carbonization kilns to incorporate best available technology to avoid the emissions of methane and particulate.

Cosipar, a private Brazilian company producing 330,000 million tones of pig iron in the state of Pará, in Northern Brazil has an objective to establish plantation forests to produce its charcoal needs, as opposed to other

companies in the Amazon region that are either using charcoal from unsustainable degradation of natural rainforests, or are moving to coke.

The study conducted by energy management cell of UNDP explored various measures for implementation and to reduce industrial electricity consumption as detailed below.

- *Installation of new Energy Efficient Pushers type furnace equipped with new set of burners, high efficiency recuperator, and blower, oil heating pumping unit, pusher, ejector, flue line & chimney, damper and PLC control combustion.*
- *Replacement of existing spindles & couplings by universal type spindles/couplings*
- *Replacement of existing roll neck fabric bearings with anti-friction bearings*
- *Adoption of Flat belts in place of existing V-belts*
- *Installation of new roughing mill having anti-friction bearing, tilting tables, stationary wall tilters centralized lubrication system*

Some of the main opportunities available for SME's in steel sector are energy efficiency measures by way of saving in fuel and electrical energy. Major savings are expected in fuel – furnace oil and coal [22].

- *Replacing/retrofitting to blowers, motors and rolling mills*
- *Redesigning the furnace for increasing the productivity and efficiency*
- *More efficient furnace oil burners*
- *Change of insulation*
- *Switch to fuels with lower carbon content, e.g. from coal to fuel oil*
- *Optimizing of air fuel ratio*
- *Heat recovery from exhaust gases*

Where as in integrated Steel plant where coal, limestone, iron ores, steel scraps are processed to make, coke, pig iron, hot metal in coke ovens, blast furnaces, ladle /electric arc furnace to manufacture ingot, billets, bloom, plates, I,/V-section, rail, wire rope etc has ample scope to bring down the emission of GHG as shown in Table-3

- Coal dust, hot oxygen & tar injection in blast furnace can be done to reduce coke rate, operation cost, energy consumption
- Waste Gases from blast furnace / Corex Units can be use to generate electric power – steam – boiler
- Waste heat recovery from DRI/Midrex can be adopted to manufacture sponge iron
- Russian Romelt: is a single-stage continuous *iron-making* technique meant for recovery of valuable from metallurgical wastes - EAF dust *etc*. It uses iron bearing wastes in its natural form without any

preparation using only ordinary non-coking coal and burnt lime for process conversion. Currently being adopted by NMDC in India.

- Hydrogen annealing can be done to reduce H_2 in a material to prevent H_2 embrittlement (long exposure at 200 ^oC). It is mainly used immediately after welding or galvanizing of the parts [23-24].

Methodology for GHG Reductions

(a) Reducing waste heat energy release into the atmosphere and recovery of waste heat to generate steam
(b) Generating Electricity for in-house consumption and exporting surplus power to grid thereby reducing the electrical energy load on the regional grid
    i. Reducing GHG emission at the thermal power stations
    ii. Conserving the non-renewable natural resource like coal
    iii. Making coal available for other utilizations
(c) Contributing to a small increase in the local employment in the area of skilled jobs for
(d) Operation and maintenance of the equipment [25].

Scope of Registered Projects with CDM

There is approved baseline and monitoring methodology under the CDM section of Kyoto protocol as given by UNFCCC for such project related to Iron & Steel industries.

The methodology mainly used is **ACM 0012 - "Consolidated baseline methodology for GHG emission reductions from waste energy recovery projects** --- Version 3.1[11]"

More than 30 projects have already been registered with CDM in India with this scope. These projects are mainly the waste heat recovery projects which helps reducing the GHGs by the efficient use of energy, replacement of Grid connected power or combined heat and power

Table – 4 Various Units with minimization of their GHG Potential

Unit	Potential Areas
Coke Ovens	• *Coke Dry Quenching (CDQ)* • *Tall and Wider Ovens*
Sinter Plant	➢ *Waste Heat Recovery* ➢ *Installation of Multi-slit Burners*
Blast Furnace	Coal Dust Injection / Coal Tar Injection Top Pressure Recovery Turbine (TRT)
SMS	❖ *Replacement of Open / Twin Heath Furnace by BOF* ❖ *Recovery of LD Gas (CV : 1680 KCal/m^3)* ❖ *Continuous Casting and thin slab casting*

Rolling Mills	▪ *Installation of Walking Beam type Reheating Furnaces with computerized combustion system* ▪ *Strip/ Slab charging at higher temperature (online)*
EAF	o *Scrap pre-heating* o *Oxygen lancing(ALARC),supersonic nozzle design*
Power Plant	• *Fuel Switching [12]*

Some Case Studies of Registered Projects

So far, quite a number of projects have been registered under this type. As mentioned earlier, the major scope of developing a project activity under CDM in the steel industry would fall under the energy efficiency category. A glance at the *registered projects in India would show that a* majority falls under the waste heat recovery type. The different kinds of projects developed under different possible methodologies are:

Title: "Waste Heat Recovery project at Saraikela, Kharsavan, Jharkhand by M/s Kohinoor Steel Private Limited"

- ✓ Date of registration: 28 May 2008
- ✓ Applied Methodology: ACM0002
- ✓ Emission Reductions (CERs): 56,176
- ✓ Project Activity: Iinstallation of a 10MW Captive Power
- ✓ Plant (CPP) for generation ofelectricity by utilizing sensible heat of waste gases emanating from the Direct Reduction Kiln.
- ✓ Project Location: Kharsavan, Jharkhand

Title: Waste heat recovery based captive power project in an integrated Iron and steel plant

- ✓ Date of registration: 6 July 2007
- ✓ Applied Methodology: ACM000
- ✓ Emission Reductions (CERs): 8536
- ✓ Project Activity: Increase in waste heat recovery of the LD gas generated from the LD converter process of the integrated steel plant, and utilizing it to meet the captive power requirements
- ✓ Project Location: Rourkela, Orissa

Title: Electrotherm 30MW combined waste heat recovery, coal based captive power plant at Kutch

- ✓ Date of registration: corrections under reveiw
- ✓ Applied Methodology: ACM0012
- ✓ Emission Reductions (CERs): 61386

- ✓ Project Activity: installation of waste heat recovery boilers, in order to generate power from the hot flue gases from the sponge iron kilns at an iron and steel facility.
- ✓ Project Location: Kutch, Gujarat

Apart from these three case studies, there are **more than 30 registered projects** under the CDM EB related to Iron & Steel Industry.A percentage share of registered projects in India has been highlighted here. It shows that almost 7 % of the total registered projects accounts for Iron & Steel Industry. Also such projects carry overall sustainable development in the regions which make them eligible to gain the carbon credits.

Benefits of Acquiring Carbon Credits

1. *Implementation of New technologies*
2. *High investment required*
3. *Contributions to Emission reduction by the efficiency measures*
4. *Overall sustainable development through the infrastructure improvement*
5. *Encouragement for more development and future benefits to the environment.*

Thus considering all the above facts related to the Iron & Steel industry, CDM benefits are seemed to be a better supportive tool for these industries. And the trend of CDM registered projects in the area of Iron & Steel industries has shown us the potential scopes in CDM and its future benefits as well and also encourages the new project proponent to implement such new environment friendly technologies keeping a faith on Carbon credits supports. Therefore a move with CDM is definitely a profitable business for the Iron & steel industries and also a effective measure for GHG emission reductions.

Sustainable Growth

Overall in order to minimize the negative impact of unplanned urbanization, industrialization, it is essential to have a thoughtful approach towards development. Adoption of CDM based green engineering would enforce all the stake holder to optimize usage of natural resource, minimize waste, nurture community values to impart economic prosperity. Hence during planning of any development project apart from the standard right from ecofriendly, ergonomic, safe design, impact on environment, biodiversity, community health, value & risk analysis, logistic, etc. aspects if precisely taken into account then it would certainly be a better sustainable place for tomorrow. Complex problems [26-27] e.g. climate change driven rural to urban migrations creating Syrian civil war, integrated interaction of global, social and human system can be efficiently addressed. This will lead

to a global sustainable production and consumption with human security in a low carbon society.

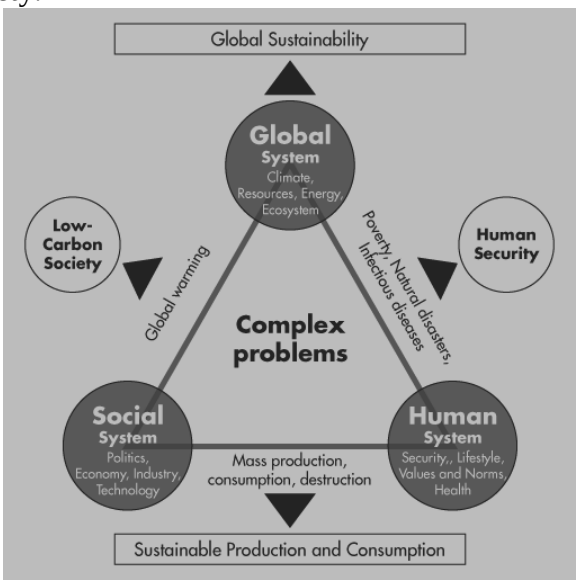
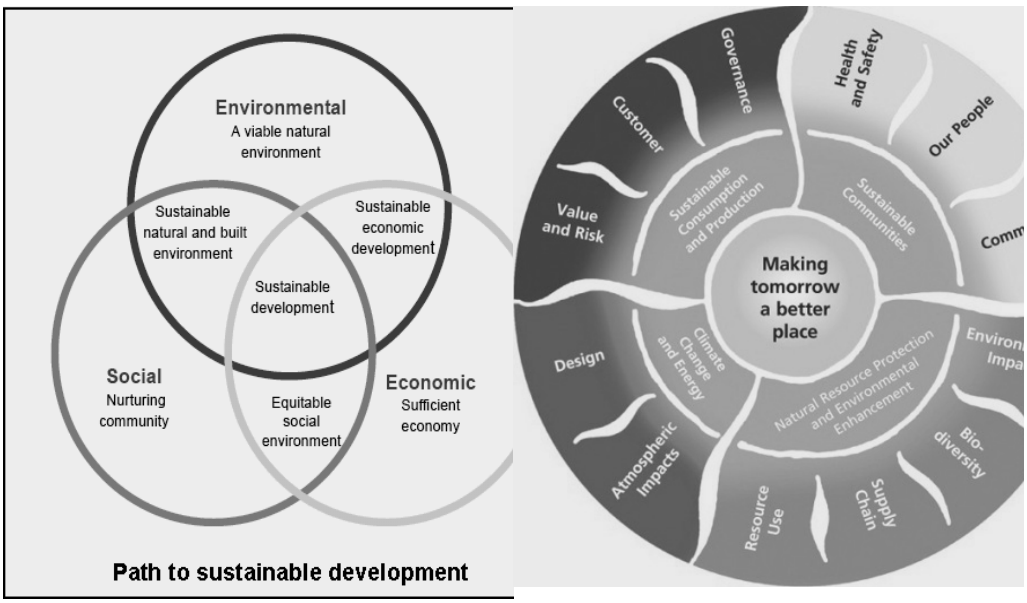


Figure 4: Matrix to addressing complex problems



(a) (b)

Figure 5: Plan to sustainable develop for better tomorrow

Conclusion

(a) Futuristic green certified products will have to be manufactured in "Green Factory" in strong compliance with universally approved Green Process Standard using Green raw materials.

(b) Rapid industrialization, globalization, liberalization and privatization along with its mineral rich resources, economical skilled manpower and visionary steel tycoons have lead India to improve its ranking as one of top key player in iron and steel manufacturing sector.

(c) The green house gases emitted from various units of iron and steel manufacturing industries are responsible for the global climate changes.

(d) The GHG has several ill effects threatening to inter & intra country migration and also survival of the human race on this planet.

(e) India being part of 1997 *Kyoto* Protocol signatory has enormous potential in the emerging carbon based economy. It can offer effective risk management for companies with emission constraints and opportunities to sponsor green house gas emission reduction projects.

(f) Clean Development Mechanism being one of the healthy routes to acquire a carbon credit against per tone of reduction in GHG emission. It is a multistage and lengthy process where domain experts in specialized field can guide industries with suitable methodologies to minimize the emission by managing their energy resources..

(g) Usage of Advanced High-Strength Steel (AHSS), Life Cycle Assessment (LCA) tool & Renewable energy technologies proved vital in bringing down carbon foot prints.

(h) Modernization of raw material yard, alternative fuels, their pre and post treatment, various melting units, metal working process, power plants etc are the sectors where there is scope to reduce GHG and save the planet.

(i) The carbon credit thus sought can be internationally traded to boost the revenue of the vibrant Indian economy. It can lead to sustainable growth if it can adopts customized Green Technologies (with their due diligence) which will offer flexibility in burden to produce wider, economic, quality product range in iron and steel vertical.

(j) Achieving sustainable development in a low carbon society is feasible if all the stake holders of any development project give

due justice to various parameters ranging from biodiversity to economics.

(k) Green products and services if given certain tax holidays by government will lead to healthy industrial boon brining harmony & joy among human giving them opportunity to truly taste the fruits of sustainable growth.

(l) Green Engineering if practiced perfectly will facilitate all of us to pass on this beautiful conserved & gifted planet by our ancestors in a same or eco-friendly state to the generation next for their sustainable growth.

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ESTIMATION OF THE URBAN HEAT ISLAND IN LOCAL CLIMATE CHANGE AND VULNERABILITY ASSESSMENT FOR AIR QUALITY IN DELHI

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Abstract

Delhi experience the effect of high heat compared to the rural surroundings during hot seasons. This phenomenon is known as Urban Heat Island (UHI) which exerts a significant influence on local climate. Urban climate, land cover, land use, vegetation ratio and surface temperature have been cited as the main contributors to the UHI effect. This paper focuses on urban heat islands (UHI) as a specific problem expected to be exacerbated by local climate change. A simple formula has been used to calculate the urban heat island (UHI) from a set of land surface temperature data for observed temperatures by Landsat 7 and 8 and quantifies how this urban heat island effect on local climate change response strategy 2000- 2014. The aim is to identify climate sensitive urban patterns during summer, winter and monsoon months. The study reveals that the intensity of heat island varies from 3 C° to 8 C° and intensity is high during summer season compared to monsoon and winter seasons. In Delhi the formation of heat island is controlled by vegetation density. It has been found that UHI become bigger during cooling at night time. The urban heat island helps to decrease air quality during summer. UHI coupled with high land surface temperature conditions during summer season causes human discomfort and higher death rates in Delhi. These changes reflect sensitivity to variations in regional climate alone, so omit other factors such as changes in land use, emissions, land surface temperature, or synergies on size and shape of heat islands.

Keywords: Urban Heat Island, Emissivity, Air quality, Urban climate

Introduction

Why cities are matter, already about 50 percent of people live in cities that this number will increase to 80 present by 2030. In the Indian context, over 27.8% of Indians currently live in urban areas. There are 4,000 cities and towns in India, out of which about 300 cities have a population of more than 1, 00,000. Seven cities viz. Mumbai, Delhi, Bangalore, Kolkata, Chennai, Hyderabad and Ahmedabad have population of more than 3 million. Greater Mumbai still is the most populated city in India, followed by Delhi, Kolkata, Bangalore and Chennai (Census of India, 2011). The trend of urbanization can increase local temperatures, whereas temperatures in less built-up suburban/rural areas generally will remain constant (Rosenweig et al. 2005). In fact people's actives across the cities changed physicals view of the cities which cause different temperature between central and surrounding areas. Urban heat island is matters for so many indicators which involve to people life such as health and energy used. Major cities across the world experience the urban heat island effects. Generally urban areas have warmer air temperature relative to suburban areas which depend on ecology back ground of the city can make weak or strong heat island. Increasing urban temperature in the center can generate difference temperature between center and surrounding urban area non as urban heat island. Urban heat island is varies from city to city. They are several factors like size and ecology contacts of the city can cause heat island. The buildings, amount of vegetation, water bodies, streets and other infrastructure that comprise urban environments typically make cities hotter than surrounding rural areas. This condition of hotter cities than its surroundings is known as an urban heat island. An urban ecosystem affected by human activates which could impacts on environment. Surface urban heat islands (SUHI) are one of the three widely recognized heat island types (the other two being canopy layer heat island and boundary layer heat island) is an important factor in global change studies, in estimating radiation budgets and amount of solar radiation in heat balance studies and as a control for climate models. Delhi is situated between the Thar Desert of Rajasthan to the west and with hills area to the north and east. Delhi being a industrial area with different land use and land cover with a long river inside and also a vulnerable climate in three different seasons (monsoon, Pre monsoon and past monsoon).Urban climate and Meteorological conditions. Air quality, rather than climate itself, was defined as a problem first. The first known urban climate study was published in 1833 by Luke Howard, an alchemist who also provided the first description of cloud types. Using methodologies and equipment the quality of which would not be acceptable today, Howard established differences in climate between London and surrounding countryside. In 1925, the first circulation pattern associated with an urban center was identified in Munich. Urban Heat

Islands (UHIs) were first identified in the 1800s when the differences between London's temperatures and the surrounding countryside were noted (Howard, 1818; Streuther, 2002). Haward analyzed many of the temporal characteristics of the urban which effect on air temperature observed by him. Although Harward never took simultaneous measurements at different sites in London and its environs he correctly deduced that it was an effect lessened in the suburbs. Furthermore we have to mention the other works which done for Paris during the second half of the 19th century (Renou, 1855), and also Wilhelm Schmidt found these conditions in Vienna early in the 20th century (Schmidt, 1917,1927).In 1956, T.J. Chandler produced the first major description of the London heat island , including spatial distribution maps. The first major urban climate experiment, the Metropolitan meteorological experiment (METROMEX), occurred in St Louis (USA) in the early 1970s. Interest and the literature in urban climates were expanding rapidly. In 1972, P Rao introduced the use of remote sensing from satellites for urban heat island analysis. In that year, the American Meteorological Society held its first conference on the urban environment. In 1974 and 1975, the first detailed work on urban canyons began. Futher reviews on urban climate during the 1970s were produced by T. Oke for the WMO. In 1981, Helmut Landsbergs landmark book, The Urban Climate, was published by Academic Press, followed in 1985 by The Urban Atmosphere by B. Atkinson. The relationship between meteorological conditions and the UHI is generally well known. Morris et al. (2001) and Morris and Simmons (2000) provide a detailed evaluation of the relationship between UHI and meteorological conditions between 2000 and 2010 in Delhi. Comparing a central business district site with three rural air port sites, the UHI detected over the 20 year period averaged 1.13C° and ranged from -3.16 to +6 C°. Negative temperature periods suggested the existence of an urban cool island. On a seasonal basis, the average UHI was 1.29 in summer, 1.13 in spring, 1.02 in autumn, and 0.98 in winter. The differences between spring/summer and autumn/ winter were statistically significant. This study allowed an evaluation of the total range of weather conditions on UHI, rather than just a focus on extreme conditions. The dominant frequency of UHI values occurred between 0 and 2 C°. In fact when synoptic conditions are calm or very weak, a local urban circulation, the UHIC, can form, controlled by the difference in temperature between the urban center and the rural surroundings (Haeger- Eugenessen and Holmer 1999). Once it reaches the UHI center, the increased heating and turbulence causes it to rise. The UHIC forms most strongly in the daytime because solar heating favors greater vertical convection (Oke, 1995). Eliasson and Holmer (1990) studied UHI with meteorological conditions over Göteeborg. When UHIs were stronger than 2.5C°, an urban circulation system was established over

Göteeborg on winter night. UHIC development at night can bring cooler air into the city, reducing the urban- rural temperature gradient, but creating an equilibrium between the city and its rural surroundings that allows the UHIC to continue for several hours (Haeger- Eugenessen and Holmer 1999). Generally different UHI phenomena can be distinguished vertically. Air temperature sensors at weather – screen level (UCL) record something different from those at higher elevation above the surface, in the UBL, and from that derived from remotely sensed surface temperature data. Increasingly, UHI are being studied using remotely sensed surface temperature data. This satellite derived ground temperatures do not always reveal the same spatial and temporal patterns as air temperature survey. In Delhi atmospheric inversion, another vital phenomenon, occurs by trapping of the cold air over Delhi with gaseous pollutant. Vehicular pollution is accountable for almost 70% of the air pollution in Delhi and degradation in air quality noticed, further threatening serious health problems. Positive relationship between existence of green cover and micro climate however land Use/Cover Change monitoring can bring better understanding for status of green cover and Urban Heat Island (UHI). Therefore, it was essential for us to monitor and predict Urban Heat Island as it has impact on the micro-climate of Delhi.

Present climate

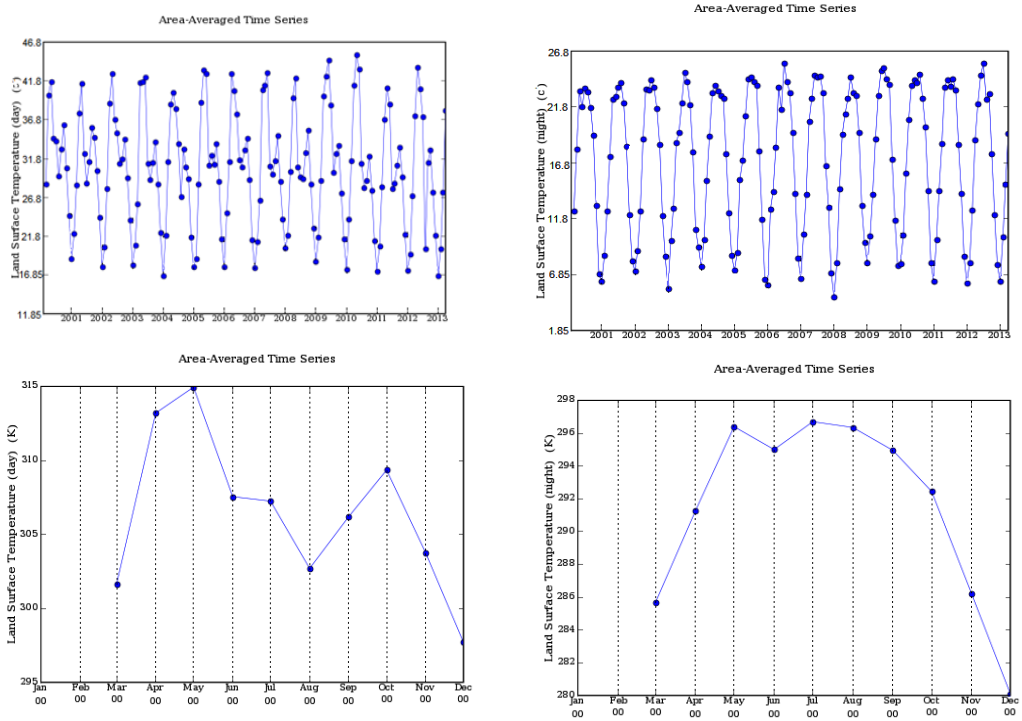
Few studies have discussed the association between the urban heat island (UHI) phenomenon and air quality under synoptic weather patterns conducive to UHI. In this study, the authors used statistical analyses to study this association in the Delhi metropolis region. The air quality data obtained from CPCB observation stations (Average of 9 stations) and temperature field. Delhi's Heat Island can be several degrees warmer than surrounding rural areas due to the urban heat island effect. For example, the average peak temperature difference between the central part of Delhi (Darya Gang) and a rural reference station in Langley (about 30km west) was 5ºC over the summer of 1999 (Mallick.,2006). Increased urban temperatures have an impact on the summer cooling demand in relation to the "intensity" of the heat island – defined as the peak difference between urban and rural temperatures. Detailed monitoring indicates that the heat island is most pronounced at night, that it weakens with increasing wind speed and distance from central part of Delhi. Figure 1a, shows that the heat island is also highly changeable from one year to the next (as a consequence of variable temperature patterns), attaining differences of up to 7ºC between Mangolpuri (N),(S) and Nangal Raya, Pratap Nagar and Subhash Nagar. The annual number of nights with intense heat islands (defined herein as greater than 5ºC) has been climbing at a rate of over four years per decade since the late

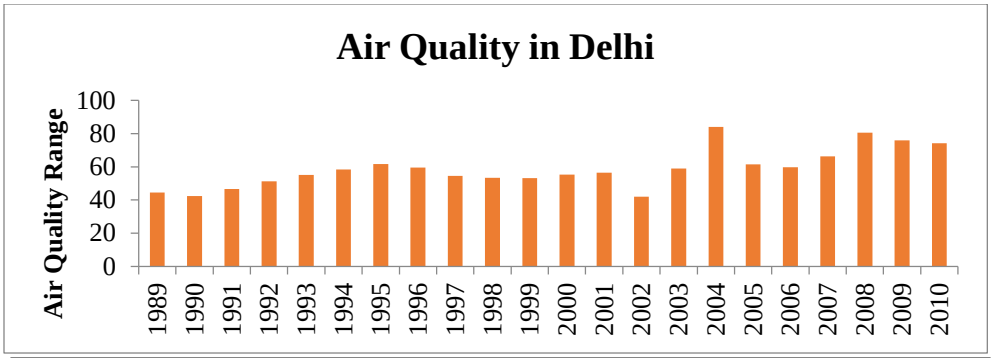
2006s (Figure 1b). The average nocturnal heat island intensity increased at the rate of 296-286K per month over the same period. Conversely, the number of intense day-time heat-islands has declined from May to December (Figure 1b). Figure1c Difference in Year (1-1) and Monthly air quality (1-2), Annual average air quality is increased from 2004, and fair air quality increased from August to November.

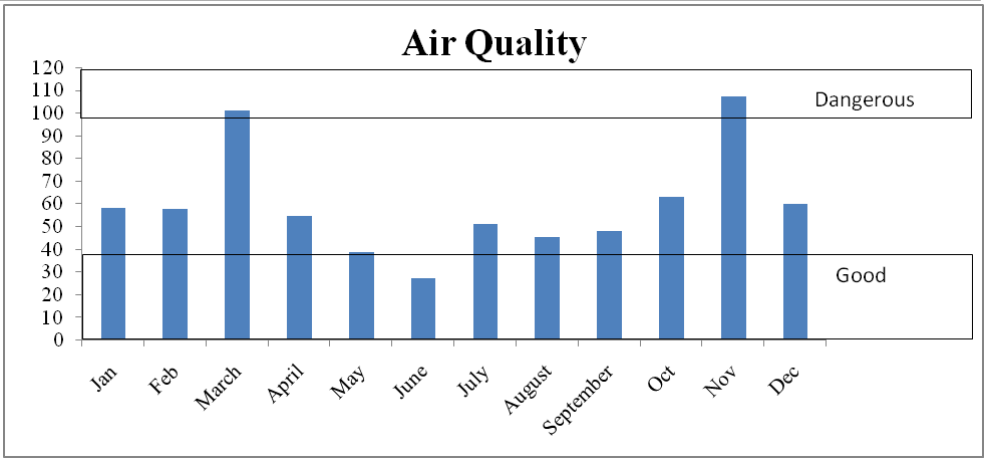
Figure 1a, Difference in day average (left column) and night-time average (right column) daily temperatures between 2000-2014. 2000. 41.5, 44.5, 46.1 Day-time heat island (deg C) night-time 25.6, 24.6, 26.5 heat island (deg C).

Figure 1b Monthly frequency of month with day heat island intensity greater than 5K (left column), and monthly average nocturnal heat island intensity (right column) greatr than 4 K 2000-2014. Heat island intensity (tenths Kelvin). Figure 1c As in Figure 1b, but for day-time maximum temperatures.

Figure 1c, As in Figure 1c, annual average of air quality is increase from 2004 (1-1) and Monthly average air quality is increase from July to November (1-2)





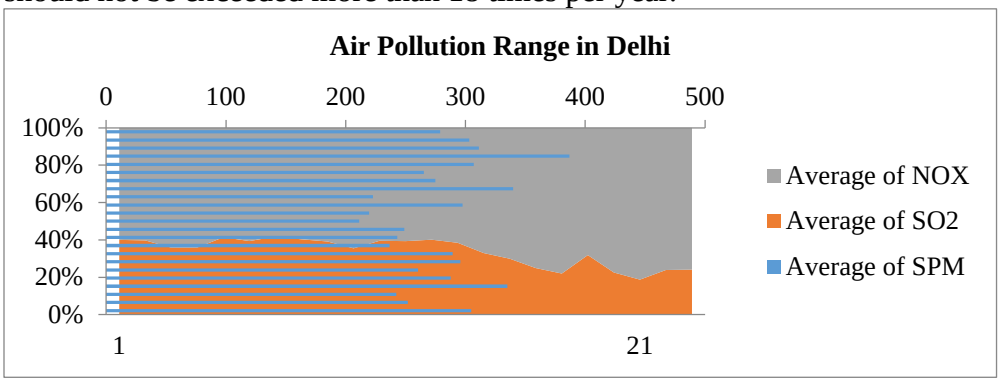


Delhi's Air Quality

Delhi's Air Quality (ORAQI) represents defined levels of air quality which avoid significant risks to health for 3 pollutants (Sulfur dioxide, nitrogen dioxide and sulphur dioxide). Air quality is monitored by the National Automated Monitoring Networks and Non-automatic Networks at over 9 sites across the Delhi, with data available as far back as 2000 for some sites. The reliable detection of air quality trends is complicated by the brevity of data sets, changes in instrumentation, representativeness of monitoring sites and the strong control exerted by weather patterns on pollution episodes .Air quality remains at unacceptable levels in many parts of Delhi. The Air Quality Index (AQI) or ORAQI is an index for reporting air quality. A study on the annual and monthly variations of Air Quality Index over a period of 14 years (2000-2014) based on monthly averaged concentration data of criteria air pollutants has been conducted for Delhi. An attempt has been made to quantify the changes in the ORAQI on annual and monthly is showing the best air quality was depicted by industrial areas, indicating that policy measures relating to the industries in the city during past years have helped in improving the air quality. Increased traffic density seems to have resulted into the worst air quality at residential areas in the city amongst all

the monitoring stations. There is a shift for the bad air quality in the city from winter to summer season in period of twenty years. Change of season for bad air quality from winter to summer may also be likely due to increased photochemical reactions playing major role with change in the nature of emissions. The air quality from 2004 to 2010 become better just in the time of monsoon that is due to high rainfall more that 120mm during in this period (Babazadeh, 2013)(Figure2).

Figure2, Yearly maximum hourly average sulfur dioxide concentrations (ppb) from 2000-2010. Note: the National Air Quality Standard for nitrogen dioxide is 300 ppb for a one hour mean. This limit should not be exceeded more than 18 times per year.



Future climate

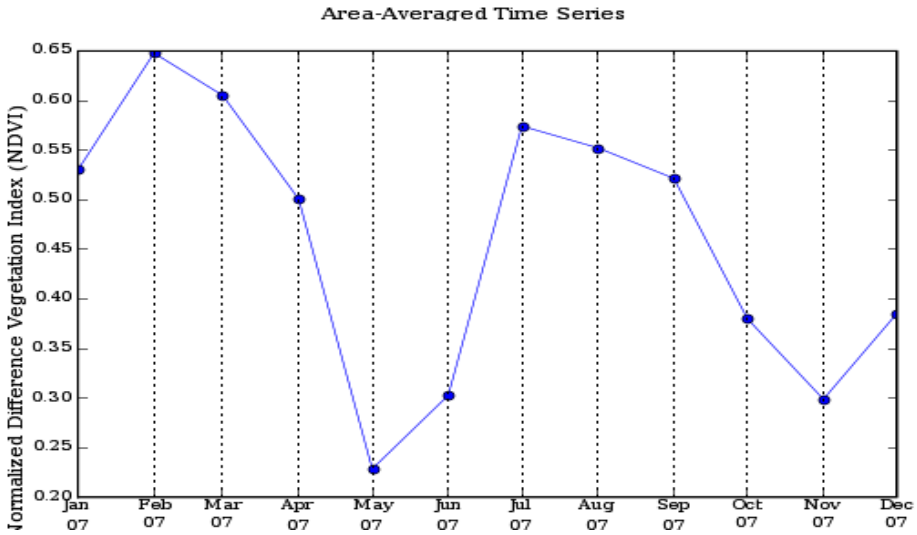
Projected changes in the urban heat island

Heat waves may increase in frequency and severity in a warmer world. Urban heat islands exacerbate the effects of heat waves by increasing summer temperatures by several more degrees Celsius relative to rural locations. This can lead directly to increases in mortality amongst sensitive members of the population (Kunst et al., 1993; Laschewski and Jendritzky, 2002). For example, the heat waves in the summers of 2004 and 2010 were associated with a 15% increase in mortality in Delhi (Babazadeh, 2013). Early surveys of Delhi's heat island indicated that the peak usually lies South of central Delhi, reflecting the density of urban development, and the displacement of the heat-island by prevailing Northwest winds (Babazadeh, 2013). More recent monitoring has highlighted the mobility of the peak in relation to hourly shifts in wind direction (Graves et al., 2001). The thermal centre typically moves by several kilometres in line with the change in wind direction, therefore, future changes in the frequency of different wind directions could have an impact on the future location of the thermal centre.

The intensity of Delhi's nocturnal heat island has been modeled using Monthly minimum temperatures for central part of Delhi (rural reference station 30 km to the southwest). The average nocturnal heat island intensity

for the period 2000 to 2010 was +5.8ºC, ranging from +10.0ºC (on 2004) , with 5% of month having an intensity of 5ºC or more. In comparison, the average month heat island intensity was just +0.3ºC, ranging between +11.7ºC . The monthly minimum temperature differences between South east and central for Delhi. Significant correlations were found between the intensity of the heat island and NDVI. For example, Figure 3 shows the relationship between the nocturnal heat island intensity and NDVI from May. Interestingly, the nocturnal heat island intensity is only weakly correlated with regional temperatures, suggesting that future changes in the heat island will be largely independent of projected temperature changes.

Figure3, NDVI across Delhi, Generally we face to decrees on Normal Difference Vegetation Cover from August to November



Projected Changes in Air Quality

Air pollution is already a serious health problem in many cities even under the current climate (Anderson et al., 1996; COMEAP, 1998). Climate change is expected to cause further deterioration in air quality in large urban areas. This is because future weather will have a major influence on the production, transport and dispersal of pollutants. Any increase in the frequency of hot, anticyclones weather in summer will favor the creation of more temperature inversions trapping pollutants in the near surface layer of the atmosphere. For example, it has been estimated that a 1 degree Celsius rise in summer air temperatures (also a proxy for the amount of catalyzing sunshine) is associated with a 14% increase in surface ozone concentrations in metropolitan (Lee, 1993). Higher air temperatures increase natural and man-made emissions of volatile organic compounds (VOCs) (Sillman and Samson, 1995), exacerbating the health effects of ozone pollution (Sartor et

al., 1995). Climate change is also expected to affect the seasonality of pollen-related disorders such as hay fever (Emberlin, 1994). Meteorological factors are shown to exert strong controls on the start date and length of the pollen season (Emberlin, 1997), as well as the total pollen count (Takahashi et al., 1996). Acute asthma epidemics have also been linked to high pollen levels in combination with thunderstorms (Newson et al., 1998). Finally, deteriorating air quality as a result of climate change could have secondary impacts on the vitality of urban forests and parkland. For example, SPM has adversely impacted the structure and productivity of forest ecosystems throughout the industrialized world (Krupa and Manning, 1988). Levels of sulfur dioxide deposition are also closely linked to the frequency of large-scale weather patterns across the Delhi. As noted previously, weather patterns are a strong determinant of ambient air quality and pollution episodes (O'Hare and Wilby, 1994). Therefore, future air pollution concentrations in Delhi will reflect local and regional patterns of emissions, as well as the frequency of large high-pressure systems over the south.

Results

Analyzing the results of the LST (Land Surface Temperature) in day and night for the study area, it is occlude that in the urban area of Delhi observed temperature are much higher than the temperature of rural areas. In specific, the mean Temperature value for Delhi is calculated 35°C.This also observed different in temperature can be explained by the difference in Air quality and NDVI.

Conclusion

This study examined the relationship between air quality, NDVI with land surface temperature (day- night) of an urban environment of across Delhi city. Specific temperature patterns (LST) not only exacerbate the UHI effects but also deteriorate air quality due to high amount of pollutants. Statistical analyses showed that these patterns can also easily strengthen the UHI effect. Temperature patterns under which clear UHI developed over the Delhi characterized. The statistical analyses revealed that under the same weather pattern, the concentrations of many air pollutants increased with the UHI intensity (decrease air quality. The convergence phenomenon usually generated in the nocturnal period due to the UHI causes the accumulation of air quality (increase amount of pollutants), as well as other air pollutants, thereby affecting the air quality during the subsequent daytime period. land surface temperature indicates considerable inter-annual variability in the frequency of summer air quality episodes, and caveats related to future UHI by decrease in NDVI apply. Notwithstanding significant reductions of diffuse emissions over north-west of Delhi, the still

indicative of deteriorating air quality conditions for Delhi under future climate change.

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TOWARDS SUSTAINABLE COMMUNITY AND INSTITUTIONAL RESPONSE TO CLIMATE EXTREMES: A SITUATIONAL ANALYSIS OF INSTITUTIONS, COMMUNITIES AND THEIR RESPONSE TO CLIMATE CHANGE INDUCED DISASTERS IN UTTARAKHAND

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Abstract

This paper presents a situational analysis of disaster in 2013 and issues related to the preparation of mountain communities in Uttarakhand with specific reference to Bhatwari Block in Uttarkashi District and their adaptation and response. It also anlayses the response of the institutions in the light of needs of the communities. The paper argues that the determinants for such a response are located in the information flow and access, resource access and governance. The need for looking at these responses in the light of Mountain vulnerability frameworks and sensitivity aspects which include both gender and social marginality issues are emphasized. The issues of gendered vulnerability of the mountain communities located in a fragile eco system and inequitious social system with specific reference to agricultural and forest based livelihoods are discussed. The paper also focuses on how these vulnerabilities are impacted by climate change. The paper argues that institutional contexts also influence the responses of adaptation and mitigation. The paper concludes with suggesting some mechanisms for preparation of the communities and institutions for a sustainable response.

Keywords: Gendered vulnerabilities, Climate change impacts, institutional contexts, Adaptation

Introduction

Climate change induced disasters are increasing and these are affecting mountain communities adversely. There is a need to locate these

impacts in the context of vulnerabilities of communities as well in the resource access, information flow and governance processes.

Climate change has been described as 'significant changes in the measures of climate lasting for an extended period of time' Thus it could mean 'major changes in temperature, precipitation, wind patterns occurring over several decades or longer'.USEPA (2015)

Climate extremes increasing in the decade since IPCC 4 Report has been noted (IPCC 2014) "There are likely more land regions where the number of heavy precipitation events has increased than where it has decreased. Recent detection of increasing trends in extreme precipitation and discharge in some catchments implies greater risks of flooding at regional scale (*medium confidence*)'.(p-8) IPCC 2014.

Such extremes have a serious impact on the lives and livelihoods of the communities, more so of the poor and marginalised in these communities. Vulnerability and capacities for adaptation and mitigation are 'strongly influenced by livelihoods, lifestyles, behaviour and culture (medium evidence, medium agreement)'IPCC (2014). Further the institutional and social contexts are important in putting effective steps to combat extreme climate events and reduce vulnerability. The contextual underpinnings of vulnerability have been highlighted by many scholars (Cutter et al 2003; Machhi, 2011)

Hazards of place model of vulnerability spoken by Cutter (2003) reflects on the need to link social vulnerability. The model focuses on risk as an objective measure of the likelihood of a hazard event which interacts with mitigation – measures to lessen risks or reduce their impact. This produces the hazard potential. The hazard potential is either moderated or enhanced by a geographic filter (site and situation of the place , proximity as well as the social fabric of the place. The social fabric includes community experience with hazards, which in turn are influenced by economic, demographic and housing characteristics. It is believed that the social and bio-physical vulnerabilities interact to produce the overall place vulnerability (Cutter, 2003). There were also variations in measuring vulnerability which could be classified as either top down or bottom –up approach (CCA RAI, 2014). The issue of vulnerability of any system is seen as the outcome of three factors ' One of magnitude of climatic changes affecting a particular system(exposure) , the characteristics of the system(sensitivity) and the ability of people and eco systems to deal with resulting effects (adaptive capacities of the system)' CCA RAI, 2014 p.15. Following Hinkel 2011, the CCA RAI (2014) speaks of the need for case specific vulnerability assessments as the impacts as well as vulnerabilities to climate change can vary across regions, economic secotes and social groups or types of systems considered (social , naturel, economic or socio-ecological). There are issues

concerning measurement of vulnerability as there is no agreed upon consensus in measuring vulnerability like temperature. Nevertheless it is agreed that the sensitivity of climatic change is considerably high when societies depend on natural resources or eco systems e.g. agriculture and coastal zones. Further the poor communities are especially vulnerabilities- (IPCC, 2014, and CCA RAI, 2014).

Thus as the latter report points out there is ‘ limited access to resources, secure housing, proper infrastructure, insurance, technology and information. Further it points out that ‘ almost the whole of India has a high or extreme degree of sensitivity to climate change, due to acute population pressure and a consequential strain on natural resources, which is further accentuated by the high degree of poverty, poor general health and the agricultural dependency of much of the populace (Maplecroft cited in CCA RAI, 2014)

Social vulnerability is considered as a multi-dimensional concept with 11 factors identified as key factors in determining the vulnerability. Cuter developed a social vulnerability Index consisting of 11 factors consisting of Personal wealth, age, density of the built in environment, single sector economic dependence, housing stock and tenancy, race, ethnicity, ethnicity, occupation and infrastructure dependence. While geographical specifities were also identified as key inlfuemcing factors in shaping vulnerability.

It has also been pointed out that assessment of vulnerabilities could be from ‘ to down approaches’ or ‘ bottom up approaches’. The former looking at vulnerability from the view point of impacts of a disaster, whereas the latter take analysis from the people view point. Bottom-up approaches are participatory in nature and are conducted at local levels like households or rural communities, which appears to be site specific and context specific and there are issues of ‘generalizability ‘ that have been mentioned (CAA RAI, 2014)

There are others who have spoken of mountain specific vulnerabilities. Prasad and Brodnig (2010) have combined two models of vulnerability one the IPCC vulnerability Framework and the mountain specificities framework developed by N.S Jodha (1992). Brodnig and Prasad contend that as developed by Jodha Mountain Specificities include either constraining features or enabling features. The constraining features are accessibility(involving distance, mobility and availability of risk management options);, marginality (relative endowments of a system such as slope/altitude, low resource productivity and reinforced by lack of social and political capital); fragility refers to the diminished capacity of a social or ecological system to sustain shocks. Diverstiy, niche and adaptive capacity are considered as the enabling factors that point to different coping strategies

that emerge from a natural resource management patterns, livelihood endowment and cultural practices. Thus Brodnig and Prasad (2010) emphasize that ' The Mountain Vulnerability Framework merges and aligns the IPCC and mountain specificities frameworks, thereby integrating global criteria for describing vulnerability with more contextual parameters for mountain ecosystems. It highlights the importance of both biophysical and socioeconomic factors in assessing vulnerability, and offers sample indicators that can be modified or expanded depending on the specific focus of the assessment. In addition, the framework is scalable both in terms of time and space and can thus be employed for different assessment purposes, from project to country level'

The gendered vulnerability is part of the social vulnerability. However this needs a special mention as the mountain women have huge roles and responsibilities in taking care of the household as well as participate in the 'productive' functions as well. The social marginality and social specificities also include gender aspects. Risk Assessments and adaptive capacities are further undertaken

Adaptation and mitigation responses are underpinned by common enabling factors. These include effective institutions and governance, innovation and investments in environmentally sound technologies and infrastructure, sustainable livelihoods and behavioural and lifestyle choices IPCC (2014)

Following Machhi(2011) Adaptive capacity is considered as 'The capabilities, resources or institutional capacities of systems, organisations or (individual) actors that enable them to adapt to climatic conditions that have altered or will alter in future and their possible impacts, to take effective adaptation measures and, by these means, to reduce their own vulnerability'.

Tuana and Cuomo (2011) have indicated that climate change debate is dominated by western scholars with a complete absence of gender, race and colonialism. There is need for gender differentiated impacts of climate change, and this is especially important in Indian Himalayan societies, where women carry the largest burden of agricultural work. Scholars have rejected the separation of development and climate change adaptation as two separate and competing objectives and recognising the agency of women and the poor in understanding the impacts (McGregor, 2005).

Study Site

The Rapid Assessment study site was the Upari Tok area of Block Bhatwari in Uttarkshi District, Uttarakhand. The state of Uttarakhand was ravaged by the 2013 disaster with unseasonal and heavy rain(a climate extreme event).The majority of people in Uttarakhand are dependent on subsistence agriculture coupled with seasonal tourism as the major means of

survival, with tourism and its connected occupations providing over 25% of state income and a large chunk of employments/ livelihoods. The road network built for pilgrim tourism was crucial in linking the village/local economies with the regional economies. It ensured the flow of essential goods and services including crop produce, seasonal vegetables and fruits from and to far off places, including Delhi. Further Tourism, largely Pilgrim Tourism was a major contributor to the local economy as well as state economy. According to the Uttarakhand Tourism Department, the total loss to the tourism sector from the 2013 disaster is about INR 12,000 Crores. But the flow of tourists being massive (at about 2.7 crore people in 2012, about 2.5 times the local residents) and unevenly distributed – due to the presence of the famous "*char dham*" pilgrim centres - in only three districts (Chamoli, Rudraprayag and Uttarkashi), these three mountain districts (along with the plains district of Haridwar) bear the major burden of massive mountain-blasted big-road construction, huge hotel infrastructure (often blocking the path of rivers) etc. Road cutting by blasting in steep hill-sides has caused massive land-slides with heavy rains, with the state losing nearly 15,000 KMs of roads to slides till 2011, with 200 lives lost & 5600 houses damaged in 2012 alone (Disaster Mitigation & Management Centre, Uttarakhand). This shows that the 2013 disaster (where over 6,000 lives were lost) is not /will not be a one-off catastrophe, and hence there is no way out but to prepare on all fronts of knowledge, community involvement and developing & implementing participatory response mechanisms.

However the disruption of road network by extreme climate event like very heavy/ unprecedented rainfall has resulted in tremendous misery and put the people under severe strain. Further in the absence of road connectivity, the distribution of relief was affected and the relief for communities that were located even 8-10 km was difficult to reach. Preliminary assessments carried out spoke of the long commute and hardship for communities located far away from Uttarkashi town, in carrying the relief load to their homes from the distribution points (A.Malathi & Dutta, 2013). Further this is compounded by huge loss of produce from subsistence agriculture. The crops that have been badly affected are the *Asade Aloo* (early maturing Potato), Apples and to a lesser extent - the paddy produce, both on account of water logging and the loss of agricultural land as also the destruction of the terraced land. In such situations the food security of mountain communities is compromised in availability, access and utilization. In fact it is fairly well recognized that climate change caused food and livelihood insecurity (CFS, 2012; FAO, 2011; ECB, 2013).

Tools and Methods

Rapid Assessment

Rapid assessments are done when quick understanding regarding disaster and its impacts are to be understood. The methodology includes transect walks within the village to understand loss and damage to infrastructure, loss of life to human and animals, as well as damage to agricultural lands/crops and their impacts on livelihoods of the people. The quick assessment would also understand the relief distributed so far.

Rapid Assessments using participatory approaches requires a certain philosophical stance. These are concerned with how communities are recognised, respected and partnered with in undertaking such research work. In all these efforts it is recognised that the community voice needs to be represented as accurately as possible. Independence from official authority structures also ensures that such a representation is free from inherent biases in over exaggeration of the sufferings and underplaying the relief reached. In building instant rapport and in presenting oneself as people of concern and openly sharing the purposes of the assessment and the identity of the researcher, the information sharing process becomes more transparent as well as ensures validity. The reliance on different sources for information hopes to ensure data triangulation.

Participatory assessments of vulnerability and sensitivity would ensure transparency to the process of vulnerability assessments as well as ensure that such knowledge is empowering(ECB, 2012) and would include Disaster Response by communities /institutions (government and non-government) which would identify the knowledge and capacities regarding climate change impacts and their adaptive capacities would be another area for assessments.

Tools used

Focus Group Discussions were used with key informants to get an understanding of the issues. Sometimes the focus group discussions were held on the main street of the village for e.g. Bagori.

Interviews with key informants like *Patwari* and *Pradhans(elected village council Head)* of the villages, as well as with elderly people and shop keepers were also conducted. Some of the village level associations lke *Mahila Mandals* (Women's groups) and Youth groups were also included in the discussions regarding the impacts of disaster, the relief distributed, their current needs and future concerns as also their preparation for such events. Shop keepers, teachers etc were also included in the research process.

Observations were done regarding loss and damage to housing and other infrastructure within the village. Observations were done during transect walks and while conducting interviews. Visits to families with

damaged houses, agricultural and horticultural land as well as the village level infrastructure including drinking water channels/sources. Observations were also done with regard to approach roads to the village, land slide areas and their impact on water channels and housing and other infrastructure.

A brief profile of the study area

Uttarkashi was originally a part of district Tehri Garhwal. Soon after independence, when Tehri Garhwal kingdom merged with India, it was made a border district with the district headquarter at Uttarkashi. Uttarkashi district was created on 24 February 1960 out of what then constituted the parganas of Rawain and Uttarkashi of Rawain tehsil of erstwhile Tehri Garhwal district. It sprawls in the extreme northwest corner of the state over an area of 8016 sq. km. On its north lie Himachal Pradesh State and the territory of Tibet and the district of Chamoli in the east. Topographically, the district is mountainous but a network of roads has made all parts easily accessible. The district at present comprises of 4 tehsils and 6 Community Development Blocks. It has 3 towns and 686 villages (678 inhabited villages and 8 uninhabited villages). The Bhatwari Block of Uttarkashi District has been ravaged by the recent disaster in June 2013.

The villagers in the Bhagirathi valley practice horticulture, agriculture and pastoralism. The area is famous for apples, though production has been declining in recent years. The villagers practice transhumance, with the cultivators moving lower down the valley to Dunda from November to March, while the shepherds move between the high-altitude meadows and the forests in the Terai. Tourism is confined to a very short pilgrimage season.

There have been reports of climate change leading to decrease in the rainfall during winters and warmer winters as also the relative frequency in the happening of extreme weather events both in summers and winters. These changes have brought tremendous stress to the already fragile environment as also the social situation of the communities increasing their vulnerability. Some of the mitigation measures they are resorting to are increasing migration to the plain areas or lower hills and or remittance economy – depending less and less on agriculture and horticulture for their livelihoods.

Agriculture and Irrigation: Agriculture in these areas suffers from many constraints. The availability of cultivable land itself is the greatest restricting factor. As much as 88 percent of the area is either covered by forests or is barren and uncultivable. The land is low in fertility except in the valleys and even land is too few and far between. Shorter agricultural season, low temperature, high altitude, smallness of land holding, perpetual problem of soil erosion due to steep gradients etc. are other inhibiting factors

effecting agriculture. Sheep rearing for production of wool and meat, orchard raising, spinning and weaving of wool and other cottage industries etc. offer much scope for livelihood generation. The cultivation in these areas is carried on largely by making terraces on the sloping hillsides. Some cultivation is done on steep hills also where terracing and tilling cannot be done and the place is cleared by burning scrubs and bushes. The seeds are sown with the help of a hoe. This practice of cultivation is known as *Katil*. The main Kharif crops are paddy, small millets and potato while the chief Rabi crops are wheat and barley. These crops account for over 80 percent of the total cropped area. Horticulture is another field that can boost up the economy of the district. However, it has not made much headway due to difficulties in marketing the produce, arising from poor communications and remoteness of areas.

Mahajan (2008) speaks of sustainable mountain agriculture and lists about 40 species that are grown by farmers in the region using mixed cropping patterns. He also shares that this primary livelihood is characterised by very high levels of bio diversity and use of organic cultivation methods. Such farming is based on the evolved and tested knowledge of farming systems and the uncanny sense of what grows best for the soils and the ecology in concern.

The major emphasis is that the people of Uttarakhand have been living in ecologically fragile environments in a way that ensured both ecological and economic sustainability- however the impact of climate change have altered the ecological situation drastically. This set in motion certain ways of coping – chief among them is migration and resorting to remittance economy.

Such copings have altered the family structure and have altered the community social structure too. A number of villages are having populations less than what they were before- increasing instability in the livelihood scenario that was dependent on forest and agriculture has made it imperative for families to seek greener pastures in search of employment and education.

Animal husbandry: Animal husbandry is an important source of supplementing income of the rural population. Of the total livestock, bovine population and that of sheep accounted for almost one third each. The production of milk per milch animal is very low. Efforts are under way for introducing high yielding strain. Sheep rearing is an important industry in the district. Yet it does not provide full time employment and it is only a vocation for those who are engaged in its pursuit. As many as sixteen sheep development centres are functioning (Statistical Patrika, 2013).

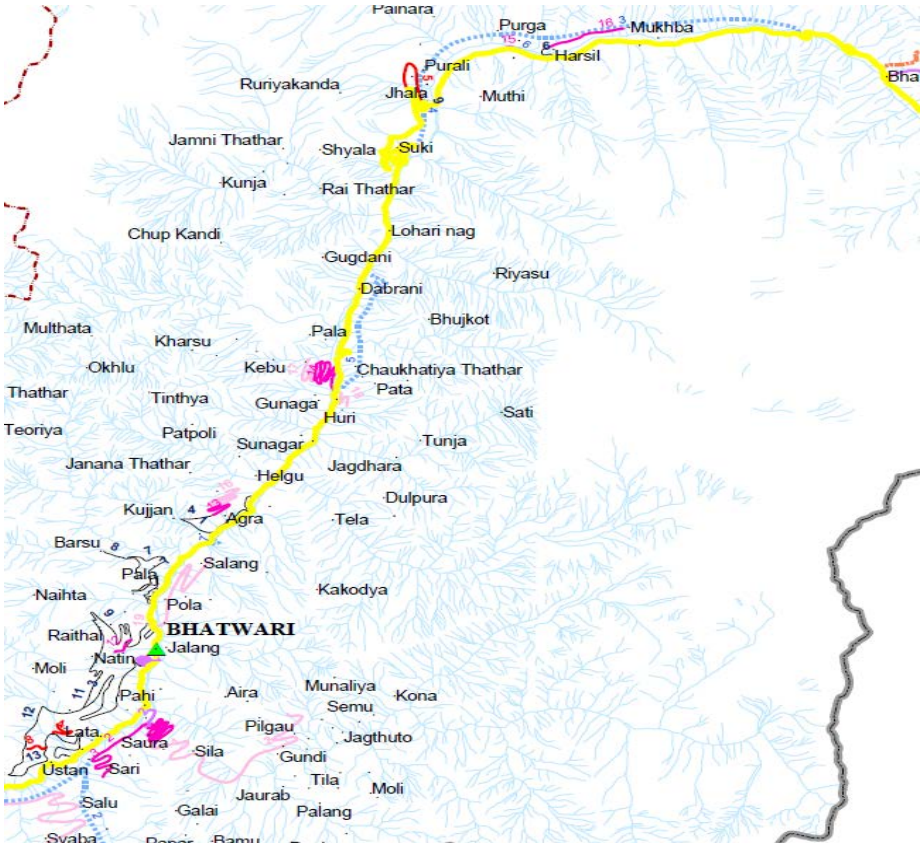
Industries: The cottage and village industries play an important role in the economy of the district. The most important cottage industry is the production of wool and woollen goods. Sheep are reared in a large number

and the industry flourishes at an altitude between 1525 m and 2440 m. Carpets (namdas), tweeds, blankets etc. are produced. Other cottage industries are basket-making, mat weaving and wood craft (Statistical Patrika, 2013).

Tourism and Hospitality Industry: This is another major livelihood providing sector with many linkages with local economies that are yet to be seriously studied.

Migration and Remittance economy: It has been found that mountain communities are resorting to migration on a large scale because of un-remunerative agriculture compounded by the vagaries of the weather. The migration to the plains or elsewhere even outside the country is by able bodied young men –which means it is the women who bear the brunt of sustaining the agricultural based livelihoods. Such large scale migration makes the hill communities comment that about sixty percent of the population has moved to the plains seeking education or employment. This poses serious concerns to the issue of sustainable livelihoods.

Two villages of Dharali and Bagori are illustrative of the destruction suffered by these communities.

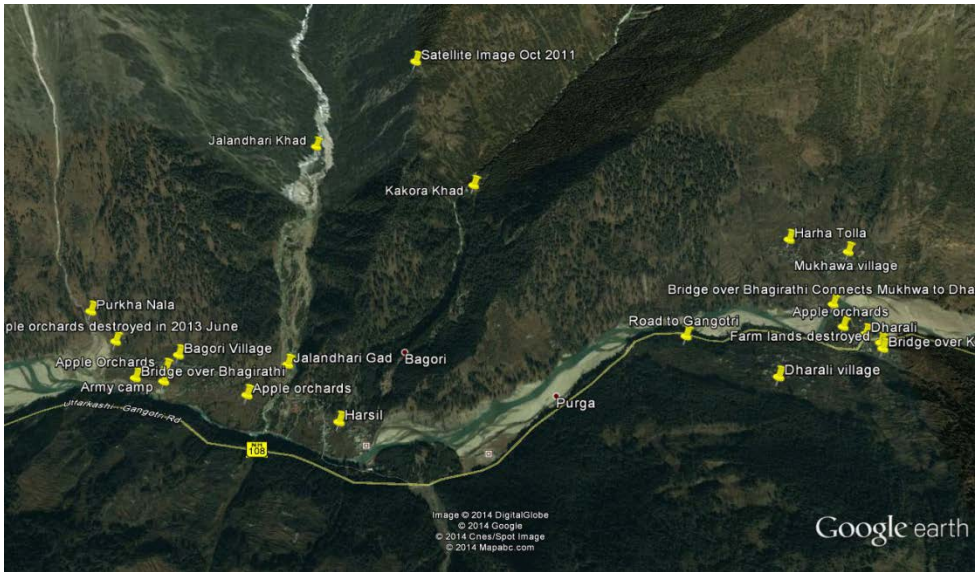


Source: Department of Disaster Management, 2004, GOI, Uttarakhand

Section of the map showing Bhatwari Block with border villages Mukhba and Harsil.

The Bhatwari Block has been affected in multiple ways. One of the most important is the road network being affected and the communities in remote areas being unable to get supplies of essential goods. The border villages have special issues and concerns because of their remoteness and travel involved, as also villagers from Harsil, Bagori, Mukhba and Dharali move to the lower altitudes at Duda to escape from harsh winters, that is they practice transhumance.

The natural resource base of village communities living close to border areas consists of vast mountains with the Bhagirathi. The villages are just 30 km from the main pilgrim centre Gangotri, which is considered as one of the '*char dham yatra* ' pilgrim spots. The impacts of these villagers have been extreme – they have lost many of their apple orchards and Kidney beans harvest, besides being cut-off from essential supplies for well over 2 months. The relief distributed to them was meagre and it was the military station in Harsil areas that helped these villages to cope up with the disaster.



Villages in the Border areas of Bhatwari Block of Uttarkashi District
Source Google Earth Map

Two villages of Dharali and Bagori are illustrative of the destruction suffered by these communities. Bagori village is close to Harsil and Dharali is on the bank opposite Mukhba as seen in the Google earth map above.

Village Bagori is close to Harsil with access from Harsil village. It is largely composed of ST population. The village has well over 300 families of whom at least 50% stay in the Dunda area of Uttarkashi district. The movement of the villagers to this area is common as they seek to move their

cattle and sheep away from the snow bound areas in winter to Dunda for six months every year from November to April.

The villagers are largely dependent on sheep rearing and processing of wool and knitting and weaving of woollen products. The other major livelihood occupations are raising apple orchards, cultivation of kidney bean(local name *Rajma*). In addition many of the families have milch animals for which fodder requirements are a major concern. They also support these livelihood ventures with additional income from their labour.

Impacts

Livelihoods

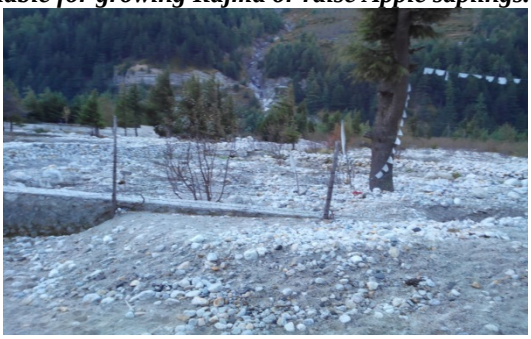
The major impacts on livelihoods are when the impacts were on land and orchard.

Orchard land affected

Many in the village suffered silt deposition in their orchard land, backyards, or some orchards being washed away

Protection walls around orchards were also found to be damaged. They had to cut through the boundary walls to make way for the water to drain out from the roads and from their homes.

Damage to the orchards near Jalandhari Nala- one can see the remaining fence structures with white silt and stones. This will take lot of effort to clear and make it available for growing Rajma or raise Apple saplings.



The silt and rock deposition in the backyards and in the area close to the river needs to be removed for reclaiming land. Such efforts were already on where people had removed the stone and silt from in and around trees – they had cleared these to put manure as they usually do before the onset of winter- when all the trees get covered in snow.

* Young saplings planted could not withstand the onslaught of flood and for a few families that got them only this year and planted these with the hope that this will stand them in good stead- found to their dismay that everything was lost. It usually takes about 8-10 years for their apple tree to mature and give them returns.

- Many families also complained of the loss of *Rajma* plants and harvest in the floods in Jalandhari and Purkha Nala. One can see virtually a white layer with silt and stone on the fields of the villagers. In some cases the harvest is very small. Potato cultivation is also affected. For many the potato harvest got submerged in water. It needs to be emphasized that large number of families grow *Rajma* and Potato for their own consumption and very little of it is sold outside.
- Hence these have impacted on their food security
- Wet conditions have made it difficult to cook food and increased the domestic work load on women, in the absence of natural gas cylinder supply that was affected because of road network being damaged.

Livestock

- No major loss of livestock was reported. One instance of a loss of a cow was reported for which compensation could not be received because of lack of evidence. Evidence of the tail or an ear of the cow was asked by the Patwari which the family could not cut because of religious and personal sentiment. Hence no compensation could be provided.
- They had also mentioned that many of their sheep could be saved because they were at the higher altitudes during the floods and remained safely there.
- Fodder issues were a major concern as the fodder is to be brought by the women folk who bear the major brunt of arranging for fodder and taking care of livestock. They were seen collecting fodder and loading these on trucks to move out to Dunda area in Uttarkashi district.
- Moving to Dunda is a major effort as it involves the relocation of the families along with milch and other animals. The last group of villagers were seen loading their belongings or waiting for transport at Harsil, when the research team visited the village.

Weaving and other activities

Some of the families depend on weaving woollen products. Since many families possess sheep- the wool is available in plenty- this is then taken by some of the families that are traditionally dependent on weaving to make woollen products. But the major complaint of these families which live close to the river bank are that many of their machines and their houses were lying in water for quite some time. They also go to Dunda area during the winters. There they continue with their weaving activities. They make a range of products from weaving such as socks, sweaters, caps, shawls, gloves and their traditional '*pankhi'*(a large woollen piece in the size of a bed sheet that is wrapped around by women during winters. These products

are then sold in the local markets in Harsil and sometimes one or two women act as sales persons taking these products to close by villages like Harsil, Dharali and Mukhba. When they move to Dunda they also sell their products in the local markets.

Special Features

In the Harsil area called *Upari Tok*, there are four villages that move down to the lower altitudes in Uttarkashi area during the harsh winters. Bagori villagers have traditionally moved down to Dunda in Uttarkashi area during winter months. In this case the entire infrastructure seems to move to the lower altitudes to serve the needs of the transhumans. Thus the schools and the Anganwadi also move out to Dunda, where the Anganwadi worker and the school teachers also move with their families to be with the children.

They take their livestock and supplies for winter – move with bag and baggage to their Dunda location where they have a house too. Here they carry out their daily life activities and when the severity of the winter abates, they move back in May. During their absence in order to oversee security issues, one or two villagers act as the security and do '*chowkidari*'. They are nominally paid by the villagers.

It has been found that while majority of the families do this seasonal migration, others have moved permanently to the lower areas of Uttarkashi and other areas of Uttarakhand for the education of their children. Thus those who stay back avail of the houses of others to stay and pay them some nominal amount. Thus it was found that at least 50 to 70 families do not have house of their own and stay in rented accommodation in their relatives/neighbours houses. When the research team reached the village, it was found that many households have already left and only 15-20 families were there to interact with.

It was also found that the villagers helped to serve the pilgrims/tourists during the disaster- taking care to organise community kitchens (Nichenametla, 2013). Further they also contributed whatever they have to run a relief camp and later they themselves benefited from a relief camp run by ITBP.

Water facilities

Water availability- they used to get their supplies from water source located at a distance. But the pipeline from this source got damaged. There are water channels within the village (cemented structures) and points where hand pumps/taps from piped water are located. Most of them are in working condition.

Public Distribution System facilities

The rations through PDS were found to be irregular in supply even in normal times The supplies come once in 3 months. During the disaster, they have used whatever rations they had to support the tourists. For almost one month they had to depend on their own. The relief supply was inadequate. There was no organisation other than government to provide relief material. After the disaster they were supplied only once with relief material consisting of food items:15 kg rice, 15kg wheat, 5 litres kerosene, 5 kg pulse and 3 kg sugar.

Once they exhausted their relief they depended on the Army and ITBP's relief camps to fend for themselves. In the middle of October, Bagori villagers got their rations for the winter. Most families had left by then to Dunda.

Supply of Natural Gas

Supply of natural gas was affected because of the disruption in road network. The villagers had to now rely on fuel wood. It was very hard immediately aftermath of the relief. LPG cylinders of many households were lost in the flood waters, especially for those families living close to the river(the weaving community).

Electricity Supply

The electricity supply was affected because of the disaster. It was restored after 1 ½ months.

Village Dharali

This village has approximately 260 families of whom 15-20 families live in the Cholmi area close to Harsil. Dharali is situated 3km away from Harsil enroute to the pilgrim centre of *Gangotri*

Major livelihoods

Apple Orchards

Apple orchards are the major sources of their livelihoods. They earn substantial amounts with this. However the damage to Apple orchards because of incessant rains and the Kheerganga Nala overflow was a major source of devastation.

Kidney Beans Rajma Cultivation

Most families also engage themselves in the production of Rajma.

Daily Wage labour

Many of them also engage in daily wage labour, especially those belonging to SC/ST families

Hotel & Restaurant Business

Most families also engage in hotel and restaurant business

Repair unit

Some families also engage in running of vehicle related repair units

Provisions and Grocery shops

Some of the families engage in petty trade and run small shops on the roadside

Impacts

Livelihood Impacts

Majority of the people have suffered damage to their apple orchards. In fact apple is the main source of livelihood. The apple harvest declined also because of the delay in securing pesticides and the inability of staff of horticultural department to reach the remote areas. There was also debris deposition in some of the orchard land and some orchards being affected by landslides.

House and hotel damage

There is partial damage to a number of houses. Some of the houses close to the Kheerganga Mountain stream (Nala) have their toilets washed away.

The hotels, shops and houses situated close to the Kheerganga Mountain Stream (Nala) were damaged and completely filled with silt and debris. Some of the hotels and petty businesses have suffered damage to their furniture and tradable goods respectively. At least 20-25 buildings were affected with debris deposition. 20 hotels were affected out of 22 hotels big and small in Dharali. The average costs for the removal of debris from one shop alone came to Rs 50-60,000/-

Approach roads to the Village

The village is situated on a major national Highway 108 on the way to Gangotri. The approach roads are two – one for the old village and the other for the new village which was built after the fire hazard in 1972. They have constructed a new gate as the old gate has been washed away and also the approach road to the old village of Dharali. The approach to the new village is a recent construction and is not affected much.

Roads within the village

Within the village roads affected especially in the old village. The new village has much better pathways within the village.

There are two Nalas one Kheerganga and the other Mukhol Nala.

The Bridge on the Kheerganga side needs to be constructed again as the stream has flown way beyond the bridge boundaries and the length of the bridge falls short of the new stream length. The Kheerganga Nala floods have eroded the fields in the area and completely destroyed the apple orchards close to the Nala. In addition some of the toilets located close to the Nala were washed away. There is not much damage seen on the Mukhol Nala side.

Public Distribution Supply(PDS)

The PDS shop is located in Dharali itself near the main Bazaar. There is irregular supply of rations even in normal times (once in 3 months). Hence during the disaster, the supply was severely affected because of damaged road network.

Relief- After the disaster they were supplied only once with relief material consisting of the following food items. Relief provided by government to the villagers included 15 kg rice, 15kg wheat, 5 litres kerosene, 5 kg pulse and 3 kg sugar. There was no other relief supply from any other organisation. They also had run shelters for the tourists.

Water supply

Their mulshrot (for safe water) was affected as the pipes were damaged. They used to have pipes carrying water from the Kheerganga Nala. But now they have to carry water directly from the Nala which entails lot of hardships. This has further increased the work loads of women.

Electricity supply

The supply of electricity was affected during the disaster. The supply is restored now.

Special Features

The villagers move to lower areas during winter months. But some families do stay back. Many households have already left and only 15-20 families were there to interact with-in each of the two hamlets of the village. The villagers took shelter in a cave during the disaster. They stayed there for about 3-4 days.

They also took care of about 1200 tourists and took them to higher places to protect them from the deluge of *Kheerganga Nala*

They were cut off from the supplies and markets because of the devastation of road network. For four months they did not have connectivity by road and had to trek the whole distance to get supplies.

Garhwal Mandal Vikas Nigam has purchased the apples from them but so far no money has been paid till then (Ramola, 2013).

They have themselves cleared through *shramdan* the 10-15 feet debris in which the *Kalpkeda* Temple which was deeply buried in the silt.

Major Needs

Some of the major needs expressed by the villagers of Dharali are:

1. Need for Regular income generation activities related with knitting and weaving or even processing of apples for juice and jams.
2. They are also willing to undertake training related to herbs and medicinal plants and the processing of the same.
3. They have also expressed the need for a proper communication tower by any service provider as the reach of BSNL tower located in Harsil village is limited.
4. Since their houses and hotels were damaged in the Kheerganga Nala floods, they would like some sort of protection walls built around the housing side of the Nala. They have also lost toilet facilities, land which was laden with fruit trees and Rajma plants. They also want the debris removed from the Nala so that next year they will not face similar such flood situation. They are also concerned that if this does not happen next year rains will lead to increased level in the Nala waters which might wipe out the entire village on the Kheerganga side. They also feel strongly that they will move out next year to safer places and not stay in the village at all if debris is not removed to ensure that Nala waters do not overflow and affect their village.
5. They also strongly desire to have adequate compensation for the apple trees lost and the Rajma harvest lost. Rs 300/- per Nali compensation offered for their orchard land is grossly inadequate- need for increase in compensation.
6. Further, they would like support as their terraced land is damaged and this requires much more effort both financially and physically. For this they demand at least Rs.10,000/- per Nali.
7. At least 30-35 families have suffered damage to their orchards or land in this way
8. They would like some sort of mechanism where debris removal from their homes and hotels could be supported as it is a costly venture
9. 70- 80% families live in Uttarkashi because of the lack of quality education services. If the quality of schooling improves – settling down of families in lower regions could be avoided. They want a

good standard English medium school in their area that could serve the eight border villages.

10. Compensation received by 5-4 families for damage suffered and in case of an owner of a building who used to rent it for a tyre repair shop- he received compensation of Rs 3 lakhs but the renter himself did not receive any compensation for the loss of his repair equipment and loss of livelihood.
11. Since the road network was cut-off they could not get the required dosage of pesticide for their apple orchards, which used to be provided by the Horticultural Department. Because of this their apple harvest was affected- apples were small and some trees white fungus type infection was seen. Hence they want timely treatment for their trees and plants

Institutional concerns

1. Remoteness in distance also seems to ensure remoteness to power structures.
2. Their closeness to the Border areas also ensures military presence which also affects their lives both positively and negatively. During the aftermath of disaster, the villagers have recounted stories of how the military helped them survive. They also tend to use the military hospital located at Harsil instead of the government service. The conditions of health infrastructure is very poor, compelling them to travel all the way to Uttarkashi(76km away or to Dehradun or Rishikesh for treatment).
3. Governance structures, mechanisms are inadequate and there is an inordinate delay in ensuring the success of the programmes. Remoteness – also means the administrative personnel show apathy and do not physically reach the areas to assess the loss and damage or offer compensation. Even in non-disaster times, the personnel are inadequately represented. These call for immediate steps to step up the governance mechanisms and systems. Governance systems apathy also means that what little is available of infrastructure is under-utilised – and there is an increasing reliance on private operatives for both welfare and other needs.
4. There is a tremendous effort by the villagers to continue with their lives despite the adverse and harsh climatic conditions. Villagers continue to eke out their subsistence agriculture and it is the tourist season that offers them the space to manage their lives. Since agriculture based livelihoods are in doldrums both because of vagaries of weather and the instability of incomes as also because many of the ‘hands’ are missing-

5. Health and educational services are poor and this compels families to move out in search of ensuring a proper future for their children
6. Livelihoods based on agriculture and horticulture that is dependent on natural eco-systems suffers in the light of dramatically changing climatic conditions. This requires them to continually adopt themselves. Dwindling social capital in terms of more and more people moving out of the village and disruption in families because of movement of young people to towns and cities means that natural livelihood systems are facing crisis of personnel and support. The efforts of the elderly and those left behind in the villages means that agriculture remains only at the subsistent level.
7. Further there could be value addition of the existing natural produce that has immense potential for raising the living standards of the people in these villages
8. Poor infrastructural facilities and lack of technical support in improving their facilities also makes village dwelling less attractive.
9. Ensuring basic supply of goods and services and effective implementation of government programmes and schemes will not only raise the trust but also raise standards of governance and ensure people's participation.

Conclusion

Towards Sustainable Response

Drawing from the two village illustrations related to Disaster, it becomes quite clear that the disaster response requires a strong governance system to be in place. Remote areas suffer from lack of response from governance during normal periods of time and in disasters this problem gets accentuated in reaching relief to the affected. Further the disaster preparation of the system seems to be in shambles as it was only in end March 2014 that a team from Block Head Quarters visited the village. The villagers have demonstrated coping abilities in facing disasters and even in taking care of tourists trapped in the disaster. However one other coping that they are doing is flight response, locating their families in the lower altitudes in Uttarkashi District or moving to Dehradun the capital where infrastructural support in terms of health and education are available. Thus disasters are not the only ones to create damage. It is the apathy and indifference of governance systems that enhances the effect. The mechanisms of disaster preparedness and response thus needs to be institutionalized to reduce the impacts and promote the adaptive capacities of the mountain communities. Further support for livelihoods in terms of cold storage facilities, value additions and market linkages for the foods cultivated, storage of food grains and essential items in a food storage depot within villages and locally managed, proper

and timely weather advisory with linkages to possible agricultural activity for which community controlled and monitored weather stations could be put in place. Along with these there is a need to strengthen the health and educational infrastructure.

End notes

1. The area researched is referred to as *Upari Tok* which refers to the eight border villages.
2. The land is usually referred to in *Nalis* a term which indicates 240 sq. Yards or 1 hectare is equivalent to 49.8 *nalis*

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DEVELOPMNET AND DISPLACEMENT IN KERALA: AN EXPERIENCE OF COCHIN INTERNATIONAL AIRPORT LIMITED (CIAL)

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Abstract

The India has adopted new economic policy as well as structural adjustment programmes after 1991 to compete at the International market, the process of restructuring its old model development to new initiatives of Liberalization, Privatisation and Globalization also started in Kerala. The 'Kerala model of development' is widely known as the simultaneous persistence of high social development and lowest economic growth. It is a classic example of continuous debate on the phenomenon of "lopsided development" which means highest social development with stagnant economic growth. Although many scholars have criticised Kerala model as development replica for other Indian states due to its slow economic growth (Subrahmanian, 2006).

It is in this context, the paper takes overview of Kerala model of development and impact of economic reform by examining the developmental projects and the outgrowing displacement in the name of development in the state of Kerala. The research paper examines the land acquisition and displacement in Kerala by taking case of Cochin International Airport Limited (CIAL) to understand the perception and experience of development in post reform era. The paper is based on descriptive research design, adopting snow ball sampling technique to identify the project affected people(PAP) in two resettlement colony of Ernakulam district of Kerala and total 50 sample size of PAP households have been used for data collection purpose and data have been quantitatively analysed to understand the impact of CIAL on the PAP. The findings of the study reveal that CIAL has created multi-dimensional impact on the PAP and the rehabilitation and resettlement still remains unresolved issues for the affected population.

Keywords: Development, Cochin International Airport

Introduction

The concept of Kerala model of development is internationally renowned model of alternative development especially publicized by Amartya Sen. Kerala model development held up by the development scholars because of it achievement in social development with lesser economic development. A striking feature of Kerala's development experience is the growth of the service sector. Historically too, this sector has been more pronounced in Kerala than in the rest of the country. The largest shares of income (55 per cent) and employment (40 per cent) are generated in the service sector. Kerala's economy is no longer predominantly agrarian; the primary sector accounts for only 26 per cent of the State income and 32 per cent of employment (as in 1999-2000) (Human Development Report, 2005).

Kerala occupies the first rank in human development in India. The Human Development Index of state increased from 0.685 in 1991 to 0.773 in 2001. In contradictory the per capita income is lower than either state in India. So the Kerala model development proves that economic growth is not essential for the social development. Kerala's achievements in terms of some of the basic indicators of human development are well known and have been much commented upon (Human Development Report, 2005). The results of Kerala model of development are highlighted in the following indicators: a generally high literacy rate, a low population growth, high life expectancies and greater accessibility to essential services like health, water, electricity, public distribution shops, roads etc. These indicators are important because these are attributes available to, experienced by, a large section of population to show up significantly when measured on a spatial or per capita basis. The "Kerala Model" has in fact laid the foundations for the development of a new model based on knowledge-intensive industries and services and modernization of traditional agriculture and cottage industries. Education is the key of development in the Kerala model development (Swamy, 2010).

Veron (2001) describes the Kerala model development as "old" and "new" models. He connotes the "old" development as achievement of highest social development by state intervention through Public Distribution system and various welfare policies and socio-cultural changes through various public movements. "New" Kerala model begins in 1990s by the implementation democratic decentralization through three tier local bodies (District, Block and village). This model was forcefully implemented after the panchayati raj constitutional amendment in India. Similarly, this New Kerala Development Model based on the tenets of structural adjustment programme, invited more private players to invest in the state for industrial as well as for infrastructural development purpose by adopting the public

private partnership model. At present the state is witnessing rapid development in the areas of airports, seaports, metro rail, mono rail, roads and information technology infrastructure etc. There are total four international airport in the state at Thiruvanthapuram, Kochi, Kozhikode and Kunnur district respectively, one major seaport and seven minor seaports, Metro and Mono rail network in the district of Thiruvanthapuram, Kochi, Kozhikode, seven national highway and the state road with density of 417 km/100 sq km, developing more than 1000 acres of IT infrastructure creation, smart city, cyber city, cyber park and IT hubs etc. The New Kerala Development Model based on ideology of neo-liberalism fundamentally different from old development model concerns for human development, social development, democratic and peaceful means for peoples development. Contrary, the nature and approach of new Kerala development model is towards marketization, privatization and attracting private financial institute to invest in the infrastructural development through public-private partnership mode and using undemocratic means in the state development process. Hence, the post reform period characterized the state of Kerala's transformation from soft development to aggressive development. Ironically, nature of development process adopted by the state has created more land acquisition and related eviction of masses in the name of development and higher degree of human rights violation of people. The state un-democratic nature of forceful eviction for attaining growth creates the issue of various level of impoverishment and denial of freedom from participating in development process. Undemocratic means of land acquisition put question on the post reform development model adopted by Kerala. Land acquisition and Displacement due to various development projects indicates the fundamental change in the development paradigm of the state which put more focus on the growth rather than the social development and human rights.

New Kerala Model of Development and Origin of CIAL

Since last two decades, Kerala has witnessed to substantial development in aviation sector. Three international airports are already functioning in Kerala and fourth airport in Kannur is under process of construction. The new Cochin airport project was an alternative to the existing civil enclave in the naval airport, which was not capable of handling larger aircraft due to runway limitations. Cochin International Airport Limited (CIAL) was the first airport in India to be built in the joint sector by public – private participation model. The airport users and other benefactors, mainly non-resident Indians, the general public, Government of Kerala (GOK) and the airport service providers came together to build an airport of international standards. (Varkkey and Raghu Ram, 2001)

CIAL is the initiatives of Kerala government to avoid the criticism of non-utilization of NRI remittance for the development programmes in the state. CIAL model of development initiated the PPP (Public Private Partnership) model of development in Kerala. Kannur Airport project is also trying to get constructed with the help of NRI business community.

CIAL is a successful attempt under public-private partnership to enhance aviation and development sector in Kerala. The operation of CIAL has boost tourism, business, cargo services and employability in the state. But on the other side, the forced land acquisition and dissatisfaction of PAP regarding compensation and resettlement package by government brought out the issues of vulnerability and marginalization of PAP. To build CIAL total 1254 acres of land acquired and 872 households were displaced mainly belong to scheduled castes communities. The PAPs who lost houses were rehabilitated in various locations which are known as `Six Cent Colonies' (six cents of land was given to each family who lost their house). This new model of development surpassed the sustainable and democratic model have had experienced by Kerala and created different forms of marginalization on the name of development in the state. It is in this context, the study has been designed to examine development induced displacement to understand process of rehabilitation and resettlement under CIAL in Kerala. (Varkkey and Raghu Ram, 2001)

Methodology

The present paper based on descriptive research design. Using snow ball sampling techniques, total 50 sample sizes of displaced households have been selected for data collection from two resettlement colony of CIAL namely Nedumbassery Gram Panchayat and Angamaly Municipality of Ernakulam district of kerala. The data have been collected by household survey using structured interview schedule. The collected data quantitatively analysed by using SPSS package and descriptively written to explain the impact of CIAL on project affected people of universe of the study.

Data Analysis and Findings

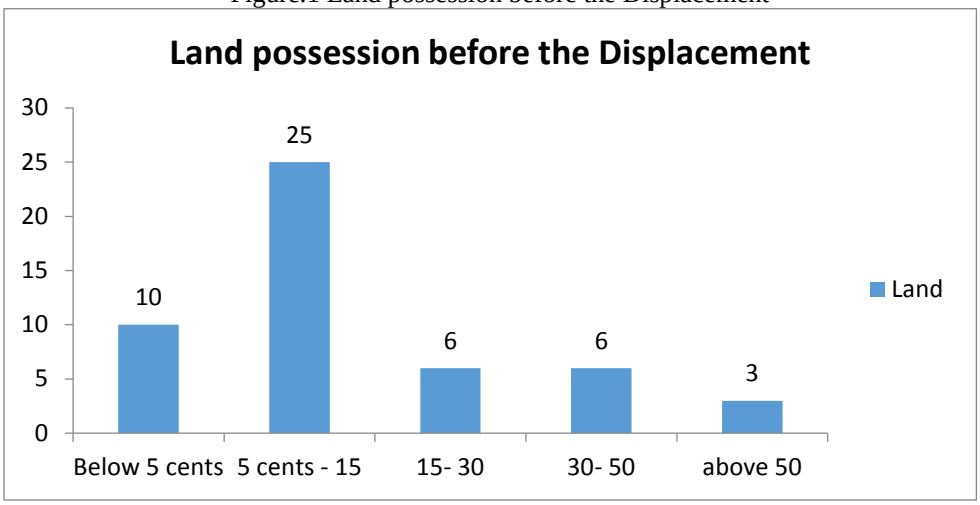
First part of analysis comprises the impact on land possession and livelihood due to the displacement. Second part comprises the impact on homelessness and management of homeless by the displaced persons in resettlement colonies. Finally, it analyse the impact on socio- cultural life of the displaced persons by displacement.

PART-I: DISPOSESSION AND IMPACT ON LIVELIHOOD

This part described in detail impact of displacement on landholding and livelihood patterns of displaced persons. It constitutes cross analysis of

land holdings before displacement, previous livelihoods patterns and impact on livelihood by the reduction of landholding among the displaced persons. The cross analyses also been attempted to understand the effectiveness of R&R to minimise the issue of joblessness and level of satisfaction in job and income level after displacement.

Figure.1 Land possession before the Displacement



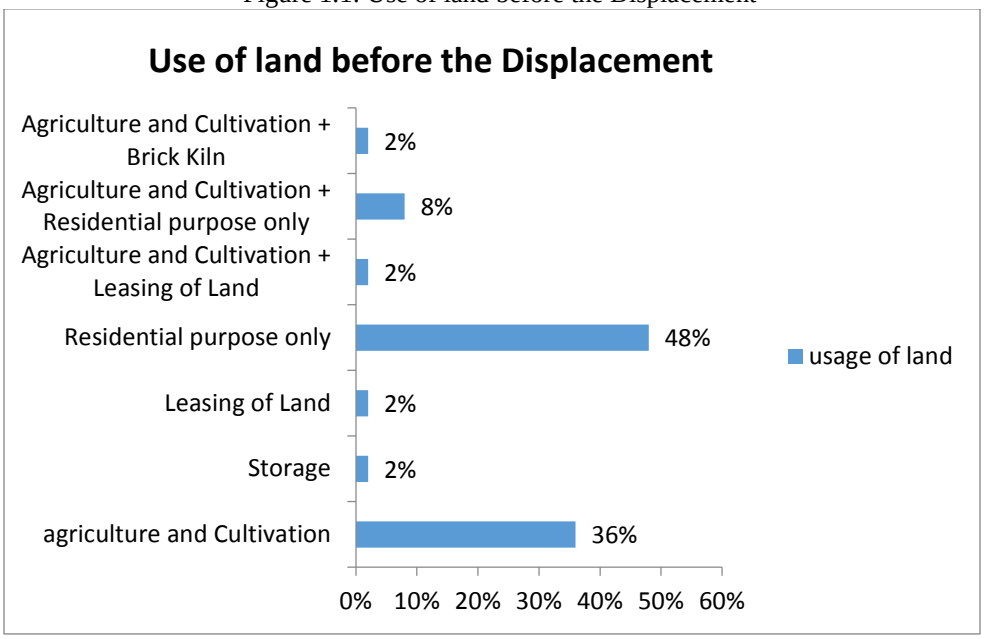
The chart and data described the land possession of respondents before displacement. Majority of the respondents were holding 5 cents to 15 cents of land. Only few respondents had more than 50 cents of land. It indicates that the household with less than 15 cent of land largely affected due to displacement and settled in resettlement colony compare to those who have high land holding. In other words, household with less landholding suffered more compare to large land holding by CIAL project.

Table .1 Impact of reduction of land holding on livelihood after displacement

Impact	Respondents (%)
Less Agricultural Land Productivity	32
less land for leasing purpose	2
Limited land for brick kiln	2
Less Agricultural Land Productivity + No land for cattle rearing	10
Less Agricultural Land Productivity + Less land for leasing purpose	8
Not affected	2
Less Agricultural Land Productivity + Limited land for brick kiln + No land for cattle rearing	2
NA	42
Total	100

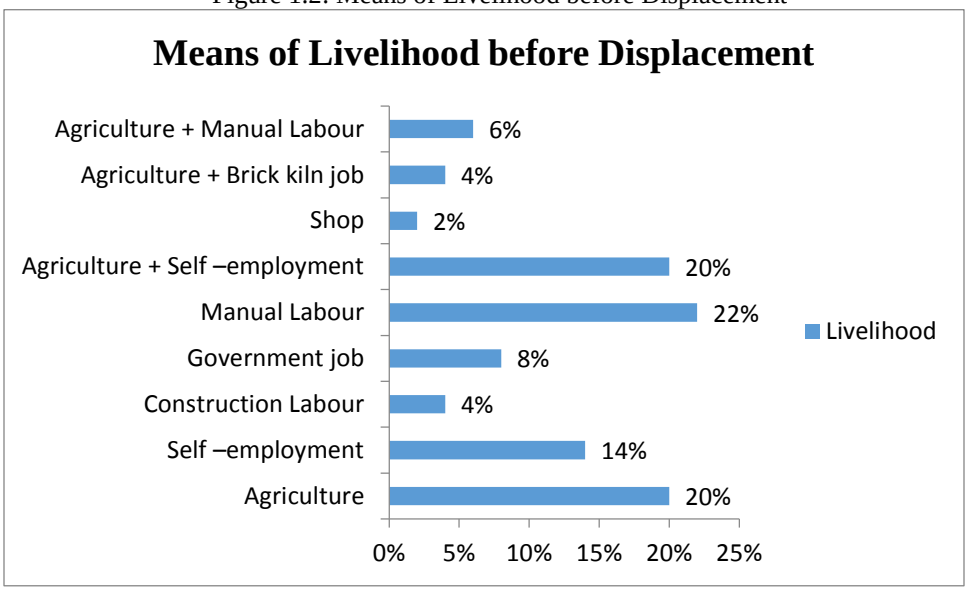
The table indicates impact on livelihood due to reduction in land size after displacement. Majority (32%) of the respondents have lost their agricultural land. For constructing Airport, CIAL has acquired huge acres of paddy field changed the occupation pattern in the universe of the study. It indicates that the people are highly depending on CIAL jobs and other allied works. Similarly, some of the project affected people working in non-farm activities such as brick kiln work for their livelihood. Data also show that acquisition of land and displacement have negatively affected on livelihood of displaced population under study.

Figure 1.1: Use of land before the Displacement



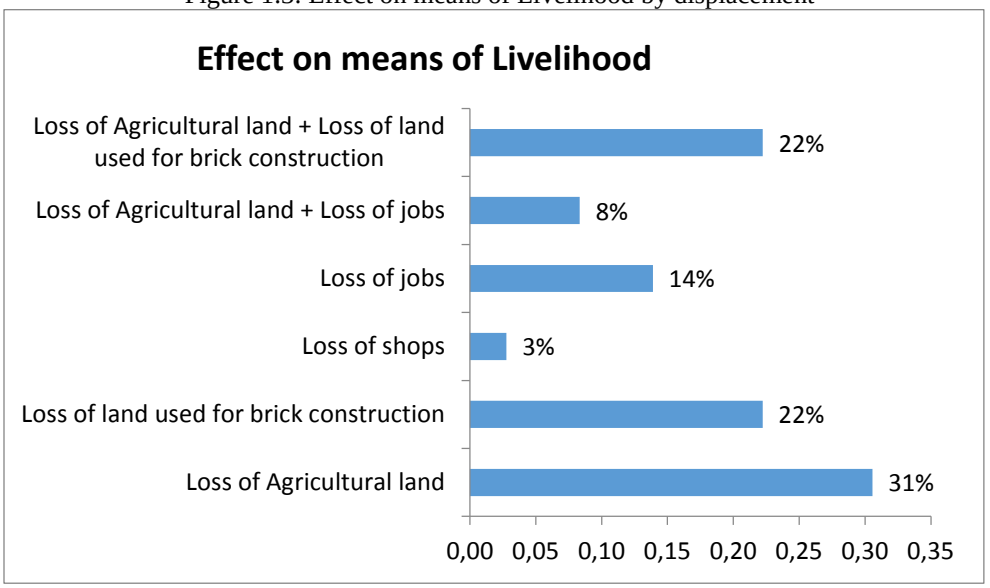
The figure shows majority (48%) of the people used land for residential purpose only and 36% utilised land for agriculture and cultivation purposes. It also shows that people were used land for agriculture along with leasing and storage purposes. The above trend indicates that displaced community were highly relied on agriculture and allied activities before displacement.

Figure 1.2: Means of Livelihood before Displacement



The figure and data provides detail regarding means of livelihood before displacement. It indicates that majority of the respondents were involved in manual labourers (22%), agriculture labour (20%), Agriculture as well as self-employment (20%), self-employment (14%) before the displacement. Similarly, small percent of them were also engaged in brick kiln work, owning shops, government jobs and construction work. However, data shows that agriculture was main livelihood of the displaced before the land acquisition.

Figure 1.3: Effect on means of Livelihood by displacement



The data indicates majority of displaced people have lost their agriculture land (31%), land used for brick kiln work (22%) after displacement. Similarly, it is also shows that the people have lost their sources of livelihood such as jobs, shops etc after displacement from their own land. It indicates major livelihoods of respondents were affected by the displacement.

Table 1.1 Number of persons got job under R&R package

Jobs offered	Respondents (Numbers)
Job offered	38
Not offered	12
Total	50

The data indicates majority (38) household could able to get small menial jobs for livelihood compare to (12) households were not offered jobs from CIAL under R & R package. It also indicates that more than 50 per cent of project affected peoples (PAPs) have benefitted and got alternate source of livelihood from CIAL. However, the nature of jobs offered by CIAL were mainly menial in nature to satisfy basic subsistence needs of households.

Table 1.2 Nature of job provided by CIAL

Category	Nature of job				
Category	Permanent	Temporary	Contractual	Taxi Permit	Not applicable
General	2	0	4	1	2
Scheduled Castes	2	3	12	1	7
Other backward classes	1	4	5	3	3
Total	5	7	21	5	12

The table describes nature of jobs provided across different social group households under CIAL R&R package. Data indicates out of 38 job seekers, majority 21 households got contractual work, 7 households got temporary work, 5 households got permanent work and 5 household got taxi permit to ferry passengers and staff of CIAL. The displaced households were mostly involved in unskilled and manual jobs under CIAL R&R package. Similarly, the representation of social group household in different nature of jobs offered by CIAL reveals and replicates the vulnerability of traditionally excluded communities such as scheduled castes and other backward classes. Data indicates R&R package has created more temporary and contractual labour among scheduled castes and other backward classes in comparison to general categories.

Table 1.3 Type of jobs provided by CIAL

Social category of respondents	Type of job				
Category	Manual labour	Office work	Transportation	Taxi Permit	Not applicable
General	4	1	1	1	2
Scheduled Castes	13	2	3	1	7
Other backward Classes	7	0	3	3	3
Total	24	3	6	5	12

The table represents types of jobs and distribution among social groups under CIAL R&R package. Data reveals that the different types of jobs such as manual labour, office work, transportation and taxi permit were provided among social group of displaced households. Majority of social group households represented in manual labour (24) in comparison office work (3), transportation (6) and taxi permit (5). Similarly, it also reveals that majority of scheduled castes and other backward class groups (20) were recruited in manual labour in comparison to general category in CIAL. Thus, above trend indicates vulnerability of scheduled castes and other backward classes in types and distribution of jobs under CIAL R&R package.

Table 1.4 Nature of Job Satisfaction

Satisfaction	Respondents (in Numbers)
Satisfied	14
Not Satisfied	24
Job Not offered	12
Total	50

The table describes nature of job satisfaction of respondents work with CIAL. It shows that majority (24) respondents were not satisfied with jobs provided by CIAL in comparison to (14) of them are satisfied with job. Majority respondents are unhappy due to irregular and contractual nature of CIAL jobs. However, they still continue with jobs due to limited livelihood option available for them after land alienation and displacement by CIAL.

Table 1.5 Needs Satisfaction by job

Needs	Respondents (in numbers)
Decent standard of living	6
Food consumption only	32
Job Not offered	12
Total	50

The table described nature of needs satisfaction of respondent under CIAL jobs. It shows that total 38 displaced persons were benefitted by job under R&R package of CIAL. Majority 32 respondents expressed that job only helped them to meet their food consumption and 6 respondent expressed jobs enable them to live a decent standard of living in daily life. These data indicates that jobs provided by CIAL have limitations and could only provide subsistence needs to the beneficiaries.

Table 1.6 Status of income level after Displacement

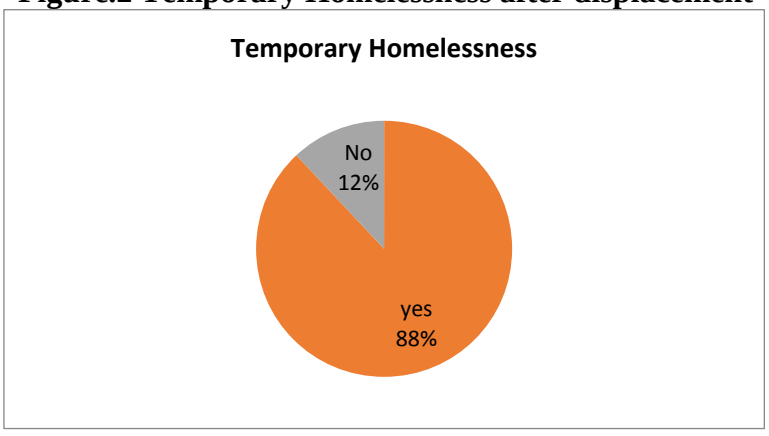
Income level	Respondents (%)
Increased	12
Decreased	72
No change	12
Don't know	4
Total	100

The data related to status of income level after disaster reveals that majority 72 percent of displaced populations income levels have significantly decreased in comparison 12 per cent have responded increased in income level and 12 per cent respondent no change in income level after land acquisition and displacement. The data shows that displacement negatively affected income level of the displaced persons under study.

Part-II: issue and management of homelessness:

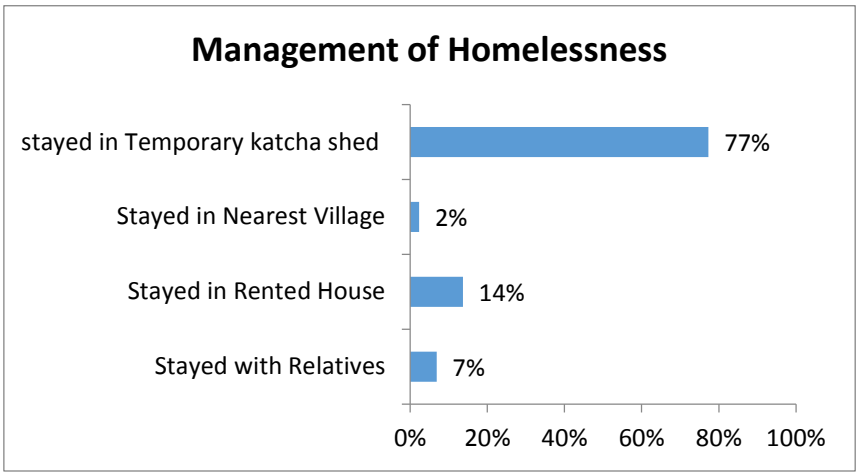
This part of the analysis described the situation of homelessness faced by the respondents after displacement. It consists of the issues of homelessness faced by the displaced persons and various coping strategies adopted by them to manage homelessness in the resettlement area. This part is also analysing compensation package of CIAL to assist displaced persons to build decent homes in resettlement area.

Figure.2 Temporary Homelessness after displacement



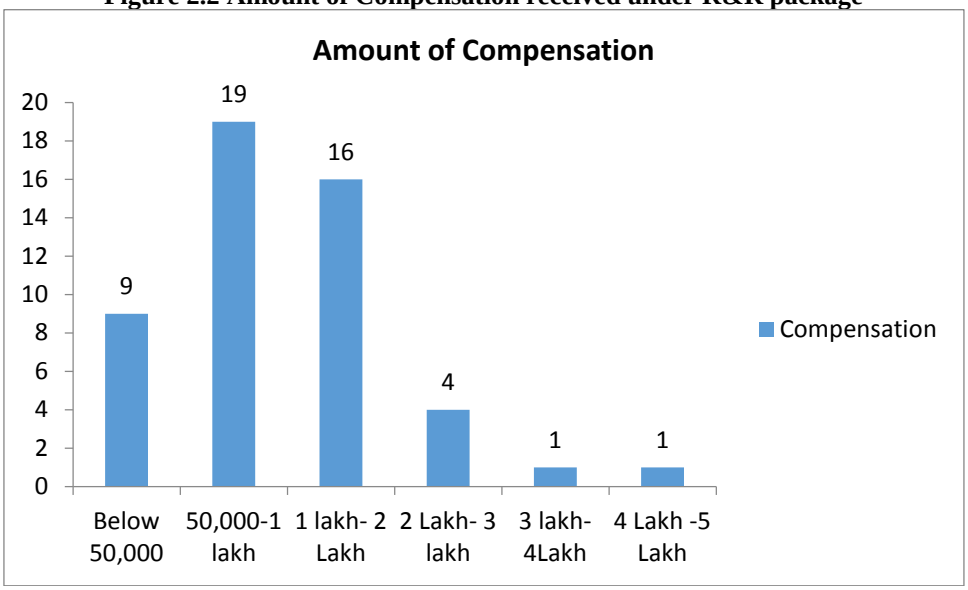
The pie chart describes the magnitude of temporary homelessness suffered by the displaced persons after CIAL. Majority (88%) of the respondents have undergone temporary homelessness after displacement. It indicates that the temporary displacement forced displaced population to explore temporary settlement for living.

Figure2.1 Management of Homelessness after displacement



The graph represents management of homelessness by displaced population after displacement. Homeless population have managed with temporary homelessness through various ways. Majority (77%) of them stayed in a temporary katcha shed in resettlement colony, 14% stayed in rented house, 7% stayed with relatives and 2% stayed in nearest village before constructing their homes in resettlement colony. It indicates that displaced population have managed their alternate residence due to delay in construction of resettlement colony by CIAL and lack of government support and facilities to tackle the issue of homelessness after the displacement.

Figure 2.2 Amount of Compensation received under R&R package



The data reveals that majority of the respondents (16) got the amount between one lakh to 2 lakh and (19) respondents received amount between fifty thousand to one lakh rupees. Only one respondent availed amount between 4 lakh and 5 lakh and least got the amount higher than 5 lakh rupees under the R&R package. It means compensation amount was meagre compare to the value of their land undergone displacement due to CIAL project. It indicates that CIAL compensation amount was negligible and insufficient for any self-employment or alternate livelihood option of displaced population.

Table 2. Satisfaction on compensation

Satisfaction on Compensation	Respondents (%)
Yes	8
No	92
Total	100

The data indicates majority of displaced population (92%) were not satisfied with compensation in comparison (8%) displaced population satisfied with compensation under Resettlement and Rehabilitation package of CIAL. It also means the compensation package of CIAL have generated dissatisfaction among displaced population due to low worth of it.

Table 2.1.Various sources adopted to complete the construction of home

Sources	Respondents (%)
Loan from money lenders	12
Bank loan	18
Sold out land	4
By doing work	52
Loan from local	2
Administrative institutions	
Loan from cooperative banks	4
Bank loan + Sold out gold	4
Loan from money lenders + Bank loan	4
Total	100

The table reveals majority of the respondents are not satisfied with compensation provided under the R&R package. In order to construct home, they have used other resources in resettlement area. More than 50 percent of them started working to find resources to construct house. Rest of them took bank loans, approached money lenders, sold out land for money, loan from administrative institution, loan from co-operative banks, sold out gold etc to generate money and resources for constructing house. This process pushed them into debt and long term debt repayment process.

Part III: impact on socio- cultural life of displaced persons

This part comprise of analysis on impact of displacement on socio-cultural life of displaced persons under study. It includes the changes in consumption pattern, social cohesion and interaction among the displaced people. For analysing the effect of displacement on various communities, cross analysis of loss of common community properties on different social groups have been conducted.

Table 3: Change in consumption pattern after displacement

Consumption	Respondents (in numbers)
Yes	39
No	11
Total	50

The table reveals majority (39) respondent reported about significant change in the consumption pattern in comparison 11 respondents reported no change in consumption patter after displacement. It means loss of land and livelihood source after displacement severely affected consumption pattern of displaced people after displacement.

Table 3.1: Factors led to the changes in consumption after displacement

Factors	Respondents %
Dependency on market products increased	16
Less money for consumption	6
Expenditure on market products increased+ Dependency on market products	32
Any other	46
Total	100

The table represents the factors led to changes in consumption pattern of displaced persons after displacement. Majority 32% of respondent reported that expenditure on market products increased as well as dependency on market products have increased after the displacement. Similarly, 16% reported dependency on market products increased and 6% reported less money for consumption after displacement. It indicates that varied factors led to the changes in consumption after displacement.

Table 3.2 Impact on Social Cohesion and Interaction

Impact	Respondents (%)
Yes	28
No	72
Total	100

The table reveals impact on the social cohesions and interaction after displacement. Majority 72% respondents reported there is no impact on social cohesion as well as interaction in comparison 28% reported displacement has affected social cohesion and interaction after displacement. Majority respondents don't feel impact on social cohesion and interaction due to proximity of resettlement colony and previous areas of residence of displaced population. However, 28% of respondent reported loss of neighbourhood, lack of time and distance led to change in social cohesion and interaction between the community members after displacement in resettlement area.

Table 3.3 Reasons of changes in Socio-cultural life of the Displaced people

Reasons of changes in Socio-cultural life	**Respondents (in numbers)**
Loss of common Cremation Ground	4
Loss of worshipping Place	6
Loss of Neighbourhood	3
Loss of common Cremation Ground + Loss of worshipping Place	11
Loss of common Cremation Ground + Loss of Neighbourhood	1
Not responded	25
Total	50

Data reveals varieties of reasons for change in socio-cultural life of displaced population. More than 50 per cent i.e. 25 household reported loss of common cremation ground, loss of worshipping place, loss of neighbourhood are major reasons led changes in socio-cultural life of displaced population in the study area.

Table 3.4. Loss of common community property and resources

Social category	Loss of common cremation ground	Loss of worshipping Place	Loss of Neighbourhood	Loss of common Cremation Ground + Loss of worshipping Place	Loss of common Cremation Ground + Loss of Neighbourhood	Not responded
General	1	0	2	0	0	10
Scheduled castes	3	3	1	10	1	7
Other backward communities	0	3	0	1	0	8
Total	4	6	3	11	1	25

The table represents loss of common community property and resources among social groups after displacement. Data reveals among social groups, scheduled castes have suffered in all aspects of loss of common community property and resources in comparison to general and other backward classes. Data shows that displacement has adversely impacted on the cultural life of the dalits in area under study.

Table 3.5 Displacement affected on family structure and relationships

Impact	Respondents (%)
Not Affected	62
Creation of nuclear family	32
Creation of nuclear family + lack of affection + Lack of participation in festivity and family celebrations	4
Lack of affection + Lack of participation in festivity and family celebrations	2
Total	100

The table describes impact of displacement on family structure and relationships. Data shows 38% of households reported impact of displacement on family structure and relationship in the study area. Majority 32% reported creation of nuclear family after displacement, 6% reported lack of affection and lack of participation in festivity and family celebration after displacement. Thus, displacement has created nuclear family as well as lack of affection among family members.

Discussion and Concluding Observation

Based on above data analyses and findings of the study, the concluding observations are as follows:

The displaced persons who were possessed lesser extent of land before displacement were settled in resettlement colony. Displacement has made reduction on the size of land and negatively impacted on the livelihood of displaced persons. Majority of displaced persons were engaged in agriculture and related works before displacement. Displacement by CIAL changed agrarian society in to a highly dependent manual labours relying on CIAL.

Nature and type of most of the jobs provided under R&R package is temporary and manual. Only few displaced persons got permanent job under the package. Job provided under R&R package is not sufficient not to satisfy a decent standard of living. Majority of displaced persons who availed jobs only able to meet the consumption needs. Scheduled castes people failed to get permanent jobs proportionate to their numbers comparing with other social groups and their number in unskilled job is higher than the other community groups.

Land acquisition and related displacement was immediately commenced without giving proper time to displaced persons to construct home in resettlement area. Study found that majority of the displaced persons were suffered temporarily homelessness after displacement and they forced to live in thatched/katcha sheds for a long time till to complete construction of homes.

Displacement has affected the consumption pattern by increasing dependence on market products than earlier. Loss of agriculture land, insisted displaced people to rely on market to meet consumption needs. Scheduled castes people have suffered severely than the other social groups in respect of loss of cultural and common community properties. Common cremation ground and indigenous worshipping places were the unique nature of dalits in Kerala. Data show that displacement has adversely impacted on the socio-cultural life of the dalits. Reconstruction of the indigenous worshipping place needs to give much more importance under R&R package with the mainstream religious community groups. Loss of neighbourhood affected social cohesion and community interaction among the displaced persons resettlement colony. Resettlement area is not far away from the previous residential area. So the displacement has made fewer changes in cultural life of the displaced people.

Kerala has achieved highest social development by the successful implementation of public policies like land reformation, Public Distribution system (PDS), education and health facilities through public action. Developmental policies in state has implemented through democratic and

peaceful means rather than the undemocratic and authoritative rule. After 1990s, shifting of development programmes as part of Structural Adjustment programme of India has taken place. Kerala adopted the development plan to utilise its foreign remittance through PPP model of development. This model also paved the utilisation of resources of Kerala for the business and capital of Non Residential Keralites in the name of economic growth. Development model adopted by CIAL based on remittance and capabilities of NRIs. Acquiring of huge land and mass displacement indicated a shift in the earlier development model as 'soft development' to more aggressive, violent and exploitative. Paper explored that displacement has made a significant impact on livelihood, shelter and socio- cultural life of displaced people. Study also revealed that dispossession of land by accumulation caused to the transformation of an agrarian society to highly capital dependent community. Study explores that development projects which intended to enhance the economic growth invokes impoverishment and socio-cultural impact on the displaced community. Majority of the displaced people were dalits and they were restricted in the new employment environment as unskilled and manual jobs. In CIAL project, dalits were the major community displaced and suffered the loss of cultural space and common community properties. In conclusion, Kerala needs to revive its 'old' model of development rooted on social justice and change, public participation, public action and inclusive than the 'new 'partial, exclusive and aggressive model development.

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WASTE MANAGEMENT INITIATIVES IN INDIA FOR HUMAN WELL BEING

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Abstract

The objectives of writing this paper is to study the current practices related to the various waste management initiatives taken in India for human wellbeing. The other purpose is to provide some suggestions and recommendations to improve the waste management practices in Indian towns. This paper is based on secondary research. Existing reports related to waste management and recommendations of planners/NGOs/consultants/government accountability agencies/key industry experts/ for improving the system are studied. It offers deep knowledge about the various waste management initiatives in India and find out the scope for improvement in the management of waste for the welfare of the society. The paper attempts to understand the important role played by the formal sector engaged in waste management in our country. This work is original and could be further extended.

Keywords: India, Recycling, Waste Disposal, Waste Management

Introduction

"There are few things certain in life – one is death, second is change and the other is waste." No one can stop these things to take place in our lives. But with better management we can prepare ourselves. Here we will talk about waste and waste management. Each of us has a right to clean air, water and food. This right can be fulfilled by maintaining a clear and healthy environment. Now for the first question, what is waste? Any material which is not needed by the owner, producer or processor is waste. Generally, waste is defined as at the end of the product life cycle and is disposed of in

landfills. Most businesses define waste as "anything that does not create value" (BSR, 2010). In a common man's eye anything that is unwanted or not useful is garbage or waste. However scientifically speaking there is no waste as such in the world. Almost all the components of solid waste have some potential if it is converted or treated in a scientific manner. Hence we can define solid waste as "Organic or inorganic waste materials produced out of household or commercial activities, that have lost their value in the eyes of the first owner but which may be of great value to somebody else." (Robinson, W.D.1986). Generation of waste is inevitable in every habitation howsoever big or small. Since the dawn of civilization humanity has gradually deviated from nature & today there has been a drastic change in the lifestyle of human society. Direct reflection of this change is found in the nature & quantity of garbage that a community generates. We can dispose the waste or reuse the waste and can earn money through proper management. Indian cities which are fast competing with global economies in their drive for fast economic development have so far failed to effectively manage the huge quantity of waste generated. There are about 593 districts and approximately 5,000 towns in India. About 27.8 percent of India's total population of more than 1 billion (as per Census 2001) lives in urban areas. The projected urban population percentage is 33.4 percent by the year 2026. The quantum of waste generated in Indian towns and cities is increasing day-by-day on account of its increasing population and increased GDP. The annual quantity of solid waste generated in Indian cities has increased from six million tons in 1947 to 48 million tons in 1997 with an annual growth rate of 4.25 percent, and it is expected to increase to 300 million tons by 2,047 (CPCB, 1998).

Population explosion, coupled with improved life style of people, results in increased generation of solid wastes in urban as well as rural areas of the country. In India like all other sectors there is a marked distinction between the solid waste from urban & rural areas. However, due to ever-increasing urbanization, fast adoption of 'use & throw concept'& equally fast communication between urban & rural areas the gap between the two is diminishing. The solid waste from rural areas is more of a biodegradable nature & the same from urban areas contains more non-biodegradable components like plastics & packaging. The repugnant attitude towards solid waste & its management is however, common in both the sectors. Universally 'making garbage out of sight' is the commonly followed practice.

In India, the urban local bodies, popularly known as the municipal corporations/councils, are responsible for management of activities related to public health. However, with increasing public and political awareness as well as new possibilities opened by economic growth, solid waste

management is starting to receive due attention. The various initiatives taken by government, NGOs, private companies, and local public drastically increased in the past few decades. Nonetheless, land filling is still the dominant solid waste management option for the United States as well as many other countries like India around the world. It is well known that waste management policies, as they exist now, are not sustainable in the long term. Thus, waste management is undergoing drastic change to offer more options that are more sustainable. We look at these options in the hope of offering the waste management industry a more economically viable and socially acceptable solution to our current waste management dilemma. This paper outlines various advances in the area of waste management. It focuses on current practices related to waste management initiatives taken by India. It also highlights some initiatives taken by the US federal government, states and industry groups. The purpose of this paper is to gain knowledge about various initiatives in both countries and locate the scope for improvement in the management of waste.

Classification of waste

There may be different types of waste such as Domestic waste, Factory waste, Waste from oil factory, E-waste, Construction waste, Agricultural waste, Food processing waste, Bio-medical waste, Nuclear waste, Slaughter house waste etc. We can classify waste as follows:

- Solid waste- vegetable waste, kitchen waste, household waste etc.
- E-waste- discarded electronic devices such as computer, TV, music systems etc.
- Liquid waste- water used for different industries, tanneries, distilleries, thermal power plants
- Plastic waste- plastic bags, bottles, bucket, etc.
- Metal waste- unused metal sheet, metal scraps etc.
- Nuclear waste- unused materials from nuclear power plants

Further we can group all these types of waste into wet waste (Biodegradable) and dry waste (Non Biodegradable).

Wet waste (Biodegradable) includes the following:

- Kitchen waste including food waste of all kinds, cooked and uncooked, including eggshells and bones
- Flower and fruit waste including juice peels and house-plant waste
- Garden sweeping or yard waste consisting of green/dry leaves
- Sanitary wastes
- Green waste from vegetable & fruit vendors/shops
- Waste from food & tea stalls/shops etc.

Dry waste (Non-biodegradable) includes the following:

- Paper and plastic, all kinds
- Cardboard and cartons
- Containers of all kinds excluding those containing hazardous material
- Packaging of all kinds
- Glass of all kinds
- Metals of all kinds
- Rags, rubber
- House sweeping (dust etc.)
- Ashes
- Foils, wrappings, pouches, sachets and tetra packs (rinsed)
- Discarded electronic items from offices, colonies viz. cassettes, computer diskettes, printer cartridges and electronic parts.
- Discarded clothing, furniture and equipment

In addition to the above wastes, another type of waste called **"Domestic Hazardous Waste"** may also be generated at the household level. These include used aerosol cans, batteries, and household kitchen and drain cleaning agents, car batteries and car care products, cosmetic items, chemical-based insecticides/pesticides, light bulbs, tube-lights and compact fluorescent lamps (CFL), paint, oil, lubricant and their empty containers. Waste that is considered hazardous is first required by the EPA to meet the legal definition of solid waste. The EPA incorporates hazardous waste into three categories. The first category are source-specific wastes, the second category is nonspecific wastes, and third, commercial chemical products. Generally, hazardous waste "is waste that is dangerous or potentially harmful to our health or the environment. Hazardous wastes can be liquids, solids, gases, or sludge. They can be discarded commercial products, like cleaning fluids or pesticides, or the by-products of manufacturing processes (EPA Wastes Website, 2010).

Similarly there is **"Non Hazardous waste".** There are many definitions of hazardous and non-hazardous waste within the US federal government, states and industry groups. The Department of Defense (DOD) and The Environmental Protection Agency (EPA) define waste as "the extravagant, careless, or needless expenditure of DOD funds or the consumption of DOD property that results from deficient practices, systems, controls, or decisions. In addition, "abuse is the manner in which resources or programs are managed that creates or perpetuates waste and it includes improper practices not involving prosecutable fraud" (EPA Wastes Website, 2010**).** The Environmental Protection Agency (EPA) defines solid non-hazardous waste as "any garbage or refuse, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility

and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities" (EPA Wastes Website, 2010). The definition of non-hazardous waste can also include financial waste. In 2009 the US Presidential Executive Order, Reducing Improper Payments and Eliminating Waste in Federal Programs was initiated to eliminate payment error, waste, fraud and abuse in major Federal government programs due to public zero tolerance of fraud, waste and abuse. This Executive Order is based upon a transparent, participatory and collaborative comprehensive framework between the government and public.

Disposal vs. Management

There are common practices to dispose waste from ordinary people. But disposal of waste is becoming a serious and vexing problem for any human habitation all over the world. Disposing solid waste out of sight does not solve the problem but indirectly increases the same manifold and at a certain point it goes beyond the control of everybody. The consequences of this practice such as health hazards, pollution of soil, water, air & food, unpleasant surroundings, loss of precious resources that could be obtained from the solid waste, etc. are well known. That's why it is essential to focus on proper management of waste all over the world. Waste management has become a subject of concern globally and nationally. The More advanced the human settlements, the more complex the waste management. There is a continuous search for sound solutions for this problem but it is increasingly realized that solutions based on technological advances without human intervention cannot sustain for long and it in turn results in complicating the matters further. Management of solid waste which generally involves proper segregation and scientific recycling of all the components is in fact the ideal way of dealing with solid waste. Solid waste management (SWM) is a commonly used name and defined as the application of techniques to ensure an orderly execution of the various functions of collection, transport, processing, treatment and disposal of solid waste (Robinson, 1986). It has developed from its early beginnings of mere dumping to a sophisticated range of options including re-use, recycling, incineration with energy recovery, advanced landfill design and engineering and a range of alternative technologies. It aims at an overall waste management system which is the best environmentally, economically sustainable for a particular region and socially acceptable (World Resource Foundation, 1996; McDougall et al., 2001). This not only avoids the above referred consequences but it gives economic or monetary returns in some or the other forms.

Basic principles of Solid Waste Management

1) 4Rs: Refuse, Reduce, Reuse & Recycle

- Refuse: Do not buy anything which we do not really need.
- Reduce - Reduce the amount of garbage generated. Alter our lifestyle so that minimum garbage is generated.
- Reuse - Reuse everything to its maximum after properly cleaning it. Make secondary use of different articles.
- Recycle – Keep things which can be recycled to be given to rag pickers or waste pickers (Kabadiwallahs).Convert the recyclable garbage into manures or other useful products.

2) Segregation at source: Store organic or biodegradable and inorganic or non biodegradable solid waste in different bins. Recycle of all the components with minimum labor and cost.

3) Different treatments for different types of solid wastes: One must apply the techniques which are suitable to the given type of garbage. For example the technique suitable for general market waste may not be suitable for slaughter house waste.

4) Treatment at nearest possible point: The solid waste should be treated in as decentralized manner as possible. The garbage generated should be treated preferably at the site of generation i.e. every house.

Based on the above principles, an ideal Solid Waste Management for a village could be as under.

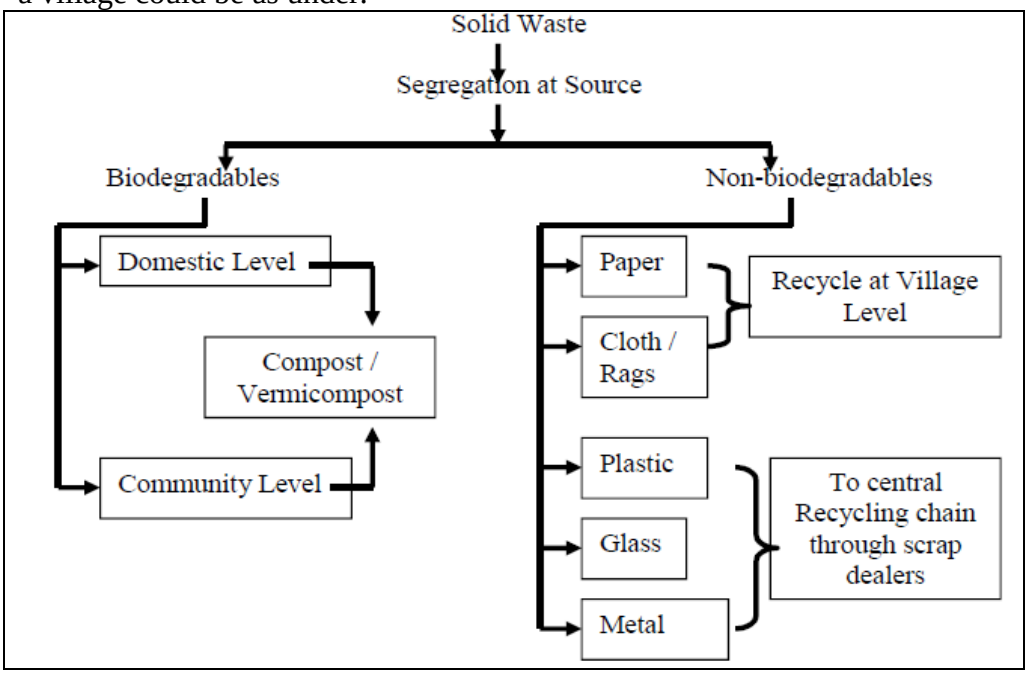

Figure 1- An ideal Solid Waste Management at a glance

Source- Shrikant M.Navrekar, “Sustainable Solid waste Management: Need of the hour”

Waste Management System in India

Waste management market comprises of four segments - Municipal Waste, Industrial Waste, Bio- Medical Waste and Electronic Waste Market. All these four types of waste are governed by different laws and policies as is the nature of the waste. In India waste management practice depend upon actual waste generation, primary storage, primary collection, secondary collection and transportation, recycling activity, Treatment and disposal. In India, municipality corporations play very important role in waste management in each city along with public health department. Municipal Corporation is responsible for the management of the MSW generated in the city, among its other duties. The public health department is responsible for sanitation, street cleansing, epidemic control and food adulteration. There is a clear and strong hierarchy of posts in the Municipal Corporation. The highest authority of Municipal Corporation rests with the Mayor, who is elected to the post for tenure of five years. Under the Mayor, there is a City Commissioner. Under the city commissioner, there is Executive Officer who supervises various departments such as public health, water works, public works, house tax, lights, projection tax, demand and a workshop, which, in turn, all are headed by their own department heads. The staffs in the Public health department are as follows: Health officer, Chief sanitary and food inspector, Sanitary and food inspectors, Sanitary supervisor, Sweepers, etc. The entire operation of solid waste management (SWM) system is performed under four headings, namely, street cleansing, collection, transportation and disposal. The cleansing and collection operations are conducted by the public health department of city Municipality Corporation, while transportation and disposal of waste are carried out by the transportation department of city Municipality Corporation. The entire city can be divided in to different zones. These zones are further divided into different sanitary wards for the purpose of solid waste collection and transport operations. Currently waste management in India mostly means a picking up waste from residential and industrial areas and dumping it at landfill sites. The authorities, usually municipal, are obligated to handle solid waste generated within their respective boundaries; the usual practice followed is of lifting solid waste from the point of generation and hauling to distant places known as dumping grounds and/or landfill sites for discarding. The treatment given to waste once thus emptied is restricted to spreading the heap over larger space so as to take away the waste from the public gaze. Waste collection is usually done on a contract basis. In most cities it is done by rag pickers, small- time contractors and municipalities.

Waste Collection in India:
Primarily by the city municipality

- No gradation of waste product eg bio-degradable, glasses, poly bags, paper shreds etc.
- Dumps these wastes to the city outskirts

Local raddiwala / kabadiwala (Rag pickers)

- Collecting small iron pieces by magnets
- Collecting glass bottles
- Collecting paper for recycling

In Delhi - MCD- Sophisticated DWM (Delhi Waste Management) vehicle

There are different sweepers employed in street sweeping and primary waste collection in each city. Each sweeper is responsible for the daily cleansing of a fixed area, usually a street including all side lanes. Domestic solid waste is usually thrown on the streets directly or in plastic bags from where road sweepers collect it into heaps. These waste are then transported by hand-cart trolley to the nearby open dumps or to bins, or directly by tractor trolley to the out-skirt of the cities. The road sweepers are equipped with a broom, pan, favda (spade/showel), hand-carts, panji (small pointed hand-rake), gayti (pointed small spade to clean road-side open drains) and buckets. The waste from street cleansing is collected in wheelbarrows and thereafter; it is dumped into roadside bins or at open dumping space along with household waste. Municipal workers collect waste from collection points (open dumping spaces or bins) into various vehicles including tractors and bull carts and haul it to disposal sites. In some cases, the workers collect the MSW from the collection points using chabra (wooden baskets) and transfer it into the vehicles manually. Normally, bull carts make only one or two trips a day to the final disposal site; a tractor makes two or three trips per day whereas refuse collectors/dumper placers make four trips. Finally recycling and reuse takes place by recycling units in different cities. Recycling is related to processing of a waste item into usable forms. The concept of recycling and reuse is well embedded in India largely due to prevailing socio-economic conditions and partly due to traditional practices. In India some cities have become a hub for recycling activities as considerable amounts of recyclable materials also come from adjoining towns and villages. Recycling industry mainly process paper, plastic, glass and metals. But recycling is not a solution to all problems. It is not a solution to managing every kind of waste material. For many items recycling technologies are unavailable or unsafe. In some cases, cost of recycling is too high. Recycling forms a big part of informal sector engaged in solid waste management. Waste recycling has, in fact, both organized and unorganized sections. The lower segments working as waste and dump-pickers, itinerant waste buyers, and small traders come under the unorganized segment, while

the big traders, wholesalers and manufacturers come under the organized segment of the waste-recycling sector.

Waste Management Initiatives in India

During the recent past, the management of solid waste has received considerable attention from the Central and State Governments and local (municipal) authorities in India. A number of partnerships/alliances are found to exist in the field of solid waste management in Indian cities. These alliances are public-private, community-public and private-private arrangements. To identify the status of existing alliances in the study area, it is first necessary to identify the various actors working in the field of waste management. These actors can be grouped as under:

- Public sector: this comprises of local authority and local public departments at city level;
- Private-formal sector: this constitutes large and small registered enterprises doing collection, transport, treatment, and disposal and recycling;
- Private-informal sector: this constitutes the small-scale, non-recognized private sector and comprises of waste-pickers, dump-pickers, itinerant-waste buyers, traders and non-registered small-scale enterprises; and
- Community representatives in the form of NGOs, etc.

These actors enter into partnerships for providing various activities related to solid waste management. These partnerships can be as follows:

- public-private (Local Authority and private enterprises);
- public-community (Local Authority and NGOs); etc
- private-private (waste-pickers, itinerant-waste buyers, waste traders and dealers, wholesalers, small scale and large scale recycling enterprises); and
- Public-private-community (Local Authority, private enterprises and NGOs).

National Solid Waste Association of India (NSWAI) is the only leading professional non-profit organization in the field of Solid Waste Management including Toxic and Hazardous Waste and also Biomedical Waste in India. It was formed on January 25, 1996. NSWAI helps the Ministry of Environment and Forest (MoEF), New Delhi in various fields of solid waste management makes policies and action plans and is entrusted the responsibility of collecting information and various data related to solid waste management from the municipalities of Urban Class-I cities(population more than 1Lakh) and Urban Class-II cities(population above 50,000), collate and disseminate the information to website which is

linked to national and international organizations. The association is a member of the International Solid Waste Association (ISWA), Copenhagen, Denmark and provides forum for exchange of information and expertise in the field of Solid Waste Management at the national and international level.

The other regulatory framework for waste management is related to Indian government Initiatives for waste management under Jawaharlal Nehru National Urban Renewal Mission (JNNURM), Urban Infrastructure Development Scheme for Small & Medium Towns (UIDSSMT), "Recycled Plastics Manufacture and Usage Rules (1999) amended and now known as The Plastics Manufacture and Usage (Amendment) Rules (2003), "Draft Guidelines for Sanitation in Slaughter Houses (1998)" by Central Pollution Control Board (CPCB), Non-biodegradable Garbage (Control) Ordinance, 2006, Municipal Solid Wastes (Management and Handling) Rules, 2000, etc. At the national policy level, the ministry of environment and forests has legislated the Municipal Waste Management and Handling Rules 2000. This law details the practices to be followed by the various municipalities for managing urban waste. Other recent policy documents include the Ministry of Urban Affairs' Shukla Committee's Report (January 2000) the Supreme Court appointed Burman Committee's Report (March 1999), and the Report of the National Plastic Waste Management Task Force (August 1997). In order to get a sense of the current status of sanitation in India's cities, a survey was initiated by the Ministry of Urban Development as a part of the National Rating and Award Scheme for Sanitation in Indian Cities. The methods used for the survey can be found on the Ministry of Urban Development website. The Government of India announced the National Urban Sanitation Policy (NUSP) in 2008. As a part of this, the government proposes to encourage states to develop their own sanitation strategies to tackle their own sanitation problems and meet the goals of the NUSP. The rating and award scheme has been taken up under this policy initiative.

The first major initiative was taken by the Honorable Supreme Court of India in 1998, which resulted in formation of an expert committee to study the status of SWM in Indian cities. This Committee identified the deficiencies/gaps in the existing SWM system in the country and prepared the Interim Report in 1999 on SWM Practices for few cities. As a second major initiative, in conformance with Sections 3, 6 and 25 of the Environment Protection Act of 1986, and on the basis on the recommendations by the Committee, the Ministry of Environment and Forests (MoEF) of the Government of India, developed and issued Municipal Solid Waste (Management and Handling) Rules (MoUD, 2000). These rules aim at standardization and enforcement of SWM practices in urban areas. These rules dictate that "Every municipal authority shall, within the territorial area of the municipality, be responsible for the implementation of

the provisions of these rules and infrastructure development for collection, storage segregation, transportation, processing and disposal of municipal solid wastes". The municipal authorities are further required to submit a detailed annual report on waste management to the Secretary-in charge of the Department of Urban Development of the concerned State in case of a metropolitan city; or to the District Magistrate or the Deputy Commissioner concerned in case of all other towns and cities every year. As per NSWAI, there are 303 projects till September 2009 running in the country related to waste management, environment and others. The CPCB in collaboration with National Environmental Engineering Research Institute (NEERI), Nagpur has undertaken a detailed survey of 59 cities in the country to assess the existing status of solid waste management in these cities (MoEF –India). The objective of the survey was to assess the compliance status of 59 cities with Municipal Solid Wastes (Management and Handling) Rules, 2000 and initiatives taken for improving solid waste management practices. The 59 cities selected for study cover 35 metro cities. It has been observed that initiatives for collection of waste from house-to-house and waste segregation has been undertaken in only seven cities, privatization of transportation of waste has been done in 11 cities and waste processing facilities have been set up in 15 cities. Ten waste processing facilities are based on composting; one of these composting facilities has provision for energy recovery also, four are based on vermin-compositing, and one facility employs pelletisation and energy recovery technology. In relation to hospital waste the Government of India (Notification, 1998) specifies that Hospital Waste Management is part of hospital hygiene and maintenance activities. This involves management of a range of activities, which are mainly engineering functions, such as collection, transportation, operation/treatment of processing systems, and disposal of waste. If the infectious component gets mixed with the general non-infectious waste, the entire mass becomes potentially infectious. Before the notification of Bio-Medical Solid Waste (Management and Handling) Rules 1998, now amended, waste from houses, streets, shops, offices, industries and hospitals was the responsibility of municipal or governmental authorities, but now it has become mandatory for hospitals, clinics, other medical institutions and veterinary institutions to dispose of bio-medical solid waste as per the Law. Besides all these initiatives Delhi Waste Management (DWM) was formed in 2004 as a Special Purpose Vehicle (SPV) in the Public Private Partnership (PPP) format for collection, segregation and transportation to landfill sites of municipal waste. Over 1000 employees are employed as a part of this initiative. The overall initiatives related to waste management in India can be summed up as follows in the table 1.

Table -1
India's Waste Management Initiatives

Policy and Regulation	
Institutional Framework	• Central Level • State Level • Other Organizations/Associations
Legal Framework	• 74th Constitutional Amendment Act, 1992 • Management and Handling Rules • Environment (Protection) Act, 1986 • National Environment Tribunal Act, 1995 • National Environment Appellate Authority Act, 1997 • Water (Prevention & Control of Pollution) Act, 1974 • Water (Prevention & Control of Pollution) Cess Act, 1977
Environmental Norms	• Existing Environmental Standards • Recently Notified Environmental Standards
Policy Initiatives	• National Urban Sanitation Policy, 2008 • National Environment Policy, 2006 • Policy Statement for Abatement of Pollution, 1992 • National Conservation Strategy and Policy Statement on Environment and Development, 1992 • Law Commission Recommendation • Ecomark Scheme, 1991
Key Government Programmes	
JNNURM	• Programme Scope and Structure • Funding • Experience So Far • Experience on Reforms • Issues and Challenges
Total Sanitation Campaign	• Programme Scope and Structure • Funding • Experience So Far • Issues and Challenges
MNRE's Waste-to-Energy Programmes	• Programme Scope and Structure • Experience So Far • Issues and Challenges
Other Programmes	• Integrated Low Cost Sanitation Scheme • National Biogas and Manure Management Programme
Technology and Practices	
Traditional Technologies	• Landfills • Waste Incineration • Sanitation

Key Projects	• Kolkata: SWM Improvement Project • Kanchrapara: SWM through Citizens' Participation • Kollam: MSW Management Project • Chennai: MSW Project • Navi Mumbai: MSW Management Project • Gurgaon: Ultra Modern Waste Management Plant • Namakkal: Zero Garbage Status • Suryapet: Dustbin Free and Zero Garbage Town • Visakhapatnam: SWM Though Citizens Participation • Thiruvananthapuram: Decentralised SWM • CIDCO: SWM System at Areas Adjoining Navi Mumbai
Key Initiatives	• Chennai: GPRS Equipped Waste Bin • Ahmedabad: Tapping Methane Gas • Goa: Solid Waste Management Corporation • Nagpur: Bye-Laws to Collect Waste Generated in Hotels • Nagpur: Management of Construction Debris • Akola: CBO for Waste Management • Yavatmal: Door-to-Door Collection of Solid Waste
Rural Waste Management	
Key Projects	• Tamil Nadu: Zero Waste Mgt. at Vellore District • Maharashtra: Slwm at Dhamner Village • Gujarat: Greywater Mgt. at Fathepura Village • Maharashtra: Greywater Mgt. at Wadgaon Village • Nashik: Wastepaper to Pepwood • Kerala: Post-NGP Initiatives at Kattapana Village
Industrial Solid Waste Mgt.	
Key Projects	• Andhra Pradesh: 3.66-MW Power Generation Project • Uttar Pradesh: 6-MW Biomass Cogeneration Power Plant • Other WTE Projects • Kolkata: Waste Minimisation of Small-Scale Industrial Units • Himachal Pradesh: Waste Treatment Plant
Liquid Waste Management	
Key projects	• Municipal Liquid Waste • Other Noteworthy Water Reuse and Recycling Projects • Industrial Liquid Waste

Source- India Infrastructure report (2009)

Initiatives taken by Private Companies

There are various private companies that are providing complete solutions for waste management. For example Subhash Projects and Marketing Limited (SPML) is a leading Engineering and Infrastructure development organization with 26 years in Water, Power and Infrastructure. Today SPML is surging ahead in Urban Infrastructure, Solid Waste Management, Water and Waste Water Systems, Cross Country Pipelines, Ports and SEZs, through BOOT/PPP initiatives. "SPML Enviro" is an integrated environment solution provider arm of Subhash Projects and Marketing Limited (SPML). It provides complete solution in relation to collection, transportation & disposal of municipal / hazardous waste, segregation and recycling of municipal waste, construction & management of sanitary landfill, construction & operation of compost plant and waste to energy plant at the Delhi airport and Hyderabad Airport. SPML Enviro has invested in the necessary resources and partnerships to provide solid and water treatment solutions. It expertise includes solid waste-to-resources' solutions – universal, industrial and medical waste. SPML Enviro has teamed up with PEAT International, North Illinois, USA, a waste-to-resources company specializing in treating and converting waste to usable resources. PEAT's proprietary Plasma Thermal Destruction Recovery (PTDR) technology is an environmentally friendly process, that converts wastes into non-toxic synthetic gas (which is a valuable source of alternative energy) and other useful end-products. The PTDR is a proven, cost-effective, environmentally clean and commercially viable solution for waste remediation. SPML Enviro together with its joint-venture partners, has proven capabilities to successfully execute projects on turn-key basis involving Okhla sewage treatment plant, Delhi Jal Board, Bewana common effluent treatment, Delhi State Industrial Development Corporation, Delhi State Industrial Development Corporation, Yelahanka primary/tertiary sewage treatment plant, Bangalore Water Supply and Sewerage Board, Okhla common effluent treatment plant, Sewage treatment plant, Mysore, Karnataka water supply and sewerage board, etc. SPML has also formed a joint venture with the US based Company INSITUFORM Technologies (INC.). INSITUFORM is a pioneer in sewer rehabilitation projects world wide. The Company brings with them a No Dig Technology, that eliminates replacement of old sewers. In this, pipe within a pipe concept - a liner is inserted into the sewer, which makes it as good as new.

Initiatives taken by Indian corporate

In India, there are various initiatives taken by many corporations. For example HCL Info system believes that the producers of electronic goods are responsible for facilitating an environmental friendly disposal,

once the product has reached the end of its life. HCL Info system supports the ongoing initiative for separate e-waste legislation in India. HCL has been working on an easy, convenient and safe programme for recycling of e-waste in India. HCL has created the online process of e-waste recycling request registration, where customers (both individual and corporate) can register their requests for disposal of their e-waste. Apart from corporate customers, HCL has extended its e-waste collection program to retail customers also through its HCL Touch spread points spread across the country HCL extends the recycling facility to its users regardless of the fact, when and where they purchased the product. To promote recycling of electronic waste, Nokia India launched a 'Take Back' campaign where customers can drop their old handset in the company's stores and win gifts. The take-back campaign is aimed at educating mobile phone users on the importance of recycling e-waste. As a part of this initiative, Nokia encourage mobile phone users to dispose their used handsets and accessories such as charges and handsets, regardless of the brand, at any of the recycling bins set up across Nokia Priority Dealers and Nokia Care Centers. ITC Ltd has chosen energy management, environmental & waste management and social & farm forestry as major focus areas for CSR. Specific processes include recycling/reuse of paper mill back water for dilution of bleached pulp, recycling of paper machine primary clarifier outlet water for miscellaneous uses, etc. These are few examples to show that Indian corporate is not behind in producing initiatives related to waste management.

Challenges in India

Key issues and challenges include lack of collection and segregation at source, scarcity of land, dumping of e-waste, lack of awareness, etc. Simple dumping of mixed waste is the practice followed practically everywhere and especially in the developing countries as they cannot mobilize financial resources for applying expensive technology propounded by the developed countries.

In India, "The new Municipal Solid Waste Management Rules 2000", which came into effect from January 2004, fail, even to manage waste in a cyclic process. Waste management still is a linear system of collection and disposal, creating health and environmental hazards. Urban India is likely to face a massive waste disposal problem in the coming years. Until now, the problem of waste has been seen as one of cleaning and disposing as rubbish. But a closer look at the current and future scenario reveals that waste needs to be treated holistically, recognizing its natural resource roots as well as health impacts. Waste can be wealth, which has tremendous potential not only for generating livelihoods for the urban poor but can also enrich the earth through composting and recycling rather than spreading pollution as

has been the case. Increasing urban migration and a high density of population will make waste management a difficult issue to handle in the near future, if a new paradigm for approaching it is not created.

A strong need felt on private sector participation in waste management but we can not ignore the risk of private sector participation. Risks of private sector involvement may include a lack of transparency, a commercial failure that would then lead to disturbance of public services, or low cooperation between stakeholders. Another important questions is that how effective are the public-private partnerships? We remember that Chennai based corporation and French conglomerate Onyx partnered for garbage collection. But we really don't know how effective it was in practical sense. The Corporation paid heavy amount for garbage clearance. But there were complaints against the company. In any case the company was simply collecting garbage and dumping it on the dumpsites. There is no engineering miracle in collecting and dumping waste. The way forward is proper waste management policies which must be adopted and responsibilities of each are defined in proper manner and correctly watched, if the municipal authorities get the private companies (like onyx) to composting and recycling wastes rather than just dumping it.

There have been a variety of policy responses to the problem of urban solid waste in India, especially over the past few years, yet sustainable solutions either of organic or inorganic waste remains untapped and unattended. For developing countries, recycling of waste is the most economically viable option available both in terms of employment generation for the urban poor with no skills and investment. All policy documents as well as legislation dealing with urban solid waste mention or acknowledge recycling as one of the ways of diverting waste, but they do so in a piece-meal manner and do not address the framework needed to enable this to happen. Critical issues such as industry responsibility, a critical paradigm to enable sustainable recycling and to catalyze waste reduction through, say better packing, have not been touched upon. Recycling of only some types of materials like plastics, paper and metals is not enough. Many types of new materials mainly used for packaging are not, or indeed cannot be, recycled in the low-end technology being employed. Besides, there are serious issues of poor occupational safety provisions of the waste pickers as well as workers.

In India, new and expensive technologies are being pushed to deal with our urban waste problem, ignoring their environmental and social implications. It is particularly true in the case of thermal treatment of waste using technologies such as gasification, incineration, pyrolysis or pellatisation. Indian waste content does not provide enough fuel value (caloric value) for profitable energy production. It needs the addition of

auxiliary fuel or energy. Such technologies put communities to risk and are opposed widely. For example, the United States has not been able to install a new incinerator for the past five years, while costs for burning garbage have escalated astronomically with rising environmental standards in other countries. While the more developed countries are doing away with incinerators because of high costs (due to higher standards of emission control), developing countries have become potential markets for dumping such technologies.

Suggestions for future improvement

The political will is the first priority. Generally Government bodies and municipalities give priority to present problems which they face but do not think for future problems due to environmental decay. Their view is that, they will solve problems when they will face it but not now. Because doing something for environment does not provide political gains or assure next time seat. Now questions is that how can we change this mentality? We believe there should be a positive approach for a long time planning and implementation. Legislation and its effective enforcement is a key to sustainability for which the framework requires to be established.

Efforts to improve waste storage and collection are required. This can be done when each household and locality are provided standard bins that are placed outside for ease of collection. In areas where this is not appropriate, centrally located waste collection points should be established that are shared by a number of households. Wastes need o be increasingly sorted at the source, to separate materials that can be recycled and to educe the amount of wastes requiring collection and disposal. Co-operation is required among communities, the informal sector, the formal waste collectors and the authorities. An effective Solid Waste Management system should aim at minimizing manual handling and 100 % collection & transportation of solid wastes should be achieved.

In solid waste management, one thing became very clear that segregation at source is to be practiced. There are lots of initiatives to manage wastes but goes in vein because of not identifying wealth in wastes. In India, we cannot afford sanitary land filling as land is precious here and there are lot of municipalities who do not have land as trenching ground. The source segregation needs lot of study on human behavior against waste littering. A continuous sensitization programme is to be planned according to the sentiments of the residents towards their city and ultimately it will work as wonders. If waste segregation is practiced, the potential threats can be minimized directly. Besides, the quality of materials retrieved will be better due to absence of mixing. The pickers can thus, fetch better money on the

materials retrieved besides having lesser threats of catching diseases, cuts and wounds encountered in the usual practice of waste picking.

The adoption and transfer of the technologies from the developed countries without adapting them to the local or regional perspective would be fallacious on the part of the developing countries. Therefore, the technical aspects for a waste management would have to take into account many points for planning and implementation of strategies according to situation of the country. It would call for the strengthening of the management sector which has to go hand in hand with technical planning.

General public can play a very important role. Public participation is necessary for a proper waste management system. Changes in the habits of segregation, littering, can change the approach towards wastes. For example in a heritage town of West Bengal, there was a movement related to waste management. Within a span of two years it successfully sensitized residents for segregation at source and not littering in open areas. Now the city is really becoming clean and other people are also participating in the movement.

In order to improve the system efficiency and increase the coverage to 100 percent in each city, it is recommended to explore alternative arrangements for collection of waste like involving private operators. A mechanism to generate revenue from the citizens should also be developed. However, the approach to public-private partnerships pursued in the developed countries cannot be replicated for Indian towns in general. This approach can only be implemented after some modifications taking into account the local conditions.

There may be separate parallel decentralized schemes by the government. Financial support by the community based on decentralized schemes will provide the right impetus for the development of waste management method. For example the municipality of Bangalore has a parallel scheme, “Swaccha Bangalore”, which levies mandatory fees for all households, businesses and educational institutions to increase its financial resources. These user fees imply that the residents will expect the municipality to provide proper waste collection services. It integrates them into the overall waste management strategy in all localities thereby helping to reduce the amount of wastes going outside the locality. The levying of waste collection and disposal fees should be based on waste generation rates and according to the economic standard of the area, whilst considering the nature of the waste wherever necessary. However, these fees should not be levied solely to meet the financial lacunae for management and the equipment demand.

In India waste management could materialize only if service delivery will be linked to private sector participation. “It is imperative that the private

sector comes forward and enables the public sector stakeholders to devise appropriate frameworks that result in a win-win for both sides." Although there are some initiatives taken by corporate but there is strong needs that all corporate must come forward to take first step. At least they should manage their industrial waste rather littering and throwing in the rivers as we can find many examples in Indian cities like Kanpur, Varanasi, Agra, etc. The private sector could also play an important role in building the capacities of municipal bodies. Solid waste management, along with recycling, presents plenty of opportunities for partnerships. For example, EXNORA is an NGO in Chennai that focuses on the environment through their solid waste management program, which works in municipalities throughout Tamil Nadu.

In fact, despite the lack of proper legal and financial support by public agencies, the informal sector has a firm standing and gives an invaluable service to a large section of the society in relation to waste management. There is an urgent need to understand the vital role of this informal sector engaged in municipal solid waste management, study their socio-economic conditions, and to integrate them with the formal sector to achieve sustainable solid waste management on one hand and improve their living conditions on the other.

The possible future policy options available with the policy makers for management of municipal solid waste are to promote either/all of the existing alliances between private-private enterprises, private-public enterprises and private-public-community. The selected scenario should be based on socio-economic, environmental and health considerations. It should fulfill the basic goal of recycling the maximum waste generated, creating maximum employment through cleaner methods without bringing any threat/reducing the potential health hazards to the lower rung of the waste recycling sector and improving their socio-economic conditions, as well.

Another option is to promote formation of micro-enterprises among the waste-recycling sector through various policies. It is observed from various case studies of developing countries like Latin America, Egypt, etc. that if waste pickers and recyclers get official recognition from the local authorities and they organize themselves and institutionalize their activities, there is an overall improvement in the living conditions of these people. Micro-enterprises in the field of solid waste management sector are a new process in India and only few examples are available. The Self Employed Women's Association (SEWA), Ahmedabad, India successfully improved the living conditions of women paper pickers, by organizing them into cooperatives and by searching for easily accessible raw materials in bulk quantity.

There are several missing links and many loose ends both in terms of management, technology and professional skill. The solutions need thorough understanding, for example, deployment of competent persons qualified in solid waste management (real hard taskmasters and not people who turn up with a handkerchief to cover their nose to keep the stink away), application of efficient combination of waste handling equipments in cost effective manner and streamlining of the handling of waste at various stages throughout its journey from source of generation to ultimate safe disposal site, without intermediate dumping and accumulation of waste for days together. A flawless continuous flow sheet of waste management has to be developed. Matching financial support, discipline and attitudinal change in all concerned will obviously be the key for effective and successful waste management in India.

In India the landfill, sometimes described as `sanitary landfill', does not go beyond filling up of low-lying areas with stinking waste conveniently bypassing the recommended requirements for `sanitary landfill'. In the end, anything that is emptied at dumping or landfill sites continues to cause serious environmental depredation. The developed countries do boast that they handle their waste in a more scientific manner at landfill sites by laying the dumping grounds with a vulcanized plastic sheet to avoid leaching of toxic digested and undigested waste into the ground underneath. In our countries authorities practicing landfill do declare that they assiduously implement requirements for recommended landfill to assuage citizen concern.

The quantum of solid waste is ever increasing due to many reasons. Plastics waste is a significant portion of the total municipal solid waste (MSW). Recycling of plastics should be carried in such a manner to minimize the pollution level during the process and as a result to enhance the efficiency of the process and conserve the energy. Newer techniques related to recycling and reuse of plastic can be adopted.

Any new paradigm should include a cradle-to-grave approach with responsibility being shared by many stakeholders, including product manufacturers, consumers, communities, the recycling industry, trade, municipalities and the urban poor. The Ministry of Urban Development and Poverty Alleviation, as well as Agriculture, should develop the market for compost, and if required provide subsidies for compost manure – first to provide organic soil nutrients to the farmers and to solve the urban waste problem which continuously is polluting land through uncontrolled dumping.

In order to make proper waste management activity sustain in true sense, following other points need to be given attention to –

1) Region specific planning: Looking at the geographical, topographical and cultural diversity of the country it can be divided into five regions such as

Northern region, Eastern region, Western region, Central region and Southern region. Each of these regions has different structure. Hence all the activities should be planned & implemented on regional basis.

2) Planning from below: To make Solid Waste Management a success in true sense, the planning as well as implementation should start from general public level planning followed by block level planning, district level planning and state level planning.

3) Involvement of self help groups, youth groups and small entrepreneurs: The general public level waste management units can be run by self help groups, youth groups or small entrepreneurs. This will help in making the programme self supportive and sustainable.

4) Well planned and effective training policy: Technical training at all levels (General public to state) forms the backbone of a successful waste management programme. Adequate training must be given to all those concerned prior to actual launching of the programme in the field.

Conclusion

It is suffice to say that we require a more stringent integrated and strategic waste prevention framework to effectively address wastage related issues. There is an urgent need to build upon existing systems instead of attempting to replace them blindly with models from developed countries. To prevent any epidemic and to make each city a healthy city-economically and environmentally, there is an urgent need for a well-defined strategic waste management plan and a strong implementation of the same in India. To achieve financial sustainability, socio-economic and environmental goals in the field of waste management, there is a need to systematically analyze the strengths and weaknesses of the community as well as the municipal corporation, based on which an effective waste management system can be evolved with the participation of various stakeholders in India. The public apathy can be altered by awareness building campaigns and educational measures. Sensitization of the community is also essential to achieve the above objectives and we need to act and act fast as every city in India is already a hotbed of many contagious diseases, most of which are caused by ineffective waste management.

All these above said suggestions are given in relation to India and will be effective only when we individually feel the responsibility of making environment clean. As general public, we can not do much in policy and regulations formulation, adoption of newer technologies related to recycling and other waste management options but we can play a very important role in this process if we can adopt only few tips. Here are a few tips to achieve this goal.

1. Keep ourself informed: It is important that we are in the know about what is happening on the environment front. Read about how untreated sewage is thrown into the rivers, attend public lectures about air pollution, & keep in touch with new policies that affect our environment. The more informed we are, the better equipped we are to fight such issues.

2. Consume less: Motto: Refuse…..Reduce….Reuse… Recycle .This means consuming fewer resources, reusing whatever we can and finally recycling what cannot be reused. This process greatly reduces the garbage.

3. Say 'No' to plastic bags: One of the biggest sources of pollution in Indian cities is the ubiquitous plastic bag. Refuse to accept one. Instead, carry a cloth shopping bag with us.

4. Separate our garbage: India has one of the world's most efficient recycling mechanisms. Use the service of our raddiwalla. Newspapers, bottle cans and other such recyclables can fetch us money and in the process we can help to save the environment. Rag pickers, too, perform a vital function for the city. Kitchen garbage (biodegradable) should be separated from non-biodegradable waste.

5. Compost our organic waste: Start a vermiculture bin. We can convince our neighbors to start a vermiculture bin also to produce manure.

6. Stop burning garbage: Ask our neighbors to desist from burning solid wastes. It may seem harmless but smoke emitted from leaves contributes to air pollution. Also, when there are plastic in the heap, it emits dangerous toxic fumes. Leaves can be converted to fertilizer through composting & plastic can be recycled.

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THE ERA OF NEUROSYNAPTICS: NEUROMORPHIC CHIPS AND ARCHITECTURE

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Abstract

Since its invention the modern day computer has shown a significant improvement in its performance and storage capacity.However, most of the current processor cores remain sequential in nature which limit the speed of computation. IBM has been consistently working over this and with the launching of neurosynaptic chips, it has opened a new gateway of thought process. This paper aims at reviewing the various stages and researches that have been instrumental in the overall development of neuromorphic architecture which aims at developing flexible brain like structure capable of performing wide range of real time computations while keeping ultra-low power consumption and size factor in mind. Inspired by the human brain, which is capable of performing complex tasks rapidly and accurately without being programmed and utilizing very less energy, TrueNorth chips tends to mimic the human brain so as to perform complex computations at a faster pace. This has inspired a new field of study aimed at development of the cognitive computing systems that could potentially emulate the brain's computing efficiency, size and power.The paper also aims to highlight the inadvertent challenges of neuromorphic architecture as posed by the prevailing technologies which are a major field of research in near future.

Keywords: Neurosynaptic, ultra-low-power, TrueNorth, Cognitive Computing

Introduction

Human Brain- synonymous with the central processing unit of a computer , consists of a wide network of neurons and attached dendrons which on contraction and expansion help in transferring of information from one part of body to another. This very transfer is done by Synapse, which means ‘conjunction’. Thus, at a synaptic site, signal passing neuron comes in

close contact with the target which is rich in extensive array of molecular machinery.

In actual, the biological neural systems perform wide range of real time computations and tasks such as pattern recognition, sensory reconstruction carried out by these low power, dense neural circuits which within metabolic constraints are more efficient that traditional computers.

The basic computational unit of this system is the neurons that communicate with each other through the generation and modulation of spike trains where it may be an all-or-nothing pulse.

The human brain consists of a staggering number of over 100 billion neurons and over 1 trillion synapses.

The implementation of such a complex system is feasible through use of supercomputers but power and space has always been a constraint, preventing its usefulness in mobile systems for real time applications. Thus, mimicking human brain so as to take a big leap towards bionic systems has been a major concern over decades. With the aim of producing intelligent memory cells, materials such as chalcogenides need to be crafted which can sustain non-Boolean Algebra,thereby offering multi stable states. The memories so created are called 'cognitive memory' and forms the very basis of OCD's.

Ovonic computational devices (OCD) have analogous functions to neurons in brain and their synapses and they tend to offer same plasticity as organic molecules associated at neurosynaptic sites. Their very composition comprises of nano-dimensional amorphous structures like chalcogenide glasses offering high optical quality, which can be used to mimic brain like computations.

But in order to improve the switching times and reduce power consumption per synaptic event, the neuromorphic architecture came into being, which was capable of running spiking neural networks in compact and low power hardware. This neuromorphic architecture used analog circuits for biological components and digital asynchronous circuits for the communication of spike events. Inspite of its compactness and reduced power consumption , its sensitivity to process variations, ambient temperature and noisy environment posed a challenge in configuring circuit that could operate under a wide array of external parameters. This limited correspondence between analog implementations and neural algorithm was an obstacle to algorithm development and deployment . Even the lack of addition of high density capacitors and sub-threshold currents in analog implementation made it more complex and unreliable. Thus, implementation of neuromorphic architecture using discrete time, low power event driven circuits provided a path to both area and power efficient architecture, capable of one-to-one correspondence with the simulator.

This breakthrough came as a part of IBM's launch of neurosynaptic chips, which opened gateways to a new thought process.

The world of synapses

The innovation heralded with development of neurosynaptic core which had 256 integrate-and-fire neurons,1024 axons as the input which meant 1024X256 synapses in 4.2mm2 of silicon using a 45nm SOI process. This meant the innovation successfully was able to achieve the ultra-low energy consumption 1) At the circuit level by the usage of an asynchronous design where the switching in the circuit took place while performing neural updates;2) At the core level by using a crossbar memory implementation of a 256 neural fanout in a single operation was done; and 3) At architecture level by restricting core to core communication to only the spiking events which occurred sparsely in time .

Since the implementation was purely digital, the resultant was reliable and deterministic operation that helped in achieving one –to – one correspondence with a simulating software. It not only made the core readily scalable but also provided a platform for performing a wide range of real-time computations. The VLSI implementation - referred to as 'neuromorphic chips' overcame the area and power constraints of its biological counterpart. This facilitated a wide range of real time application that involved machine learning and perception. The discrete timed circuits hence provided an alternative solution to the constraints posed by the analog circuits. However, the parallel and event driven processing does not naturally fit the sequential processing model of the traditional computers.

As a result communication of spikes between physically separated processor and memory requires large bandwidth resulting in high power consumption and limited scaling. This can be taken care of by usage of a crossbar between memory and computation.

The asynchronous design methodology however is a natural fit to the distributed processing of neurons ensuring power dissipation levels of inactive parts in the system are kept minimum. The implementation although extremely robust remains operational under a wide range of process, voltage and temperature variations overcoming the earlier discussed constraints of immobility.

The neurosynaptic core basically has:

- Asynchronous circuits mimicking central elements of the neural system
- Computation , memory and communication integrated into one architecture
- Asynchronous communication accommodating the architecture
- Synchronization mechanism that maintains one-to-one correspondence

The prototype comprises of a single core with 256 digital leaky-integrate -and-fire neurons, 1024 inputs, and 1024x256 programmable binary synapses with a SRAM crossbar array. The entire core fits in a 4.22mm2 footprint in IBM's 45nm SOI process and consumes up to 45 pJ per spike.

Architecture and operation

Neurons: Physical Structure and Function

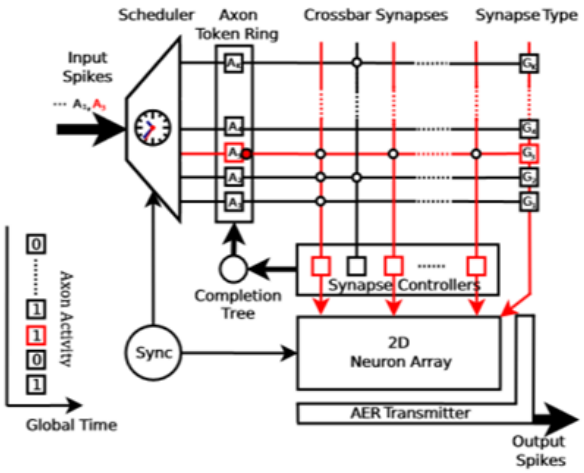

Fig. 1 Architecture of Neurosynaptic core

The individual neurons and the interconnecting synapses and their electro physical properties contributes to the computational power to the brain like networks. The neuron model forms the basis of the leaky integrate-and-fire model due to its ability to capture the behavior of real neurons in a range of situations and its efficiency.

The axons and synapses interconnect the various neurons. The axons correspond to the output of neurons in the same core or maybe driven by an external driver. If S_{ji} represents connection between axon *j* and neuron *i* and G_i characterizes the type of axon that can take different values indicating whether it's a strong excitatory, weak excitatory or inhibitory synapses that' axon forms with neuron it connects to and the neuron is parameterized by a leakage current L, a spike threshold theta, and three synapse weighs corresponding different axon types then neuron states are updated at each time step according to external input and interconnectivity. At any time t the voltage V_i [t] represents the neuron *i* and the activity bit A_i [t] represents the axon *j*:

The neurons voltage is updated at each time step after subtracting a leakage current from its voltage and integrating synaptic input from all the axons:

When this voltage level exceeds the specified threshold a spike is produced by the neuron and resets the voltage level. The negative voltages are also clipped back to 0 at the end of each time step.

Address Decoding

As mentioned earlier the heart of the core has a crossbar memory that forms the junction between axons and neurons. This array is configurable so as to be able to set up arbitrary networks in the systems, with the rows and column in the crossbar corresponding to an axon and input of a neuron respectively. Thus, for a network consisting of 1024 Synaptic inputs and 256 neurons, a 1024x256 crossbar synapses are obtained with a huge configuration space .With the help of address event representation [11] spiking events are sent to and from the core. AER transmitters and receivers play indispensable functions.

An AER transmitter[12] encodes the spiking activity by identifying locations of active neurons through a multiplexed channel leveraging the fact that bandwidth of wires is orders of magnitude larger than bandwidth of biological axons. A similar AER receiver takes charge of delivering the incoming spikes to the appropriate axon at a predefined time configured by a time scheduler block.

As the spikes are serviced sequentially address are decoded to the crossbar memory where the 256 synaptic connections of an active axon are read out in parallel.

Discrete –Time Operation

The figure explains the sequential operation taking place in the core. There are principally two phases involved: In the first phase of operation, initialized at the positive edge of the synchronization clock, address events and their time stamps are sent to the core to be received by the scheduler. This scheduler is responsible for evaluation of time stamps and assertion of the appropriate axons that go into a token ring. The units in the token ring that receive the active axons assert rows of the crossbar in mutually exclusive manner .Soon after the word line in a crossbar are activated the neurons that are connected to the axon receive input spike along with the information about the axon type. With the arrival of axon events the neuron voltage levels are updated and the whole phase is completed within the first half of the synchronization clock. This gives a precise margin for the neural updates for all the 1024 axon inputs.

In the second phase, the neuron respond to the negative edge of the clock.as soon as a negative peak is detected neurons whose voltage levels have exceeded the predefined threshold produce spikes in their output ports.

The spiking addresses are encoded by the AER transmitter and now again sent out to core sequentially. The second phase reaches its completion in the next half cycle of the clock. A 1 millisecond clock period would imply performance requirements for successful execution of the two phases is easily met.

The major advantage of breaking the whole operation of neural updates two phases is that the hardware is always in sync with the simulation with the end of each time step.

Event driven implementation

The architecture has the following concurrent processes using the communicating hardware processes [13]:

A. Scheduler

The packets received by the scheduler that maybe coming from the spiking neurons within the core or from outside to be delivered to the axons at specific times and at specific sites characterized by address contained in the axons and their associated spike time. In addition, the scheduler receives a global clock and global counter time. The scheduler decodes the packet and its corresponding location of delivery. The time specified in the packet is added to the axonal delay for the particular axon and then compares global counter time on

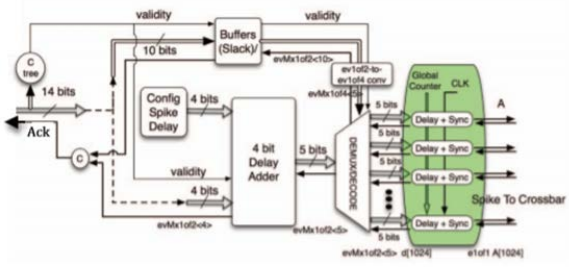

Fig.2 Internal structure of Scheduler

every tick of the clock. If the time matches to the clock a spike is delivered to the crossbar.

A. Axon Ring

With the detection of edge of the synchronization clock, scheduler picks up the axon lines with spikes. Each axon corresponds to the row in the crossbar memory. The dendrites correspond to the columns of the crossbar but since it can be a interconnection between various axons rows need to be essentially be asserted in mutually exclusive manner [14].On assertion of an axon, its server sends a request to the neighbour to pass a token. This action is carried by the multiple axon servers with each serve having an axon input

and word line of the crossbar at the output. The circulation of tokens between the servers ensures mutually exclusive access of the crossbar.

After request for passing the token is asserted by the server the request propagates through the token ring and passes along the requesting server. Upon receiving the incoming token the corresponding row of the crossbar is asserted.

All this paved way for IBM's Neurosynaptic chip popularly known as TrueNorth, which has become popular on account of its efficiency and speed.

The era of neurosynaptic chips: truenorth architecture

Neuro synaptic computation chip, TrueNorth is an entirely new class of processor chip that mimics human brain both in complexity and functioning. The chip has totally revolutionized the cognitive computing principles prevailing, by the extensive network of components mounted and associated power required for the same. Inspired by the hypothesis, that cerebral cortex comprises of repeating canonical cortical microcircuits, the neurosynaptic chip comprises of a tileable on-chip-two-dimensional mesh network of 4,096 digital, distributed neurosynaptic cores. It comprises of 5.4 billion transistors, making it second largest CMOS chip in the world. It has over 400 million bits of local on chip memory to store synapses .It supports hierarchical communication, with on-chip message spike routing network followed by local fanout crossbar, thereby reducing network traffic. The first ever chip to use digitally driven mixed asynchronous and synchronous neuromorphic network, reduces neuron switching by 99% of average. The design scaled down to 28nm, consumes power as low as desktop computer; 26pJ per synaptic event, lowest ever recorded. The TrueNorth architecture is modular and non Von Neumann, consisting of scalable neurosynaptic cores, each consisting of neurons, dendrites, synapses and axons. With the existent CMOS technology, it tends to capture the essence of neuroscience both in function and complexity. Though mimicking the right side of the brain, which is comparatively slower than left side, the TrueNorth architecture is yet 388 times slower than real time.

Truenorth working and architecture

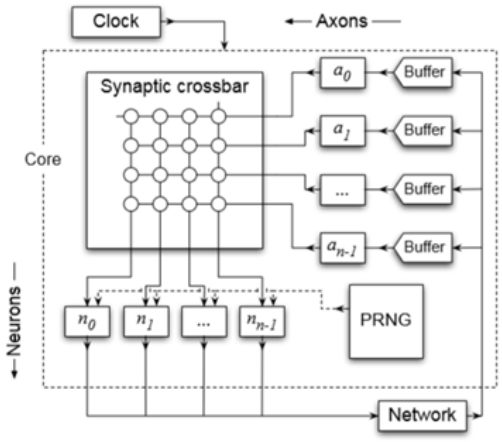

Fig. 3 Conceptual architecture of Neurosynaptic core

Replication of brain like mechanism consists of a Neurosynaptic core [1], [2], [15], [16] connected to the other cores in the system via some communication network. The simulated Neurosynaptic core consists of 256 axon, 256 dendrites feeding to 256 neurons and a 256x256 binary crossbar synaptic array. A neuron, characterised by configurable parameters, on any Neurosynaptic core, operating in parallel can connect to an axon on any core in the network in semi-synchronous fashion. Neurons are digital integrate-leak-and-fire circuits which send a spike message to the connecting axon.

Each TrueNorth core receives a clock operating at 1000Hz which is employed to discretize neuron dynamics in time steps of 1 millisecond. Post to this event, the core cycles through each of its axon, to check if the axon's buffer has a spike ready for delivery at the current time step. The synaptic value on the horizontal synaptic line is transferred from pre to post synaptic site. On such examination, if a particular axon-neuron pair carries a non-zero synapse value, the neural membrane's potential is incremented by (possibly stochastic) weight corresponding to the axon type. In similar fashion, a configurable stochastic leak is applied by each neuron and the finally that neuron fires a spike whose membrane potential has exceeded its threshold. The so generated spike travels to corresponding target axon, which schedule the spike the delivery at a future time step in its buffer. The communication channel plays an indispensable role by bridging axon of one neuron to dendrites of other, thus neuron axon connection communication while synapses represent memory. The entire cycle repeats until the tick of slow clock arrives. Thus, synaptic state never leaves the core only the spikes do so, thereby driving the communication network solely by spike events. The

TrueNorth quite successfully amalgamates computation and memory, thereby breaking the Von-Neumann bottleneck.

Thus to set wave for TrueNorth a parallel functional simulator, Compass was developed, which has one-to-one equivalence to functionality of TrueNorth. Compass is an architectural simulator which is multi-threaded, massively parallel and highly scalable, which can simulate under a soft real-time constraint. It incorporates several innovations in communication, computation and memory.

Compass neurosynaptic chip simulator

Compass, which is implemented using a combination MPI library calls and Open MP threading primitives, is an architectural simulator for TrueNorth cores. Various threads within a process independently simulate synaptic crossbar and neuron behaviour in a semi-synchronous manner. Compass has got an inherent tendency to minimize communication overheads between pair of processes into a single MPI message. As Compass executes a process map is used to identify all destination on remote processes. During a tick, as all neurons integrated, leaked and fired, the process aggregate all spikes and uses a single MPI send call to transmit each buffer, within a TrueNorth core.

Thus compass is indispensable for performing the following functions:

1) Regression testing to verify TrueNorth correctness
2) Dynamic behaviour study of TrueNorth cores
3) Hypothesis testing, verification and iteration of neural cores
4) Approximation of power consumption
5) Bench marking inter-core communication topologies
6) Demonstrating application in the field of optic flow, sensor integration, real time motor control (robotic navigation), multi-modal image audio classification and spataio-temporal feature expansion.

Parallel compass compiler

In order to translate a compact of functional regions of TrueNorth cores into explicit neuron parameter, PCC is extensively exploited. Unlike the conventional Compass simulator, PCC tends to minimize MPI message counts by assigning TrueNorth cores in the same functional region as few Compass processors. This shared memory concept helps in handling intra-region spiking, thereby increasing the speed manifold. This helps to create lower level core parameter from higher level. Though complex in functionality, computation in terms of neuron count and synaptic connection count is enhanced.

Challenges to neurosynaptics

1) Despite being fast and reliable, as the neural network grows in size, delays in switching time, howsoever small (as may be) are inevitable.

2) As a mesh of dendrons and axons are interconnected, there are probable chances of reaching of information to wrong location because of leakage current/ voltages at the Neurosynaptic site.

3) The architecture is based on non- Von Neumann architecture, thereby posing a problem of interfacing it with other devices which are predominantly Von Neumann.

4) The technology is costly and very complicated. Moreover, it is 388 times slower than Human brain.

Conclusion

Hailing towards Bionic computations and brain like systems has been a matter of great concern over decades. The advent of Neurosynaptic era was with IBM's TrueNorth. The foundations for the same were laid by Ovonic Computational Devices which comprised of chalcogenides, which could retain non-Boolean Algebra via multi stable states. The message transfer occurs in three respective phases, Synapse phase, Neuron phase and Network phase, which have been successfully simulated using Compass and PCC as simulating tools. The field is ever growing and there are various challenges like that of switching times and interfacing problems which have to tackled in the long run before the chips can be made available commercially.

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PERSPECTIVE BUILDING FOR DISASTER MANAGEMENT IN INDIA

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Abstract

India is a country vulnerable to number of natural and human made disasters. Its 58.6% landmass prone to earthquakes; over 40 million hectares (12%) of land is prone to floods and river erosion; of the 7,516 km long coastline close to 5700 km is prone to cyclones and tsunamis; 68 per cent of the cultivable area is vulnerable to drought and hilly areas are at risk from landslides and avalanches. Similarly, vulnerability also exists due to Chemical, Biological, Radiological and Nuclear (CBRN) disasters. In order to deal with varied nature of disaster the Government of India has adopted policy document and legislation on disaster management in 2005. The government approach to disaster has changed from 'reactive approach' to 'pro-active approach'. In this context, the present paper takes overview of disaster management practice in India. It tried to highlight relevance of perspective building for disaster management and proposing anti-discriminatory perspective for disaster management as potential framework for intervention during the natural as well as human-made disasters. The present paper is divided into three parts; Part one explains the need of perspectives building for disaster management, Part, two discusses about the anti-discriminatory perspective for disaster management, and part three highlights importance of anti-discriminatory approach in the post disaster and its implications for human service as well as social work disciplines.

Keywords: Anti-discriminatory perspective, Disasters, Disaster Management, Social Work

Introduction

Broadly, disaster management defined as "a collective term encompassing all aspects of planning for and responding to disasters, including both pre and post disaster activities. It may refer to the management of both the risks and consequences of disasters". Thus, the term management for disaster situation has emerged as integrated term that encompasses preparedness and mitigation of pre and post disasters.

However, the important issue is does disaster management comprehensive enough to deal with varied disaster situations and the issues of socio-cultural diversity and marginalization in disaster situations. What should be ideal perspective for disaster management to deal with complex issues of social exclusion and marginalization in the disaster situation? How to make disaster management more comprehensive and non-discriminatory for pre and post disaster? The reporting on various disasters shows that poor and marginalized communities suffer doubly during and after a disaster. There are various issues essential to create socially just communities are not addressed by disaster management after disasters. The issues of class, caste, gender and religious inequities in the post-disaster phase are neither addressed nor resolved and became challenging task before disaster management practice. There are few civil society organizations addressing these issues but largely disaster management practice is silent on the issue of discrimination and marginalization in the post-disaster situations. Similarly, there is no substantive study on the aspect of community re-building and mitigating socio-cultural disparity after disaster in the social science literature.

To address above concerns, the present paper attempts to propose the perspective for disaster management and its potentials to practice inclusive as well as non-discriminatory disaster management practice in India. The literature on disaster management and mitigation emphasizes several important components such as early warning, relief distribution, need assessment, mental health, psycho-social aspect of disaster victims, community practice etc. These approaches of have intrinsic limitations and may generate discriminatory, sectarian and socially exclusive practice during disaster situation. There is need for larger non-discriminatory and socially inclusive framework for disaster planning, management, mitigation and preparedness.

In this context, the present paper tried to highlight relevance of perspective building for disaster management and proposing anti-discriminatory perspective for Disaster management as potential framework for intervention during the natural as well as human-made disasters. The present paper is divided into three parts; Part one explains the need of perspectives building for disaster management, Part, two discusses about the anti-discriminatory perspective for disaster management, and part three highlights importance of anti-discriminatory approach in the post disaster and its implications for human service as well as social work disciplines.

Perspective building for Disaster Management in India

It is essential to develop perspective for disaster management in India. The more rigorous and unbiased efforts put in for perspective building

process, easier would be process of identification of issues, vulnerability, target group and design of intervention during disaster situation. The perspective building is also important to make disaster management socially inclusive in nature and instrumental for community re-building which can achieve values such as social justice and human rights. The process of perspective building includes looking at the current definitions of disasters and building a new definition on the basis of varied nature of disaster and reasons behind the different disasters. The definition of disaster should be flexible and comprehensive enough to add in and cover all the types of natural and human-made/social disasters. It should not discriminate or exclude any disaster due to socio-cultural and political complexity.

The literature on disaster management gives feeling that the concept is meant for development as well as re-building society after disaster but actually in practice it is managing the post-disaster situation by rescue, relief and rehabilitation work. There is more emphasize on 'naturalness' of disasters, rather than preventive aspects. Moreover, the Disaster Management Act and policy document on disaster management is silent about the certain human-made disasters/social disasters such as droughts, displacement, communal riots, caste conflicts/atrocities etc. There seems to be narrow vision and systemic silence with in conceptualization of disaster management itself in order to intentionally stay away from the structural and socio-cultural complex issues of the Indian society. The victims of social disasters wait long for justice and made satisfied by government meager compensation and relief measures. The issues of vulnerability and preparedness do not get sufficient attention, methods and skills to deal with varied vulnerability are neglected and poor and marginalized communities issues are not highlighted in the process. Similarly, the complexity of issues, the difficulty of intervention, the dynamics of political processes, attitudes of the community, and the politics of aid have generated a lot of dilemmas. These issues have to tackle with sensitivity and breaking up into separate process, each requiring individual attention as well as collective recognition. Thus, the narrow vision and weak conceptualization of disaster management becomes fundamental deterrent to address the root cause of societal issues and produces self-limiting emergent intervention in rescue, relief and rehabilitation.

It is in this context the perspective building becomes pertinent to envision comprehensive disaster management theory and practice. The comprehensive and suitable conceptualization helps in three ways. First, it helps to provide framework to understand origin and naturalness of disaster and provides help to identify the issues to prevent the disaster at the first stage. This is a process that helps to identifies reasons of disaster and make conscious individuals to handle those reasons of disaster to prevent present

and future disasters. Second, it develops critical understanding about the ground reality and provides insights to access the actual need and vulnerability of disaster. Third, consequently it will help to design social intervention and methods to deal with unaddressed disasters, issues and vulnerability at micro, mezzo and macro level. These aspects are already mentioned in the critical social work theories and especially in the anti-discriminatory social work perspective. The anti-discriminatory perspective is one of the suitable perspectives for disaster management and rebuilding society after disasters. The following section will briefly discussed about the anti-discriminatory perspective.

Anti-Discriminatory Perspective for Disaster Management

Social work intervention during disaster situation is the reflection of mission of social work profession. Social work interventions in disasters have dealt with different target groups such as individuals, families, organizations and communities for the areas such as psycho-social aspects, traumatic stress, relief and resources for victims and support and coordination of disaster relief initiatives. The review of the literature shows that social work profession is involved in disaster management and mitigation work but its emphasis is more on mental health and psychosocial interventions in post-disasters rather than community rebuilding and minimizing socio-cultural disparity in post-disaster recovery. The contemporary social work approach towards disaster situations/management is spontaneous, need-based, and service-based. It is not only limits social work towards service delivery but also deviating itself from larger mission of social work i.e. social change, social justice and Human rights. Thus, the above description shows lack of suitable perspective and approach of social work education towards disaster situation in India.

The International Federation of Social Workers' define the key purpose of social work as the promotion of social change and the liberation and empowerment of people. The social work theories are broadly divided into three categories: reflective-therapeutic, social order and social change. The social change theories must underpin our practice, if we are to achieve these key purposes of social work. The English-speaking countries that introduced radical social work 30 years ago, namely Great Britain, Canada, Australia, significantly influenced the international definition of social work and remain at the forefront of the development of the social change and empowerment theories in social work. Contrary, Indian social work education and practice highly involved in assisting state welfare and development programme and activities and rarely talk about social change and empowerment. Thus, the element of discrimination also persists in social

work education in India and need the orientation of anti-discrimination for inclusive intervention and practice.

The anti-discriminatory social work perspective is part of broader critical social work perspective. The perspective propagated by British authors, Thompson and Dominelli who affirm that the discrimination and oppression can be expressed through sexism, ageism, disablism, racism, as well as based on sexual orientation, religion, language, ethnicity, region and mental illness and impairment. Thompson uses a concentric model to identify three levels in which all types of discrimination and oppression take place—the social/structural; the cultural; and the personal/psychological. Thompson proposition has potential to analyse and understand the issues of socio-cultural diversity and discrimination and develop model to minimize the diversity and discrimination in the society. In the context of disaster management, the anti-discriminatory perspective could be applies as holistic perspective that is un-bias, inclusive, non-discriminative, which understand social reality of disaster within a particular context and then design intervention to deal with the emerging issues with the aim to re-build society on the basis of social justice and equality.

In nutshell anti-discriminatory perspective in the context of disaster management means the socially inclusive process that identifies the disasters in the socio-political context and doesn't treat disasters as isolated events of loss and pain. Further, it develops strategies and intervention not only to cover loss and pain by relief and rehabilitation but re-build community for larger integration and social change. In addition, it has potential to transform the hegemonic structures and policies that perpetuate inequities and injustice.

Anti-Discriminatory Disaster Management Practice

This anti-discriminatory perspective has direct relevance to the concept of disaster management. To what extent human service professions/social work education and practice advocate this perspective to make disaster management more socially inclusive process will decide the faith of the perspective. As mentioned the human service professions/social work education and most social workers are not adhere to anti-discriminatory disaster management practice although the perspective and practice advocated by few NGOs in India and abroad.

There are various ways to mainstream anti-discriminatory disaster management in the academic institutions as well as practicing disciplines. First, all academic institutions should adopt a policy to have disaster management concept in its course curriculum and develop an initiative to involve in pre and post disaster situations. Second, the course curriculum on disaster management designed in such way that the flexibility and critical understanding about disasters and disaster management reflected in the

syllabus. Third, the issues of vulnerability and marginalization of poor and oppressed during disasters should be given primacy for evolving approaches, strategies and interventions during disaster situation. Fourth, during disaster efforts heavily focused on rescue, relief, trauma and mental health of disaster victims, co-ordination of support system but need also to give attention on different excluded groups and their needs, policy advocacy and the socially inclusive intervention methods and skills to re-build relations of disaster victims.

Conclusion

The disaster management practice is complex in nature with multiple debates. It is largely accepted that disaster management practice should do relief work, coordinate the disaster relief support system, and access resources to vulnerable sections. These services and activities are essential but do not necessarily address socio-political context of disasters and do not address issues of social change. Moreover superficially understanding the naturalness of disaster in terms of loss and pain and providing healing and mental support does not seem commensurate with the facilitation of social and economic justice. There is need that disasters looked into socio-cultural-political context and disaster management should be made as socially inclusive process. Thus it is essential to make disaster management as comprehensive and socially inclusive process to do justice with the disaster victims. More meticulous observance of anti-discriminatory approach in disaster management and mitigation helps to rebuild equal and just society after a disaster.

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RESILIENCE OF INDIGENOUS PEOPLES TO DISASTERS: AN EXPLORATION OF PRACTICES OF KONYAK COMMUNITY, NAGALAND

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Abstract

With an increase in the occurrences of disasters there is growing interest in the way indigenous communities living in developing nations deal with disasters. The states' disaster risk reduction programmes are in their nascent forms and struggle to reach rural and tribal areas. However, people have lived with disasters for centuries. This notion of resilience inherent in traditional communities depends on their belief systems and perceptions. While these perceptions may appear superstitious and irrational to the scientific community, it is worthwhile to examine how some of the cultural practices contribute to reducing disaster risks and building resilience of traditional communities. This paper explores the link between culture and tradition and its intersection with disaster management practices of the *Konyak* community in Nagaland. It builds on the idea that traditional communities demonstrate resilience to disasters because of their cultural beliefs, practices, and also of their understanding of the environment.

Keywords: Indigenous Knowledge, Resilience, Traditional communities, Culture, Disaster Risk Reduction

Introduction

The everyday lives of traditional communities are closely intertwined with nature and its elements. Their perceptions of disasters are based on a much deeper understanding of their natural environment, of life, death and destruction – an understanding which is based on a complex web of relations which have evolved over generations of lived experiences and observations. Some of this understanding is codified and is often reflected in cultural practices, traditions and ceremonies including those perceived by outsiders as religious. These practices and beliefs strengthen the resilience of a

community that lives in close proximity to any hazard. Tribal, cultural and religious traditions have defined the relationship between land and people as intimate and foundational (Edward & Dudek, 2008). Land and ecology not only provides space, food and basic resources that meet people's needs but also a foundation for social and economic activities of the tribals. In the tribal worldview, one cannot make a clear-cut distinction between the sacred and secular, between religious and non-religious, between the spiritual and material areas of life. There is a deep and fundamental belief in cosmic oneness, a worldview which modern science is still trying to grapple with (Edward & Dudek, 2008). Thus, from the perspective of tribal communities it is important to question the mainstream definition of disasters and its relevance in building resilience of the people who are vulnerable to disasters.

Defining Disasters

Models and interpretations of disaster are plentiful. However, the phenomenon is highly multi-faceted and a general theory with universal explanatory power is unlikely to be ever formulated. Moreover, changes in society and the economy continually alter the tenets and controlling parameters of disasters. For this reason, it is important to periodically re-examine the question "What is disaster?" in light of current concerns of a given society (Quarantelli, 2005).

The United Nations International Strategy for Disaster Reduction (UNISDR, 2009) defines disasters as, "A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources" (Disaster, para. 1). In India, the National Disaster Management Act (2005) defines disasters as "a catastrophe, mishap, calamity or grave occurrence in any area, arising from natural or man-made causes, or by accident or negligence which results in substantial loss of life or human suffering or damage to, and destruction of, property, or damage to, or degradation of, environment, and is of such a nature or magnitude as to be beyond the coping capacity of the community of the affected area" (p. 2). The two definitions outline the views of mainstream institutions and organizations, both national and international, focusing on disasters and reducing disaster risk. While these definitions are applicable in the larger context of global and national governance, these are often at variance with indigenous and tribal communities' perceptions of disasters. Their perception of disaster risks is intertwined with an understanding of the environment and the functioning of its elements. This can be described as a form of knowledge distinct to the communities.

Understanding 'community resilience' in disasters

The UNISDR (2007) defines resilience as, "The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions" (Resilience, para.1). Resilience, thus, involves the ability to "resile from" or "spring back from" a shock. A resilient community is ideally the safest disaster prone community that has the ability to cope with and overcome the damages brought about by disasters, either by maintaining their pre disaster social fabric or by accepting marginal or larger change in order to survive (Gaillard, 2007). The resilience of a community with respect to potential hazardous events is determined by the degree to which the community has the necessary resources and is capable of organizing itself both prior to and during times of need. It requires the community to be ready to face abnormal events in terms of its scale, form or timing; and ability and willingness to adapt to a changing and threatening environment by upholding a common cause and a shared set of values (McAslan, 2010). Social resilience is associated with the adaptation of individuals and society to environmental change and with enhancing the coping ability of a community to strengthen it (Andharia, 2010). It puts emphasis on the strengths of the community rather than concentrating on their needs during disasters. Safe and resilient communities understand the disaster risk they face and can accordingly, monitor and protect themselves, as well as minimize the losses and damage when a disaster strikes. These communities can sustain their basic function and structures regardless of the impact of disasters. They can build back better and in the process vulnerabilities are reduced for future disasters (IFRC, 2008). Human society faces internal threats and their vulnerability and resilience has external roots (Levine, Pain, Bailey & Fan, 2012). Hence, to understand resilience, one needs to embrace the notion of awareness, detection, communication, reaction and recovery within a community to retain its traditional strength in coping with or adapting to disasters.

It should be noted that community resilience as a concept has its limitations. It is very relative and one has to understand what individuals, communities and systems are vulnerable or resilient to and also to what extent. It also requires descriptions of the basic standards of living or minimal acceptable conditions under which the people grow and flourish, when discussing resilience or the adaptive capacities of a community or a household. This idea of community or social resilience may focus on responsibilities of a community that is already experiencing poverty, deprivation and marginalization to absorb the impacts of decisions and actions of others, over which it has little or no control. In other words,

normalizing poverty, marginalization and struggle of risk and uncertainty is a fundamental problem in the dialogue around resilience (Andharia, 2010). This could promote the governments' negligence of its responsibilities, thereby creating or maintaining existing vulnerabilities and disasters. Finally, it should be understood that no community can be completely normal and safe from natural hazards and disasters.

Indigenous knowledge and its role in disaster management

Indigenous knowledge is defined as a body of knowledge possessed by a group of people living in close contact with nature over generations (UNEP, 2008). It refers to the knowledge retained by the original inhabitants of an area and reflects many generations of experience and problem solving by ethnic groups at local level (Langill, 1999 as cited in UNEP, 2007). Indigenous knowledge systems were developed in traditional societies as they recognized the fact that for them, to be living and surviving with what is experienced as natural disasters, would require them to monitor the environmental conditions, including the weather, be able to make meaningful predictions and take actions to mitigate disasters and hazards associated with it (UNEP, 2007). This tends to be comprehensive knowledge system, unlike what modern policy makers and administrators label as "disaster management" activities. It is perhaps this comprehensiveness that makes for resilience in traditional communities.

Since disasters are not unknown, many indigenous knowledge, traditions and practices include disaster management systems which has helped people adjust their lives and livelihoods to adapt to changing contexts for over centuries (Dekens, 2007). Indigenous knowledge systems have particularly been studied in flood disasters, due to the likely increase of flood events resulting from anthropogenic climate change through heavy precipitation, increased catchment wetness and sea level rise (Wilby & Keenan, 2012). More frequently, indigenous knowledge systems are among the elements implicated in "disaster resilience thinking", as reflected in sub-texts of the Hyogo Framework for Action of 2005 as part of its call for "building the resilience of nations and communities to disasters" (UNISDR, 2005). The case of flood management in Bangladesh can illustrate this shift in thinking from a technical and developmental approach to a more local and indigenous method of mitigating floods. The ineffectiveness of flood management in Bangladesh has been attributed to the focus on large-scale technological solutions which tend to emphasize short-term, sectorial approaches. A growing literature has been promoting the importance of building upon local knowledge and local adaptive strategies for improved flood management in Bangladesh (Paul, 1984; Rasid & Paul, 1987; Haque 1988; Zaman, 1991 as cited in Denkens, 2007). Indigenous people in

Bangladesh have been able to understand the adversities of nature and have accordingly, developed ways of forecasting and preparing themselves for disasters. Their knowledge of disasters goes far beyond just knowing or predicting disasters. Also, knowledge on how to deal with them is perceptible in their traditional way of living (Ifranullah & Molateb, 2011).

Indigenous knowledge could potentially constitute a precious national resource in dealing with disasters as a blend of scientific and traditional approaches and methods that opens avenues towards better disaster prevention, preparedness, response and mitigation (Rosemary, 2008). It can fill up the gap that where the so-called scientific approaches have completely failed. The faith in sea walls is one example. Literature indicates that indigenous knowledge helped the residents of Surin Islands, Thailand, survive the great Indian Ocean Tsunami of 2004. The *Moken* culture which talks about the *Laboon* or 'god of waves', passed down to the younger generations through folk stories, helped save not only the community but also the tourists that were in the area (Stevens, 2009). Examples of indigenous knowledge of climate change and disaster prediction has helped tribal communities cope with drought and flood situations in Rajasthan. This knowledge includes the understanding of cloud patterns, wind direction, behaviour of reptiles, birds, and insects to name but a few examples. Based on the understanding of the hazards there, the communities have built houses that are flood and strong wind resistant (Pareek & Trivedi, 2011). It is important to recognize that this indigenous knowledge of disasters and the ways tribals cope with them are a powerful asset for communities faced with multiple hazards.

Valuing Indigenous knowledge as separate knowledge system

This paper recognizes that a focus on indigenous knowledge can be problematic. Questions such as what constitutes indigenous knowledge, what is its validity and what methods must be used to relate indigenous knowledge to a process of scientific inquiry are indeed complex ones. There are debates in the western and modernist scientific community about the promotion of indigenous knowledge which is often dubbed as pseudoscience or even anti-science as many of its beliefs defy scientific rationality (Semali & Kincheloe, 1999; Nakashima & Roue, 2002). It is regarded as backward, static and a hindrance to modernization. However, unlike pseudoscience, indigenous knowledge neither attempts to masquerade as science nor sets itself in opposition to science (Battiste & Henderson, 2000). Most of the critique to indigenous knowledge is based on its comparison with Eurocentric and scientific foundations of science (Horton, 1993; Semali & Kincheloe, 1999; Horsthemke, 2004). However, in this debate on the validity of indigenous knowledge, one should not disregard the importance of such traditional

knowledge systems to communities who practice them. These knowledge systems embedded in the culture of traditional communities could potentially contribute to DRR and sustainable development. The more knowledgeable a community is, the less vulnerable and more resilient it is to disasters. It is important to explore, document and share this knowledge beyond a specific community in order to examine its applicability to other contexts which indeed may not be quite linear.

This paper is based on a qualitative study on the *Konyak* community in Mon district, Nagaland, which was conducted over a period of one year using ethnographic methods. The researcher focused on the *Konyak* tribe's beliefs around disaster and hazard events and their traditional ways of prevention, response and coping mechanisms. Men and women of different age groups who could share practices and knowledge related to disaster prevention and response were interviewed in two villages namely *Chui* and *Goching*. The respondents were respected members in the community and also well-versed in the cultural practices of the tribe. Several group discussions were also held.

In addition, officials from the Nagaland State Disaster Management - namely the UNDP State Project Officer, Kohima District Project Officer, State Coordinator for disaster management, Capacity Building Officer and other officials from the National School Safety Programme were interviewed. The Extra Assistant Commissioner in charge of overlooking the Mon District Disaster Management was also interviewed to understand district officials' approach and preparedness for disasters.

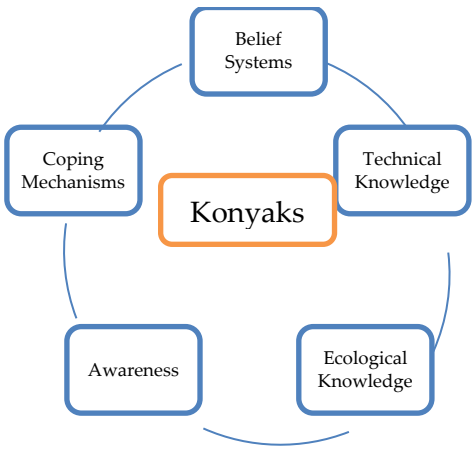
Nagaland as a state is very vulnerable to disasters (NSDMA, 2013) such as forest fires, lightning storms, landslides and flash floods. These hazards have affected the state frequently causing damage to property and sometimes loss of lives. Over the years, there has been mounting evidence that certain social and demographic groups are more vulnerable to disasters than others, due to marginalization based on various factors such as class, gender, race and ethnicity, age, income and geographical area. Vulnerability experienced locally, is very context specific and exists in inter-related ways at individual, household and community level (McAslan, 2010). Dependency on help and special support which covers an important dimension of vulnerability is influenced by existing socio-economic and cultural and religious disparities, the lack of resources and the inability existing level of technology to prevent exposure (Andharia, 2009). The concept of resilience talks of a shift to self-reliance at the time of disasters as counter to vulnerability (Manyena, 2006). This idea of resilience is important in a state like Nagaland as most of the communities in the interior part of the state have lived with risk of several disasters and may also be viewed as being marginalized by development programmes (Nagaland State Human

Development Report, 2008). Since they mostly depend on their own available resources and capacities during adverse times, it would be useful to explore what constitutes their resilience in order to enhance it and reduce vulnerability.

Prior to the data collection, a number of frameworks exploring indigenous knowledge and disasters were examined. Accordingly, information on traditional beliefs and practices were identified, segregated and classified. Deken's (2007) framework provided a broad idea on what to look for during data collection and thereby draw the linkages between traditional knowledge and its relevance to disasters. Pareek and Trived's (2011) method of classification was used to explore the traditional coping mechanisms of indigenous communities.

Practices of the *Konyak* Community

Most of the traditional knowledge is influenced by a community's belief, lifestyle and behaviour. Practices account for their understanding of the adverse conditions they live in, in order to survive especially in the toughest of conditions. Examining and understanding the knowledge systems of traditional or indigenous communities requires an appreciation of people's ways of knowing as much as their practices and beliefs, perceptions and values. The qualitative data obtained through interviews and discussions on practices was grouped under 5 categories.



Beliefs, Values and Worldviews

Belief systems shape people's understanding, perceptions and responses to natural hazards. These perceptions bound to a specific time and place are arbitrated by cultural interpretations in combination with a number of factors relevant to each community or household. They influence people's preparedness to disasters. The *Konyaks* are very firm in their cultural beliefs. Though many of these beliefs seem superstitious, they form a large part of

their perceptions of risks and disasters. These beliefs and perceptions provide insight into the rationale, the perspective and meaning behind their actions. Some of these cultural beliefs have been captured in sayings or proverbs within the community which reflect traditional wisdom. For example there is a saying that roughly translates as:

> *"The natural drainage should be left alone as nature has intended it to be like this. Changing the natural system would change the soil and in the process damage the natural system as a whole".*

In contemporary scientific discourse environmental scientists would endorse this practice. In fact the haphazard growth of small towns and large cities reflect that planners and construction engineers are quite unmindful of these fundamental principles.

Similarly on natural weather phenomenon the *Konyaks* believe that

> *"Lightnings are acts of heaven. There is no protection against it. No place is safe from this phenomenon".*

Religious beliefs have played an integral part in shaping the cultural beliefs of the *Konyak* community. With the coming of Christianity, many of the ancient traditions were considered pagan and mystical and ceased to be practiced within the community. These practices defy the understanding of what people consider 'normal' and are regarded as supernatural. Though traditional rituals were practiced by the community over generations, today only a handful in the community, especially the village elders, remember these practices. One such practice is called *O-gok-pu* - when literally translated it means 'Chicken burn practice'. It involves making predictions of natural disasters, harvest results, rains etc. with the use of an egg.

Technical knowledge: Layouts and house designs

While there are innumerable technical elements that need to be studied, within the limited time the researcher focused on the physical layout of the village and the housing design.

Village Planning: A visit to the village reveals that there is a systematic village planning process wherein the grain store houses are located far away from the residences. They are located in a particular area and all the villagers had grain houses of their own. One of the reasons for this practice is that in case of an eventuality within houses like fire accidents or attacks, the grains remain safe.

Similarly, drainage is given importance. The village elders are consulted based on their knowledge on comprehensive traditional understanding of the hills, the topography, the geographical history, the ecology and so on. The Konyaks make sure that the natural passage through the village is preserved and undisturbed. Bamboo plants growing or planted on the roadsides or river banks are preserved as it helps bind the soil tighter

and prevents soil erosion and landslides. This is in sharp contrast with the way roads were built in Uttarakhand by GREF and Border Roads Organisation (BRO) which is now known to be one of the factors underlying the devastating disaster in 2013. Most of the *Konyak* villages are surrounded by large trees. They are centuries old and also serve as posts during wars or conflicts. The village is prone to high speed winds and these trees act as wind barriers and slow down the velocity of the winds.

Housing design: A traditional house is designed according to the topography of the village and also takes into account the natural events that are frequent in the area. The house is designed in such a way that it causes least resistance to high velocity winds. The roof comes down very low, almost touching the ground. The design is a good mechanism of directing the winds towards the top and then away from the house. There are 1-4 poles that are attached to the central frame of the house that provide extra support during the windy season. During the construction of a house, the logs' wider ends are placed underground, while the cylindrically smaller ends point to the top. This design also helps against heavy rains during the monsoon season as there is lesser area given for the entry of water. During winter season, the temperatures drop to around 4^0C. To protect themselves from the cold wind and the freezing temperature outside, the bamboo walls are double matted. This is helpful even during the rainy seasons as they prevent water from entering the house. The roofs have a small opening for natural light to come inside the house. Storehouses for paddy, roots and vegetables are located at an elevated place. The whole structure is supported by stones or silts. This is to prevent damage of the grains from rats and other pests and also to keep the floor dry. The adaptation of these designs by the government and creation of appropriate structures may be viewed as a logical mainstream DRR activity. However, thus far, governmental bodies follow Public Works Department (PWD) norms which have no understanding or appreciation of traditional wisdom.

Ecological Knowledge

Land use: The traditional system of land use in the villages has helped the villagers use their natural resources sustainably. Lands are allotted for various activities like agriculture, housing, building roads etc. The lands in the two villages belong to the Great Chief *Angh* who ruled over 37 villages in the area. Use of forest products are regulated by the village chief or the village elders. They are responsible for the wellbeing of their community and their people. There is a seasonal calendar for various forest-based activities like hunting, timber and firewood cutting and collection of various forests products like leaves for making house roofs. This is

systematically adhered to by everyone and again practices are embedded in cultural beliefs of 'the right thing to do'.

The deep understanding of their environment has helped the people living in the villages cope with various hazards. For instance, the village is prone to dense fog but this does not affect the activities of the people as they are very acquainted with the surrounding they live in. One of the villagers told the researcher that even at night when they have no light and there is dense fog, he would still make it to his home safe as he has been walking the same path his whole life. The villagers have taken the same route to their fields or for food gathering and hunting for centuries. Not many new roads have been constructed and landowners themselves do not allow it unless the consent of the elders is obtained. They make sure they conserve their environment as they believe that it will affect their life. "Roads may be widened but we will not build new roads," said a villager when the researcher asked if the need for new road arises. They value their ecological base and do not believe in changing their environment drastically.

Spreading awareness in the community about impending disasters

Traditional communities have their indigenous methods of spreading awareness among the community members about impending disasters. These practices help the community to prepare for natural or human made disasters and emergencies and thereby reduce their vulnerability to specific hazards. In the *Konyak* community, prior to the season when fires occur, the villagers gathered in front of chief *Angh*'s palace and water was given to them in bamboo cups by the chief himself. The idea behind this ceremony was to spread awareness about possible fires during the season. While taking the bamboo from the chief, the villagers had to walk over tender shoots of banana plants that were chopped and spread on the ground. This practice was to signify that fire can also be trampled upon, crushed and cooled down like the crushed banana shoot.

Another similar practice performed by the menfolk of the village was to crush the banana shoot and collect the water oozing out in a bamboo. This cup was placed along the hardest and strongest wooden frame called *Shongzu* i.e. the mainframe post. This practice was symbolic and asked the heavens or the forces that be, not to let fire harm the household.

Coping mechanisms of the community to disaster risks

Traditional communities have resilient mechanisms to counter the risks posed by nature by taking advantage of knowledge about their immediate environment. These mechanisms are based on the ability to perceive the signals given by nature prior to any impending disaster. One such coping mechanism is food security. When the community observes

shortage in rainfall or drying up of mountain springs signalling droughts in the next season, food grains are stored in earthen pots to suffice their need in case there is a shortage of food. Maize, garlic, yam (*Colocasia*) and other seeds like pumpkin seeds are dried and stored up in the kitchen as fall back mechanism in case of a crop failure. One of the main reasons for storage in kitchens is to protect them from getting damaged by moisture. These seeds are also kept in dried conditions so that they can be used again when there is proper rainfall the subsequent year. Red meat is smoked over the fireplace as method to increase its shelf life.

Conclusion

The above findings show how traditional beliefs and practices have helped the *Konyak* community of *Chui* and *Goching* village cope and adapt to disasters. Similar practices are seen in indigenous communities all over the world (UNEP, 2008; Stevens, 2009; Ifranullah & Molateb, 2011; Pareek & Trivedi, 2011). They serve as potential resources that help strengthen the resilience of the traditional communities to disasters. As the global community moves towards building societies resilient to disasters, there is a need to understand such knowledge systems which govern risk management practices in indigenous communities. The state machinery should recognise the importance of such knowledge systems and integrate them into disaster risk management plans and programmes. It also needs to ensure the implementation of such policies on the ground. This process however, is a lengthy one and requires a great amount of research and engagement with the community. The first step would be to develop a framework for data collection and analysis of indigenous knowledge related to disaster preparedness (Dekens, 2007). This would help identify the linkages and relationships between indigenous knowledge and practices and its influence on DRR. Secondly, it would be to identify how indigenous knowledge of a particular community can be combined with other knowledge bases such as scientific knowledge systems to reduce their vulnerability to environmental hazards (Mercer, Kelman, Taranis & Pearson, 2010). Thirdly, processes for effective implementation of the framework need to be identified. This would mean empowering and involving the existing customary and religious institutions. Members of this institutions can be trained both in traditional and formal skills so that the implementation of the integrated framework can be more effective on ground. However, before doing this, indigenous communities need to understand the importance of traditional practices in the field of disaster risk reduction. In conclusion, policymakers need to recognise and understand each community's perception of risk during the process of policy formulation. They should consider the fact that no two communities will have the same risk perception of a particular hazard. What

one community in Rajasthan perceives as risk may not be of much threat to another community living in Nagaland.

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SELECTION OF TEMPORARY REHABILITATION LOCATION AFTER DISASTER: A REVIEW

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Abstract

Temporary rehabilitation is extremely important to recover after disaster allowing people to return back to their normal activities like work, school, cooking, housekeeping etc. This study recapitulates the different models used for the selection of temporary rehabilitation location after different disaster. It explains various guiding principles, selection criteria, minimum standard for victims to be provided, various tools and techniques used for locating the effective site. Basic services like health facility, transportation, accessibility and livelihood are primary concern while selecting any site for temporary resettlement.

Keywords: Site selection, temporary rehabilitation and temporary resettlement

Introduction

The International Federation of Red Cross defines disaster as "a sudden, calamitous event that seriously disrupts the functioning of a community or society and causes human, material, and economic or environmental losses that exceed the community's or society's ability to cope using its own resources" (IFRC 2001).

Disasters can occur as a consequence of the impact of a natural or a human-caused hazard. Natural hazards comprise phenomena such as earthquakes, volcanic activity, landslides, tsunamis, tropical cyclones and other severe storms, tornadoes and high winds, river and coastal flooding, wildfires and associated haze, drought, sand and dust storms, and infestations. The Emergency Events Database (EM-DAT), a global disaster database maintained by the Centre for Research on the Epidemiology of

Disasters (CRED) in Brussels, records upwards of 600 disasters globally each year. (Dilley 2005)

Contrasting the past two decades, the number of people killed in natural and manmade disasters was higher in the 1980s (86 328 annually) than in the 1990s (75 252 annually). However, about 211 million people per year were affected by disasters in the 1990s as compared to 1980s which was about only 147 million people per year. (Dilley 2005)

In 2011, about 196 natural disasters occurred throughout the world causing death of about 28,000 and affecting about 85 million people. The damage c aused by these events are estimated about US$290 billion. (ADRC 2012)

According to the UNHCR 2012, about 72 million peoples are displaced. This created a need of proper planning for the temporary resettlement for the victims .This require proper planning for the selection of sites as well as considering the socio economic perspective of the victims. Sometimes reconstruction takes more time than the expected. So it became necessary to plan properly for the temporary resettlement while maintaining the minimum standard for living for the victims.

In June2013, the unprecedented rainfall in Uttarakhand causes flash flood and landslide, affecting about 900,000 people, 4,200 villages and loss of 580 human lives (Govt of Uttarakhand, 2013).

It is widely accepted that in order to bring back the livelihoods of the affected communities, the reconstruction programme should start as soon as possible (UNDRO 1982). Providing a house is a fundamental step to establish some sense of normalcy in the life of the affected community, as well as to prevent the rising of deaths and the spread of diseases, increasing conditions to personal hygiene and giving protection against external factors like weather. (Felix et al. 2013)

Literature Survey

Different selection criteria for temporary rehabilitation location for different disaster are proposed based on the nature of disaster and the demographic condition of the area. Large number of studies has been carried out for proper planning of disaster preparedness and mitigation phases. Various studies has been done in past on different problem like location of emergency medical centre, location of shelter, selection of site for temporary shelter, location of emergency warehouse for relief item, etc.

Temporary location for resettlement after an Earthquake

Kilci et al. (2012) examines the dynamics of location problem for shelter site application in Turkey and develop a mixed integer linear programming mathematical location model which integrates with the

requirements of the Turkish Red Cresent and improve their existing system. The mathematical model maximizes the minimum weight of open shelter areas while deciding on the location of shelter areas, the assigned population points to each open shelter area and controls the utilization of open shelter areas. The result of mathematical model is validated by generating a base case scenario using a real data. (Kilci et al. 2012)

Givechi et al. (2013) illustrates the site selection for temporary housing of the sixth region of the Shiraz Municipality of China because of the high probable seismic activity in the near future using the Analytic Hierarchy Process model. The existing study shows the tendency about selecting the location for the temporary housing as: the damaged masses prefer to stay close to their houses which mean the site should beside their damaged homes and damaged masses are ready to live in camps close enough to their houses. These criteria are used for the analytical descriptive method for the selection of the site for temporary housing.

The available information data for the study region, selection criteria and the indicators are weighted according to the views of experts of crisis management, couple comparison and Expertchoice software. The output of this step is weights value table of the studied criteria, in terms of importance in studied region. Surface zonation map is generated for the region six of Shiraz municipality using the ArcGIS and AHP (Analytic Hierarchy Process) model. A layer is generated for each specified weighted criteria and the result is combined to produce the complete surface map of the region six. Givechi et al. (2013)

Various guidelines are proposed for the design of the temporary shelter from architectural and urban design point of view. The guidelines considers two major issues firstly the community participation which create ownership feeling in the victims and secondly is the probability of converting the temporary shelters in the permanent shelters which require more creative and innovative structural and architectural design. (Forouzandeh et al. 2008)

It is noticed that although a number of studies have been carried out with regard to temporary shelters, but very few cases have discussed the issue form architectural and urban design point of view. The type of spatial setting (linear, central, and hybrid) of shelters, the situation of neighboring textures (regarding the orientation and form considerations), and access ways are other issues which are discussed in this paper. Other problems which are taken into consideration are: type of materials, internal setting of spaces by consideration of behavioral patterns of the stricken community, the location of open areas, and the users expectations. (Forouzandeh et al. 2008)

Bolin and Stanford (1991) examine the problem associated with the temporary housing and emergency shelter of the victims after disaster. It

includes the differential access to shelter and housing aid, demographic factors, relation between the post disaster and housing and the role of social support networks in the housing.

Cultural diversity effects emergency sheltering and the long term housing. After the 1989 Loma Prieta earthquake in Watsonville, California it is found that the shift in demographics put minority groups and the poor at the greater risk and increases the sheltering problem (Philips 1993). The report of the emergency sheltering and housing of earthquake victims for the Santa Cruz County raised the issues like provision of temporary shelter and housing for the large population of the state. (Bolin et al. 1993)

The problem of locating disaster response and relief facilities in the city of Istanbul is solved by a two tier distribution system that utilizes the existing public facilities locally in addition to the new facilities that will act as a regional supply points. A mathematical model is used to decide the location of the new facilities with the objective of minimizing the average weighted distance between the casualty location and the closest facility and opening a small number of facilities subjected to distance limit and backup requirements under the vulnerability considerations. (Gormez et al. 2011)

Various scholars have suggested various guidelines for the selection of suitable sites for the temporary resettlement (Hossenini et al 2006, Forouzandeh et al. 2008). These can be concluded as:

- Number of refugees
- Functionality of the Sites
- Infrastructure available at the site
- Configuration of the Sites
- Accessibility
- Ownership

Temporary resettlement of the facilities in the disaster prone area

FEMA in 2001 required every Florida County to identify the potential locations of disaster recovery centers. The project team used a mathematical model called the covering location model in a two stage approach to find, recommend and have accepted DRC locations. Stage 1 approach gave three idealized DRC location requiring each residence in the county to be within 20 miles of the closed DRC. In stage 2, they relaxed the 20 miles requirement and identified locations and also satisfy the evaluation criteria not included in the stage 1. The result provides significant improvement to the original FEMA location criteria while maintaining acceptable travel distance to the nearest DRC. (Dekle et al. 2005)

Typhoon emergency shelters are places for the people to live temporarily when they cannot live in their residence during disaster. An integrated location-distribution model is proposed for coordinating logistics

support and evacuation operations in disaster response activities. The example explained uses the proposed model to optimize the location of typhoon emergency shelter location near the coastal areas in the China. The statistics data shows that there are almost 27 to 28 tropical cyclones happened in the North Pacific Ocean which closes to China and South China Sea every year, which is about 38 percents of the total of typhoons in the world. Covering models are the most widespread location models for formulating the emergency facility location problems. (PAN 2010)

Two models are proposed for hospital location and capacity allocation on an area prone to natural disaster. The first model aims to locate hospitals and allocate capacities so that the mean travel distance for the patients to the hospital is minimized while the other models aims to reallocate capacity among hospitals so as to maximize the system's effectiveness to upcoming disaster. Heuristic solution methods of the two models are investigated, so as to make the approach computationally viable and to gain insight into the location and capacity allocation strategies The result of both these models are illustrated with the case studies, one based on earthquake scenario in Northridge, California, and another based on a hurricane scenario in New Orleans. (Paul and Batta 2006)

An automated decision support system for optimizing the temporary housing arrangements are proposed which serves as a tool for the decision makers to estimate the expected displacement of the families after natural disaster. Different software systems Mid-America Earthquake Center system MAEviz and Hazards United States-Multihazard (HAZUS-MH) are used for this purpose but they lack the capability of providing temporary housing solutions. After the occurrence of the disaster different emergencies agencies require to provide the adequate temporary housing solution to rehabilitate the large number of displaced ones. This developed system is integrated with the MAEviz to optimize the different objectives like minimizing the socioeconomic impacts, maximizing the housing safety, minimizing negative environmental impacts and minimizing the public expenditure. To implement this system it is divided in three different models namely data collection, automated optimization and output analysis and visualization. (Anwar et al. 2009)

Methodology

Different methodology is adopted by different author to select the effective temporary rehabilitation sites. Kilci et al. 2012 uses the mixed integer linear programming model to locate the temporary housing after an earthquake. The model uses the district data which is obtained from the Google map while population data is obtained from the Turkish Statistical

Institute. The candidate location and the shelter area along with the defined selection criteria are pinned on the map using the ArcGIS software.

Gormez et al 2011 uses two tier distribution model based on the linear integer programming. In the first stage integer programming is used to locate the temporary facilities to each district in its neighborhood. In the second stage these temporary facilities are treated as the demand points, for which permanent facilities are located to service considering the minimum total weighted distance. All the models discussed above uses the same concept to minimize the total weighted distance between the location and the demand points. The main aim of the entire model is to decrease the running time while increasing the efficiency of the model. Models used for the facility location also focus on the capacity allocation along with the shortest distance.

Result and Discussion

All these problems are formulated using various models having some limitations and advantages with them. The table below shows different models and the problem for which it is used for along with the limitations and advantages.

Table1: Comparison of Different Models

Models	Used for	Advantages	Limitations	Proposed by
Mixed integer linear programming Model	Locating sites for temporary housing after an Earthquake	-Consider shelter area utilizations -Computation of scenario is too fast	-For some particular case it takes long time (11 hours) to compute the scenario	Kilci F, Yetis Kara B, Bozkaya B
Covering location facility model using pick the farthest algorithm	Locating potential disaster recovery center after disaster	-Serves both dispersed and aggregate demand points -Easy to understand and explain	-It does not cover the entire problem -Aggregation criteria results are not accurate as ideal conditions	Dekle J, Lavieri M.S, Martin E, Farinas H. E and Francis R.L
Maximal Covering Model based on Ant Colony Optimization	Facility location in Large Scale emergencies	-Provides each demand points with multiple quantity of facility location	-Efficiency is same as that of traditional models -used only with maximal Covering model rather than P-centre and P-median problem	Xiang-lin LU and Yun-xian HOU

Two tier distribution system using integer programming model	Locates disaster response facilities in Istanbul	-Efficiency of result is very near to ideal condition	-For larger problem computation time is too much	Gormez N, Koksalan M and Sakman F S
Heuristics Model	Locate hospitals and allocate capacities in area prone to disaster	-Optimal solution is obtained for smaller and short time problem	-Computation time increases for moderate and large size problem	Paul AJ and Bhatta R
Maximal covering location model	Determines the number and location of distribution centre in relief network	-Enable relief practitioner for efficient decision for pre-stocking and locating facility	- Computation time of model analysis increases for larger problem	Balcik B and Beamon BM
Integrated location distribution model	Coordinates logistics support and evacuation during disaster response activities	-Dual objective model	-Theoretical model	Anping PAN

Conclusion

Different models discussed above have both limitations and advantages. All the models works based on their assumption and the constrained applied to find the appropriate site for the rehabilitation after the disaster. Different assumption of the model is based on the nature of the disaster and the requirements of the victims. All the models are either based on the linear integer programming or the covering location problem. For the facility location in the disaster prone areas heuristics model and maximal covering location model are preferred over the integer programming.

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SANITATION (SWACHH BHARAT MISSION), GOVERNANCE AND SOCIO-ECONOMIC DEVELOPMENT IN INDIA

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Abstract

The degree of deprivation and socio-economic exclusion in the society can be measured by using six strategic components of human development, namely; health, basic education, nutrition, water supply, sanitation and housing. Sanitation in general and toilet facility (for households) in particular is essential for sustainable development in terms of safety, security, self-esteem and social status of the civilized society. Improved sanitation can maintain our health, the environment we live in and our quality of life and is also considered as a sign of being civilized (individual as well as country). Sanitation situation in India is quite unfortunate and distressing and that's why urgent policy interventions are essential. "Swachh Bharat Mission" has been introduced to address the serious issues of toilets shortage in rural as well as in urban areas. It focuses on both qualitative (usage) and quantitative (construction) improvement in sanitation in India. The biggest challenge that lies ahead is not the construction of toilets but the issue of hygiene in terms of maintenance, water supply, cleanliness. The mission tries to overcome these challenges by creating awareness among people. Besides, to ensure efficiency and effectiveness in the mission, there is need of implementing a strong monitoring mechanism that will remain vigilant in achieving the mission objectives and should evaluate output (construction) and outcomes (use) of the mission from time to time.

Keywords: Sanitation, open defecation, policy, toilets, intervention and mechanism

Introduction

The development of the nation is very much dependent upon amplification of people's choices and their capabilities that add value to decent standard of living and wellbeing of the masses. That is why, **Dr. Mahbub ul Haq** rightly said that "the basic purpose of development is to

enlarge people's choices. In principle, these choices can be infinite and can change over time. People often value achievements that do not show up at all, or not immediately, in income or growth figures: greater access to knowledge, better nutrition and health services, more secure livelihoods, security against crime and physical violence, satisfying leisure hours, political and cultural freedoms and sense of participation in community activities". The objective of development is to create an enabling environment where people enjoy long, healthy and creative lives.

The *"basic need"* approach has acknowledged six strategic components of human development globally. These are health, basic education, nutrition, water supply, sanitation and housing. The degree of deprivation and socio-economic exclusion in the society can be measured by using all these components. Sanitation in general and toilet facility (for households) in particular is essential for sustainable development in terms of safety, security, self-esteem and social status of the civilized society. Improved sanitation can maintain our health, the environment we live in and our quality of life and is also considered as a sign of being civilized (individual as well as country).

National Sanitation Policy has been introduced to address the serious issues of toilets shortage in rural as well as in urban areas. It focuses on both qualitative (usage) and quantitative (construction) improvement in sanitation in India.

Sanitation in India - An Overview

According to Census of India-2011, in sanitation front, at all India level, 53% of total households do not have toilet facilities within their premises. Further, it is found that 69.3% rural households and 18.6% urban households do not have toilet facilities within their premises. This clearly shows the unhygienic peripheral environment caused due to open defecation by people. Although open defecation (OD) has come down from 78.1% in 2001 to 69.3% in 2011 in rural areas and, 26.3% in 2001 to 18.6% in 2011 in urban areas, still a large number of people defecate openly which is a subject of great concern and a sign of national humiliation.

Table 1- Households having Toilet Facility in India: 2001 & 2011(%)

	Have 1 toilet facility within premises (%)		**Do not have toilet facility within premises (%)**	
	2001	**2011**	**2001**	**2011**
Total	36.4	46.9	63.6	53.0
Rural	21.9	30.7	78.1	69.3
Urban	73.7	81.4	26.3	18.6
Rural-Urban Diff.	51.8	50.7	-51.8	-50.7

(Source: Census 2011, GoI)

If we comprehend the census-2011 data in detail, it is found that 53% of people i.e. around 66 crore out of total population (125 crore), defecate in open every day in India. This is about 60% of the total open defecation (OD) in the world. In an average, 33 crore women and children openly defecate and are constantly being watched and molested. As a result, crime rate has increased against women over the years. This indicates degradation of social status, social values and is a kind of humiliation of on our part. Toilet facility within the premise has been increased from 36.4% (2001) to 46.9 % (2011) at all India level which is about 10% per decade i.e. on an average 1% growth in every year. If we assume the same growth rate in the future, India will take 53 more years to achieve the status of OD free country. The growth rate of toilet facility in premises in rural India is quite serious, about less than 1% per annum; that means rural India has to wait for next 70 years to become OD free. The objectives of providing 100% toilet facilities to the people by 2025 as promised by India in the Millennium Development Goals (MDGs) will get a big blow if we attain the present growth rate (toilet construction).This clearly reflects the poor living and pitiable sanitation situation in India.

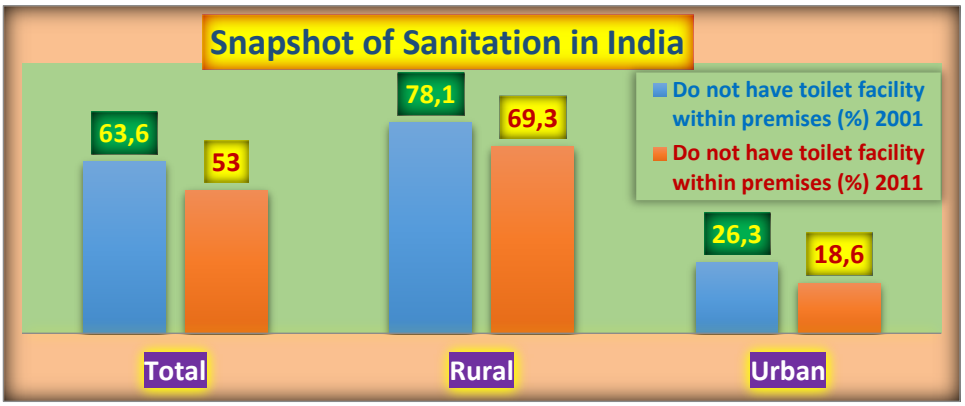

Figure 1 *(Source: Census 2011, GoI)*

Sanitation situation in India is quite unfortunate and distressing and that's why urgent policy interventions are essential. There is a serious call for public provisioning for toilet facilities in the rural areas in particular. This indicates a high degree of suffering among rural people and specially the women and children. In this regard, *"Swachh Bharat Mission"* which has replaced the earlier '*Nirmal Bharat Abhiyan'*, is no doubt a welcome step. The other areas of sanitation that needs attention are related to eradication of manual scavenging, solid and liquid waste management and to convert of waste to wealth.

Swachh Bharat Mission - Milieu & Objectives

Swachh Bharat Mission was launched on 2nd October, 2014 on the occasion of Gandhi Jayanti to achieve "*Clean India*" by 2019. This mission is designed to be accomplished to mark the 150th birth anniversary of Mahatma Gandhi, the Father of Nation. Prime Minister Mr. Narendra Modi has taken the initiative with active involvement and said that "Clean India" was the vision of Mahatma Gandhi and the government is trying and facilitating to achieve the same. He led the mission by sweeping the pavement of *Valmiki Sadan* and *Bapu Niwas*. He has also requested the people of our nation to be the part of the mission and to keep their surrounding clean. He is looking forward for voluntary association of citizens and people's participation in the mission to make it a grand success. A large number of people have taken *'sanitation pledge'* including our prime minister. The Ministry of Human Resource Development (HRD) had taken the initiative to administer the sanitation pledge to its employees too.

Recently the Government of India (Ministry of Drinking Water and Sanitation) gave a circular on 30th September, 2014 enlisting the features, broad guidelines and measures for improvement of sanitation and cleanliness in India. Looking at the diversity and vastness of our federal system, the Swachh Bharat Mission has been divided into 2 sub-missions:

1. *Swachh Bharat Mission - Gramin*
2. *Swachh Bharat Mission - Urban*

Swachh Bharat Mission (Gramin) will get the budgetary support from Ministry of Drinking Water and Sanitation while Swachh Bharat Mission (Urban) will get the grants from Ministry of Urban Development. The scheme for construction of toilet will be funded in ratio of 75:25 by the centre and state respectively. But special category states like Jammu & Kashmir, North-Eastern states as Manipur, Assam etc. will get the funds in 90:10 ratios from centre and state.

Also the unit cost for individual household toilet has been increased from Rs. 10,000 to Rs. 12,000 in the restructured 'Swachh Bharat Mission' in order to provide water to toilets for hand washing and cleaning. Till date, housing provisions from Indira Awas Yojana (IAY) have been provided but without toilet. In future, such provision needs to be amended where provision of independent toilets shall be a part of the housing schemes Earlier MGNREGA also attached in improvement of sanitation facilities in Gramin area. Now in lieu of all, matters related to toilet construction and related issues needs to be taken care of by Swachh Bharat Mission only.

The government has decided to retain other components of Nirmal Bharat Abhiyan like Solid-Liquid Waste Management (SLWM) & Community Sanitary Complexes (CSCs). In terms of fund allocation, Solid-Liquid Waste Management will be funded at 75:25 shared by centre and state

respectively. The issues and nature of CSCs and its functioning are different from SLWM. Just construction of Community Sanitary Complexes is not enough, its responsibility of ownership, maintenance and cleanliness is very much important for its success. The success of CSCs remains in the hand of management of Gram Panchayat and its efficiency. The cost of complex will be shared in ratio of 60:30:10 by Centre, State and Community respectively.

Also in order to ensure greater efficiency and better management, the responsibility of construction of school toilets has been transferred to the Department of School Education and Literacy. Similarly construction of toilets in Anganwadi will be managed by Ministry of Women and Child Development.

The biggest challenge that lies ahead is not the construction of toilets but the issue of hygiene in lieu of maintenance, water supply, cleanliness. The mission tries to overcome these challenges by creating awareness among people. Besides, role of technology is very important in terms of construction, cost reduction and sustainability. To ensure efficiency and effectiveness in the mission, there is need of implementing a strong monitoring mechanism that will remain vigilant in achieving the mission objectives and should evaluate output (construction) and outcomes (use) of the mission from time to time.

Policy Initiatives and Interventions

Despite the landmark improvement in sanitation in India, the nation lags behind many other nations whose GDP is far below us. Around 53% of population is openly defecating, out of which the women and children are the hardest sufferer. As health and environment is a state subject and sanitation directly affects the health and environment and hence sanitation also becomes a state subject. So the success of this scheme depends directly upon the role of state in terms of its implementation and vigilant management. Thus the scheme proposes that each state can adopt their self-determining technology but that needs to match or be above the set standards provided by centre. Few initiatives and suggestions of the mission detailed herewith:

- Although state will make their own sanitation strategy still they have to adhere to the norms and follow the mission objectives. Besides, central government will award as well as incentivize states on the basis of their performance. To trigger this process, the central government will support the states in terms of technology and fund allocation.
- During the period of 2014-19, the government has proposed to spend Rs. 2 lakh crore for the mission where Swachh Bharat Mission (Gramin) will get Rs.1.34 lakh crore and Swachh Bharat Mission (Urban) shall get Rs. 62,009 crores.

- Also change in behaviour of public is important. For instance, many people even though provided with sanitation facilities at their respective houses, they still defecate in open areas. The scheme tends to not only emphasize on construction but also the maintenance as well as spread of awareness.
- Thus civilizing people by spreading of awareness and supporting them financially, technologically and educating them are imperative for achieving 360 degree behavioural change.
- As the prime minister has addressed the nation, specially the corporate sector to achieve this mandate and advocated that corporate social responsibility by private player as a part of funding and supporting the program. Many private players have come forward and also a few corporate players and a number of educational institutions have already started implementing the plans to achieve the same.

Peoples' Movement and Public Awareness

Post-independent era, India had started a lot of schemes and initiatives on sanitation for the well being of people through public provisioning, financial support and coordination among various stake holders. But with special interest and involvement of our Prime Minister Mr. Narendra Modi, Swachh Bharat Mission has got a momentum where public; politician, corporate house and government officials are involved. Swachh Bharat Mission becomes peoples' movement and lunched on the birth anniversary of Mahatma Gandhi who had been a supporter of sanitation in India. Prime minister has addressed the nation to support the mission to achieve complete cleanliness or samporna swachhata in India. He has emphasized on construction and maintenance of toilet and its uses. Also request the people to keep public places and their surroundings clean. He said that sanitation is not about construction of toilet rather the change behaviour and mindset of the people in view of better sanitation. He requested people to work for 100 hours in a year or 2 hours in week to contribute in the cleanliness drive as a volunteer.

Issues and Challenges

Although the mission has started with best of intentions and to spread the benefit among the needy and deprived population, still several inherent challenges poses a threat toward its efficient implementation. Though it started with a noble cause and philosophy, it can't be turned into fruitful implementation unless scientifically and efficiently managed due to numerous challenges. The acronym ***"WATER"*** (developed by the author) describes a set of fundamental challenges that the government may face and

accordingly needs to address the same to achieve improved sanitation and better well being of people.

W: Water

For a hygienic living, toilets are very much essential. But the real benefit of toilet facilities is very much dependent upon availability of water for flushing, cleaning and hand washing etc. Also it has been observed that about 47% of people, who have access to toilet facilities, aren't able to avail them due to unavailability/shortage of water. Thus it can be interpreted that the major obstacle ahead of implementation of mission is not the issue of availability of fund for construction but the availability of minimum amount of water in toilet.

A: Awareness

In our country, unhygienic living is a major issue that also leads to high contamination rate, mortality rate etc. Open defecation by people, is a social stigma. Open defecation is also a striking satire toward the Indian culture which emphasizes on respect for women and love for children who are still deprived of having proper sanitation facilities. Moreover open defecation increases the chances of crime against women as well as children that has been brought to our notice through newspapers recently. Another challenge that lies ahead is that people even though with facilities of toilets at their premised, don't maintain the hygiene of their toilets by properly flushing, cleaning of toilets using sanitary cleaning material as phenyl etc.

T: Technology

In order to achieve and implement the said scheme, sustainable technology at affordable cost that can be availed by states and be accessed by masses without any compromise with the set standards; needs to be provided. Technology intervention is essential for achieving faster and cheaper provisioning of toilet facility for the deprived.

E: Engagement

The success of this scheme depends on the collective effort by both state as well as private players. Thus the government has proposed for engagement of private players, corporate sectors, civic society and NGOs in addition to government organization for a collective effort to achieve improved sanitation for a better nation.

R: Resources

India is a developing nation with limited resources. The centre is short of fund as the limited funds needs to be allocated on several areas as agriculture, housing, drinking water, social welfare etc; in order to maintain consistency in nation's growth. Thus with the limited funds, an overall developments in all areas is very difficult. Also basic needs not only include sanitation, but also includes housing, drinking water, food needs etc. Hence proper resource allocation as well as their vigilant monitoring for proper utilization is important.

Concluding Remarks

A better and healthier tomorrow is not only the government's responsibility but a collective duty to be shared by all the citizens of the nation. Proper sanitation provisioning is a step towards a better hygienic environment. It's a step taken by Government of India, if not new, is definitely a step to create awareness and encourage people's participation towards achievement of goals of total sanitation for all. It's a kind of civic mission for providing service to nation, driven by patriotism and participation rather than politics. Thus success of this mission is not only the responsibility of the workers engaged in sanitation work or program but is rather the responsibility of each individual of our nation. If each and every individual and institution/organisation should try their best to keep their immediate surrounding clean, then definitely the dream of *"Clean India"* could be achieved. Swachh Bharat would therefore make a significant impact on public health, and in safeguarding income of the poor, ultimately contributing to the national economy.

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INVOLVEMENT OF YOUTH IN MARRIAGE RELATED DECISION MAKING IN INDIA

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Abstract

In India marriage are typically family arranged in which parents are mostly involved in selection of potential spouses for their children. This paper tries to focus on the role and level of involvement of youth in spouse selection. Above 90 percent of the marriages are arranged in India and except for the southern states, majority of married young men and women meet their spouse on the wedding day. Women seems to be more worried and anxious about getting married as in contrast majority of the men are excited about getting married although there is hardly any interaction among couples prior to marriage, especially in Bihar, Rajasthan and Jharkhand. Odd ratios reveals that mothers education have a significant and positive relationship on the respondent's opinion regarding choice of marriage partner. However, unlike the mother's education, religion, caste and work status does not show any association with the respondent choice of partner. Respondents who often discuss their personal issues with their parents tend to select their marriage partner themselves or they have a strong opinion in spouse selection.

Keywords: Marriage, Youths, Decision, Spouse Selection

Introduction

Assuming that individuals make a decision to marry, two other decisions then have sociological relevance- "whom to marry" and "when to marry".[1] Marriage process needs to be understood in its own right since it not only signals the initiation of reproductive life but also because it reflects the way family life proceeds. Moreover when, whom, and how one marries, all have implications for gender relations within society.[2] In India, marriages complied with the principle of Hypergamy and in consideration of the social

[1] J. Joel Moss (1965)
[2] Mensch et al (2005)

and economic status of the spouses, they are mostly arranged. Caste, Natal charts gotra, family background, financial status of the groom, appearance character of the bride and the bridegroom are the most important facets of arrange marriage. The willingness of the parents and blessings of elders are important considerations in arranged marriage. Ross puts it as in India "love was not necessary as a basis for marriage selection, nor was courtship a necessary prelude for testing the relationship" (1961: 251).

Considering the universal nature of Indian marriage, little has been studied about the role of young people themselves in the decision making process of their own marriage. This autonomy impacts other spheres of young people's lives, as individuals as well as partners in marriage such as in decision making, self-confidence, contraceptive use, etc., is poorly understood.[3] What is available on marital process, in Indian context, is mainly on marital age, consequences of early marriage such as early pregnancy and childbirth, dowry and violence within marriage[4] but qualitative studies, to a certain extent, do throw light on marital decision making process.[5] Recent evidence points to the fact that, of late more girls and boys are being involved,[6] but factors or characteristics that encourage involvement of youth in their spouse selection and the impact of such involvement on their married life are poorly understood.

The traditional normative pattern of Indian marriage does not provide much opportunity to the prospective spouses to participate in the decision-making process of their own marriage. In many cases, they never see each other until the wedding day. A majority of young men and women in India are abided by the social norms and acquiesce to the social disciplines of traditional life. "Indian arranged marriage and family values" against "western style love marriages" has thwarted efforts to comprehend the nature of individual desire and the choice of marriage partners.[7] As *Kalidasa*, the Indian poet, remarked that "young people seek pleasures",[8] the Hindu system regarded mate selection by self-choice as undesirable and feared that freedom of choice might upset the process of adjustment of the bride in her new family. Modern law and legislation on marriages recognise free choice marriage but the weight of custom and tradition associated with the reproduction of the caste system works severely against it. Yet, the conditions of modernity such as law and rights, changes in the political economy and the emergence of urban cultures at marked variance from rural

[3] CPOP,CPOP (2005)
[4] Jejeebhoy and Sebastian (2003a); Jejeebhoy and Sebastian (2003b); ICRW (2003)
[5] see for example Santhya, (2003); Haberland et al, (2001); George (1997)
[6] Jejeebhoy & Halli 2006
[7] Shalini Grover (2007)
[8] Auboyer, (1965: 176)

cultures have no doubt a bearing on the possibility of aspirations for change in the private lives.[9]

Literature review

Marriage in India is treated as an alliance between two families rather than a mere union of two individuals.[10] Researchers and demographers' focus has been on the age at marriage and its implications on fertility. However other aspects of the marriage transition such as the involvement of youth on spouse selection process have been relatively neglected. What is available underscores that many young women and to a lesser extent young men have little, if any, input into the timing of marriage and choice of spouse.[11] Lack of participation in the process of spouse selection does not mean the prospective bride and groom disregard the importance of marriage. The seriousness with which the marriage ritual is taken by youth is all the more reason why they are not entrusted with the responsibility of making self-selection and why the parents' judgments are accepted.[12] Goode rightly observed the prevalent sentiments of the parents regarding individual mate selection. "The young person could not be relied upon to follow the rules exactly. With limited social experience and no opportunity to travel, he or she could not locate the few eligible persons to be found in a population of several thousand distributed among villages. Even if this was possible, the individual might not respond emotionally to the eligible person or be able to persuade them to agree to a marriage" (1963: 210). In some cases girls and boys barely meet their future spouses before marriage resulting in marriage of two strangers.[13] But some women and men are choosing to defy marriage customs and marry late,[14] or not at all.[15] Still, there is social and family pressure to get married.[16]

Recent evidence indicates a decline in kin control and increase in a young woman's involvement in mate selection[17] or atleast the arranged marriages in India are being transformed to a more consented model.[18] A group of writers contend that the Indian family system is experiencing

[9] Kalpagam U. (2008)
[10] Kurian (1974); Cormack (1961); Shah (1961)
[11] Desai (2007); CPOP (2005); Santhya (2003)
[12] V. V. Prakasa Rao and V. Nandini Rao (1976)
[13] Desai (2007); CPOP (2005); Cynthia Waszak et al, WHO (2003); Haberland et al, (2001); George (1997)
[14] Zhao (2008)
[15] Zhang and Gu (2007)
[16] Li, S et al (2010)
[17] Jejeebhoy and Halli (2005); Malhotra in National Academics press 2005; Jejeebhoy & Sebastian (2003a)
[18] Banerjee (1999)

changes slowly yielding its rigidity to flexibility, exhibiting loss of firm grip over the traditional patterns of mate selection, and demonstrating the adaptive strategy of allowing freedom to the young to a certain extent.[19] Moreover, good couple communication and self confidence in women play pivotal role in influencing family decision making including reproductive decisions, facilitating negotiation between spouses on use of contraception, limited family size and reduced risk of HIV through reduced extra marital sex.[20] For the few who select their own spouses overlooking the traditional norms, what are called "love marriages", the change in the marriage practice reflects the aspirations for change by these men and women who have to negotiate between freedom and choice, social disciplines, patriarchal securities and domination, honour and shame, tradition and intergenerational mobility.[21] Increasing age at marriage, education, economic independence, increasing access to western media and living in urban area are cited as playing a role in this transformation.[22] However, some writers argue that the findings reveal no significant departure from the traditional method of mate selection under the present social conditions and observe that the Indian family system is maintaining its basic character adhering to traditional patterns of life.[23] In fact, one writer argues that Taya Zinkin's statement made in 1958 that "India is a country of arranged marriages. Only aboriginals and modern elite marry for love" holds true even today.[24]

Objectives

The main objectives of the study are:

1. To explore the level of involvement of young people regarding their marriage decision of when and whom to marry.
2. To assess the factor affecting youths decision in selection of marriage partner.

Database and methodology

The study uses data from "The Youth in India: Situation and Needs" conducted to identify key transitions experienced by unmarried and married youth in India. The survey was conducted in 2006-07 in six states of India, representing different socio-cultural and geographic setting, namely – Andhra Pradesh, Bihar, Jharkhand, Rajasthan, Maharashtra and Tamil Nadu.

[19] Goode (1963); Gore (1969); Shah (1961); Ross (1961)
[20] Population reports (1998)
[21] Kalpagam U. (2008)
[22] Alexander et al (2006a); CPOP (2005); Mensch et al (2005); Lloyd and Mensch (1999); Singh, S. and Samara, R. (1996)
[23] Kurian (1961, 1971, 1974); Singer (1958); Vatuk (1972)
[24] Kurian (1971)

The study is being executed by the International Institute for Population Sciences, Mumbai, in collaboration with the Population Council, New Delhi and with financial support from the Packard and MacArthur Foundations. Respondents included 17362 unmarried women and 11522 unmarried men and 13912 married women aged 15–24 and, in view of the paucity of married men in these age, 8052 married men aged 15–29.

This paper draws on the data of married men aged 15-29 and married women aged 15-24 only. Bivariate analysis and Logistic regression is employed to determine the correlates of youth's involvement in marital decision-making. To cover the given objectives the study includes youth's age at marriage, type of marriage, choice of partner, interaction with spouse before marriage and approval of parents. The study also shows the effects of social and cultural determinants on the role of youth's in marriage practice.

Analysis

Socio-economic profile

Majority of the respondents in this study belongs to age group 20-24 for married women and 25-29 for married men. Respondent from rural areas are the highest and maximum is from Rajasthan. Overall respondents were mostly Hindus belonging to OBC category. Majority of the men respondent have completed 8-11 years of schooling. However, for women respondent majority of respondent who didn't receive any formal education are found highest in Rajasthan, Bihar and Jharkhand. Similarly for both fathers and mothers education majority of the respondent didn't receive any formal education. Gender differences are quite wide in case of work status where majority of the respondents are engaged in paid work both before and after marriage. Majority of the respondents from Maharashtra, Bihar, Jharkhand and Rajasthan belongs to non-nuclear family. However, the difference among respondents belonging to nuclear and non-nuclear family in Tamil Nadu and Andhra Pradesh is minimum. Considering the peer connectedness before marriage, it is found that above 90 percent of the respondents have same sex friends which decreases to 20 percent when asked about having opposite sex friends. It is relatively low in Rajasthan.

Age at marriage

Sociological analysis of marriage usually points out that age at marriage varies with the type of society and, therefore, reflects the stage of industrialization and urbanization.[25] Table 2 depicts that women marrying before legal age is significantly high in all the six states with Bihar recording highest percentage and Tamil Nadu lowest. Rajasthan shows very low

[25] J. Joel Moss (1965)

percentage of men are married above 21 as compared to other states. However, 80-90 percent of the respondents including both married men and women are aware of the legal minimum age at marriage for girls and boys. Literature highlights the fact that the motivation for a parent involved in mate selection to marry a daughter off early is that girls are thought to be compliant in the choice of spouse when they are young.[26]

Marital Process

Arranged marriage is a normative in our country. Except for Tamil Nadu all other states have shown that above 90 percent of the marriages are arranged. Percent of love marriage in Rajasthan is significantly low for both married men and women (below 1 percent). Parents seeking opinion of their wards about their like and dislike of the boy/girl has shown higher percentage than regarding their opinion about the preferred age at marriage. Interestingly it is found that marriage partner according to respondent's choice in higher for married women than married men in states of Tamil Nadu, Andhra Pradesh, Maharashtra and Jharkhand. However, choice of partner considering both parents and respondents choice in comparatively low in all the states. Although gender gap is wide but majority of the respondents approved the girl/boy chosen by their parent and very few disapproved their parent's choice. Similarly considering parent's response to the choice of respondent shows that there is almost an equal distribution of parents who agreed and parents who disagreed. A wide north-south differentiation has been highlighted as 20-30 percent of the respondent in Tamil Nadu and Andhra Pradesh knows their spouse very well before marriage which is only 2-3 percent in Bihar and Rajasthan. Very few percentage of respondents were unhappy about getting marriage. However, the percentage differs as most of the men are excited about getting married while women are anxious/scared.

Factors affecting marriage related decision making among youths

Table 3 shows the result of logistic regression analysing the respondent role in selecting the partner for marriage. Age at marriage shows a significant relationship with the choice of partner. Keeping all the variables constant, it is found that women married at 18 and above age are more likely to give their opinion regarding the partner selected for marriage. Similarly men married at age 21 and above are more likely to select their partner compared to those men married below the legal age. Respondent from rural areas are less likely to give their opinion regarding selection of marriage partner. Apparently except for Muslims, respondents from other religions are

[26] UNICEF (2001 b)

1.59 times (married men) and 1.71 times (married women) more likely to have a strong opinion in choosing their partner for marriage compared to Hindus. Again men belonging to General and OBC category and women from OBC category are more likely to have a choice in partner selection compared to the SC and ST category. However, neither religion nor caste shows any significant association with youth's decision in choice of partner. Increase in mother's education level have a significant and positive relationship in selection of marriage partner. Involvement in economic activity prior to marriage confer autonomy for boys in selection of their spouse. Similar findings are found among men who discussed with their parents issues of friendship, romantic relationship and other growing up issues are 1.41 times more likely to have their opinion which selecting their partner compared to men who does not discuss with their parents. Similarly women are 1.35 times more likely to have their opinion in selection of spouse compared to them who does not interact with their parents. Goode is convinced that India exhibits a number of changes in family relations and concludes that "even in mate selection choices, the winds of change may be felt, and there is a movement in the direction of giving greater freedom to the young. This change is especially important because the Hindu arranged marriage was the keystone to all the other family patterns that characterized Indian society for so long" (1963: 207-208).

Conclusion

Findings reiterate the fact that traditional custom of early age at marriage especially for women continues in India. Over 90% of the marriages are arranged and though the young people, with wide regional disparity shown in participation of youth in marriage related decision making. However, Tamil Nadu shows some discrepancy with reference to the age at marriage and involvement of youth in selection of spouse. Study says that more men than women, are being involved in marriage related decision making. Most of the marriage takes place with the approval of the parent. But a trend of involving youth in selection of spouse could be seen as half of the parents agree to the boy/girl selected by their wards. This again holds true as majority of youth approves the partner chosen by their parents and very few rejects their parent's choice. However a clear north-south difference could be seen as above 75 percent of the marriages in Bihar, Jharkhand and Rajasthan are taking place between two almost strangers meeting on the wedding day which is comparatively less in southern states. The practise of endogamy (marriage between close relative and notably cross cousin), and isogamy (status equity between the bride's family and the groom's family) in southern states could be a probable reason behind such results.

Higher age at marriage and mother's education appeared as a significant and positive determinant in allowing son/daughter's participation in selection of partner. Interaction with parents brings in more autonomy in spouse selection among youths. Findings emphasise the need for programmes for, not only young people's education but also to improve that of their parents, especially mother's. Although the role of youth in marriage related decision making has gained more acceptances, research is yet to be fully established in studying the casual link between their autonomy in marriage related decision making and its impact on later marital life which could strengthen inter spouse relationship through better interaction and communication and contribute to better sexual and reproductive health of the married couples.

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Appendix

Table 1 - Socio-demographic profile of Married men and Married women in India

Individual characteristics		**Tamil Nadu**		**Andhra Pradesh**		**Maharashtra**		**Rajasthan**		**Bihar**		**Jharkhand**	
		MM	**MW**	**MM**	**MW**	**MM**	**MW**	**MM**	**MW**	**MM**	**MW**	**MM**	**MW**
Age of respondent	15-19	0.2	16.0	1.0	28.4	1.6	77.1	9.0	26.7	5.7	36.0	4.3	35.3
	20-24	18.5	84.0	27.6	71.6	28.4	22.9	35.8	73.3	34.7	64.0	35.1	64.7
	25-29	81.3	NA	71.4	NA	70.0	NA	55.2	NA	59.6	NA	60.6	NA
Place of residence	Urban	49.4	40.1	46.1	44.5	47.5	46.3	33.5	39.9	49.1	48.5	48.1	38.5
	Rural	50.6	59.9	53.9	55.5	52.5	53.7	66.5	60.1	50.9	51.5	51.9	61.5
Religion	Hindu	90.3	89.2	85.6	83.6	81.2	78.6	90.7	84.1	86.4	85.6	86.4	75.5
	Muslim	6.1	7.4	8.8	7.5	11.8	11.6	8.2	14.4	13.6	14.4	13.3	13.1
	Others	3.6	3.4	5.7	8.9	6.9	9.9	1.1	1.5	0.0	0.0	11.8	11.4
Caste	SC	25.3	27.9	21.9	22.3	17.5	16.5	21.3	19.3	21.8	20.6	15.7	16.4
	ST/VJNT	2.8	0.7	7.1	5.8	18.0	11.3	13.9	9.3	2.1	0.1	24.2	20.6
	OBC	71.0	70.1	48.0	50.0	28.0	26.6	49.3	53.1	61.4	65.8	47.1	52.2
	General	0.8	1.3	23.0	21.9	34.1	41.5	15.4	18.2	14.6	13.5	12.9	10.7
	DK/No Caste	0.0	0.0	0.0	0.0	2.4	4.1	0.1	0.1	0.1	0.0	0.0	0.1
Education	No schooling	6.0	9.7	18.6	27.3	9.1	13.8	15.9	46.0	25.7	51.6	23.4	47.0

	1-7	40.9	28.4	31.9	34.5	26.6	28.6	26.6	26.0	24.8	22.2	26.1	26.0
	8-11	37.6	45.5	32.7	28.8	44.0	42.2	35.9	19.9	32.9	19.5	34.3	21.5
	12 & Above	15.5	16.3	16.7	9.4	20.3	15.4	21.6	8.1	16.5	6.8	16.1	5.5
Fathers education	No schooling	50.8	40.1	69.6	63.1	40.9	31.8	57.3	50.4	47.5	48.6	49.8	50.1
	1-7	27.0	31.0	19.5	22.4	36.2	33.9	18.3	18.0	19.6	14.0	23.4	18.1
	8-11	18.8	23.3	7.9	9.9	17.4	26.2	17.2	22.7	24.8	25.0	20.3	24.8
	12 & Above	3.4	5.5	3.0	4.6	5.5	8.1	7.3	8.8	8.1	12.3	6.5	7.0
Mothers education	No schooling	66.9	63.0	84.3	81.5	72.2	62.0	88.4	87.2	84.0	81.7	85.5	84.9
	1-7	21.3	23.8	11.4	14.3	20.9	28.3	6.6	6.4	9.3	10.1	9.2	8.9
	8-11	10.6	11.5	3.5	3.4	5.8	8.5	4.2	5.0	6.3	7.1	4.9	5.4
	12 & Above	1.2	1.8	0.9	0.8	1.1	1.1	0.9	1.4	0.4	1.1	0.4	0.7
Individual characteristics		**Tamil Nadu**		**Andhra Pradesh**		**Maharashtra**		**Rajasthan**		**Bihar**		**Jharkhand**	
		MM	**MW**	**MM**	**MW**	**MM**	**MW**	**MM**	**MW**	**MM**	**MW**	**MM**	**MW**
Work Status (Paid Work)	Before marriage	1.1	41.9	2.6	19.9	1.5	22.2	2.1	18.2	4.3	23.0	4.7	20.5
	After marriage	1.8	17.2	3.4	22.8	5.0	34.8	22.5	41.1	14.3	28.1	17.0	37.1
	Both before and after marriage	97.0	40.9	94.0	57.3	93.5	43.0	75.5	40.7	81.4	48.9	78.2	42.4
Type of family	Nuclear	41.5	36.8	40.2	44.0	22.3	23.8	26.8	30.0	28.2	28.7	26.7	32.0
	Non-Nuclear	58.5	63.2	59.8	56.0	77.7	76.2	73.2	70.0	71.8	71.3	73.3	68.0
Peer Connectedness (pre-marital)	Have same sex friend	96.6	97.1	99.0	97.1	98.7	96.1	95.8	94.4	96.9	97.8	93.5	96.9
	Have opposite sex friend	28.1	22.5	22.6	10.4	28.8	14.6	8.2	6.2	19.0	5.7	25.3	14.6

Source: Youth in India Situation and Needs 2006-2007

Note: MM - Married Men (15-29), MW - Married Women (15-24), NA – Not Applicable

Table 2 – Distribution of married men and married women in the involvement of marriage process and related decision making

Marriage Characteristics		Tamil Nadu		Andhra Pradesh		Maharashtra		Rajasthan		Bihar		Jharkhand	
		MM	**MW**	**MM**	**MW**	**MM**	**MW**	**MM**	**MW**	**MM**	**MW**	**MM**	**MW**
Age at marriage	Below 18	0.8	28.9	9.4	66.2	3.2	36.5	37.7	75.9	28.7	82.0	24.4	80.6
	18 - 21	25.7	58.7	32.4	29.2	29.1	55.4	34.0	19.1	34.2	15.3	34.1	15.9
	Above 21	73.5	12.4	58.2	4.6	67.7	8.1	28.3	4.9	37.2	2.7	41.6	2.7
Knowledge about legal age at marriage	Boys	95.7	87.9	94.2	86.4	97.1	87.7	92.4	79.1	90.6	74.7	85.9	60.9
	Girls	98.9	97.0	94.4	87.3	97.2	92.5	92.1	80.3	91.0	77.6	86.5	63.6
Type of marriage	Arrange	79.6	80.8	94.0	91.6	94.9	94.2	99.5	99.2	97.9	97.8	93.9	90.9
	Love	20.4	19.2	6.0	8.4	5.1	5.8	0.5	0.8	2.0	2.2	6.1	9.1
Parents asked	Preferred age at marriage	76.5	56.8	67.1	21.3	59.7	28.2	17.4	14.4	23.5	5.7	31.8	9.5
	Like the girl/boy	90.4	80.8	93.4	76.3	95.5	60.1	39.7	37.6	50.0	17.8	70.6	36.0
Choice of partner	Respondent choice	46.8	64.5	29.2	46.5	44.2	59.3	11.4	7.7	23.9	20.7	29.4	62.1
	Parent's choice	51.7	33.3	26.3	40.6	32.6	33.3	63.6	90.1	61.5	76.8	67.6	36.4
	Both	1.5	2.2	44.4	12.9	23.3	7.4	25.0	2.2	14.7	2.4	2.9	1.5
Involved in decision making	Approved the girl/boy chosen by parents	54.4	85.5	50.0	90.3	57.3	86.9	46.2	63.3	44.6	57.9	68.1	55.6
	Said no to boy/girl chosen by parents	11.9	21.1	15.8	11.2	17.7	15.1	1.6	11.6	9.8	3.5	9.5	7.0
Parents response for girl/boy chosen by respondent	Agreed	52.8	56.5	47.0	64.1	54.3	54.6	42.9	44.1	40.3	63.1	64.6	68.3
	Disagreed	44.2	42.1	47.0	35.5	40.4	42.0	50.0	55.9	50.0	36.9	30.3	30.3
	No response	3.1	1.4	6.0	0.5	5.3	3.4	7.1	0.0	9.7	0.0	5.1	1.4
Interaction with spouse before marriage	Meet on wedding day	21.2	36.1	44.8	44.2	51.4	61.0	83.3	83.1	88.5	91.7	76.8	78.7
	Know somewhat	40.8	32.0	31.6	29.2	35.8	24.7	14.4	12.9	7.6	5.2	15.5	11.9
	Know very well	38.0	31.9	23.6	26.6	12.8	14.3	2.3	3.9	3.9	3.2	7.6	9.4
Feeling about getting married	Excited	77.0	31.1	53.3	19.2	72.2	33.3	63.7	21.6	50.4	10.9	53.2	18.2
	Nothing special	16.9	15.1	39.0	23.7	21.8	25.3	29.8	24.8	38.1	18.7	31.4	14.8
	Anxious/Scared	5.2	53.3	6.9	56.2	4.7	35.0	5.8	51.6	10.1	68.4	12.4	63.9
	Unhappy	0.9	0.4	0.8	0.9	1.3	6.4	0.7	2.0	1.4	2.1	2.9	3.0

Source: Youth in India Situation and Needs 2006-2007

Note: MM - Married Men (15-29), MW - Married Women (15-24), NA – Not Applicable

Table 3 - Logistic Regression Analysis showing factors affecting Youth's participation in Choice of Partner for Marriage

Variables		Odds Ratio	
		Married Men (MM)	Married Women (MW)
Age at Marriage of the respondent	Below 18®		
	18 and above		1.74***
	Below 21®		
	21 and above	1.79**	
Place of Residence	Urban®		
	Rural	0.70*	0.87*
Religion of the respondent	Hindu®		
	Muslims	0.41	0.62
	Others	1.59	1.71
Caste of the respondent	SC®		
	ST/VJNT	0.47	0.38
	OBC	1.56	1.17
	General	1.51	0.67
Mother's education	No schooling®		
	1-7	1.86**	1.08***
	8-11	1.35***	1.60***
	12 & Above	1.72***	2.96***
Work Status of the respondent	Before marriage®		
	After marriage	0.52*	1.03
	Both before and after marriage	1.16	1.11
Interaction with parents (friendship, romantic relationship, growing up issues)	Never®		
	Sometimes/Often	1.408***	1.346**

Note: 1. ® is the reference category in the logistic regression.
2. *** is the coefficient which is significant at one percent level of significance.
3. ** is the coefficient which is significant at five percent level of significance.
4. * is the coefficient which is significant at ten percent level of significance.

INDIVIDUALS CERTIFICATION SYSTEM AND ITS INSTITUTIONAL STRUCTURE (ACCREDITATION SYSTEM) EVALUATION IN LATVIA

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Abstract

In the Latvian certification system of individuals there is necessary to ensure appropriate process realization in the public protection interests and government needs, which incorporates in EU common structure. Certification system and its institutional structure assessment is done with the aim to develop proposals for the improvement of Latvian certification system for reducing costs, while ensuring both high system efficiency and service recipients and the public interest. To achieve its goals study provided a summary of the situation in Latvia, as well as in the neighboring countries: Lithuania, Poland, Estonia and Finland. During the study, there were used both the secondary and the primary sources of information. Primary research was carried out in Latvia and consisted of two parts: expert interviews and focus groups. Results of the research are guidance to the overall approach and the criteria by which to guide in the future, for setting which professional service providers require a mandatory certification. In the process of study there is made a Matrix which helps to define certified profession, taking into account the need to protect the public interest and the level of national involvement in regulation of specific areas of professional services.

Keywords: Certification, risks

Introduction

In the Latvian certification system of individuals there is necessary to ensure appropriate process realization in the public protection interests and government needs, which incorporates in EU common structure. There are regulated and non-regulated occupations. So there can be seperated two types of recognition of professional qualifications:

- De jure "professional recognition of regulated professions. To be eligible to work in these occupations, the national legal acts (laws of

Latvian Republic, the regulations of the Cabinet of Ministers or the ministerial normative documents) states that the person must have documents confirming the recognition of educational and professional qualifications.

- "De facto" recognition of professional non-regulated professions. In this case, the employer and / or professional organization is in need of information about the applicant's qualifications.

The object of the study is both regulated and non-regulated occupations.

Regulated professions covered by the study: security staff, architects, competent specialists of occupational health and safety, detectives, building, road and bridge construction professionals, surveyors, real estate appraisers. Non-regulated professions: dangerous machinery safety specialists (experts), energy auditors, accountants, geodesists, cartographers, real estate agents (brokers); land installers, tourist guides.

Aim of the study

Study of the certification system and its institutional structure assessment is done with the aim to develop proposals for the improvement of Latvian certification system for reducing costs, while ensuring both high system efficiency and service recipients and the public interest.

Materials and methods

To achieve its goals study provided a summary of the situation in Latvia, as well as in the neighboring countries: Lithuania, Poland, Estonia and Finland. During the study, there were used both the secondary and the primary sources of information. The previous studies, databases and Internet resources, which can provide the necessary information about the certification principles, criteria, institutions, costs, etc., were used as secondary sources of information.

Primary research was carried out in Latvia and consisted of two parts: expert interviews and focus groups.

Interviews with experts were held with both, public and private institutions. The focus group was held on 23 July 2014 and was attended by 14 experts representing public authorities and the private sector. Primary investigation has obtained the arguments and facts about the system of certification in Latvia and possible improvements to increase the system functionality and reduce costs.

Results

As the results of the research there are provided guidance to the overall approach and the criteria by which to guide in the future, by setting

which professional service providers require a mandatory certification. There has been made a Matrix which helps to define certified profession, taking into account the need to protect the public interest and the level of national involvement in regulation of specific areas of professional services.

Risk analysis and assessment was carried out as a first step in the development of certification criteria. One can distinguish two probabilistic risk methods:

- The objective of the event is based on the given repetition frequency calculation;
- The subjective is based on personal experience, expert assessment consultant's opinion.

The certification system and the potential risk calculation are very difficult and often impossible. Therefore, this study used a subjective method of using expert and consultant ratings.

The potential risk to mitigate the impact of specific countermeasures is needed to provide the necessary protection. As the most important mitigation measures identified in the analysis of international and Latvian research showed the following:

- Education;
- Insurance;
- Work experience;
- Monitoring and control.

Education criterion exists in all the Member States and applies to all professions which are certified. On various occasions the general or special education is used as criteria, as well as various educational levels: secondary and higher education. There are countries where gained suitable education from the state view point is considered to be sufficient proof of professional ability to work in their chosen profession, as it is, for example, in Finland.

In spite of the right to work in the acquired specialty, also the non-regulated occupations often use the certification. In such cases, it works on a voluntary basis and is conducted by professional organizations such as associations or chambers of commerce.

Often in such a situation, in the process of monitoring the service quality are involved both the public and the local government bodies. Local governments are involved in cases where the service is associated with a specific territory, as it is, for example, architects, real estate agents, tourist guides. Public bodies are significantly less involved in the supervision of unregulated professions provided service quality, and it is mostly through consumer protection system.

Often used in risk protection is the insurance.

Liability insurance is a versatile tool that provides protection of the recipient, especially financial. In the professions assessment or certification/no certification decision making, there are recommended several matrix options. They many have possible modifications. Based on the study's analysis, you can change the determinants of risk indicators.

A simple risk assessment leads to conclusion that most professions are subjects of tax, economic, legal and political risks. Life and health risk doesn't matter in many professions, but the focus group participants believe that it is one of the main certification / non-certification criteria.

0- risk is impossible
1- risk cannot be excluded
2- risk is probably half (50/50)
3- there may be a risk
4- risk is very likely

Education is a key component of Anti-risk measures. Accreditation is only one of the possible ways for improvement, so this criterion is expanded as "requirements for education", where:

0 - no demands;
1 - primary education;
2 - secondary education, courses;
3 - first level higher education;
4 - second level higher education, a master's degree.

Law of Free service provision (free service provision law; paragraph 1, point 10), points out 14 public protection measures to be carried out by its performers. Ratings are associated with the degree of realization of these measures:

0 - do not exercise;
1 -1 to 3 protective measures;
2 – 4 to 6 protective measures;
3 – 7 to 9 protective measures;
4 – 10 to 14 protective measures.

One of the ways to improve the attitude towards work events is the use of a code of ethics. Evaluation:

0 - absent;
1 - has been prepared but not implemented;
2 – is in the association as advisable;
3 - is in the association as a mandatory requirement for all;
4 - is included as a requirement of the legislation.

Table 1. Matrix

Matrix	Health/life	Finance/tax	Commercial/ economic	legal	**A=I+II+ III+IV**	Education requirements	Protecting the public	Insurance coverage	Code of ethics	**B=VI+VII+ VIII+IX**	B - A
0	I	II	III	IV	**V**	VI	VII	VIII	IX	**X**	XI
Guards	4	1	3	3	**11**	2	2	4	3	**11**	0
Dangerous equipment security experts	4	2	2	2	**10**	0	3	0	1	**4**	-6
Occupational Health and Safety Specialists	4	2	1	3	**10**	4	3	4	0	**11**	+1
Detectives	3	2	2	3	**10**	4	3	0	3	**10**	0
Accountants	0	4	4	4	**12**	3	3	0	2	**8**	-4
Tourist guides	1	1	1	0	**3**	3	2	0	0	**5**	+2

The matrix shows the calculation logic, however it is clear that risk assessment is not and cannot be so simplified. Therefore, an accurate risk assessment follows this sequence and conditions:

1. Matrix is added to a number of peer reviews, with the size and significance of the risk determination for each profession. For, example:

Table 2. Multiple expert assessment Matrix

	Expert I			**Expert II**			**Expert III**			Weighted average
Profession	Risk amount	Notability	Weighted value	Risk amount	Notability	Weighted value	Risk amount	Notability	Weighted value	

To the risk assessment according to probability (risk value) and the degree of effect (the importance) experts use the following values:

Table 3. Risk assessment probability and degree of effect.

Evaluation sistem	**Risk probability**	**Risk effect**
4	The risk is very likely	Catastrophic
3	Risk is possible	Critical
2	The risk is probably half 50/50	Serious
1	Risks cannot be excluded	Minor
0	Risks cannot be	Minor

2. Risk qualitative and quantitative analysis and evaluation. This study employs Qualitative analysis, because for quantitative analysis it is

necessary the assessment of occured risk in terms of money. To use this exercise, it requires a lot of financial information that the author of this study did not obtain.

Risk qualitative analysis.

Does not give an accurately measurable risk value, but allows you to set the priority risks (ranked in order of impact amount). Bases on the nominal or descriptive scales, which includes the possible consequence analysis. Viewing two dimensions - risk probability and risk consequences. (Working Environment Risk Assessment Guidelines, 2003)

Risk quantitative analysis.

Quantitative risk assessment is based on mathematical methods, using the principles of probability theory, algorithms, empirical coefficients, functions, methods of analysis, as well as a variety of software programs. Risk quantification is the assessment of the risk event occurrence in terms of money. To use this evaluation it requires an extensive financial information that the author of this study was not available to acquire.

3. The anti-risk measures. It should be noted that risk can not be transferred, but can be divided.

Dividing ways:

- Insurance;
- Outsourcing;
- Joint venture;
- Franchise.

There is carried out the possible additions to risk assessment analysis, but the proposed Matrix as important is the second section - anti-risk measures. It should be noted that the risk cannot be transferred, but can be divided.

Insurance offered in the Matrix.

There is no standard list of risks that are worth to insure, because of the priority risks vary depending on the company's activities and specifics. Insurance is often cost-effective risk management method, as it provides protection against the risk of a price that is lower than the risk value.

Typical risks to be insured are:

- Threats to property (fire, storm, vandalism, etc.).
- Loss of Income (strike, fraud, etc.);
- Accidents;
- Environmental pollution;
- Professional Responsibility.

Matrix offered insurance, which provides for three types of insurance: Accident, Environmental Pollution, Professional Liability. However, further analysis is required here, where the main aim is for the insurance to be lower than the price of risk. Otherwise, the insurance will not have expected effect.

There is also carried out an initial redistribution of risk between the public and private partners. In a case of study, it may also occur between the state, municipalities and the private partner. Latvian accreditation and certification system provides public and private responsibility in risk management. Only in one case (tour guides), it is entrusted the municipalities. Redistribution of risks is also possible in this aspect.

Conclusion

The study will provide guidance to the optimal distribution of roles and responsibilities between public authorities and private parties aptitude assessment, and institutions involved in the designation of certified individuals in the monitoring. Currently, the state has undertaken a major role in the accreditation of both companies, as well as at the certification of individual professions. Local governments are not practically involved in these processes. The involvement of non-governmental organizations is incomplete and dependent on the organization and its activities, rather than on sound strategy. Situation in Latvia is not thought out, compared to the situation in the other studied countries. State institution is the supervising authority in Estonia and non-governmental organizations are entrusted with the conformity evaluation. In Poland certification takes place in the corresponding local government. Finland consideres that its public education is in a very high quality, so it is more valuable than a diploma certificate.

- Latvia introduces a certification system for individuals to separate the monitoring of conformity assessment.
- At present, in the local government supervision is transferred only one of the studied profession certification, that is, tourist guide. However, other professions have essential municipal opinion and monitoring, such as security guards, architects, surveyors, geodesists, land installers, etc.
- The state certification should be explicit provisions to avoid possible interpretation. The criteria to be set by the state regulatory regimes. There should be pointed the precise number of points that describe the accordance of certification services and objective of certification. In particular, for the certification process to be able to select a good and qualified specialists from the poor quality workers and for the certification process to ensure the proper examination required for daily work. Accuracy is essential to minimize the potential action of

certification organizations in the interpretation of the rules according to their needs and preferences.

- The certificate may be issued only by the state-accredited institutions (as it is already presented), which uses state licensed and accredited program (which is currently not in all study analyzed institutions). Programs can be developed by certification organizations on the basis of the public authority (Ministry of Education and Science) recommendations. Thus, the state is responsible for the development of high-quality programs (this process in collaboration with certification organizations is guided by national authorities), as well as the criteria for accreditation of both organizations and the creation of programs. Private organizations are responsible for respect of these criteria and quality of execution, or the realization of these criteria in their work.
- State participating in the examinations, depending on the level of risk in each profession. From the professions analyzed in this study, the most at risk is in the dangerous equipment specialist, security guard and detective work. In these occupations, there are at least two risks - life and health risks. The presence and supervision of state is necessary, because these sectors going into low-quality professionals in the labor market would be a threat not only to specialists, but also the life and health of the persons involved. One possible solution is to build the examination procedure similar to Latvian. Obtaining a driver's license, the certification candidate's knowledge and skills can be acquired in a private organization, but the examination is made, organized, directed and adopted by national institution, therefore the fact of non objectiveness is excluded. Equivalent results can be obtained, supplementing the requirements of the profession criteria, such as the obligatory higher education.

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LIFELONG EDUCATION IN MALAYSIA: EREDICATING ILLITERACY OR SOCIAL SAFETY NETS?

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Abstract

A basic principle to any education system is to allow people access to education, at least to make them able to read and write to fulfill various needs of daily lives. Normally, a government introduces an education system as a mechanism to achieve one development standard, which is measured by literacy rates amongst the population. Meanwhile, there are also some needs of the people to get education as far as they want, anytime and anywhere, in order to help nation achieves its rapid development. This paper attempts to explain the aim of lifelong education provided in Malaysia, whether it is just as to ensure every citizen is able to read and write, in order to achieve the standard of nation's development, or aimed at preparing future work force who can survive in the wave of nation's development in the future. Results of analysis revealed some findings, which is mostly in supportive of the idea about the needs for education systems, including lifelong education, is merely as Social Safety Nets to each individual to survive in the ever competitive environment in the future.

Keywords: Lifelong education, illiteracy, Social Safety Nets

Introduction

One very important contributor towards political, social and economic development is education. Governments of the world normally introduce public policies in realizing their political, economic and social philosophies through education. Nations which are not prioritizing or unable to develop effective educational systems will find it very difficult or may not be placed amongst group of developed nations.

The main indicator of a nation's education standard can be seen by the illiteracy rate within the population. This standard may have some degrees of influence onto development of one nation because, a nation can only produce many skilled workers when its population can read and write.

Unskilled workers, as most foreign workers are, only eligible for part-time or seasonal jobs in few sectors.

There are some approaches to be used by nations in eradicating illiteracy. One of them is by allowing access to one concept in modern system of education – namely lifelong education.

Methodology

This paper is produced based on literature research, which is highly supported by secondary data and information. For the purpose, several sources were consulted such as books, statistics reports, journals, as well as previous researches. Data and information were manually analyzed and presented via descriptive approaches.

Conceptual definition

This paper attempts to discuss three main concepts, i.e. lifelong education, illiteracy and social safety nets. Then, discussions will comparatively explain the relationships among the concepts and the outcomes of all those relationships.

a) Lifelong Education

Lifelong education refers to a concept where one can get opportunity to access education anytime, anywhere for the whole life up the highest level he can afford to. Web page of Dictionary.com refers lifelong learning as `the provision or use of both formal and informal learning opportunities throughout people's lives in order to foster the continuous development and improvement of the knowledge and skills needed for employment and personal fulfillment'. Whereas Field (2006), defines it as `the ongoing, voluntary, and self-monitored pursuit of knowledge for either personal or professional reasons'.

Lifelong education can only be succeeded with participation of both parties – the providing party and the receiving party. The providing party means the government, whether through public or private initiative, to fulfill the national education policy. Whereas, the receiving party refers to the public, whether the citizen or non-citizen of the country.

b) Illiteracy

Illiteracy refers to one's ability. One is considered illiterate if he or she is not able to identify and understand any language by its writings. This equals definition by UNESCO on literacy as `one who has reading ability or simply, can read', or `one who has formal education and at least some form of informal education'. There are some individuals who can read but cannot write, whereas, individuals who can write may automatically read. One is

not considered illiterate as long as he or she can understand instructions conveyed via writing, although he or she cannot write.

Meanwhile, there is one type of illiteracy suffered by an isolated group of individuals. The group consists of individuals who can read and write, but cannot understand instructions include in particular questions. This type of illiteracy is known as technical illiteracy. It can occur to some group of individuals who live in society within a national educational system which is too much stress on the results (result-oriented), compared to the quality of the outcomes. Consequently, the like of pre-programmed `human robot' will be created. They can only hear, read and write, then, sit for examinations and answer multiple choice questions. If this is the system that we prefer, it is not impossible for some individuals to reach certain education levels with just only have to pass some examination hurdles of that type. An illiteracy problem will only be realized when those individuals in the group have to pass examinations at certain levels, which require candidates to write critical and analytical answers (in essay type questions).

c) Social Safety Nets (SSNs)

Generally, SSNs refers to services provided by a state aimed at achieving wellness and well-being of the people. SSNs normally includes all necessities including various types of welfares, medical and health assistance, and other subsidies. It is aimed at helping the poor, low income group, and other vulnerable groups, such as elderly, single parents and disabled. Furthermore, SSNs also allocate several types of emergency (ad hoc) assistances to the people who are suffering from any sort of manmade or natural disasters. This is tally to the meaning of SSNs underlined by Besley et.al. (2003), which stated that SSNs is a kind of government intervention intended at fulfilling 2 functions, namely;

i) To channel resources needed by the poor or the needy, and
ii) To provide opportunities to individuals to recover from the aftermath of disasters

There are various types of instruments used by countries in the world to fulfill their obligations to their people. These instruments can be divided into 2 kinds, i.e.;

i) in the kind of payment contribution, and
ii) in the kind of non-payment contribution

Web page of the Law Dictionary summarizes the meaning of SSNs as `a community provided welfare service at local and state level geared towards reducing poverty in the community. It can provide housing, jobs and money for utility bills and food coupons'.

Coady & Harris (2004) further added that, SSNs can be implemented in many types because of the different needs and effects of its

implementation in different countries in the world. For example, countries like the United Kingdom and Sweden provide assistance in the kinds of subsidies, good cause contributions, discounted utilities bills, and food coupons. Where others, like the United States, provide SSNs programmes in the kinds of health assistance (such as the Medicare), and medical assistance (such as the Medicaid).

Lifelong education and illiteracy in malaysia

The development of education in Malaysia has been much influenced by the background of its multicultural society. Although the system is merely a creation of the British colonial, Malaysia still allows its major races to follow their own education streams with adjustment to the national education curriculum.

In Malaysia, illiteracy rate among the population is still significant. Appendix 1 shows the facts and figures of literacy in Malaysia (Table 1 and Table 2). The government has taken many steps to eradicate illiteracy. These include providing all resources and facilities to access lifelong education. Every year the government allocates from the annual budget, some huge amount of money on education sector, along with the introduction of public policies to ensure every citizen is getting access to the highest possible level of education he or she is willing to. The existence of private institutions of higher learning proves the statement accordingly. Nevertheless, any Malaysian may have no reason to claim for not being able to read and write while living in this country.

Lifelong education in Malaysia is provided in several stages. This can be explained as follows:

a) basic education – this stage covers from Year 1 (7 years old) to Year 6 (12 years old) but parents can sent their children as early as 5 years old to kindergartens or pre-schools. Basic education stage ends at Primary School Assessment Test (UPSR)**
b) lower secondary education – this stage covers Form 1 to Form 3 education. The stage ends at Lower Secondary Assessment test (PMR) **
c) higher secondary education – this stage covers Form 4 to Form 5 education. The stage ends at Malaysia Certificate of Education (SPM) **
d) upper secondary/pre-University education – this stage includes Form 6, matriculation, and foundation studies. The stage ends with the awarding of certificates by each institution respectively **
e) higher education – this stage offers education at diplomas, first degrees (bachelor), post-graduate (masters and PhD), and post-doctoral diplomas

*** indicates possible dropped-out here*

Basically, education policy in Malaysia allows education to be offered either via public or private initiatives, as far as they are in compliance with the respective national education curriculum. However, this condition only applied to the requirements for basic education to those who intend to enter the civil service. For example, some Chinese parents have opted their children for Chinese medium at secondary education levels, and then furthering studies abroad like in Taiwan, Hong Kong and Singapore. After graduating, they then work in the private sector or become self-employed.

Referring to the lifelong learning process in Malaysia, there are two groups of individuals who are still cannot free themselves from the illiteracy traps. The two groups are:

a) a group of the elderly who had never gone to school at all
b) a group of individuals who are dropped out at the basic education (Year 6), and some others at the lower secondary education levels (Form 1, 2 and 3)

For that purpose, the government has provided several avenues to ensure that those groups of individuals are not excluded from the national education mainstreams, as far as they want to. Among alternative avenues are:

a) technical and vocational education – via technical and vocational schools
b) skills trainings and apprenticeship - at skills institutes, training institutes, MARA training centers, etc.
c) education in community – at community colleges
d) in-service trainings – for academic and career purposes to those already and still in service

However, all obligations are burdened on the shoulder of the government as a provider, and not on to the receiver (the public) because it is contracted on voluntary basis. Laws only require parents to give access to their children basic education but the children are not required to necessarily able to read and write, which is one of indicators to literacy.

Lifelong education and social safety nets in malaysia

Each individual may want to get education as far as he wants. Education becomes an important agent to improve one's quality of life – whether his economic, political or social status.

As discussed earlier, Malaysia has provided several levels and alternative routes for the citizens to get access to lifelong education. This is to ensure that all citizens can achieve their intended quality of life, at

anytime and anywhere they want in the country. This can be considered as one type of social safety nets provided by the government.

However, the path of lifelong education system in Malaysia is still creating somewhat called `death traps' which may throw out an `idle group' at any level (marked with **earlier). These `idle groups' include those who are filtered out from the national education mainstream. These idle groups may include the followings:

a) individuals who fail to continue studies and illiterate
b) individuals who fail to continue studies but not illiterate

Individual in group (a) may include individuals who had not registered at all into the education system mainstreams. Individual in group (b) may be dropped out at higher levels than individuals in group (a).

Overall, individuals in both groups may have two possible options as the followings:

a) not continue their studies
b) continue their studies via alternative routes

Individuals in group (a) normally will proceed with their traditional lives (roughly speaking, in subsistence economic). Not many individuals from this group will enjoy success in lives if they are illiterate, unless they inherit certain amounts of fortunes. One study (Mahmood et. al., 1997), found individuals belong to this group are the major contributor to social problems in the country. However, if not illiterate, individuals in this group can still try to get jobs which can earn their living – normally lower paid jobs, unless those who inherit fortunes as in earlier case.

Individuals in group (b) are more motivated in improving their quality of life. In addition, the current demands require individuals to have higher academic qualifications to succeed in both, life and career. This is in line with the vision of the nation, better known as Vision 2020, to make Malaysia a developed nation by the year of 2020. Hence, to become always competitive, one should follow the lifelong learning process, either through the mainstream or alternative routes.

In this context, it seems that individuals merely use `education' as a mechanism to get out from the so-called `vicious cycle' of life, which may lead people into poverty and other social problems.

In Malaysia, rarely individuals who are in the capacity (get opportunities and affordable) to further studies, will simply reject it. They, on the other hand, will try to make it as far as they can afford to. All facilities and the lifelong education opportunities facilitate those who choose education as one kind of social safety nets.

Eredicating illiteracy or social safety nets?

Earlier discussions explained the meaning of lifelong education, illiteracy and social safety nets. The paper also co-related lifelong education to illiteracy and social safety nets.

Next, the paper will explain about the real aim of lifelong education in Malaysia, whether targeted at eradicating illiteracy, or more as a social safety nets. This will be divided into several perspectives as the followings:

a) basic education

Provisions of laws in Malaysia (Education Act 1996; National Education Policy) require parents to allow access to basic education for their children. However, no legislation requires the children to at least able to read, write or both.

On the other hand, most parents will continue to allow their children access to education voluntarily. Parents always have in their minds that education can make brighter future to their children. So, they will support their children by all means, in education, as far as their children want. Rarely found cases where parents ask their children to quit schools. Instead, their children are always encouraged to work hard and compete for good scholarships and various educational assistance, which they think may reduce their household expenses.

b) idle group

The system of lifelong education in Malaysia goes through several stages – early, middle, high and some alternative routes (marked by **earlier). At the end of every stage, there will be hurdles before individuals can proceed to the higher stages. These hurdles produce what is known as a `death trap' which will filter out individual under the `idle group' who cannot be used as manpower at entry level of the next stages. Refer Appendix 2 (Table 3). The lower of stages the idle group fall into the death trap, the lower values they are in the labour market. Rather, individuals belong to this group may not be able to get into the labour market at all if they are illiterates.

In this context, the role of government to provide lifelong education is to decrease number of individuals in the idle groups, and create for them opportunities to proceed their journey in education system via alternative routes. The aim of the government is to provide group of knowledge-workers in the future. The government's obligations are considered accomplished when no one is denied access to education at any level they want to.

It can be summarized that government makes continuing education projections and plans to fulfill its obligations. No one will be sued if not

taking opportunities to pursue education. On the other hand, the government would be punished if not providing such opportunities to the people. For example, the government may be thrown out power or may lose seats in legislature during elections.

c) alternative routes to education

The government has taken several steps to encourage the citizens who want to get access to lifelong education. These include steps in providing alternative routes, apart from getting access to mainstream education. The alternative routes can be in the forms of private education, out campus, distance learning, executive programs, in-service trainings, technical and vocational education, and education in community.

Those alternatives however, are seen as efforts or opportunities initiated by the government to the people, who on voluntary basis as recipients. There is no compulsory for the people, who are affordable and qualified, to fulfill it. Normally, in this context, only individuals with forward looking visions and highly motivated to improve their quality of life, will grab the opportunities.

d) political demands

Performance of government has always been related to its success in improving the wellness and wellbeing of the people. So, the goal of improving the quality of life of the people will continue to become prime agendas in the political process. It has always been set as an important agenda in manifesto of all political parties, especially during elections in Malaysia.

During election campaigns, rarely found political parties which make promises about eradicating illiteracy. Instead, most of them always promise to help creating more education, skills and job opportunities. Appendix 3 (Table 4) explains about manifestos of political parties during election in Malaysia These all are actually mean to improve the quality of life of the people, which is considered as a kind of SSNs provided by the government.

e) framework of the nation's development

Development of a nation has always been related to the evolution of its civilization. The evolution of a civilization normally can bring about a nation into one stage of development. Development can be measured based on the nation's development stages. It can be classified into three stages, namely least developed, developing and developed stages.

Development of a nation may include its political, economic and social developments. Development also may increase demands for quality human resource. This is in line with the latest development of technologies

and industries to suit the standard of developed nation. These demands require human resource to equip themselves to be more competitive in order to meet the pre-conditions of knowledge-workers. Individual citizens will try to put themselves on track of achieving the goal of knowledge-workers. Hence, the real aim of individuals go beyond their efforts to become literate. Instead, they put their aims on how to survive within political, economic and social environments in the future. This also reflects that individual's needs for lifelong education emerges as another perspective of social safety nets in order to equipped themselves in meeting demands of the ever changing world.

Conclusion

Malaysia provides various facilities to allow all citizens get access to education. This includes lifelong education, where one can get education as long as he is willing to, anywhere at any time, in line with the rapid development of the nation. However, there is always a question of whether education provided by the nation is only aimed at ensuring citizens able to read and write in order to achieve the development standards, or to produce workforce who can survive in the country with rapid development.

The question about eradicating illiteracy versus social security nets has been analyzed and discussed in this paper. Several findings show that an aim towards social safety nets becomes the major goal of individuals to access lifelong education, although eradicating illiteracy becomes the prime agenda of the government in allowing all citizens access to that education system.

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Appendix 1

Table 1
LITERACY RATES IN MALAYSIA
Youth (15-24 years old)

GENDER/YEAR	***1980 (%)***	***1991(%)***	***2000(%)***	***2010(%)***
Male	89.50	97.91	97.21	98.38
Female	86.53	95.22	97.27	98.46
Total	87.97	95.56	97.24	98.42

Adult (15 years old and above)

GENDER/YEAR	***1980***	***1991***	***2000***	***2010***
Male	78.50	88.56	91.97	95.43
Female	61.25	77.28	85.35	90.75
Total	69.52	82.92	88.69	93.12

Source: Index Mundi.com web page at www.indexmundi.com/facts/malaysia/literacy_rate

Table 2
OVERALL PROGRESSION OF LITERACY RATES IN MALAYSIA (1957-1999)

YEAR	**RATES (%)**
1957	46.1
1970	62.1
1980	72.0
1990	78.0
1999	89.0

Source: Education in Malaysia web page at http://educationmalaysia.blogspot.com

Appendix 2

Table 3
ENROLMENTS AND DROP-OUTS AT SCHOOL LEVELS IN MALAYSIA

Levels	***Total***	***Enrolment***	***Drop-out***
Pre-primary	3,500,000		
Primary		3,000,000	500,000
Survive Primary	2,976,000		24,000
Secondary		2,044,512	931,488
TOTAL	**3,500,000**	**2,044,512**	**1,455,488**

Source: Education in Malaysia web page at http://educationmalaysia.blogspot.com

Appendix 3

Table 4
MANIFESTOS OF POLITICAL PARTIES DURING ELECTIONS IN MALAYSIA

Political Parties	*Manifesto*	*Remarks*
National Front	*-To increase income and competitiveness, prices controll, creating job opportunities, increase access to education, to build affordable housings, increase access to health, preserve vernacular school, to lower crime rates, icrease satety at public spots, fight against corruption, to respect all diversities, to increase international roles and responsibilities* *-To keep all promises, bring hopes to the people, especially to lower down the living costs, increase wellness and well beings in the urbans, and to provide better and safer housings in five years to come*	*12th General Election, 2008* *13th General Election, 2013*
People's Pact	*With the slogan of `People's Pact is the People's Hope', the manifesto reflect desires to increase living standard and quality of education, to ensure Malaysia emerges as a welfare state, providing equal opportunities to all races, and to adminster the country honestly*	*13th General Election, 2013*
Malayan Islamic Party	*-Moving Malaysia towards `a Welfare State'. The manifesto underlines 42 page long of the core elements to achieve the status of the nation*	*12th General Election, 2008*
Democratic Action Party	*With the slogan of `the Only Change', its manifesto promises to create healthy environments, safety, better living standards, equal gender representation, and to strengthen the economy, democracy & freedom, quality education*	*12th General Election, 2008*
Malayan Socialist Party	*The manifesto puts attention on issues such as eredicating the culture of corruption, equal distribution of the nation's prosperity, equal rights, pure development and genuine democracy*	*13th General Election, 2013*

Sources: drhalimahali web page at https://drhalimahali, National Front home page at http://bn.nationalfront.org.my, The Star Online at www.thestar.com.my, Election.info web page at www.election.info/party-candidate/ manifesto-election, the Malaysian Insider web page at www.themalaysianinsider.com/, Democratic Acton Party home page at http://dapmalaysia.org/party

EFFECT OF INCLUSIVE EDUCATION ON THE PERFORMANCE OF STUDENTS IN MATHEMATICS AND ENGLISH LANGUAGE: A SCHOOL STUDY

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Abstract

Inclusion, as a model for educating students with disabilities (SWDs) is a fairly recent phenomenon that is changing the face of instructional settings and formats in schools in the United States. Inclusion is achieved through the seamless collaborative efforts of both general education and special education teachers in inclusive instructional settings. The purpose of this study is to determine the effect of inclusion, as an instructional practice, on the performance of students in a middle school in Southern, USA. The study covers a two-year period for groups of 5th grade students in mathematics and English Language Arts (ELA), in inclusive and general education instructional settings, through to the time they completed 6th grade. Data on the performance of the students in inclusion classes, in mathematics and ELA, over the two year period, were collected and analyzed. The concern that the performance needs of the special education students are not being met in the inclusion settings, and that the setting may be detrimental to the performance of regular education students, is not supported by the findings of this study in the two content areas. Implications for instructional leadership are also examined.

Keywords: Inclusive Education, Students with Disabilities, Student Performance, School Leadership

Introduction

Inclusion, as a model for educating students with disabilities (SWDs), is a fairly recent phenomenon which had its origins in several key pieces of legislation in the United States. The legistlative developments are changing the face of education, as we know it. In the 1970s, only 20% of children with

disabilities were being educated in regular school settings (US Department of Education, 2010). Beginning with the Education for All Handicapped Children Act of 1975 (EAHCA), which later became the Individuals with Disabilities Education Act of 1990 (IDEA), persons with disabilities who had once been isolated from typical educational settings were provided the opportunity to receive educational opportunities similar to those provided to other students. Steps were then taken to move students out of institutions that exclusively focused on meeting just the basic needs of SWDs in exclusive settings, to the preferred least restrictive environment within general education settings (US Department of Education, 2010).These pivotal changes were followed by the ratification of the 1997 amendments to IDEA and further supported by the reauthorization of the Elementary and Secondary Education Act (ESEA) in the form of the No Child Left Behind (NCLB) Act in 2001. As a result, schools started creating opportunities to *include* (emphasis adddd) children with disabilities in the flow of school life. As time went on, terms like *least restrictive environment* and *inclusion* (emphasis added) became part of the normal instructional language of education (Horowitz, 2013).

These programs also mandate the wide-scale use of assessments to monitor the progress and achievement of students with special needs. Especially, the NCLB Act of 2001 mandated that students in all subgroups be assessed and be accounted as part of accountability balance-sheet of school performance. Under NCLB, SWDs were expected to perform at 95% achievement level compared with regular students. This is because some members of some communities were concerned that the performance of regular education would be adversely impacted by the presence of SWDs in the same setting. In some communities and schools, clandestine efforts were made to move SWDs out of mainstream classes and place them in more restrictive environments where they could receive what they called “personalized instruction”. This was designed in effort to creatively rig the system in order to meet the accountability requirements. At the same time, there were groups who were concerned that the significant strides made toward inclusion and holding school accountable for the achievement of *all* students were being undermined (Sapon-Shevin, 2011).

The debate still rages on regarding the effect of inclusion on the respective performance of SWDs and regular education students within inclusive education settings. Because teachers, schools, school-districts, and states are held accountable for student achievement, based on the NCLB Act, the focus of most elementary and middle schools is on English Language Art (ELA) and Mathematics (Cawelti, 2006). This is also the reason the why the content area of focus for this study is on inclusion instructional practices in ELA and mathematics classrooms.

Although there has been much debate regarding the effectiveness of inclusion, little evidence has been provided in support of inclusion regarding high-stakes testing. Because more research is necessary to better understand the full effects of inclusion beyond the positive social interactions of students in these classes, this study is designed for the purpose of measuring the effect of the inclusion program on high-stakes test scores in one middle school in South Carolina. The study focuses on the performance of students enrolled in inclusion classes in general education English Language Arts (ELA) and mathematics. The research question to be answered in this study is; what is the effect of inclusion education delivery model on the performance of SWDs and regular education students?

Conceptual Framework

The education of all students in inclusive settings, and the subsequent assessment of student learning in such environment, is the conceptual framework on which this study is based. Katz and Mirenda (2002) expressed that inclusion is the preferred method of delivery for special education curriculum in order to meet both the academic and social needs of SWDs and support inclusion as a way to promote the development of skills in academic areas as well as in non-academic areas such as communication and other "functional life skills" (p. 14). Guralnick (1990) found a positive correlation between the effect of inclusive education and the development of social and academic competences in SWDs.

Hypothesis

The authors hypothesized that SWDs who are enrolled in inclusive ELA and mathematics classes will perform at an achievement level consistent with the general student population of the school.

Review of Relevant Literature

The delivery of instruction with SWDs can take many forms. Two most common instructional delivery methods are: mainstreaming, and inclusion (Stout, 2001). Mainstreaming, also called the "consulting teacher model" (Idol, 2006, p.78), places SWDs in the a general education classroom where the special education (SPED) teacher works directly with SWDs in a general education setting. Another method of mainstreaming is to have SWDs attend general education classes while also separate receiving instruction through a resource pull-out program. In this scenario the general education and SPED teachers collaboratively design a plan for assisting the student in transferring learning from the resource program to the general education setting (Idol, 2006, p. 78).

In inclusion classrooms, both the general and the SPED teachers co-

plan and the curriculum and instruction and co-teach seamlessly in the same class to both SWDs and general education students at the same time. They work collaboratively as partners who are fully vested in the education of the all the students in the classroom regarding delivery of instruction, assessment, and accountability (Friend, 2008, p. 9). The inclusion of SWDs in a general education classroom setting is intended to improve educational outcomes for all students in the inclusive setting (Harr-Robins, Song, Hurlburt, Pruce, Danielson, Garet, & Taylor, 2012, p. ix).

Providing all students with the least restrictive environment while assessing student achievement are both legislatively mandated in most states. This study seeks to shed some light on the effect of inclusion instructional practice, on the performance of both SWDs and regular education students who are co-taught in inclusive instructional settings, on high-stakes test at a middle school.

I.
Method

The study is a quantitative non-experimental post-facto design with high-stakes test scores, as the dependent variable drawn from previous Palmetto Assessment of State Standards (PASS) tests administered in May of each school year. The data is limited to mathematics and ELA scores. These are the two content areas that are tested yearly in South Carolina for middle school students and for which inclusion instructional approach is the practice. Scores are taken from existing data from a two-year period beginning with the 2011-2012 school year to 2012-2013 school year. These scores are accessible from a database maintained by the school district and state department of education, and were obtained accordingly. Students who have received instruction in inclusive classrooms, in ELA and Mathematics, over a two academic-year period covering 2011-2013 were the sample for this study.

The scores of SWDs students were compared to scores of regular education students in the two subject areas (mathematics and ELA) thought in the inclusion settings to determine if the achievement level of the SWDs differs significantly from that of regualr education students. Tests of differences between the mean scores of SWDS and regular education students were performed at 95% CI and $p = 0.05$ using SPSS-PAWS Statistic Version 18.0.

Study Limitations

The small number of subjects within each sample group were less than 30. This presents a limitation to the nature of the statistical analysis approach used and the generalizability of the results. This was why Leven's Test for Homogeneity of Variance (LTHV) was performed to test for

equality of variances despite the slighly small sample size. The test confirmend homogenity and that smaple size does not signisficalty alter the inferences form the analysis. Hence, the study is generalizable to the student population in inclusion education program at the study school.

Assumption

The degree of collaboration between special education and general education teachers and the nature of the interaction of the teachers with the sample students, were assumed to be consistent throughout the two years covered by this study.

Data analysis Method

Analysis were done using SPSS-PASW Statistics, Version 18.0 statistical software. Independent t-tests were performed for the mathematics data, and a Univariate Analysis of Variance (UANOVA) was performed for the English Language Arts (ELA) scores.

Results

Mathematics

The results of the analysis of mathematics scores, over the two-year period, are shown in Tables 1 and 2. The mean of mathematics scores for the inclusion class was slightly higher in 2012-2013 (600.79) than in 2011-2012 (589.38). This is an indication of improved performance overall. However, the difference was not statistically significant at $\alpha = 0.05$, $t_{(52)} = -1.140$, $p > 0.05$ (see Table 1).

Table 1: Descriptive Group and Inferential Statistics for Mathematics across the Two Years of Study

Descriptive Group Statistics by Year Dependent Variable: Score				
Year	**Sample Size N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
2011-2012	26	590.38	37.08	7.27
2012-2013	28	600.79	29.83	5.64

Inferential: Independent Samples Test by Year								p> 0.05	
	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	1.482	.229	-1.14	52	.260	-10.40	9.12	-28.72	7.91
Equal variances not assumed			-1.13	48.02	.264	-10.40	9.20	-29.90	8.10

As shown in Table 2 below, the mean score of students in the regular education mathematics class (623.88) was higher than that of the inclusion class (610.21). The difference was not statistically significant at $\alpha = 0.05$, $t_{(47)} = 1.582$, $p > 0.05$.

Table 2: Score Comparison of Students in Regular Mathematics Classroom with those in Inclusive Classroom

Descriptive Group Statistics by Instruction Grouping in Mathematics				
MATH Study Group	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Regular Ed Class	25	623.88	25.69	5.14
Inclusion Class	24	610.21	34.36	7.01

Independent Samples t-Test								p> 0.05	
	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	2.628	.112	-1.582	47	.120	-13.68	8.64	-3.72	31.06
Equal variances not assumed			-1.572	42.57	.123	-13.67	8.69	-3.87	31.21

English Language Arts (ELA):

The analysis of the scores from inclusive ELA classrooms were done by combining across-year and across-student-instructional-grouping simultaneously using a Univariate Analysis of Variance (UNOVA) approach. See table 3 below.

The mean score of SWDs in ELA in 2012-2013 (597.17) was slightly higher than the mean score of SWDs in ELA in 2011-2012 (591.10). This indicates an improvement. The performance of regular education students was very similar across the two year period (2011-2012 mean = 622.47; 2012-2013 mean = 624.12). These results were not statistically significant at $\alpha = 0.05$, $F_{(50)} = 3.06$, $p > 0.05$. However, the comparison of mean scores between the special ed (594.13) and regular ed (623.29) students in the inclusive ELA setting was statistically significant at $\alpha = 0.05$, $F_{(50)} = 174.42$, $p < 0.05$.

Table 3: Descriptive and Inferential Statistics of the Mean Differences of Student Performance in ELA

Descriptive Group Statistics by Year and Instruction Grouping in ELA
Dependent Variable: Score

Year	Class-group	Mean	Std. Error	95% Confidence Interval	
				Lower	Upper
2011-2012	Regular Ed Class	622.47	8.93	604.53	640.40
	Inclusion Class	591.10	10.94	569.14	613.07
2012-2013	Regular Ed Class	624.12	8.39	607.27	640.96
	Inclusion Class	597.17	9.98	577.12	617.22

UANOVA: Tests of Means Between Subjects Effects
Dependent Variable: Score

Source		Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Year	Hypothesis	192.868	1	192.868	3.055	.331	.753	3.055	.111
	Error	63.137	1	63.137					
Class-group	Hypothesis	11012.593	1	11012.593	174.423	.048	.994	174.423	.700
	Error	63.137	1	63.137					
Year vs. Class-group	Hypothesis	63.137	1	63.137	.053	.819	.001	.053	.056
	Error	59794.065	50	1195.881					

a. Computer using alpha = .05

Discussion

The purpose of the study is to determine the effect of inclusion, as a special education instructional delivery model, on the performance of SWDs and regular education students in Mathematics and ELA in a middle school. The results support the hypothesis that special education students enrolled in inclusive general ELA and mathematics classes perform at an achievement level consistent with the regular education students.

The results of this study indicate that there is no significant difference in performance of SWDs and regular education students overall, except for English language where the perforamnec of regular education students are signifcantly higher that those of SWDs in inclusive setting. Students are enrolled in these classes in order to receive special education services within an environment that is as much like the educational experience of regular education students while still meeting the individual needs of all the students. Inclusion did not have any significant negative effect on the performance of regular education students in an inclusive setting. However, the significant difference between the performance of regular education and SWDs in the ELA inclusion class is revealing. SWDs may be more likely to experience difficulty in ELA than in mathematics classes; since mathematics is a more process-driven subjact than ELA.

Conclusion

The findings of this study tend to support utilizing inclusion as an appropriate and beneficial instructional delivery model for meeting the unique needs of SWDs as well as regular education students. The concern that this model is detrimental to the performance of the regular education students in the inclusion class, is not supported by the findings of this study. This is evident in the lack of a significant difference in performance between the SDWS in the inclusion class and students in regular education class taught by the same set of inlusive instruction co-teachers.

Implications for Practice

The findings of this study support the need for continuation of the current inclusive model of special education instrutional delivery at the study school. The concern that the needs of the SWDs are not being met in the inclusion setting and that the setting may be detrimental to the performance of regular education students is not supported by the findings of this study.

The finsings als have implications for school leadership in terms of planning and scheduling of instructional delivery and services. In schools with SDWs, inclusion classrooms may be the performance-effective option for instructional scheduling format. Similar studies at other schools and studies of the effect of other instructional delivery models, such as comparing students in self-contained programs with other instructional formats is also called for from the finding of this study.

Although, the purpose of the study is to determine the effect of inclusion, as a special education instructional delivery model, the results of the study may be used to plan for subsequent special education instructional delivery programs at the study school or to plan for similar studies at other schools.

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INNOVATIONS IN FUNDAMENTAL STUDIES FOR EDUCATION

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Abstract

This article reviews the influence of new knowledge in natural sciences as it relates to development of innovative technical solutions. It explains the necessity of applying new scientifical concepts to the structure of liquid systems in educating versatile specialists in order to overcome difficulties in creation of effective technical solutions.

Keywords: New knowledge, fundamental studies, education

Introduction

Unprecedented technological progress - such as development of information technologies, introduction of nanotechnologies to the field of production of various materials with predetermined functional properties – causes need for continuous use of published results of modern fundamental studies in training of experts in chemical and metallurgical industry. Training of highly intellectual experts capable of creating waste-free technologies and carrying out their scientific and technical follow-up is commanded by the following issues: (1) escalating complexity of raw materials; (2) need for reducing energy cost per item produced; (3) need for eliminating redundant technological links in the raw material - finished product chain; and (4) urgent need of environment protection. In order to achieve high quality and low-cost production of competitive goods and development of innovative technologies, the specialists no longer can work without use of new data from natural sciences studies. It is necessary to develop skills for the fastest use of scientific innovations for practical use. Technical progress caused the growth of number of higher educational institutions in the world and, respectively, the growth of number of university-educated experts. These experts are to ensure the growing demand in various industries, and this resulted in need to tailor the process of training of specialists to new conditions. The most striking example of such urge is establishment of

scientific and educational complexes (centers), research universities and super-universities across various countries. These organizations are mostly engaged in educating and upholding scientific research of various level of complexity in the course of training of experts, and they provide scientific and intellectual capacity of educational institutions to solve scientifically - applied tasks. However, this positive aspect of expert training has also a negative side. Carrying out experiments in interests of applied tasks, need to analyze a huge amount of the published material and conclusions from numerous experimental data create illusion of scientific progress. Thus, many unresolved issues in Natural Sciences studies are ignored and experimental results, which can't be explained from the existing scientific positions, are lost forever. Too many things are attributed to "an experiment error", "poor equipment" and "accident". Meanwhile, the escalating amount of "abnormal" experimental results creates impressive base for development Natural Sciences studies and for revision of outdated fundamental provisions in these disciplines. Here plays its invaluable role the rational system of fundamental researches aimed both at quality improvement of expert-training programs and at creation of the knowledge-intensive, highly intellectual technical solutions.

I.

An indicative example is training of experts for chemical and metal mining industries that in large determine economical capacity of many countries. It is well-known that today's mineral and raw sources of productions have radically changed. For example, the basis of modern mineral resources in metallurgy field is represented by polymetal ores that are too complex in mineralogical structure and, often, of poor grade, and difficult to process in the technological relation. Certain difficulties are related to deep processing of heavy, high-paraffinic and sulphurous oil and oil products. This situation requires a specific approach to creation of innovative technologies that will be deployed, and extension of product line in the petrochemical industry. To overcome existing difficulties in the use of natural raw materials, it requires fundamental knowledge of the processes happening in the considered systems. Specific knowledge about the physical and chemical properties of solid, gaseous and liquid objects is required. The science knows a great deal about the first two states of objects (although complex objects are not well-studied), but the liquid stage has not been studied well by the modern science. Yet, the science has no a uniform theory in regard to the liquid state of objects. It is the most striking example when erroneous conclusions in natural science studies led to huge losses in the innovative technologies research: the loss of time, material losses and huge labor costs. It especially influences planning and carrying out fundamental

researches (including training of expert technologists) in the areas of science and techniques which directly deal with aggregate states of substances: liquid ~ steam, liquid ~ solid and steam ~ liquid ~ solid. It should be noted out that discussion about the structure of liquid systems, electrolytes in particular, has been on for more than hundred years [1]. One of the "official" scientific points of view in regard to the nature of inorganic water solutions was outlined in the beginning of the XX century by the outstanding Swedish scientist Svante Arrhenius, who was awarded the Nobel Prize in Chemistry in 1903. He was awarded "... for the services he has rendered to the advancement of chemistry by his electrolytic theory of dissociation". His theory was supported, in particular, by Nernst and Tubandt. They carried out experiments, which (in their opinion) demonstrated competency of scientific provisions of the theory of Arrhenius. It also formed the basis to consider Arrhenius's thesis as the scientific fact, but not the assumption. Over time this thesis became the "official" scientific point of view, and began to be called as "the theory of electrolytic dissociation".

Certainly, S. Arrhenius's theory - the outstanding scientist-chemist - had a considerable impact on development of technologies, especially the technologies using electrolysis process. Technologists had an opportunity to organize rather cheap production of metalized aluminum, metalized sodium, gallium and other metals, and also to organize effective purification of copper, nickel, etc. The success of this theory was caused by existence of high-quality raw materials in this area. Considerable changes in quality of the mineral raw materials used in chemistry and metallurgy, increased requirements to economy in metallurgical processes, and environmental protection require that realistic ideas about the structure, and in many cases, and knowledge of a microstructure of the condensed systems (especially liquid systems) become a necessary condition for creation of innovative technologies. Founders and developers of existing technologies in metallurgy and chemistry relied on thermodynamic and kinetic regularities of chemical processes or used empirical and, at best, semi-empirical approaches to the analysis of processes. Now, with creation of new highly intellectual equipment becomes obvious that fundamental bases are insufficiently fulfilled in such actual area of natural sciences as a ratio of influence of various types of energy (thermal, electric, energy of light, etc.) on chemical reactions and structural transformations in the condensed systems [2]. Fundamental research in this area to a certain extent demand accurately defined concepts which are applied to describe properties of many chemical systems and aggregate states of substances. One of examples is the melted condition of metal oxides. In November, 1960 at the First All-Union council for physical chemistry of melted salts and slag, a USSR academician A.N. Frumkin spoke: "… the structure of high-temperature systems is much less

investigated as compared to the structure of water solutions, and its studying is very interesting task, and also the necessary prerequisite for creation of the general theory of a liquid state".

The corresponding member of Academy of Sciences of the USSR Ya.I. Gerassimov emphasized: "Participants … fairly believe that one of the most important problems of physics and chemistry – the problem of solutions, i.e. the theory of solutions can be resolved only by every possible development … of the molecular and statistical and thermodynamic theory of separate classes of solutions" [3]. Now, the studies on determining principles of liquid formation endure a new round in correlation of views on a microstructure of water solutions and high-temperature fusions [4, 5, etc.] . The modern science refers these researches and development of methods of forecasting such systems to the most actual fundamental and applied problems of physical chemistry. In other words, the solution of such problems, including, in natural science studies, in metallurgical technology is directly connected with realistic understanding of the nature and property of water systems in a wide range of parameters. It follows that receiving reliable initial data for development and deployment of a basis for innovative technologies in hydrometallurgy directly influences receiving effective results. If researches of solid objects are developed quite widely and bring new fundamental results and mutually agreed data on their physical and chemical properties, then researches of physical and chemical properties of solutions are generally based on the indirect data obtained as a result of various experiments. Unfortunately, physical and chemical properties of the concentrated and multicomponent solutions are studied very little. Meanwhile, this class of inorganic water solutions represents great practical interest as it is most often used in chemical and metallurgical technologies. The main difficulty in understanding of electrochemical processes have ideas of spontaneous electrolytic dissociation of solid junctions upon transition to solution. Doubts in reality of such ideas arose even during their formation. U. Sutherland showed that conductivity of solutions of electrolytes is inversely proportional to internal friction and degree of dissociation, i.e. existence of undoubted influence of a microstructure of solutions on transport of electric current. P. Fowler defined limits of applicability of Debye – Hueckel theory, especially regarding water solutions of high concentration. In general, the modern level of the theory doesn't allow to obtain numerical data on properties of solutions in the computational method and to predict their dependence on concentration and temperature, and experimental studying of solutions' properties lags behind requirement of science and practice. Recently, a number of research works where authors seek to receive more real ideas of a microstructure of various water solutions was published. For example, the works [4, 5, 6] state that liquids have a

distant order which is presented to them by statistical ensembles of clots of molecules or clusters. Clusters have the following thermodynamic characteristics: superficial tension, potentials and even energy of their surfaces [7]. Energy of cluster formation in individual liquids lie in the range of kiloJoule/mole and below, and the solvent clusters of ionic couples of salts in liquid solutions lie in the Joule/mole - miliJoule/mole range [7]. The authors [7] assume that the thermal field (k - Boltzmann's constant, T – temperature, Calvin degrees) constantly destroys clots of molecules, but this process to be in balance with processes of their formation. A driving force of clot mass formation is cohesive - cooperation interactions of similar molecules. This assumption doesn't consider that the structure of liquid systems changes with temperature increase and this change can be quite considerable [8]. Authors [7] in a number of their works suggest to consider individual liquids and their mixes, and also polymers as nanoemulsions, and clusters of salts in solutions as nanosuspensions of germinal crystals. This assumption recognizes that clots of masses may be allocated and analyzed by standard physical and chemical methods perhaps only for organic solutions and polymers [9]. Yet it is impossible to do it for inorganic water solution, though there are researches directed on establishment of their microstructure.

The authors [7] consider that it is reasonable to expect that "in the solutions used in chemical technologies, clustering processes will take place as well. For a new stage of high-quality development of the chemical and biotechnological industry this understanding will play a crucial role in formation of competitive segments of the market in the 21st century". From the above short reasoning, complexity of a problem with use of inorganic water solutions in innovative technologies is quite obvious. A big complexity is also represented by clarification of mechanics of chemical processes on electrodes, especially on composite ones. This task became actual for all world science recently. Passing of chemical processes on electrodes caused interest owing to a number of the facts. For example, it is known that the compounds received by electrodeposition on the cathode can differ in singularity of physical properties and/or nuclear and crystal structure that often is followed by formation of metastable modifications [10, 11]. The physical nature of this phenomenon wasn't analyzed earlier in spite of the fact that the practical importance of electrolytic crystals doesn't raise doubts. It was established that the general structural regularities of electrolytic crystals defining their specific properties are related to a unique factor of electrodeposition, i.e. an excess density of electrons at the front of crystallization. The excess density of electrons particularly can be caused by chemical processes which happen along with release of electric energy. Such processes can provide occurrence of thermodynamically improbable reactions, but cause additional difficulties at their studying. So, the authors

[10, 11] found out that general regularities of formation of electrolytic phases are attributed to the excess density of electrons at their cathode sedimentation. This particularly leads to stabilization of some phases which are absent on the corresponding P-T (pressure - temperature) charts.

The existing theoretical statutes on liquid outflank many difficulties, especiallyliquids in physical chemistry that negatively influences creation of realistic base for development of innovative technologies. Sometimes these ideas of liquid create unsoluble contradictions in modern fundamental science in the explanation of transport properties of the condensed systems, especially regarding transfer of different types of energy and the mechanism of transport of substance (atoms, molecules, groups of atoms or molecules, etc.). In particular, such situation doesn't promote development of scientific base for the technologies based on employing resonant phenomena in the condensed systems when using oscillatory and pulse influences.

Now the greatest interest among researchers in the world raises an issue of microstructure of inorganic water solutions. Especially this interest increased in connection with attempts to use nanotechnologies for creation of new constructional materials of different function through application of phase transitions. Research of processes of structuring and structural and phase transformations in the condensed systems at the beginning of the XXI century came to the forefront in natural-science disciplines. They gain special importance when using the nanotechnologies applied to production of electronic equipment, in technologies of receiving metals, alloys and various materials with in predetermined physical and technology properties. Thus ideas of a microstructure of liquid metals start playing a more important role. For example,, the report of professor V. S. Kroposhin (The Moscow State Technical University of Bauman) [3] shows how important it is to know not only the structure of solid alloys, but also metal fusions, including, fusions of monometals. Possibility of transfer of nanotechnologies in production of a wide range of inorganic and organic materials is studied now worldwide in laboratories of various profile and in various fields of science. Transfer of nanotechnologies in the field of producing functional materials will naturally be followed by researches of methods of use of energy in the developed technologies. Research of transmission of energy in the condensed systems will have a direct practical focus. In turn, these researches are directly related to researches of processes of structurization. The enormous experimental material accumulated by science in the XX century on transport properties of various chemical compounds and substances gives the grounds for correction of a number of ideas of structure of the condensed systems, in particular, liquid and structural transitions in liquid systems. On the practical level, this experimental material creates prerequisites for purposeful formation of structures of the condensed systems not only by changes of chemical

composition and temperature, but also under the influence of other physical factors. Realistic ideas of the principles of formation of liquid systems (and connected with it the mechanism of phase transition of the first sort) were already beyond pure academic interest. The practical aspect of this problem is a wide circulation of high technologies in production of materials with the predetermined functional properties (semiconductor devices, liquid crystals, etc.) demonstrates importance of management of structure of the condensed systems, especially, structure of liquid for optimization of technological processes. However, some fundamental representations in these issues don't allow to apply to the fullest completeness and flexibility of these theoretical representations for development of new technologies. The most indicative example of this interrelation is explanations of transfer of electric current through liquid and the principle of formation of structure of electrolytes. In the course of researches of structural transformations in liquids under the influence of different types of energy and transportation of electric current in electrolytes, the phenomenon of a coacervation of high-temperature oxidic fusions (electrolytes in modern meaning) under the influence of variation electromagnetic fields and mechanical oscillations was revealed [12]. Besides, anisotropy of conductivity of high-temperature fusions is revealed and influence of orientation of molecular dipoles on the value of fusion electric conductivity is demonstrated. Also, there was a number of findings in various exotic phenomena in conductivity of the fusions occurring under the influence of electromagnetic fields and electric current characteristics (for example, decrease of conductivity of fusion with temperature increase, increase of conductivity of fusion with fall of temperature, spasmodic change of conductivity, etc.). Also revealed an abnormally high electroforetic migration of solid particles. Established a possibility of chemical interaction of oxidic fusions with components of a gas phase with a wide chemical composition under the influence of pulse electric current (meander) [13]. At the same time deoxidizing gas can act as an oxidizer, and structural changes in fusion lead to loss of fusibility of oxidic systems. The given facts give the grounds for need of revision of the existing theoretical views of processes of formation of a microstructure of liquid (in particular, water solutions and oxidic fusions) and conductivity of liquid for interpretation of practical properties of these systems (the theory of electrolytic dissociation by Arrhenius, various theories of conductivity of liquid, etc.). In turn, the existing theories of conductivity of liquid only partially correspond to the realities and call for their improvement for introduction of high technologies in metallurgical and chemical production [14, 15].

Conclusion

The most important aspect of innovations is in applying results of modern fundamental researches into the course of training and is a dialectic approach and analytical reasonings in teaching it is natural science studies and application of new knowledge in teaching the main subjects at training of specialists with the higher education. Obviously, it will require correction of some scientific views and definitions in the nature of chemical reactions, power testaments, micro and macroproperties of substances in their interrelation [16, 17, 18]. Since the whole world is using a new paradigm in education, it will require feaguring out the way of overcoming conservatism in education in order to secure prerequisites of a sustainable development of society.

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IMMIGRANT NEIGHBORHOODS IN CHICAGO AND COMMUNITY SCHOOLS: A MODEL FOR STUDENT SUCCESS

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Abstract

Schools can become the focus of community connected to daily lives and experiences. They can also address the academic and social context of education with strategic partnerships. Educational experiences are affected by school and non-school factors; therefore, schools need to expand their boundaries to other areas which affect learning. The greatest influence on students is the family and the greatest influence on families is the community so schools need to seek the integration of school, family and community to deliver a quality educational program for all students. Supporting and challenging students entail supporting and strengthening families. There is interdependence among schools, families and communities in order to exert a positive influence on academic outcomes. This paper examines the characteristics of effective community schools in a study of one particular school in an immigrant neighborhood in Chicago.

Keywords: Immigrant neighborhoods, community schools, partnerships

Introduction

Many schools that advance student achievement continuously have a mission with a purpose. They also nurture relationships in order to challenge all participants to be the best they can be. These schools also demonstrate a shared belief in collective endeavors. According to Donaldson (2006), these characteristics constitute the three stream model- relational, purposive and action in common. Community schools foster mutual trust and openness so people can influence one another. They also connect individuals with organizational purposes and demonstrate a shared belief that goals can be accomplished. In many diverse school settings, economic, cultural and linguistic stereotypes influence expectations. Such expectations impact the performance of students – if they are allowed to occur. However, stereotype dangers are situational, therefore, educational environments can be created in which all students can excel academically, socially and emotionally and can

empower them to be successful and to have an unlimited positive attitude and perception of their own potential. Low-income communities, immigrant families, English language learners, undocumented students, special education programs, high number of dropouts, etc. – constitute myriad of reasons for some individuals who anticipate that these stereotypes have an unalterable impact in pursuing rigorous academic standards and excellent outcomes. This story with evidence-based strategies proves otherwise. It validates the transformative power that school communities can create to combat all of the above self-fulfilling prophecies which magnify stereotypes.

I.
Immigrants and Community Schools

Community schools and immigration represent the core values of democracy in America. The United States was founded based on the principles of freedom, economic and educational opportunities. All immigrant groups have contributed to these ideals. Yet, history repeats itself as new immigrants arrive and face their uphill battles in fulfilling the American dream. The draconian measures advanced in Arizona and other legislative initiatives in other states represent the antithesis of what this country is all about.

Due to economic pressures, immigration remains in the public eye. Dominant populations have always demonstrated a high level of anxiety while immigrants are arriving; yet everyone recognized their important contributions to America. Immigrant bashing continues to prevail nowadays regardless of the myriad contributions of documented and undocumented residents to the system of free enterprise. In the past, immigrant groups from Europe, Ireland and the Mediterranean were suspect on issues of public safety, religious and economic grounds.

However, as immigrant groups acculturated to the American way of life, the pessimism subsided until new issues emerge and immigrants become scapegoats among a variety of social and economic ills which become recycled in history. Latino, Asian, European and Caribbean immigration in its great majority is grounded on the value of hard work, family and faith commitments and the adaptation to America by learning English and most of all paying taxes.

The story of a community school exemplifies the attributes of all immigrant groups who aspire to the American dream in search of educational and economic opportunities.

It is estimated that immigrant origin youth will make up a third of young Americans in 2040. We need to focus on their educational and economic success for the well-being of this country. Therefore, the Dream Act as it has been proposed in Congress, unsuccessfully in the past, needs to

be addressed. It will provide equitable educational opportunities for successful students who have served their country well. One such approach is the concept of a comprehensive community school from preschool through high school. The driving force is a simple premise: Education does not occur in isolation from the rest of a student's life. Many factors – instructional quality, family, community, universities, non-profit organizations, government agencies, businesses – play an extremely important role in students' successful education. A continuous cycle of improvement is based on constant reflection of the following educational practices.

Relationships, Collaboration and Accountability

The interaction of all members of the school community, students, teachers and parents are critical aspects of school quality. Motivation and attitude toward the role of the school sets the tone for everyday accomplishments. This cannot occur without the development of social and emotional skills where conflicts are addressed and positive relationships are the norm. Empathy serves to engage people in treating one another with sensitivity and a willingness to support everyone. Self-awareness and your own assessment in how we react to others bring trustworthiness (Goleman 2006). According to Bryk and Schneider (2002), respect, competence, personal regard and integrity form the foundation for developing trust in schools leading to improved student outcomes. Even though academic cohesiveness is necessary, we must also foster teacher creativity by providing the necessary resources and flexibility to do innovative work. Collaboration by grade levels and academic houses leads to better planning and reviewing student work. It also leads to developing a student – centered approach where progress is monitored and resources are provided to meet student needs. Teacher autonomy also combats monotony and boredom.

Curriculum

A connected curriculum allows teachers to work with increased clarity and students to work with increased focus and responsibility. Teachers integrate reading and writing across the curriculum by using core frameworks for organizing instructional focus. Teachers organize activities in which students work independently or with a learning partner or team to "get it, get it clear, think it through, and get it across" (Radner 2006). Students use a variety of activities to learn by illustrating why they read and using graphic organizers to organize and communicate knowledge. Students explain what they learn – and how it relates to what they knew. They also communicate what is important using a variety of formats. Throughout this connected curriculum approach, the teacher makes learning clear and also guides activity. Students think thoroughly by connecting vocabulary and

making sense of writing. Staff development sessions focus on the implementation of the connected curriculum. All teachers receive curriculum maps to guide standards-based instruction. These tools provide a coherent program of instruction emphasizing standards in content areas and instructional activities to integrate them.

Youth Leadership Development

Students need to be encouraged with issues they regard as vital concerns and involved in planning what they will be doing. Whenever they are involved with applying ideals such as fairness, equity and justice to their world, their engagement is more powerful. Therefore, service learning opportunities enrich the curriculum and provide leadership development in order to address community needs. High school students serve as tutors in the primary grades on a daily basis. They participate in workshops to enhance their skills as reading buddies and increase their knowledge in the teaching of reading. This experience also conveys the message that they are role models in their own community. Internships in agencies surrounding the school expand their experiences to serve other members of the community. Students also participate in democratic life by researching and advocating legislative issues that affect their community by communicating with elected officials. Some examples include the advancement of fair immigration laws and gun control legislation. Other community organizing activities have included advocacy for a neighborhood public library, a play-lot for pre-school children and peace marches in the community. Students commit to meaningful school experiences when there is significance in what they learn and it reflects their world. They soon realize that their engagement makes a difference and they are connected to others through mutual work on common goals.

Parent, Community Engagement and Extended Learning Opportunities

Schools cannot escape interdependence with outside factors that influence whether students learn. Schools must seize opportunities to connect students and families to resources and support, rather than lament the prevalence of outside negative influences. By expanding boundaries, schools will become stronger and will engage parents and the community. Schools have the power to become the focus of the community, connected to daily lives and experiences and thus can share the educational responsibilities with other responsible partners. This process develops relational accountability where we become interdependent and co-determinants of student success. The meaningful extension of the school day is about providing the students with what they need to succeed, to beat the odds and capitalize on their strengths so they can grow up to be competent,

caring and responsible. Extended learning opportunities must provide a variety of academic, social and recreational activities, to accommodate different learning needs and styles. Family and community engagement can be fostered through high school equivalency classes, English as a Second Language, and literacy classes that reflect the needs of the community. A partnership with a health agency allows the school to offer health fairs, conferences and services to families. This collaboration culminated with the opening of a school-based clinic. Parents working as literacy leaders can teach other parents and community residents. Home gatherings can emphasize financial education, neighborhood improvement, immigration rights and community safety.

Assessment and Alignment

Student assessment occurs on a regular basis to determine progress in learning required content. Curriculum content is always aligned with instruction. Data on student assessment is used on a regular basis to make decisions regarding resource allocation, student needs, and the effectiveness of the instructional program. Data-informed instruction is integrated with the vision of the school and further developed with professional development. Common interim assessments are administered with defined standards aligned to state assessments and college readiness. Even though imposed accountability standards are used to assess compliance and progress, relational accountability permeates school culture where elements of quality reach beyond state tests and NCLB standards. This mission drives student success not only on mandated tests and assessments but on attendance, motivation, discipline, parent engagement, quality of student work and leadership. Evidence of student progress on required tests substantiate the following gains. Patterns of growth validate the effectiveness of the community school model in a Pre-K through High School setting.

Illinois Standards Achievement Test
Performance Profile for Spry Elementary School
Percent Meeting and Exceeding Standards
Composite Scores

Year 1	31.01%
Year 2	46.20%
Year 3	53.70%
Year 4	67.70%
Year 5	70.60%
Year 6	72.70%
Year 7	75.60%

High School ACT Scores

Year 1 3.6% scored above 20
Year 2 10.3% scored above 20
Year 3 12.5% scored above 20
Year 4 26% scored above 20

Conclusion

These turn-around efforts contradict many of the stereotype dangers that abound in many school communities. Signs of success are evident such as high student attendance (98%), minimal discipline disruptions, no dropouts and the pursuit of post-secondary goals (95%). Parent engagement in school activities is very high. All students and families make a commitment to complete elementary and high school successfully and enroll in post-secondary education. Capacity building is embedded in the culture of the school by engaging members of the learning community in planning and decision- making. Everyone shares a results orientation belief so progress can be sustained. A Pre-k through High School community school is a way of thinking, acting and working together to educate students and strengthen families and communities. All members of the school community interact everyday on the following basis. "WHAT LIES BEHIND US AND WHAT LIES BEFORE US ARE TINY MATTERS COMPARED TO WHAT LIES WITHIN US"
Ralph Waldo Emerson

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GLOBALISATION AND INDIAN SCHOOL EDUCATION: IMPACT AND CHALLENGES

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Abstract

Globalization is an important phenomenon that has affected the entire world in the contemporary era. Its impact on the education system of a country is intrinsic. In the context of India, globalization has impacted upon the education system in complex and conflicting ways. There is an increased emphasis on preparing *global* citizens who are ready to face the highly competitive world. There is a huge upsurge in the demand for learning English language, growing popularity of international schools, need for curriculum restructuring and inclusion of ICTs etc. While the basic aims of education are to enable children develop their potentials, define and pursue a meaningful purpose; globalisation has put an extra pressure on the education system to create 'winners' who are ready to battle in the race for the survival of the fittest. The present paper is an attempt to unveil the impact of globalisation on the school system as a whole. The paper is based on an empirical research conducted in sixteen government and private schools of Delhi, India. It explores their overall resources- physical infrastructure, human and non-human assets and various facilities that are intrinsic in order to provide quality education to the children. It attempts to present the contrasting revelations across the two categories of school education with respect to diverse variables such as strength of teachers and pupils, available infrastructure and its maintenance, co-curricular activities etc. It dwells into an investigation of attempts by the schools to provide a pro-social learning environment to pupils for indulging in innovative and creative accomplishments and providing a platform to explore and nurture their hidden talents. An interesting component that emerges is the strident diversity in the broad Art Education and Health and Physical Education school activities that are indeed significant for overall personality development. It also seeks to compare and critique the two categories of schools in terms of their inherited inequalities and explore their efforts as well as challenges to provide high standards of education. Last but not the least, the paper links the outcomes of the research with globalisation. It seeks to suggest few areas significant for developing an ideal knowledge base for a

global education within the contemporary Indian school system keeping in mind the child and human rights perspective.

Keywords: Globalization, education, India

Introduction

Globalization is an important phenomenon that has affected the entire world in the contemporary era. As the underlying structural dynamics, it drives the various socio-cultural, economic and political processes around the world and brings in new concepts, values, perspectives and information to the society. The increased communication contributes toward a world which is much more interactive, the one in which communication and transactions can emerge between people even when may never meet (Stromquist, 2005).

Impact of globalization on the education system of a country is intrinsic. It brings education to the front lines and in the prevailing discourse, is expected to be the major tool for incorporation into the 'knowledge society' and the technological economy. Educational access with quality is very much part of the globalization discourse where quality is defined as 'an educational content that enables students to obtain the knowledge they require for the construction of an equitable social and economic world' (Stromquist, 2005). Adopting a holistic approach to the problems, globalisation enables the ability of learners to access, assess, adopt and apply knowledge to think independently and exercise appropriate judgment and to collaborate with others to make sense of new situations. Breaking the boundaries of space and time, it uses advanced information and communications technologies, new systems of knowledge in teaching and learning that aid both the teacher as well as the student. Globalization encourages explorations, experimentation to push the frontiers of the potential of information technologies and communications for more effective learning (Cogburn, 2000). It also creates and supports policy makers and practitioners for the purpose of rethinking education and supports mechanisms for the exchange of ideas and experiences.

Impact of Globalisation on Indian Education

In the context of India, globalization has impacted upon the education system in complex and conflicting ways. There is an increased emphasis on preparing *global* citizens who are ready to face the highly competitive world. There is a huge upsurge in the demand for learning English language, growing popularity of 'international' schools, need for curriculum restructuring and inclusion of ICTs etc. While the basic aims of education are to enable children develop their potentials, define and pursue a

meaningful purpose; globalisation has put an extra pressure on the education system to create 'winners' who are ready to battle in the race for the survival of the fittest. It has led to the preparation of a curriculum that has to be internationally acceptable. There is also a huge demand for learning English language, schools with an international appeal with unconventional syllabi that focus on overall development of personality instead of rote learning, newer means of teaching learning pedagogy etc. School facilities have also come under the scanner as there is a demand for quality in available infrastructure that can aid in preparing a different class of people who are ready for a global world. In the contemporary context, students are seen as customers as well as partners in the process of learning.

Efforts by the Government to Improve the Quality of Education

The Twelfth Five Year Plan by the Government of India (2012-17) clearly links the quality of education to the available of physical infrastructure, textual materials, classroom processes, academic support to the teachers, assessment procedures and community involvement. It focuses on providing adequate inputs and infrastructure for the proper functioning of schools and treats improving school inputs as just the starting point in improving educational quality. It commits to taking a more comprehensive view for building a strong systemic focus on teacher capacity, improving school leadership/management, strengthening academic support system, better community and parents' participation, measuring and improving learning outcomes in a continuous manner. Focus is being laid on provision for having child-friendly schools and systems in teaching learning processes as well as in improved water, sanitation, hygiene and mid-day meal practices (Planning commission, 2013). The holistic view of the school as a system has also been stressed by the National Curriculum Framework 2005 (NCERT, 2006) that highlights the importance of having meaningful classroom experiences, well planned physical and sports activities; re-conceptualization of curriculum areas or school resources to improve the quality of school ethos; ensuring health, nutrition and an inclusive school environment; and, bringing about substantial systemic reforms in our school system.

The policies and legislations by the Indian government reflect its focus to meet the targets. The passing of the Right of Children to Free and Compulsory Education (RTE) Act in the year 2009 has been the landmark effort by the government to implement its commitments into action. Every child between the age of six and fourteen years now has the fundamental right to education. Major government programmes like the *Sarva Shiksha Abhiyan* ('Education for All Movement' launched in 2001-02) considered as a flagship programme, The National Programme for Universalization of

Elementary Education for children in the age group 6-14 years also show the governmental efforts towards education. These programmes focus on providing free textbooks for girls, construction of toilets especially for girls, monitoring the quality of education etc. The National Plan of Action for Children (2005) too reflects the government's special emphasis in bridging all gender and social category gaps and commitment to universalization of elementary education.

At the international level, India is a signatory to United Nations Convention on the Rights of the Child (UNCRC) that lays down emphasis on the quality of education in the context of overall development of children. India is also committed to meet the Millennium Development Goals where the second goal is to ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling. India is on track to reach the MDG targets of meeting universal primary education under goal two and the target on gender equality in education under goal three (Ministry of Statistics and Programme Implementation, 2014).

Minding the Gap: Progressive Polices and Grassroots Realities

In a sharp contrast to the progressive polices and commitment to improve quality of education by the government; the recent studies reflect few gaps and challenges in the area of education. The latest Annual Status of Education Report survey carried out by Pratham (2015) reveals deep concerns related to the kind of education being imparted in the schools. According to its latest report, 32.5% children of class III could not read simple letters while a growing proportion of class II children did not know numbers 1 to 9. Moreover, an increasing number of children in class III could not recognize numbers till 100 (Pratham, 2015). The DISE data (2015) too shows alarming observations in terms of infrastructure facilities available in schools. According to their latest report, only 22.2% of the upper primary schools/sections had computer aided learning lab, 76.1% schools had a library while only 58.1% schools had playground facility. These statistics reflect the gaps between the efforts by the Indian government towards quality education and the grassroots realities.

There is a need to dwell upon the kind of education being provided in schools. Is there a lot of pressure on 'retention' of children in schools that is hampering the overall teaching-learning process? Are the schools really catering to the need for developing overall personalities or are they merely promoting children from one class to another? Do the schools really have a pro-social learning environment for pupils to indulge in innovative and creative accomplishments or are they merely acting as institutions that provide literacy? Can the schools that lack the basic infrastructure attempt to provide quality in education and meet the overall aims of education? Such

queries present the need to unveil the schools from a holistic perspective, to seek information regarding the facilities available, strength of teachers and pupils, available infrastructure and its maintenance, and co-curricular activities. It dwells into an investigation of attempts by the schools to provide a platform to explore and nurture their hidden talents.

Present Research: Objectives and Methodology

The present research was conducted among 16 schools of Delhi — eight government and eight private. Schools were selected from four different zones of Delhi with equal representation of both categories of schools, that is, two government and two private schools from each zone. Broad objectives of the current study are enumerated as follows:

1. To examine the physical infrastructure available in the government and private schools of Delhi.
2. To explore the co-curricular activities in the government and private schools.
3. To observe and analyze the strength of teachers and students across the two categories of schools.
4. To study the contrast between the educational facilities provided by government and private schools.

To meet the above objectives, quantitative as well as qualitative information was gathered from school Principals/ administrators. A structured interview schedule was administered among school Principals/ administrators. Focus group discussions were held with 160 school children (80 males and 80 females) from the upper primary classes (classes VI–VIII). All respondents were taken into confidence before gathering information and all efforts were made to ensure the ethical principles in terms of maintaining confidentiality with respect to identities of respondents/schools at any given time. Analysis was done on the basis of findings of the interviews, group discussions with children and observations made by the author. Major findings of the present research are as follows.

Major Research Findings

Current research discovered various contrasting observations across the two types of schools in relation to various domains and variables. Major research findings can be listed as follows:

A) School Infrastructure

The overall physical environment plays an important role for paving the way for creating a learner friendly and an enabling environment in the schools. Current research unveiled the following trends in terms of infrastructural resources:

School Building

Fourteen out of the sixteen schools had a *pucca* school building. Two government schools were having a 'Multiple Type' of building as some of the primary level classes were made of tin shades. This reflects a grim reality that even in the National Capital we still have schools that do not have a proper school building. Three out of eight government schools displayed teaching and learning aids in their corridors, classrooms and school receptions. With regards to the furniture, half of government schools had furniture in dilapidated condition that questions the overall quality of teaching and learning in the classrooms.

In contrast, most private school buildings boasted a 'corporate' culture as five (out of eight) private schools flaunted huge receptions displaying beautiful paintings, multicolored charts and large display boards prepared by children and teachers. Their magnificent buildings with well-lit, ventilated class-rooms and large displays of teaching aids in the corridors showed the attempts by the schools to keep pace with creative learning methods in the education process. Most private schools had adequate and better quality furniture.

Library

Library is an extremely important part of the school set up that provides excellent opportunities to children to learn and develop reading habits. In the current research, fifteen schools had a library. Most of the private schools were seen well equipped with 'functional' libraries having a wide range of reference books, encyclopedias, journals, newspapers, comics, Compact Discs (CDs), biographies to enrich the classroom activities and provide knowledge to students and teachers. This reflects efforts to provide opportunities to the students for divergent thinking rather than sticking to conventional methods and rote learning. Half of the private schools particularly had a rich collection of books and valuable reading material. In contrast to the private schools, there was underutilization of the library facilities in the government schools where in a few cases, the books were seen gathering dust and seemed to be old. In one school, a class was also observed to be conducted in the library that echoes the shortage of space in the school.

Auditorium

Out of the sixteen schools, auditorium was available in eleven schools. Two government and three private schools did not have auditorium facility in their schools. Most private schools and two government schools particularly had spacious auditoriums and children were seen practicing for

their upcoming functions in both types of schools with great interest and enthusiasm.

Computer Room

All the sixteen schools had a computer room and a computer teacher was available in all the schools. According to the computer teachers, children had a lot of interest in working on the computer and learning it. This was more true for the government school children, who were in many cases, the first generation learners. The progressive attempts being made by the government to equip the government school children with computer skills are observed.

Safe Drinking Water

A basic amenity like safe drinking water was not found to be available in all the sixteen schools. All government schools had either a tap water facility or a water cooler that was not attached to any water purifier. Unhygienic conditions around the drinking water (water logging, dampness, fungal growth) were seen in one private and one fourth government schools. Three fourth private schools had provision of water coolers that were found attached to a water purifier. This again reflects the need for up gradation of infrastructural facilities to meet the basic need of the children as well as staff of the government schools.

Toilets

Startling comparisons were made between government and private schools in terms of their provision for students' toilets. More toilets (blocks) were seen in the private schools as compared to the government schools. Three government schools had the lowest number of toilets while half of the private schools had the highest. This reflects better infrastructure for toilets and sensitivity among the private schools. Girl's toilets were seen in all the schools. It may be also noted that that one of the government schools had only two toilets to meet the needs of their 1864 children. Inadequate number of toilet facilities seen in government schools.

Playground

All the sixteen schools had a playground (outdoor/ indoor). Private schools had better maintained playgrounds as compared to the government schools. In two private schools, huge and separate halls for playing different games instead of an open ground were seen. Separate play way area for toddles along with a jogger's track, swings, slides and a safety traffic park was seen in one private school. In contrast to the private schools, the sports ground was not as well maintained as in private schools. Most government

schools had a poorly maintained sports ground with untrimmed grass, dust, garbage dumps here and there. However, the sports grounds at one fourth government schools were well maintained. This reflects the under-utilization and misuse of playgrounds in most government schools that are unable to use them for holistic development of their students.

B) Shortfall of School Teachers

The research shows the contrast in the number of teachers teaching in the government and private schools. The table 1.01 presented below gives the gender disaggregated data of teachers teaching in the sixteen schools covered under the present research:

Table: 1.01

Zone Wise Gender Disaggregated data on Strength of Teachers in Schools

Zone	Govt. Schools *	Female Teachers	Male Teachers	Total	Private Schools *	Female Teachers	Male Teachers	Total
East	GEZS1	24	28	**52**	PEZS1	92	20	**112**
	GEZS2	12	48	**60**	PEZS2	67	3	**70**
North	GNZS1	23	18	**41**	PNZS1	7	53	**60**
	GNZS2	16	33	**49**	PNZS2	65	11	**76**
South	GSZS1	23	24	**47**	PSZS1	75	4	**79**
	GSZS2	35	3	**38**	PSZS2	59	6	**65**
West	GWZS1	27	11	**38**	PWZS1	60	11	**71**
	GWZS2	58	5	**63**	PWZS2	50	10	**60**
Total		**218**	**170**	**388**		**475**	**118**	**593**

(*G=Government, P=Private, S=School, The four geographical zones East, North, South and West are denoted by E,N,S and W respectively)

The number of teachers in majority of the private schools is almost one and a half to two folds as compared to the government schools. This indeed has an impact on the teacher pupil ratio of the schools. The following excerpt shows the opinion of teachers from a government schools on the shortage of teachers and high teacher pupil ratio:

We have eight classes at the primary level with only two permanent teachers in the entire primary wing who catered to the needs of two hundred and ninety three children studying at the primary level. I have to take two classes simultaneously and have a lot of additional workload. It is practically impossible to do justice when I cater to two different classes, each having about fifty children.

The higher teacher pupil ratio seems to be taking a toll on the quality of education in the government schools. The ratio is lower in the private schools due to adequate number of teachers.

C) Difference in the number of male and female teachers

Another significant difference that emerges from the above table is the contrast in the number of female and male teachers in government and private schools. There were more male teachers teaching in the government schools as compared to the private schools. It was also observed that in private schools, most of the male teachers were engaged in teaching either co- curricular subjects like art, music or sports or were teaching higher secondary classes in their schools. Higher number of male teachers in the government schools may be attributed to the fact that government service provides job security. Though teaching is considered normally as a female dominated profession, but male teachers are seen in the government schools and not in the private schools because government job provides economic security and all employment benefits.

D) The Male Versus Female Students

Current research reveals the stark difference in the number of male and female students from the schools in the research sample. It also reflects that in each and every private school, there was more number of boys than girls.

Table: 1.02
Zone Wise Gender Disaggregated data on Strength of Students in Schools

	Govt. Schools	**Female**	**Male**	**Total**	**Private Schools**	**Female**	**Male**	**Total**
East	GEZS1	593	1187	**1780**	PEZS1	678	856	**1534**
	GEZS2	400	1464	**1864**	PEZS2	680	1020	**1700**
North	GNZS1	841	557	**1398**	PNZS1	390	910	**1300**
	GNZS2	319	1389	**1708**	PNZS2	641	895	**1536**
South	GSZS1	786	678	**1464**	PSZS1	753	1003	**1756**
	GSZS2	580	350	**930**	PSZS2	496	744	**1240**
West	GWZS1	616	594	**1210**	PWZS1	760	956	**1716**
	GWZS2	1200	400	**1600**	PWZS2	**520**	**780**	**1300**
Total		**5335**	**6619**	**11,954**		**4918**	**7164**	**12,082**

(*G=Government, P=Private, S=School, The four geographical zones East, North, South and West are denoted by E,N,S and W respectively)

Though there is a difference in the total number of girls and boys in both types of schools, this differentiation is more visible in private schools.

This may be correlated with the declining sex ratio of girls, particularly in Delhi. According to the 2011 census, Delhi has a child sex ratio of 940 females per 1000 males. Research has also shown that this ratio is lower in the families belonging to the affluent sections of the society in comparison to those belonging to the lower socio economic strata of society. The same gets reflected in the distribution of boys and girls in private schools that are usually approached by those belonging to the affluent sections of our society.

E) Availability of Administrative Staff

In addition to the school children, teachers, Principal, administrative staff has an important role in assisting and supports the day to day operations of the school and contributes in the administrative processes. The administrative staff comprises of the office staff, maids/ *ayahs*, gatekeepers, receptionist, secretarial staff etc. Presented in table 1.03 are the details of the total school strength of all the sixteen schools covered under the present research:

Table: 1.03
Zone Wise Strength of Staff in Schools

Zone	Government	Teaching Staff	Administrative Staff	Total	Private Schools	Teaching Staff	Administrative Staff	Total
East	GEZS1	52	9	**61**	PEZS1	**112**	40	**152**
	GEZS2	60	7	**67**	PEZS2	**70**	12	**82**
North	GNZS1	41	10	**51**	PNZS1	**60**	9	**69**
	GNZS2	49	10	**59**	PNZS2	**76**	32	**108**
South	GSZS1	47	7	**54**	PSZS1	**79**	35	**114**
	GSZS2	38	8	**46**	PSZS2	**65**	25	**90**
West	GWZS1	38	8	**46**	PWZS 1	**71**	16	**87**
	GWZS2	63	10	**73**	PWZS 2	**60**	**20**	**80**
Total		**388**	**69**	**457**		**593**	**189**	**782**

(*G=Government, P=Private, S=School, The four geographical zones East, North, South and West are denoted by E,N,S and W respectively)

The above statistics clearly show that the majority of private schools have two to three times more the number of administrative staff as compared to the government schools. The posts for the administrative/non-teaching staff in the government schools comprised broadly of about eight to ten people including the office staff, sweeper, gardener and peon. On the other hand, the non-teaching staff in private schools consisted of a range of office staff: administrative officer, office coordinator, assistants, accountants, receptionist, secretarial staff, housekeepers, sweepers (allocated floor wise), gardeners, attendants etc. There was a clear cut segregation of roles to be performed by each of these personnel in the private schools. Mechanisms for close supervision were also seen with the hierarchical division of responsibilities.

E) Contrast in the Co-Curricular Activities

Art Education

A higher proportion of art education activities in the private schools were seen as compared to those in the government schools. Children from the government schools shared during the focus group discussions that such activities were held only at the time of special occasions like annual day/ sports day etc. On the other hand among private schools, such activities were found to be embedded as an integral part of the day to day school activities. The following excerpt from a focus group discussion with children from a private school reflects the nature of art education activities:

We have many innovative activities like gift wrapping, candle making, environment clubs, creative writing offered in our school. Under music too, we have a wide range of musical instruments to choose from like congo, bongo, tabla, casio, drums, harmonium, santoor, guitar, tarang, surmandal, synthesizers, and dafli. We also have 'Just A Minute' (JAM) sessions in the morning assembly where we have to speak on a given topic for one minute. This helps in boosting our confidence..

Most private schools were able to integrate art education in their overall school curriculum. The attempts of the private schools to utilize art education as a means to harness creativity among children are apparent. Conventional art education activities were offered by all schools and its importance for personality growth was more or less recognized. The government schools provided various forms of instrumental learning like congo, harmonium, santoor, surmandal and dafli. However these too were available only in one of the government schools along with two music teachers. In most government schools, art education was being treated as an isolated and a subsidiary subject. Most of them offered the conventional activities to their students as compared to the private schools that had a range of innovative activities for their students. The gap between progressive education policies and ground realities at the implementation level are found to be very wide especially in the government schools.

Health and Physical Education

Government schools were found to be offering adequate number of sports and physical education activities. Three government schools were particularly seen active in sports. While most government schools stuck to traditionally played sports like *kho-kho*, volleyball, basketball, yoga and badminton; one fourth also offered swimming to their students. Kabaddi, an Indian sport was offered by four government schools. National Cadet Corps (NCC) was offered by three government schools. Private schools due to their better infrastructure and facilities provided a wider range of sports activities

like chess, table tennis, taekwondo, squash and handball apart from offering the other routine sports. One half were taking more interest in providing all round sports activities to their students and greatly encouraged sports as an integral part of the school curriculum. One of them had a huge sports complex with indoor facilities for playing squash, volleyball, table tennis, skating, basketball, shooting, clay modeling etc. One fourth private schools had separate play yards for younger children with swings, traffic-park, jungle gym and open space. There was no wing of National Cadet Corps (NCC), National Social Service (NSS) or Scouts in any of the private schools. *Kabaddi* was not offered by any private school.

Emerging Discussions

India has been among the fastest-growing economies in the world in the last decade. However, concerns related to the quality of education question the ability to cope with the demands of a globalized world. Ensuring access to quality education is crucial for India if it wants to take advantage of its demographic dividend. An educated population not only drives economic growth, but also has a positive impact on human development indicators. Despite the focus of the government on improving the quality of inputs provided in schools, the efforts seem to be focused on enrolment and not on children's learning. The present research has presented contrasting trends and serious quality concerns to be pondered over across the two categories of schools.

Current research has corroborated the inadequacy of basic infrastructure in most government schools. This raises various critical issues and questions the quality of education being provided. Thus, though the school enrolment is increasing, but are the children learning? There are stark differences in the availability and maintenance of physical infrastructure across government and private schools. Basic infrastructure like the availability of safe drinking water, toilets, clean surroundings, library and playground are inadequate in most government schools. Can we imply that the private sector is able to deliver better than the government? Moreover, there is no norm to ensure that a school provides a minimum quality of education. Thus the debate on private versus government school provisioning becomes louder.

Another serious issue raised in the research is the availability of adequate number of school teachers, an area of concern for the not only the educationists but also for those who have been fighting for children’s right to education. There is a major statistical link between teacher absence in government schools and private enrollment (Baird, 2009). Numerous studies have cited the importance of teacher-pupil ratio in a classroom. National and international experience has shown that a ratio higher than one teacher for

thirty students is not desirable at any stage of school education. Thus, availability of number of teachers impacts the size of the classroom and the teacher pupil ratio. This is also an important factor that influences the choice of desirable methods and practices that the teacher uses in the process of curriculum transaction. High teacher pupil ratio, as evident in most government schools questions the quality of education and the consequent high workload on teachers. Parents also recognize teacher absence and cite government-school teacher absenteeism as one reason for choosing private schools.

There is an increased demand for private players in education. Government schools in India due to their challenges in meeting the goals of providing quality education have led to greater demand for private schools. There is also a perceived superior quality of private school education due to which greater number of parents is choosing private school education for their children as they want to provide better future opportunities for their children. School curriculum and language of instruction can also impact parents' preference. Many families choose private schools because they are English-medium that would provide a competitive edge to their wards in the globalized economy. Thus even the families with low socio-economic background are preferring private school education which would enhance the 'linguistic skills' of their children. The popularity of private schooling as a choice even for low-income parents suggests that the demand for private education is likely to be increase throughout the country (Baird, 2009).

Conclusion

Education holds the key to India's growth and socio-economic development. This has assumed greater importance over the last decade with India positioning itself as a knowledge economy in a fast globalizing world. An educated population not only drives economic growth, but also has a positive impact on health and nutrition. Well-balanced education is also essential in building a just and democratic society. Thus, it is indeed critical for India, having a large young population and being low on human development indicators, to fast track access to quality education (Basu, 2013).

Education sector in India is facing serious concerns and encounters. While there is a pressure to prepare *global* citizens who are ready to face the highly competitive world, the grassroots realties present an altered image. The basic aim of education is to enable children develop their potentials, define and pursue a meaningful purpose and recognize the right of others to do the same. However, current research has reflected the need for availability as well as up gradation of physical infrastructure and further deployment of resources to enhance the quality of schooling. On one hand, most private

schools are seen utilizing resources to enable their pupils to express themselves, exploring their natural and social milieu; government schools due to the administrative hurdles and lack of physical infrastructure are unable to cater to the demands of education. This comes as an irony since the government policies and documents clearly focus on responding to the physical, psychosocial and emotional needs of children with the purpose of holistic development of their personalities.

The priority concern for the country remains particularly with improving the quality of education and making education effective, enjoyable and relevant to the children. Schools have to aim at providing children fruitful experiences that enable them to realize fully their innate talents, develop capacities and empower all children in their learning, across differences of castes, religion, gender and disability. Its only when the country will be able to provide quality education to the children across the socio-cultural milieu; it will be able to truly achieve the potentials of a globalized world.

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THE HISTORY OF DEVELOPMENT OF COMPETENCY-BASED EDUCATION

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Abstract

This article provides a historical review, which describes the implementation of the competence-oriented education. The author traces the several stages of its formation and describes the characteristic features. Starting with the very first application of the competency-based approaches within the linguistic education, proceeding to the next stages of acknowledgment and integration in other fields. Finally, after discussing the purpose, goals and influences of the competency-based education approach, the author makes an attempt to uncover the need of introducing the competency-based approach in all fields of education.

Keywords: Competence, the education system, competence approach, competence-oriented education

Introduction

Openness of the society, its increased informatization, dynamism and mobility have changed the requests for the educational area. Moreover, the need of mastering new social roles by university graduates, has significantly increased the level of expectations that shall be justified by an education in the field of social restructuring. In such context, implementing a competency-based education is a key issue of modern educational science in general.

Over a short period of time, education and professional competency have taken leading positions in globalization history, in positioning of manufactures, industries and the scientific researches associated, including those within the educational science. As a strategic area of the educational or teaching system organization, the competency-based approach is a method for keeping general and professional education in balance with the needs of society and labor market. By the early 21th century, economic processes as well as profileration of new technologies had accelerated the pace of globalizing competitiveness in educational area. Therefore, the issue of

social expertise, mastering skills and competency as basic cluster ideas of goal-setting of modern educational process has got the highest acuteness over the entire history of its development.

I.

The competency-based education was formed as an educational trend in the United States of America. Its initial idea was adopted from the so-called generative grammar by N. Chomsky who declared in 1965, "…fundamental difference between the competence or knowledge of language and the application or actual use of language" (Chomsky, 1968, p. 172).

In the late 1960s, such difference was understood much wider than its original linguistic context and it was used in pedagogical and philosophical experimentalism. The experimental essence of the competency-based approach is currently moving to historically generative context as the ideas of competency have spread far beyond a single trend and have been accepted almost by everyone, including some conformist educational schools. At the moment, we suppose that, determining what the competency-based education is and what its development process and perspectives are as the most essential thing.

Competence-oriented education is based on the specification or definition of what constitutes a certain competence in a given field of activity (traditionally, a significant amount of research is performed in order to identify levels of competence), in which the required level of competency is formed by characterization and specification of the tasks for which the levels of performance are set. When characteristics of such type have been identified and put on their place in the hierarchy of a complex phenomenon of reality, an instructional sequence shall be developed in order to enable the students of this activity type to be more efficient in achieving their set of objectives-characteristics. Within the competency-based approach, the time required for mastering a competence may vary, and the objectives set in the course of education shall remain unaltered, while existence and provision of a number of alternative ways for a learner to achieve the declared objectives is considered to be the highest concentration of an educational approach of such type.

A psychological idea that different individuals have different learning technologies and are predisposed to different learning styles is assumed as a starting point. Since the main objective of the competency approach to education is not ranking the students, but teaching them to achieve their goals, this approach implements an attempt to increase the student's probability of success by providing various instructional routes, wherefrom the future specialist may choose the one that suits his personal learning style

(for example, among these methods the student can choose lectures, reading the study materials, video presentations, guidance in the form of software, etc.).

As we have already mentioned, the competency-based education was founded in entelechic form in the 1960s as a separation of the notions of "professionalism", "competency", and "competence". Certainly, these notions are widely being used for long time however, according to I. Zimnyaya (Zimnyaya, 2005, p. 21), before the competency-based education, substantial components of these notions had always been confused. Many researchers addressed the issue of the competency-based approach development (we should mention N. Gishanova, I. Zimnyaya, V. Baidenkon, R. White, J.C. Raven, etc.). Summing general conclusions made in the course of development of different approaches to this issue, we can separate three key stages that determine respectively three highly essential stages in historical development and modern existence of the competency-based education.

First of these stages dated to between mid-1960s and early 1970s, may be determined as a terminological one as it was that very period when basic notions of a future educational discipline were introduced in scientific use (such as a "competency" itself). In addition, the prerequisites have been identified for a professional, a special division of some concepts related to each other (as already mentioned "professional", "competence", "education") on the basis of their dissimilarity relative to the central concept of competence. Nevertheless, in spite of such important achievements for modern competency-based education, in that period, the conclusions about generative grammar were not yet transferred to the field of education and pedagogy, remaining within the competency-based field of linguistic school. It was not until 1975, when D. Hymes introduced the notion of "communication competency", that Chomsky's ideas could be considered as adopted by psychological science.

From the mid-1970s to the early 1990s, the psychological aspect dominated in the competency-based approach, and that is what we would call the second stage of the development of competence-based approach to education. Such scientists as J. Raven, C. Makeshnan, R. Burns established and developed many concepts of the competency-based education at that period, but the application of these concepts was limited to purely psychological (communication theory), human resources and psychological (management) and administrative spheres.

However, some educational aspects of the competency-based approach were established in general at the same stage due to linguistic origin of the competency theory. This happened in the field of foreign language learning (Burns, 2002, p. 33–35). This very type of education

should be historically considered as the first preceptor of the competency-based orientation. Besides, in 1984 one of the classics of the competency theory J. Raven advanced a revolutionary theory of competence socialization in his book Competence in modern society – Its identification, development and release (Raven, 1984). He suggested several complete definitions for key notions and developed complete lists of basic competences with their basic features. We should note that Raven repeatedly used such characteristics of general notion of competence as above-mentioned preparedness and probability (as well as the groups of competences we separated as "will competences"). Moreover, it was Raven who first stated the idea of interconnection (or inseparability) between social and professional competences.

Thus, it was the second stage of development of the competency-based pedagogics when the idea of competences (those started to be classified in different ways, especially by Russian scientists, such as L. Petrovskaya, A. Markova, etc.) as definite and final goals of learning: this crucial aspect of general competence theory underwent some transformations with the course of time as a competence finiteness ceased to be understood as an actual entity; as it was more like a distant image in the process of excellence of a trained specialist. In 1990, the Council of Europe "…separates a strategic, social, sociolinguistic, linguistic, and educational" (Zimnyaya, 2004, p. 32) competences to become the first legal confirmation of the notions of the competency-based education.

Besides, we should note that such Russian researchers as N. Kuzmina and L. Petrovskaya came to an essential conclusion of a modern competency theory at the same time (1990) which says that the basic notion of this theory should be considered within the integral psychological and social context since the competency is not just a consequence of posteriorization of formal knowledge, but also a personality trait of a professional. This very observation implies that educational preparation in the system of higher education shall pursue a wider set of objectives rather than just compliance of a graduate with the awareness standards.

Finally, the third stage of development of the competency-based education is characterized by global development and active implementation of conclusions made at the previous stages. This period is known for significant increase of interest in competency pedagogics in Russia, where a great number of fundamental works appeared (by such authors as A. Markova, L. Alexeyeva, G. Sivkova, L. Mitina, etc.). They thoroughly analyzed the place of competency in social and cultural life of learning and developing specialists. A characteristic feature of the third, modern, stage of development of competence-based approach to education becomes a documentary acknowledgment of this approach. Thus, UNESCO materials

dedicated to educational technologies include stated sets of competences considered as necessary objectives in desired and currently implemented educational system. According to L. Petrovskaya, the four pillars of modern education stated by J. Delors (learning to know, learning to do, learning to live together, and learning to be) are actually "global competencies" (Petrovskaya, 1989, p. 146).

The competency-based education is currently focused on learning outcomes and addresses its basic ideas to what the learners shall learn to do, rather than the more traditional goal of defining of what they must learn. Keeping some basic features, the competency-based approach is currently (just like in the period of its establishment) an educational trend for setting goals in the form of knowledge, skills and behavioral features a student shall master by the end of his/her studies.

The competency-based education adapts to the evolving needs of students and teachers, but also to the needs of society: competency, which implies the ability to use a skill, requires a close focus on potential possibilities of future activities of graduates. Given this, we have to mention that the competency-based approach implies that both are competent, the graduate, but also the teacher, which in its turn requires determination of the specific competences that have to be typical for a teacher according to the considered educational approach.

Conclusion

Any form of the competency-based education (its forms are regularly updated, which is a key feature of such method) is dynamic kind of education opposed to statistical methods of the noncompetency-based approach. The competency-based approach intensifies significantly the possibilities and facilitates the orientation process for learners at the practice of their future activities, at strategic and operational side of expected educational outcome. In other words, skill orientation of the competency-based approach is actually an integral way of considering the educational phenomenon itself within objective goals stated by the modern world and set for young specialists. Moreover, the competency-based education is a humanistic trend that may refer to a professional competence along with a personal or social one of specialists, citizens, individuals.

Thus, the higher education aimed at teaching a student self-motivation, forming a learning specialist cannot be fully understood within the instructional goal-setting (at least, due to the fact that in such system the goals set are usually the ones of a teacher), resulting in production of dependent (noncompetent) professionals. As we noted, professionalism should be understood as an opportunity to carry out activities and competence - as success of its implementation, including - social success. In

our opinion, in spite of the fact that the competency-based education implies a certain risk relating to decrease in directional functions of a teacher and increase in student's control, only this approach can result in high manifestations of competent activity as only competency-based higher education implies reduction of negative psychological effects of the learning process, integral development of professional and social skills of a student and as a result, it can significantly accelerate the speed and quality of preparedness and development of a skillful specialist for efficient working activity.

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Burns, R. W., Klingstedt, J. L. Competency-Based Education: An Introduction. – NY: Educational Technology, 2002. – 169 p.

Raven, J. Competence in modern society – Its identification, development and release. – London: H.K. Lewis, 1984. – 251 p.

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Petrovskaya, L.A. Kompetentnost v obshhenii. – M.: Izdatelstvo MGU, 1989. – 216 p.

VIOLENCE AGAINST WOMEN IN DELHI (ANALYZING THE NATURE, TIME, PLACE, AGE AND RELATIONSHIP BETWEEN A RAPE VICTIM AND OFFENDER)

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Abstract

Today global warming and climate change, natural hazards and disasters, environmental pollution and degradation, hunger and poverty, terrorism and wars etc are the biggest concern for the global community. I just want to add one more problem which is prevalent across all the societies irrespective of the level of their economic development- crime. I would like to call it a social disaster. It's a disaster which disrupts the functioning of the society. In recent years, news papers are full of brutal rape cases which show an alarming rise of rape in metros like Delhi. Currently Delhi is reporting 4 rape cases every day. Rape is a crime which questions over public security as well as public health. The present study is a content analysis of rape cases published in daily news. The aim of the study is to find out the place of crime, site of the crime, nature of the crime, age of the victim and offender and the relationship between victim and offender. A total of 298 rape cases were found in last three years of reporting. It was found that most of the victims were unmarried and below 18 years of age. In majority of the cases victim knew the perpetrator. 25 percent cases of rape were in form of gang rape which shows the brutality of the crime. More than 60 percent rape victims were found below 18 years of age and 75% rapists were known to the victim. 10% cases of rape were found as incest rape. Average age of victims is 17.5 years while average age of the rapists is found 31 years.

Keywords: Rape, rape victim, incest, perpetrator, NCRB, Delhi

Introduction

Many highly developed countries are suffering from very high rate of crimes, exceeding their ability to cope up with. Crime is an issue of social well being; it questions the very idea of human development; it's a matter of

public health. Crime against women has been a grave concern in all societies, be it an urban space or a rural. Sexual violence against women such as rape has many socio-cultural and psychological causes and impacts as well. Rape is a crime which is prevalent in all societies irrespective of their level of development. Rape would be most under-reported crime in India where fear, social stigma, family honour, chastity, character assassination, victim blaming is attached with rape. In spite of changes in the legislation, practice and procedure in the investigation, high profile coverage in the media, and support available to the victims, it is on the rise despite.

How rape is a social disaster?

a) Be it any society (so called 'developed' or 'backward'), rape is a rampant and cruel reality.
b) Every space form very own home to neighbor, any public or private space rapes are prevalent.
c) Whatever security, surveillance, judicial system, trial method, punishment provision is there crimes such as Rape are beyond deterrence i.e. like a disaster, sexual crimes are almost immitigable. Even countries like USA, Britain whose judicial system is considered one of the most efficient, quick shows very low conviction rate (below 10%) when crimes like rape are concerned.
d) The recent data across the world shows that the incest rapes are increasing i.e. the very own family members are coming out to be rapists in many cases. And such cases are on raise. That's why it becomes a social disaster. The average age of rape victim is going down.

The 16 December 'Nirbhaya'[27] gang rape in December 2012 shook the conscience of the nation with unprecedented protests and drew the world attention. Again in August 2013 a similar brutal gang rape case in Mumbai happened. Recently the United Nations Secretary General Ban Ki-moon urged the Indian government to take action to protect women, and the United Nations High Commissioner for Human Rights Navi Pillay called rape in India a national problem. The Government of India acted swiftly, modified laws after the Justice Verma Committee Recommendations[28] and had set up fast-track courts to deal with the crime. It is ironical that in spite of all these, the sexual assaults continue to rise though gender equality is provisioned in the constitution.

[27] http://en.wikipedia.org/wiki/2012_Delhi_gang_rape

[28] http://www.thehindu.com/news/resources/full-text-of-justice-vermas-report-pdf/article4339457.ece

The English word rape is derived from Latin word *rapere*. Rape is violence and it is a life-threatening act in which fear and humiliation haunt the victim. It is not only an attack on the woman but also her family as well as community (Misra, 2008). Rape is a global crisis that is found in all socioeconomic groups or cultures (Irwin, & Rickert, 2005).

The statutory definition of the offence of "rape" is found under section 375. It reads thus:

"375. Rape.—A man is said to commit "rape" who, except in the case hereinafter excepted, has sexual intercourse with a woman under circumstances falling under any of the six following descriptions:—

First.—Against her will.

Secondly.—Without her consent.

Thirdly.—With her consent, when her consent has been obtained by putting her or any person in whom she is interested in fear of death or of hurt.

Fourthly.—With her consent, when the man knows that he is not her husband, and that her consent is given because she believes that he is another man to whom she is or believes herself to be lawfully married.

Fifthly.—With her consent, when, at the time of giving such consent, by reason of unsoundness of mind or intoxication or the administration by him personally or through another of any stupefying or unwholesome substance, she is unable to understand the nature and consequences of that to which she gives consent.

Sixthly.—With or without her consent, when she is under sixteen years of age.

Simply put, the offence of rape is "ravishment of a woman" without her consent or against her will by force, fear or fraud and also includes the "carnal knowledge" (penetration to any slightest degree) of a woman.

Literature Review

Studies related to crime against women are new and not much work has been done as far as India is concern. Violence against women does not need any particular place to occur and such an act, affects the victim's life always negatively. During the years 1975-80 women raised their voice against crime and in the beginning anti-rape struggle were initiated with great vigour. A horrifying case against a tribal girl in Mathura (1980) proved to be the starting point. Sylvana and Roy (1989) look at rape within the perspective of 'evolutionary biology'. According to Atray (1988), rape is the most blameworthy crime because it is not only a physical violence, but also an imposition upon women's mental, psychological and emotional sensitivities. She has also tried to look at their (victims) background.

The crime against women in India is perhaps more result of patriarchal structure than anywhere else. The male dominant society makes

women subordinate, inferior and dependent to men in all spheres of life. The view of women as sex object is so strong that a female of any age could be victim.

Sexual morality has double standards for men and women, the latter being subjected to strict norms.[29] The question as to whether rape against women is really increasing, or whether a false impression of greater incidence is created because it is being reported to a greater degree than before, is a debatable one. There is reason to believe that there is an increase in both incidence and reporting. At the same time, it must be emphasized that in spite of increased reporting and awareness, the proportion of reported crimes to total crimes remains very low. This is true of crimes such as rape or forced prostitution which stigmatize the victim, as also of domestic violence which is considered to be an internal family affair and a matter of family honour. The general tendency of women, thus, is to avoid reporting incidents of violence against them; in addition, pressure is often brought upon them to remain quiet (Meera Kosambi (1993).[30]

Studies show that increasing participation of women in work and politics (especially at the grass roots level) is making them more vulnerable to crime. The experience of Bhanwari Devi, the 'sathin' from Rajasthan, is a case in point .She was gang-raped for working against child marriage practiced by the upper castes in her village. Crimes against women have roots in the male dominated socio-economic, legal and political order (Atray[31] 1988; Verma[32] 1990; Nagla[33] 1993). Assaults on women are often visibly associated with their social status, their communal, ethnic and caste identities. Implicit in all this is the treatment of women as private property, to be protected by men of particular family, social, communal and caste groups (Kannabiran1996[34]; Dasgupta1989[35]; Desai and Krishnaraj1987[36]).

[29] Ravneet Kaur, Suneela Garg (2008), *Addressing Domestic Violence Against Women: An Unfinished Agenda* Indian Journal of Community Medicine, Vol. 33, Issue 2, April 2008

[30] Kosambi Meera (1993), 'violence against women: reports from India and Korea', Social and Human Sciences In Asia and the Pacific RUSHSAP Series of Monographs and Occasional Papers pp. 1-100)

[31] Atray, J P (1988): Crimes against Women, Vikas Publishing House, New Delhi.

[32] Verma, Usha (1990): 'Crime against Women' in Sushma Sood (ed) Violence Against Women, Arihant Publishers, Jaipur.

[33] Nagla, B K (1993): 'Women as Victims of Crime: A Sociological Analysis' in C M Agarwal (ed), Dimensions of Indian Womanhood, Shri Almora Book, Almora.

[34] Kannabiran, Kalpana (1996): 'Rape and the Constructiono f Communal Identity' in Kumari Jayawardena and Malathi de Alwis (eds), EmbodiedV iolence:C ommunalising Women's Sexuality in South Asia, Kali for Women, New Delhi.

[35] Dasgupta, Ashish (1989): 'Violence against Women: Case of Agrarian Section' in Niroj Sinha (ed), Women and Violence, Vikas, New Delhi.

[36] Desai, Neera and Maithreyi Krishnaraj (1987): 'Violence' in Neera Desai and Maithreyi Krishnara, Women and Society in India, Ajanta, Delhi.

Police records show that reported crimes have been rising. However, these data have so far not attracted the attention of scholars even for exploratory research, perhaps because of their seeming unreliability. Most of the studies have concluded that social factors are the most relevant cause for crime against women. Batria[37] feels that sociological set up of the society is more responsible for crime against women. According to him it is a result of attitude and disagrees with the often held opinion that women invite offenders by their provocative dress style.

Bhusan[38] in his study of Delhi finds that population density, literacy, schedule caste populations are not the cause for increase in level of crime but it is economic factors that determine the crime. But on the contrary, Madhurima found that apart from socio-economic reasons, it is the patriarchal set up of the society which legitimizes the crime against women.[39] At present the fragmented community characteristics led to community disorganization and hence unable to control crime (Shaw and Mckay 1942; Bursik 1988). Urban areas have low social capital and community sense so socio-spatial bonds are weak and along with anonymity it leads to a weak control over crimes.

According to some studies by US scholars Radzinovicz (1957)[40] and Amir (1971)[41], majority of offenders and victims of rape come from same age group and offenders are mostly from lower occupational and lower social status. On the other hand Ahuja (1986)[42] found that offenders and victims are often not from same age group. Victims are much younger than offenders and women from poorer economic status are at greater risk. *Age* is another important component which provides sufficient explanations to this theory. Most of the rape victims are of lower age group. Place of work as well act as a stimuli to crime.

Crime is closely related to *time* and *place*. Certain places are safe while some attract offenders. By and large, it has been seen that that public spaces are natural choices by offenders. Dark street corners and poor housing designs can invite more offenders. Spatial theories of crime mainly focus on the importance of the place. It suggest that the reason, where, when and why offenders commit crime. Traditionally home is considered as safe haven for women but now it's turning out to be scary hell. The offender always has some rationale and logical choices before committing crime which motivate

[37] Batria, Punam (1992), "Sex & Crime in India", Uppal Publication House, New Delhi
[38] Bhusan P.S. (1997), "Crime, Criminology and Society" Manish Publication
[39] Madurima (1996), "violence against women: Dynamics of conjugal relations", Gyan Pub house, new delhi
[40] Radzinowicz, L. (1957) Sexual Offences, MacMillan, London.
[41] Amir, M. (1971) Patterns in Forcible Rapes University of Chicago Press, Chicago.
[42] Ahuja, R. (1987) Crime against Woman, Rawat Publications, Jaipur.

him such as 'time' like the time after sunset provides hiding opportunity so dark hours are suitable for crime. The Rational Choice Perspective explains it.

Crime Pattern Theory tries to explain that how criminality never misses the pattern i.e. it's not the random phenomena. It expresses the concept of awareness of space. Every person has his personal awareness space which encourages the crime to occur again and again. Awareness space is also connected to societal aspects. For example it is seen that most of the crimes against women are committed by well known persons.

The home is the primary site where boys and girls learn how to view themselves and treat each other, and therefore efforts to reduce gender-based abuse must focus first on the home.[43]

Deterrence variables like probabilities of being arrested and convicted determine the expected returns from crime (Becker[44], 1968, Ehrlich, 1981[45], 1996[46], Grogger, 1991)[47]. Since these probabilities represent costs to criminals, their expected signs are negative. But ultimately the probability of being arrested depends on police performance.

Data and Methodology

First of all, I tried to locate Delhi among the Indian states and all 53 metropolitan cities of India. Then a district wise 'Trend and Pattern Analysis' of rape in Delhi is done. For this purpose data for last ten years (2003 to 2012) has been collected from 'Crime in India' (National Crime Records Bureau). Secondly, since the data provided by NCRB does not cover many aspects of crime such as the place of crime incidence i.e. whether it happened within the house premise or outside; It does not give any detail about the age of victim and offender, sex of the victim and offender; It does not give any information about the relationship between victim and offender; it does not give any clue about the motive behind the crime; It does not give the timing of the crime incidence i.e. whether it happened in the broad day light or evening or morning or late night; It does

[43] United Nations ECOSOC, *Report of the Special Rapporteur on Violence Against Women*, E/CN.4/1996/53.

[44] Becker, G.S., (1968) 'Crime and Punishment: An Economic Approach', Journal of Political Economy, 76 (2): 169-217.

[45] Grogger, J., (1991) 'Certainty vs. Severity of Punishment'. Economic Inquiry, 29: 297-309.

[46] Ehrlich, I., (1996) 'Crime, Punishment, and the Market for Offenses'. Journal of Economic Perspectives, 10(1): 43-67.

[47] Ehrlich, I., (1981) 'On the Usefulness of Controlling Individuals: An Economic Analysis of Rehabilitation, Incapacitation and Deterrence'. American Economic Review, 71 (3): 307-322.

not give monthly data of crime. Hence I chose to do a content analysis of the data collected from a daily news paper.

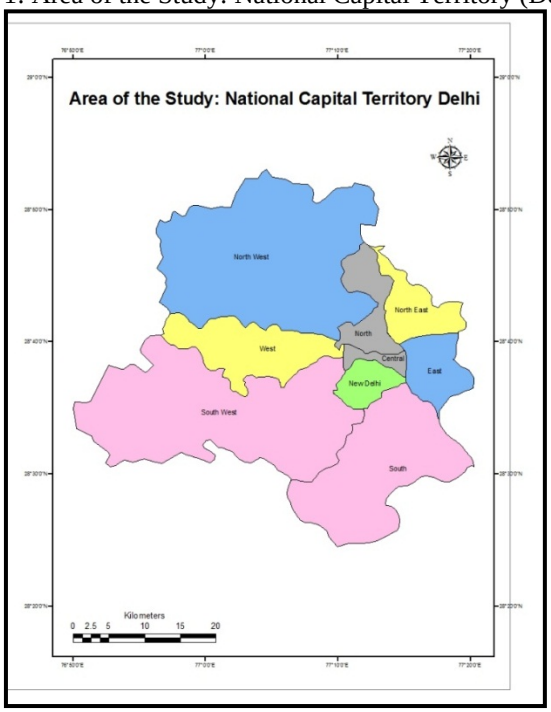
For the purpose of content analysis, 'Times of India' perhaps the most read news paper in Delhi is selected. Data is collected for three years 2011, 2012 and 2013. The main limitation of the study through the news paper is the missing information many times such as age of the offender, timing of the crime etc. and reporting of only those crimes which are sensational or news making e.g. murder, rape, kidnapping etc.

The table below is the format on which the content analysis is based.

CRIME	PLACE OF THE CRIME			TIMING OF THE CRIME			SEX OF THE VICTIM & OFFENDER				AGE		RELATIONSHIP b/t VICTIM & OFFENDER		
	Location	House premise	Outside	Evening	Night	Day	Victim		Offender		Victim	Offender	Relative/ Family members	Known	Unknown
							M	F	M	F					

Data from a news paper has its own limitations like only sensational or say most heinous crimes get reported and more over all these crime are also get reported to the police. But one thing is very important about news paper content is that it covers other socio-economic and familial aspects of victim and offender which helps in understanding the motive, the caste system, peoples reaction, locality of the crime etc.

Fig. 1: Area of the Study: National Capital Territory (Delhi)



Findings and Discussion

Data was collected manually from the Crime in India (NCRB) and from the online version of the news daily 'The Times of India'. Locality or place or districts or sometimes only police station were also noted down and the entire news was also copied for further analysis when needed. It will be interesting to find out the vulnerability setting of the crime i.e. what the most vulnerable time is, who (age group) are the most vulnerable group and the most vulnerable place and location.

In order to situate India among world nations in terms of crime, here are some data which say that when the number of total rape incidences is concerned, India is third in the world but when it is calculated per lakh population, India is in better position. Now what about the Delhi's situation in India? According to 2013 statistics, New Delhi has the highest raw number of rape reports among Indian cities, while Jabalpur has the highest per lakh rate of rape reports. But we should not forget the fact that underreporting in India must be one of the highest keeping the social stigma and family honor in mind which determine the reporting.

Top 10 Countries of Rape Incidences	
USA	84767
South Africa	66196
India	22172
United Kingdom	15934
Mexico	14993
Germany	7724
Australia	6378
Sweden	5960
Russia	4907
Thailand	4636

Top Countries and India Rape Rate/lakh Pop)	
South Africa	132.4
Sweden	66.5
Jamaica	34.1
Bolivia	33.0
Costa Rica	29.8
New Zealand	29.6
Belgium	27.6
USA	26.6
Brazil	24.9
Norway	22.3
Finland	18.7
India	2.1

Source: UN Office on drugs and crime, 2012

According to the American Medical Association (1995), sexual violence, and rape in particular, is considered the most under-reported violent crime. Sometimes it goes up to or above 90%. When aware and educated societies like America has this much underreporting, just think about the India. According to another source, only 15% of the rapes are reported, while 12% of the attempt-to-rape cases are reported. With this data, it can be realized that more than half of the rape cases in the world are not reported. Who is to blame – the administration, the judiciary or the society as a whole?

A district wise trend analysis of rape all will show a clear picture of trend and pattern in Delhi. For this purpose data for last ten years (2003 to 2012) has been collected from 'Crime in India' (NCRB). Table below shows how the rape incidences have been taking place in Delhi. An overall trend is saying that total number of rape incidences every year has gone up in Delhi from 490 to 706. Most of the districts showed increasing trend but some showed a negative trend like New Delhi and North Delhi. Maximum increase has been experienced by South West and East Delhi. News papers also reported South West Delhi as new crime hub regarding crime against women especially rape, kidnapping.

At national level, crime against women to total IPC crimes over the last 5 years is going up which is 9.2%, 9.6%, 9.4%, 10.2% and 11.2% for 2009 to 2012 respectively. According to the latest 2013 data of rape, among 53 cities, Delhi has accounted for 21.4% of total such crimes followed by Mumbai (5.5%), Bengaluru (4.9%), Ahmedabad (4.6%) and Kolkata (4.5%). Among 53 mega cities, Delhi city has accounted for 29.4% of total rape cases.

Trend of Rape incidences in Delhi

RAPE	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
CENTRAL	20	27	20	17	22	30	28	20	16	31	70
EAST	37	62	59	61	73	73	52	47	55	90	210
NEW DELHI	8	8	6	6	7	3	6	16	2	5	33
NORTH	34	23	22	22	33	20	19	7	11	14	62
NORTH-EAST	53	67	106	93	89	32	47	51	69	78	178
NORTH-WEST	128	124	190	169	172	118	95	99	131	131	280
SOUTH	83	97	88	87	83	77	62	86	90	106	273
SOUTH-WEST	57	79	71	79	51	79	93	107	119	167	365
WEST	70	58	94	88	64	54	63	72	73	79	165
TOTAL	**490**	**551**	**658**	**623**	**598**	**466**	**469**	**507**	**572**	**706**	**1636**

Source: 'Crime in India', NCRB

Trend of Rape incidences in India

Year	No of Rapes in India
2009	21397
2010	22172
2011	24206
2012	24923
2013	33707

Source: 'Crime in India', NCRB

After the incidence of 16 December 2012 gang rape of Nirbhaya, the reporting of crime against women has gone up very significantly. For example NCRB reports 1623 rape cases in 2013 in comparison with 706 in 2012. Now 4 cases of rape are being reported every day. Table No 1.1 shows that there is an increase of 35.2% in the year 2013 over 2012. Nirbhaya incidence seems has emboldened many rape victims to come forward to report the crime. And perhaps police has also started reporting such heinous crimes more promptly under pressure from public, civil society, government and judiciary. Police also became more vigilant and gender sensitized afterwards.

News Paper Content Analysis of Rape

I did a content analysis in my M.PhiL dissertation for the year of 2009 and What is most noticeable is this that 60% of total crimes against women were committed within the house premise. Half of the total female victims were found of age below 18 years. In case of rape, most of the rapes were committed within the house premise and all except two were committed by known offenders. The average age of the rape victims were found below 18 years whereas it is found 30 for rape offenders. This shows that women are not protected in their so called safest place 'home' even. When we divide the victims and offenders into male and female, a new picture emerges. Most of the male victims are concentrated in the age group of 30-60, but in case of female victims more than 70% are concentrated in the age group below 30 years (Chaudhary T.S. 2011)[48]

A total 298 cases of rape got reported in last three years (2011, 2012 and 2013). Apparently when most of the cases go under reported, we must keep this fact in mind that number of cases reported in news paper reporting is less than the reporting at police station.

[48] Chaudhary T.S. (2011), 'Socio-economic Correlates of crime in Delhi-NCR'. Unpublished Dissertation Submitted to Centre for Study of Regional Development, Jawaharlal Nehru University, New Delhi

Number of Rape Cases Reported in TOI

Year	No. of Rape Cases Reported in TOI
2011	64
2012	76
2013	158
Total	**298**

Hence lot of limitations is there in content analysis. Nevertheless keeping the underreporting as constant, a generalization of criminality pattern can be drawn to same extent. It is visible that number of reporting has gone up consistently over the period. Year 2013 the reported cases just doubled because of the Nirbhaya case happened on December 16, 2012. This trend is seen similar in NCRB's reporting as well where 1623 rape case registered in 2013 as compared to 706 in 2012. This trend can also be explained as increasing awareness about reporting or may be higher number of occurrence.

Rape case Reported in Times of India for last three years (2011-11-13)

Nature of Rape	No. of Cases
Gang Rape	73
Incest Rape	30
Victims Below 18	179
Victims Below 10	68
Victims Below 5	38
Total Cases Reported	**298**

Let us see the nature of rapes published. It is apparent from the above table that about one fourth cases are of gang rape. This is something we should think about in very deeply that why gang rape takes place and what would be the motive behind it? It can be explained in many ways such as gang rape is power exertion in order to take an absolute control over the victim. It helps the perpetrators in threatening the victim, in blackmailing her. It helps rapists to make the act a planned success because otherwise it would not be easy for a single perpetrator to make this act possible easily when girls are becoming more aware and strong. Now women are challenging the male chauvinism mentally as well as physically.

Relationship Status between Rape Victim and Offenders

Relationship Status	No. of Cases
Incest	30
Relatives	42
Friends	27
known	230
Neighbours	41
Unknown	68
Total Cases Reported	**298**

Number of incest rape is rising. Even National Crime Records Bureau (NCRB), India has started collecting data in this category. This indicated a very grim situation which shows that very own family members and relatives are becoming dangers to women. Incest rape cases have increased by 36.7% from 392 cases in 2012 to 536 cases in 2013. It is to be noted that 52.2% of incest rape victims were in age group of 10-18 years. Report says that even no relation is exception now. Father, step father, brother, cousin, uncle and sometimes even son can be rapists above table clearly says that relatives, neighbours, friends and family members constitute almost 45% of total rapes. Other are husband's friend, teacher, father-in-law, landlord, fiancé, tantric, boyfriend, brother-in-law. Thus among all the rapes 77% rapists were found known to the victim. It must be much more because in 68 cases rapist is unknown to victim but on an estimate some of them would be known to victims but somehow they could not get traced.

India's NCRB data revealed that in 2012, 24,923 rape cases were reported across India. Out of these, 24,470 were committed by parents/family, relatives, neighbours and other known persons. This leaves us with a total of 453 cases of stranger rape. In essence, men known to the victim committed 98 per cent of reported rapes. This is a staggering figure. At national level, in most of rape case offenders are known to victims. During 2013, offenders were known to the victims in as many as in 94.4% of rape cases. It is to be noted 15 out of 35 States/Union Territories have reported 100% of such cases. Most of offenders were reported as neighbours accounting 33.9%. Parents/ close family members were involved in 1.7% of these cases whereas relatives were involved in 7.3% cases.

Another aspect the crime is age. Studies in abroad says that the rapist and victim belong to same age cohort (Radzinovicz (1957) and Amir (1971) but in India it is found different. here the average age of victims are found much more less than the average age of the perpetrators (Ahuja 1986). I found that average age of victims is 17.5 years while same is 31 years for the perpetrators. What is more noticeable is that when we look at the minor victim's age it is very low but the average age of rapists does not go low accordingly. Table below is showing that the average age of rapists is well above 25 even when victims are below 5 years of age. That means the most age group of women is 15-20 while most violent age group of offenders is 25-30.

Average Age of Rape Victims and Offenders

Average Age of Victims	**Average Age of Offenders**
Victims Below 5	26
Victims Below 10	29
Victims Below 18	29.5
All Rape Victims 17.5	**31**

Table below shows that one third rape cases took place within the house premise while two third occurred outside. The rapes committed within house premise are either incest or rapist is neighbor to the victim. Rapes within house premise infers that rapist knows the victim very well and he knows even the time when victim would be alone and there would be no chance of being caught. In comparison with rapes committed outside the home, the rape occurred within house premise are often well planned. This shows how geography of crime matters. Most of the cases were committed in vicinity of the victim's house this is perhaps so because the mobility of women/girls is very limited and it is near or around her locality.

Place and Timing of Rape Incidences

Place of Rape	**No. of Cases**
House Premise	90
Outside House	199
Not Known	9
Total	**298**

Timing of The Rape	**No. of Cases**
Day	152
Evening	43
Night	47
Unknown	56
Total	**298**

Table above shows that half of the incidences took place in broad day light. That means not only nights but even daylight is as scary as it could be. Usually in urban spaces potential victims are with their family members in the evening and night. At day time people are away from their homes due to their job and hence the chances of victimization are perhaps enhanced at day time. Girls are also out more on day time in comparison with evening or night.

Since in most cases the age of victims are below 18 years of age, it is quite understandable that rapes were committed when victims were found alone or something of that situation. And that is why minors were raped when they were playing outside the house or at the time of school off when parents are away for their job or so. Most of the neighbours and unknown rapists were found of low living standards. And most of the rape victims belong to middle or low class.

Conclusion

The picture emerging from the content analysis and the trend analysis is something very alarming in a sense that number of gang rapes and incest

rapes are very high. And above all now rapists are targeting minors so that the chances of their being caught can be minimized. So it is clearly visible that it is not dressing, it is not particular age which is responsible for this increasing menace but it is the male chauvinism which treats women as consumables, sex objects. A gender sensitization from the beginning is need of the hour. This was simple content analysis to show the current situation, so a deeper study could reveal the real causes and explanations behind this emerging trend.

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LENDING TO THE POOR: THE WORLD BANK IN URBAN DEVELOPMENT IN INDIA
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Abstract

In India, the politics of development took the shape of the World Bank influenced housing policy for the urban poor. It was a recipient as well as an accomplice to the politics of development.

Globalisation induced development brought opportunities and growth in metropolitan cities and towns, thereby, triggering large-scale urban migration. Since rapid urban migration surpassed rising demand for urban shelter, the government initially acted as the sole provider of subsidised housing for the urban poor. Due to multiple shortcomings, it withdrew from its role and became an enabler of World Bank's housing policy for the urban poor. The World Bank's attempt at urban development by lending to the urban poor for urban housing missed the point that the urban poor should be consulted for their views on their development. This paper uses a bottom-up approach to understand how the politics of development is countered by the subjects of development.

Keywords: World bank, urban development, India

Introduction

Since time immemorial, cities and towns have been hubs of business, trade, and commerce. They are the loci of globalisation, development, and urbanisation. This holds true in India too. The opportunities and opulence that globalisation and development bring induces urban migration. Migrants from rural areas come to urban spaces in search of livelihood every year. In India, the rapid urban migration surpassed the rising demand for urban shelter. This exacerbated the crisis of urban housing particularly among the poor and lower-middle income families who not only made up the greater part of urban settlers in developing countries but also lacked the capacity to pay for decent housing (Rondinelli 1990: 153). The crisis of urban housing was partly resolved through occupation of pavements, and illegal

construction of slums or squatter settlements on public property, near places of work or business. The poor migrants in Olga Tellis case (1981) argued that encroachment of public property was not a choice but an economic compulsion for personal survival (Mody 2013: 80). Thus, the extent of urban housing deficiencies and the expansion of slum and squatter settlements across urban areas was (and is) a critical indicator of swelling urbanisation.

In view of the spread of urbanisation, the task of the government should be to enable poor families to access decent housing. Urban housing deficiencies, a by-product of globalisation and development, questioned the role of the state- whether it should be a provider of finished housing or a promoter of housing delivery system. By the end of the Fifth Five Year Plan, the national shelter policy shifted from the state being the sole provider of shelter to an enabler of World Bank housing policies. The shift implied a change from subsidized to non- subsidized or less- subsidized forms of accommodation. The policy shift meant a shift from *need-based to demand-based* approach to urban poor shelters (Wadhwa 1988). Hence, the state could withdraw from direct investment in housing programs as well as impose the market upon the urban poor for shelter.

The World Bank's entry revolutionised housing policies in India. Using the neoliberal paradigm, the Bank introduced free market and demand-based approach to housing loans for urban poor. This approach marked a shift from the earlier statist need-based approach where the poor where given finished constructions and subsidies. Thereby, the earlier schemes were designed to cater to the housing needs of the urban poor whereas the later schemes were geared to cater to demands for housing of the poor (Wadhwa 1988: 1762). The World Bank's attempt at urban development by lending to the urban poor was not unproblematic. The attempt was steered to re-organise on a global scale and re-produce social inequalities and vulnerabilities (Weber 2004: 189). The Olga Tellis case (1981) saw the inclusion of right to shelter as a fundamental right but left it to the government to implement the same. The withdrawal of the government from providing housing to private takeover of the task implied that the fundamental right had to be purchased in order to be accessed.

The urban poor were never consulted in matters of their own development. The shift from 'need based' to 'demand based' housing created the grounds for resistance among the urban poor against the global financial institution. This paper utilizes a bottom-up approach, as opposed to the usual top-down perspective on development, to understand how politics of development is countered by the subjects of development. It explores the nature of resistance to the Bank's endeavours in urban housing by the urban subaltern using the case study of Chennai.

Understanding Need-based Approach and Demand-Based Approach in Urban Housing Policy

A reliable indicator of urbanisation is the growing urban housing sector. For a long time, India did not prioritise the housing sector. Housing was deemed to belong to social welfare sector rather than economic sector (Sivam and Karuppannan 2002: 84). Corollary, less financial resources were allotted to housing (Mehta and Mehta 1991; Gupta et al. 1993; Smets 1997, 1999). Before independence, there were no efforts to address the crisis of housing of marginalised groups. After independence and till the Fifth Five Year Plan (1974-1979), the government provided housing to the urban poor. Starting from the Sixth Five Year Plan (1980-1985) and particularly the Eighth (1992-1997) and Ninth Five Year Plans (1997-2002), the government withdrew from its role as a provider of housing. Around the same time, the World Bank entered the business of providing shelters to India's urban poor. The Bank, disgruntled with the schemes of subsidy, influenced India's housing policy which witnessed a gradual change from need-based to demand-based approach (Wadhwa 1988; Anand 1992). Put simply, there was shift from the "delivery of a packaged product to a progressive development model" (Sivam and Karuppannan 2002: 70). Now, the government assumed the role of a facilitator creating conditions for interaction between external finance and the target urban poor.

The concept of 'need'

What is 'need'? The concept of 'need' refers to a product or a service in relation to the functions or goals it is expected to fulfil. Need may be defined in terms of essential utility, without reference either to income of the household or prices of the commodity, which is required by and large (Wadhwa 1988: 1762). Need is neither determined by choices in the market, and prices of goods and services nor dependent upon income. Need stems from an indispensable purpose. There are minimum three basic questions to ascertain whether a product or a service qualifies as 'need' (Wadhwa 1988: 1762). These are:

1. Whether the product or service is necessary
2. If yes, the quantity that is required, and
3. Who determines the need

In case of shelter services, expected objectives in needed shelter will shape the estimate of type and quantum of housing required. Under resource-stress, estimates could be used to prioritise 'needs' in relation to the objectives which should be fulfilled first and those which could be left for the long run. Moreover, needs may be determined by an individual or a household, planners or the government, and the society (Wadhwa 1988: 1762). In this paper, the perspectives of the planners or the government and

slum dwellers will be taken into account to understand politics of development from above and resistance to the same from below.

The concept of 'demand'

The concept of 'demand' belongs to the discipline of economics. Here, demand belongs to the realm of free market economy. Demand is determined on the basis of consumer's choice and price. Consumer's choice need not include the judgment of society or benchmarks laid out by planners and/or government (Wadhwa 1988: 1762). Being a matter of choice, consumer may demand for some products and not for others. This means that the product does not have an essential property- life would not turn harsh in its absence. Fulfilment of demand requires the interplay of suppliers and consumers. The divergence between need and demand became the reason for government intervention

Transformation from Need-based Approach to Demand-Based Approach

In 1960s and 1970s, the 'need-based' approach to urban housing emerged as the product of planners' and/or government's perception of the needs of urban poor. Having recognised housing as a basic need, under this approach the primary objective entailed making urban housing affordable through subsidies and making credit on soft terms and direct price controls. At the macro level, the norm of housing was set at one dwelling unit per household. It would be impossible for the urban poor to avail of the prescribed standard norm unless they were offered subsidies. The planners realised that if the urban poor were to afford this basic need, they should be offered higher subsidies. Further, the capital cost of infrastructure would have to borne by the government and the beneficiaries could be levied user charges for maintenance or improvements. In short, the housing policies in this approach were not oriented to 'capability to pay' of the urban poor (Wadhwa 1988: 1763).

The 'need-based' approach was riddled with several loopholes. The housing schemes seemed to be based on the assumption that need for housing of a household was related to the income of the household instead of its size. By emphasising on the criterion of income of the household, the target group found the housing schemes unaffordable and unacceptable. These schemes helped the rich and middle income groups to misappropriate housing meant for the urban poor. The low income groups could be assigned smaller subsidies and consequently, smaller houses, while the rich could be allotted larger houses. Thus, the definition of 'need' had a distinct class bias and failed to ameliorate the housing conditions of the urban poor (Wadhwa 1988: 1762-3).

The aforementioned government failures to provide housing to the urban poor marked a shift from 'need-based' approach to 'demand-based' programmes. The shift relieved the government from "the major responsibility of providing housing to the poor themselves and reserve for itself the role of a mere 'facilitator'" (Wadhwa 1988: 1764). The transformation was coupled with the dominance of institutions for housing policies. During 1970s, the Union government transferred the responsibility of all social housing schemes and housing needs of a state's population (except subsidised housing for plantation workers) to the respective state governments (Wadhwa 1988: 1763). In the same year, the Housing and Urban Development Corporation Limited (HUDCO) was set up by the Union government under the supervision of the Ministry of Housing and Urban Poverty Alleviation . The HUDCO was entrusted with the task to cater to the financial needs of state housing boards, and agencies concerned with providing housing. All these institutions not only employed a 'balance sheet' approach to the issues of housing but were also interested in full-cost recovery. They reduced the quantum of subsidies based on the capability of state governments or cross-subsidisation by the housing boards.

After the entry of World Bank into India's shelter programmes, the urban housing policy changed radically. According to Pugh (1990), the World Bank reinforced 'capability to pay' approach whereby it was argued that the "squatter area upgrading, very low standard serviced sites... housing solutions [we]re within or nearly within the means of poor households" (Wadhwa 1988: 1763). The urban poor, according to World Bank estimates', could afford to expend 20 to 25 per cent of their income on urban housing (Wadhwa 1988: 1763). Thereafter, the World Bank shaped urban housing programmes both at the point of entry at the project level as well as through massive funds to route programmes via existing organisations. Needless to say, finances came at the cost of conditions imposed by the Bank. Gradually, urban housing policies moved away from subsidy or 'need-based' approach to full-cost recovery or 'demand based' approach.

The Changing Course of Shelter Policies: Revisiting Five Year Plans

The planned housing policies took off only after India's independence in 1947. The state recognised that the public sector ought to intervene directly and positively role in housing for the urban poor because

> *...it is not possible for private enterprise by itself to meet the housing needs of the lower income groups. The economic rent for even the minimum standard of accommodation is altogether beyond the means of the working class and a large section of the middle classes* (Government of India 1952: 209-210; Sivam and Karuppannan 2002: 71).

The issue of urban housing for the urban poor was included in the First Five Year Plan (1951-56) itself.

> *The basic problem was thus defined as an economic one in terms of the gap between affordability and housing costs* (Government of India 1952: 209-210; Sivam and Karuppannan 2002: 71).

With the First Five Year Plan, the state undertook responsibility to provide housing to low-income groups. In the beginning, the government was the sole provider of finished social housing schemes and various other programs through the subsidized Housing Scheme for Industrial Workers (1952), Housing for Low Income Group (1954), and Housing Scheme for Plantation Workers (1956). However, studies showed that houses constructed by public agencies for the urban poor were unaffordable and mostly appropriated by the middle- and higher-income groups. Besides, the total number of houses constructed by the public agencies under various schemes was too few to ameliorate the housing conditions of the urban poor. Thus, the First Five Year Plan failed miserably to meaningfully cater to urban housing for the economically weaker sections (Sivam and Karuppannan 2002: 71).

In the Second Five Year Plan (1956-61), the government adopted the view that slums were a painful sight in the urban landscape. It pursued the policy of slum clearance and rehabilitation of housing. The idea behind this policy was borrowed from the West which barely considered the root causes for emergence of slums and the problems of housing delivery (Wadhwa 1988). Like the First Five Year Plan, this Plan failed simply because "it did not take into consideration the situation of acute shortage of housing stock. On the contrary, it sought to demolish existing stock" (Sivam and Karuppannan 2002: 71).

In the subsequent Third Five Year Plan (1961-66), emphasis was laid on identifying causes behind disappointment in the previous housing programs. The shelter schemes reached out to only to a small segment of the total population of slum dwellers. In Delhi, the program could reach only 20.66% of the target population (Singh 1992). The problem with the shelter schemes was that they directed the construction of resettlement colonies in the peripheral areas of the cities, which (Rondinelli 1990: 158-9):

1. increased the distance between places of work and residence, and
2. increased the cost of travel between places of work and residence
3. rarely solved the housing problems of most of the poor and in many cases, only aggravated it

The policy of relocation overlooked the fact that slum dwellers preferred to live closer to workplaces (Jagannathan and Haider 1990) and maintain access to income-earning opportunities. Thus, they returned to places close to work and sold off whatever shelter they owned.

During the Fourth Five Year Plan (1969-74), the government of India initiated schemes for environmental improvement and up-gradation of slums, and sites and services. Based on theories of self-help advanced by Turner (1967, 1972, 1976), Mangin (1967) and Abrams (1964), these schemes had mixed success. For example, the sites and services scheme and squatter improvement program helped in income distribution to poor households in Chennai (Pugh 2000).

During the Fifth Plan (1975-80), housing schemes for high-income groups were included under cross-subsidisation. As a result, the State Housing Boards and Development Authorities were required to implement composite housing schemes incorporating all income brackets - economically weaker section, low income groups, middle income groups and high income groups. Again, the poor hardly benefited from this policy (Ansari 1989). Ansari (1989) found that the Housing Boards spent about 85% for middle income groups (MIG) and high income groups (HIG), and meagre 8% and 7% for low income groups (LIG) and economically weaker section (EWS) for housing respectively.

The shift in the government's approach to housing policy began in the Sixth Five Year Plan. Till the Fifth Five Year Plan, the government provided subsidized housing to select weaker sections of the society. It was still a need-based approach to housing for urban poor. From the Sixth Five Year Plan (1980-85), housing subsidy policy underwent change. The World Bank became involved in urban housing policy and launched sites and services schemes oriented “for direct public sector assistance for housing the EWS” (Sivam and Karuppannan 2002: 72). The public sector continued to provide subsidised housing to the weaker sections provided but on the capacity to repay. This approach was carried forward in the Seventh Five Year Plan (1985-1990) during which the National Housing Policy (NHP 1988) was formulated “reiterating more financial responsibility on the part of individual households” (Sivam and Karuppannan 2002: 73). With the Eighth Five Year Plan (1992-1997) and Ninth Five Year Plan (1997-2002), housing policies became greatly market-oriented, that is, markets would act like a facilitator instead of direct involvement in construction of housing (Sivam and Karuppannan 2002: 73). These Plan documents, inclusive of policy framework for legislative, fiscal and financial systems, transformed the role of government from the provider of finished housing to a promoter of housing delivery system in urban and rural areas. The role of the government now was that of an enabler to World Bank housing policies. Hence, it could withdraw from direct investment in housing programs.

Table1. Investment in housing over plan periods

Five year plan	Total plan outlay (million Rupees)	Total housing outlay (million Rupees)	Percentage of total plan outlay
First (1951-56)	19,600	385	1.96
Second (1956-61)	46,720	900	1.93
Third (1961-66)	85,790	1,100	1.28
Fourth (1969-74)	157,790	1,890	1.20
Fifth (1974-79)	394,260	4,940	1.25
Sixth (1980-85)	975,000	13,020	1.34
Seventh (1985-90)	1,800,000	24,530	1.36
Eighth (1992-97)	4,341,000	49,230	1.06
Ninth (1997-02)	8,592,000	NA	NA

Source: Government of India, Five Year Plans, First to Ninth, Planning Commission, New Delhi. Also, Sivam and Karuppannan 2002: 76

The shift from subsidy approach to market approach implied that the urban slum/pavement dwellers would have to partake of the market, however expensive it might be. Since the Sixth Five Year Plan, non-governmental organizations (NGOs) too found a role to play in community development programs (Sivam and Karuppannan 2002: 73).

The Right to Shelter: A Market- based Right

The fulfilment of basic needs occupies an important place in the discourse on human rights. Basic needs range from food, clothing, shelter, education, health and more. Taking the issue of shelter for urban poor as the concern of this paper, the Supreme Court ruled in the famous *Olga Tellis vs Bombay Municipal Corporation* (henceforth referred to as Olga Tellis) that the right to shelter was a fundamental right. Consequently, the Supreme Court brought socio-economic rights under Part III of the Constitution, that is, it brought the non-enforceable 'second generation rights' under the umbrella of enforceable fundamental rights (Mody 2013: 78). The judgment of the Supreme Court not only reflected on the status of right to shelter but also provided a new socio-economic dimension to Article 21 (Sripati 1998: 413; Mody 2013: 78). Shelters were not free but needed to be purchased, be it for poor or rich. If accessibility to shelters was based on purchasing power, it provided the cause to resist macro policies of the World Bank and the state on urban housing for the poor.

Since time immemorial, cities or towns have been hubs of business, trade, and commerce. These cities or towns became the main drivers of economy as well as boast of creation of opulence. This was true in 1980s Indian metropolitan cities or towns. Metropolitan cities or towns were also sites of rural-to-urban migration. In Mumbai, lakhs of migrants came from rural areas in search of livelihood every year. Most of the urban migrants

were poor which largely explained their departure from rural areas in pursuit of wage work. They lived in slums near places of work or business.

The resistance to politics of development emerged when the then chief minister of Maharashtra, A R Antulay, ordered for slum clearance in July 1981. He announced that those migrants who failed to possess photo-passes would be forcefully deported to places of origin or taken away from Mumbai. The responsibility of slum clearance was with the Bombay Municipal Corporation (BMC) assisted by the Commissioner of Police. The Municipal Commissioner of Bombay resorted to Sections 312-14 of the Mumbai Municipal Corporation Act, 1888 (the BMC Act) to legally remove the informal shelters. Under Section 314, the Municipal Commissioner had authority to eradicate the encroachments without prior notice. In protest, the slum/ pavement dwellers in Mumbai submitted writ petitions before the Supreme Court of India to challenge the constitutional validity of Section 312-14 of the BMC Act (Mody 2013: 79). This case was known as *Olga Tellis vs Bombay Municipal Corporation* (Olga Tellis).

In the courtroom, slum/ pavement dwellers wished to reinforce the right to life and personal liberty under Article 21 of the Constitution. They argued that Article 21 was meaningful only when it included the right to livelihood. They had migrated precisely to earn the basic means of sustenance, "living on pavements close to their workplace as possible was vital to their survival" (Mody 2013: 79). What became apparent was that the petitioners in Olga Tellis used the argument for right to livelihood and not the right to live on pavements. Rather, the issue of encroachments on pavements was derived out of the right to livelihood. They resisted classification as trespassers, "since they occupied pavements not by their choice, but due to economic compulsion. The situation was of dire necessity and it compelled them to use public property for personal survival" (Mody 2013: 80). In defense, the BMC contended that the demolition drive was carried out in public interest. It asserted that "great care was taken to ensure that no harassment is caused to pavement dwellers by evicting them" and attributed the increase in crime rates and risk of traffic accidents, environmental degradation, spread of contagious diseases, and many dangers, to slum settlements across the city (Mody 2013: 80).

In the final judgment, the Supreme Court ruled in favour of BMC. It outlined that Section 314 of the BMC Act cannot be struck down for it provided autonomous decision-making authority to the Municipal Commissioner to evict illegal encroachments (Mody 2013: 82). It opined that no one had the right to encroach upon land earmarked for public purpose (Mody 2013: 82). However, the Hon'ble court agreed that eviction of slum/pavement dwellers led to loss of livelihood. For the first time, the court recognised that right to life included right to livelihood. It also ruled that the

statutory body should provide for alternative accommodation, implement socio-economic policies, schemes for rehabilitation, and positive measures for equal treatment of the neglected in society (Mody 2013: 83). Moreover, the court recognised right to shelter as a fundamental right, thereby, bringing socio-economic rights under Part III of the Constitution. Over the years, the judgment on Olga Tellis became an oft referred precedent in similar cases, *Ahmedabad Municipal Corporation vs Nawab Khan Gulab Khan, Shanti – star Builders vs Narayan Totame* (Mody 2013: 83).

The Supreme Court judgment assured that the municipal body would provide alternative shelter to the destitute. The judgment made the state responsible for provision of shelter but it did not specify how it would do so. The procedure was left at the discretion of the state. In the course of the Five Year Plans, the state's shelter policy shifted from being the sole provider of shelter to World Bank intervention, that is, from subsidized to non-subsidized or less- subsidized forms of accommodation. The policy shift had a significant impact on the urban poor: firstly, it forced the urban poor to enter the *market* for shelter, and secondly, it delineated a shift from *need-based to demand-based* approach to urban poor shelters (Wadhwa 1988). At the micro level, the urban poor experienced the entity called state through realities of slum demolition drives, role of the judiciary and introduction to capitalism. At the macro level, the World Bank found the urban poor as the source of bank income in the context of global crisis of capitalism (Weber 2004). With cognition that the new-found fundamental right to shelter contingent upon purchasing power, the stage was set for the urban poor to contest the politics of development.

Politics of Development: The World Bank and Urban Development

The core function of the World Bank revolves around 'poverty reduction' worldwide. The objective behind the agenda of poverty reduction is development. According to Leftwich (2008), poverty reduction is rooted in politics. In this kind of politics, it is the task of the donors to

> *identify, nurture, encourage and support those social and political forces which are necessary for forming the kinds of growth coalition which will demand, design and implement the institutional arrangements which will deliver pro-poor growth and social provision* (Leftwich 2008: 3).

Such politics includes activities ranging from cooperation, negotiation and conflict in decisions about the use, production and distribution of resources, then

> *the politics of development is about changing not only how resources are used, produced and distributed, but also about how decisions are*

taken about such changes and about the politics which sustain, implement and extend them (Leftwich 2008: 10).

Poverty reduction is about politics and development. Using the logic of a=b and a=c then b=c, 'politics of development' may be defined as (Leftwich 2008: 10):

(a) *When people change the way they use, produce and distribute resources, they also change their (social and political) relations – relations of power - with each other*; and

(b) *When people change their political and social (power) relations with each other, they usually change the way they use, produce and distribute resources.*

An example of the above would be the Bank's efforts in urban development, particularly financing housing policies for urban poor. Through the site and services (S&S) programme, the Bank intends to alter a state's shelter policies, and concomitantly, the relations of power between the state and the people, the state and the Bank, and the Bank and the people.

The Bank constructed the urban housing policy through the lens of neo-classical economics. Earlier, the state housing policy aimed to replace earlier "'unacceptable' and 'sub-standard' living conditions with 'acceptable' and 'formally planned' solutions" (Anand 1992: 2045). It implied slum clearance followed by building apartments for slum dwellers (Anand 1992: 2045). However, the Bank heavily criticised the state sponsored huge subsidies and sought to reform the housing policy under neoliberal approach (Mayo et al. 1986). The neoliberal approach encouraged free markets, industrialization, and profit accumulation. In the context of housing policy, it meant the elimination of subsidies and the introduction of affordability-cost recovery-replicability model. Subsidies served as an index of measurement of 'need' for housing. Through subsidies, the need could be taken care of a wide base of poor urban migrant. With the introduction of neoliberal approach, the thrust was on 'full cost recovery' of the Bank or the 'capability to pay' of the urban poor. Thereby, the emphasis shifted from "potential for developmental roles by the state" to individual capacity (Anand 1992: 2045; Pugh 1990) as well as need based to demand based approach (Wadhwa1988).

The question is, why should the World Bank involve itself in urban development in Third World countries? The business of urban development is part of the World Bank discourse on 'poverty reduction'. However, the neoliberal approach to urban development (and urban housing policies in particular) aids in the "(re)-organization of global capitalism" (Weber 2004: 357). Like poverty reduction agenda, urban development becomes an instrument in liberalization of financial sector and re-production of social risk (Weber 2004: 357). The S&S programme for housing, contingent upon

increased access to credit, get embedded in private international commercial law. The "'demand for credit" has two implications (Weber 2004: 377)

1. It produces social vulnerabilities for the urban poor who become the subject for neoliberal projects, and
2. It re-formulates 'needs' in terms of 'demand'

While the first leads to global organization of poverty, the second indicates "banking on the poor" (Weber 2004: 380). The purpose of "banking on the poor" was precisely to mitigate and manage the crisis of global capitalism (Weber 2004: 379). The S&S programme for housing was tailored "Products and Services to the Needs of the Poor In the short-term" (Basu 2005: 4011) to bring the Bank closer to the urban poor. Hence, the urban poor were quantified and spoken of in "paramilitary terms: such as 'the target population'" (Collins and Lappe 1979: 853). The poor were never consulted in matters of their own development. Further, development was perceived to be achieved "only by bringing in external resources. Foreign investment is thought of as essential. Everything should be done, therefore, to develop a favourable climate for foreign banks and corporations" (Collins and Lappe 1979: 853). Particularly, the S&S programme was merely financial in nature. There were no provisions for skill building among the target population for better repayment (Jha 2000). Lastly, the study of urban poverty was divorced from political, socio-logical and cultural factors. The study and measurement of urban poverty were relegated to economic and statistics.

Nevertheless, the Bank's attempt to bank with the poor for its own interests was not unchallenged. The urban poor often refused to participate in the Bank sponsored politics of development or participated through local political party and party institutions. The next section will show how the politics of development is countered from below.

World Bank Lending to the Poor: Countering Politics of Development

Everyday Struggles of Subaltern: Sites and Services Schemes of World Bank

The World Bank's first steps into India's housing policy commenced with the sites and services (S&S) programme. The Bank claimed that the S&S programme was highly suited to affordability considerations and practical requirements of job security of the urban poor. This programme was upheld as the epitome of tailored housing package- it closely represented an individual's preference combination- which the urban poor would demand for and willingly purchase. During the early 1970s, the World Bank proposed the S&S schemes as the key to tide over the crisis of housing for urban poor in low-income countries. Within a span of three years (1972 and 1975), the World Bank invested a whopping figure of US $ 106.3 million,

inclusive of credits and loans, in S&S programmes worldwide. World Bank's scale of sponsorship and professional approach hinged on full-cost recovery transformed the previous Indian concept of S&S so much so that "the entire concept of site and services underwent a subtle but significant change which left it looking very much like a component' part of the World Bank lending system, complete with costs, benefits and its own jargon" (Wadhwa 1988: 1765). However, the Bank sponsored programme did not find many takers. The housing constructions were either deserted by the urban poor or were obtained by higher income groups (Wadhwa 1988: 1765). The S&S programme proved to be quite a disappointment for the Bank.

The frustration of the programme was embedded in the Bank's flawed assessment of lending to the urban poor. On examination, researchers found that the Bank over-estimated the magnitude of affordability of the urban poor. According the Bank's calculation, the target poor could afford to pay 20 to 25 per cent of their income on housing (Wadhwa 1988: 1763). Since poor migrants wanted residence near places of work to save transportation costs, they would be willing to shell out for it. By giving overwhelming importance to location, the Bank overlooked that the poor earned their meagre wages mainly from the informal sector and spent most of the income on food and other basic necessities in a kind of lexicographic ordering (Wadhwa 1988: 1765). Further, the Bank delineated that the capital cost of services would be met by the government while the user-charges would be paid by the occupants.

The promise of locational affordability could not be kept by the Bank. The majority of preferred locations of the poor were near the main business centres of cities where the possibility of employment opportunities were high. In such locales, the land would be inevitably expensive and vacant land may not be available or if available, it would not be huge enough to chalk out plots for S&S projects (Wadhwa 1988: 1765). While trying to bank with the poor, the World Bank confronted with erroneous presumptions built into the S&S projects. The Bank's failure doubled when the urban poor refused to participate in the S&S projects. Even if they participated, they sold off the assets to return to old shelters. As said earlier, the poor's resistance to the politics of World Bank was not in the form of an overt movement. It took the form of everyday resistance, easily escaping visibility of the layman.

For the lower-income segments of India, there were two parallel systems to provide housing. These were the public and the private sector. Based on statistical figures, it was found that the public sector created not more than 16% housing stock in the country while the private sector constructed majority (84%) accommodation (Sivam and Karuppannan 2002: 70; Garg, 1989; Government of India, 1992). In the private sector, there were two types of housing- formal and informal. Houses were unaffordable in the

formal housing market, be it the public sector or the private sector (such as the World Bank), which forced the urban poor to seek housing from illegal informal private sector in rural or unauthorized colonies. What the S&S scheme could not do, the illegal informal sector did. The latter provided affordable housing to the urban poor by giving land for free or at low cost (Sivam and Karuppannan 2002: 80; Ansari 1989). Thereafter, the shelters were built by slum dwellers themselves from waste materials. Thus, the resistance against the international development institution manifested through dependence on the illegal informal sector.

Turning to Political Parties: Case Study Chennai

In the Indian city of Chennai, slums were a common site. From 1975 onwards, the World Bank attempted to transform the slum settlements in the city. By doing away with the costly in situ constructions near places of work of the urban poor, it aimed to put in place S&S model wherein slum-dwellers would be evicted from central areas of the city and relocated to the suburbs. Till 1986, the S&S projects provided large tracts of land with basic amenities to slum dwellers. It was left to the slum dwellers to construct their homes. Both the S&S projects and slum up-gradation projects accounted for more than 70% of total shelter lending (Buckley and Kalarickal 2006: 16-17; Raman 2011: 77). Like before, the S&S schemes were based on cost recovery and settlement tenure (Raman 2011). The Bank's policy prescriptions were governed by "technocratic neo-liberalism" which, in the case of urban housing, referred to "deregulation of markets, privatisation of municipal services, affordability, cost recovery and replicability" (Raman 2011: 77). Specifically, the Bank singled out Chennai to experiment its "new theories" (Pugh 1990: 186) and "new urban management initiatives" (World Bank 1984: v).

The Bank wished to re-orient land use planning and infrastructure provision in Chennai. It required the government to adopt the corporate management style- investment planning and efficient resource use- for urban housing (Pugh 1990: 178). It allocated a loan worth $24 million to begin the first Madras Urban Development Project (MUDP I) in 1977. Another loan of $42 million was offered to implement the second Madras Urban Development Project (MUDP II) between 1980 and 1988 (World Bank 1984: vi). Both MUDP I and II, allocated 65% of the funding to transport and shelter (Raman 2011: 77; World Bank 1989). In the third and last direct loan for shelter, the Tamil Nadu Urban Development Project (TNUDP), the World Bank allocated $255 million to the state between 1988 and 1997 (Urban Development Report 2008; Krishnan 2007).

The ruling political party in Tamil Nadu at the time the World Bank began its operations in Chennai was Dravida Munnetra Kazhagam (DMK).

The secret behind DMK's rise to and stay in power was the policy of distribution of short-term goods and services which attracted a wide gamut of people in the state. The urban poor supported the DMK whose short-term projects gave jobs and investment "quickly" to their supporters (Subramanian 1999: 204-08; Raman 2011: 75). With the ruling party geared to strategically woo more voters, its state policies and bureaucracy were "made subservient to the party's needs" so that the poor could avail the state resources through formal and informal channels (Raman 2011: 75). In case of shelter policies, the urban poor could expect to win favours by supporting DMK.

In India, the housing policies were under the purview of the central government since independence. Scholars shared the opinion that India lacked a single housing policy or multiple housing policies rather there were evolving ideas "on the proper role of the state in intervening in urban land and housing problems" (Revi 1990: 87; Raman 2011: 75). At first, government of India set very high standards for housing and infrastructure for the poor, symbolic of the aspiration of western-style modernity. By 1970s, the central government fathomed that the policy of replacement of slums with high-quality modern homes was not a viable solution. It, therefore, retreated from the role of provider of constructed shelters to provider of conditions for self-help housing and in situ slum upgrading. The new official slum policy meant to "ameliorate the living conditions of slum-dwellers as an immediate measure" (Sridharan 1995: 292; Raman 2011: 75). By the late 1980s, policy guidelines of the National Commission on Urbanisation and the National Housing Policy clearly stated that "the state should only be a facilitator of housing, not a builder" (Raman 2011: 76). It must be remembered that the World Bank had already entered the domain of India's housing policy and the policy guidelines reflected what the World Bank required of the state- to be an intermediary between it and the poor.

The housing policies of the central government, if transferred to the states, could disturb the vote bank. In Tamil Nadu, DMK "strategically modified" the housing policies of the central government to retain the "support of key groups of slum-dwellers" (Raman 2011: 74). Though the World Bank needed the Tamil Nadu government to cooperate in realising S&S schemes, the latter stood by the state shelter policies which did not believe in eviction and resettlement. Instead, it pursued in situ tenement construction with "an informal tendency to protect and reward those groups of the urban poor (for example, fishermen) that the ruling party was trying to court for votes" (Raman 2011: 74). Corollary, the urban poor allied with the ruling party (and its vote bank politics) to thwart the initiatives of the World Bank. In order to identify themselves with the political party, the slum

tenements were named after the political leaders who built them such as "MGR" or "Kalaignar" (or "Amma" for supporters of AIADMK).

The state shelter policies were implemented through the Tamil Nadu Slum Clearance Board (TNSCB) created during the DMK regime. The TNSCB was established by the Tamil Nadu Slum Areas (Improvement and Clearance) Act of 1971. The TNSCB chairman was directly appointed by the (DMK) chief minister. The TNSCB chairman, Rama Arangannal, was bestowed with the "authority to allot plots and tenements owned by the board to 'such slum dwellers whom he considered eligible'" (Raman 2011: 76). The Act did not clearly articulate the criteria for eligibility for tenement residents, "essentially giving the chairman the power to direct housing produced by the board to worthy supporters of the DMK, a power that the chairman used liberally" (Raman 2011: 76). During the early years of its formation, the TNSCB not only served as "a highly visible symbol of the DMK's commitment to the urban poor" but also "as a vehicle of political patronage which funnelled goods from the state to 'worthy' voters" (Raman 2011: 77). As a result, the urban poor did not suffer from the fear of demolition, eviction, and resettlement. In short, they had a strong political recourse to counter the Bank's drive for urban development. Consequently, the city became dotted with in situ tenements representing the alliance of advantage between the politically valuable slum dwellers and the ruling party.

The Bank made serious attempts to fundamentally amend shelter policies in Tamil Nadu. The Bank found the mushrooming slums "wholly irrational, and impractical" (Raman 2011: 77). Dubbing the phenomenon of burgeoning slums as a "crisis", the Bank's intervention sought to "rationalise" the state shelter policies (Raman 2011: 77). With the TNSCB acting as a weak partner, the shelter reforms were hard to come by. By the end of MUDP II, the Bank was fully aware of the obstacles to shelter reforms. Put in another way, democracy stood in the way of Bank's approach to development. The urban poor resorted to the state government (DMK) and its allied institution (TNSCB) for protection of slums and were obliged in return for their votes.

Conclusion

The objective of this paper was to study the resistance from below to the World Bank's housing programmes. The paper provided a discussion on macro structures of power and the micro structures of resistance. It was found that the urban poor resisted either by refusing to invest in the Bank's schemes or by allying with the regional ruling party to protect their interests. For the World Bank, the business of urban development in Third World countries like India entail "banking on the poor" to mitigate and manage the crisis of global capitalism (Weber 2004: 379). The national policy shift from

need based' to 'demand based' approaches to housing schemes not only helped the state to withdraw from an active role of a provider but also facilitated the World Bank to re-organise global capital. As the market became the site for the realisation of the fundamental right to shelter, it set the stage for the urban poor to resist against the production of risks and insecurities.

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RENEGOTIATING LINGUISTIC IDENTITIES IN THE WAKE OF GLOBALIZATION

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Abstract

Globalization, as a world phenomenon has a direct relationship with language identities, Language loss and their chances of survival. Also, with English hailed as the lingua franca and a language for possibilities and prosperity, more and more world citizens are drawn towards it, often at the cost of their native languages. While it is true that we are all staunchly moving towards one world and language uniformity ensures homogenization, yet it clashes with the principle of preserving linguistic diversity.

This poses certain questions like how is the globalization phenomenon related to issues of languages, culture and identity. What will be the effect of language loss; what roles does the linguist have to play in the process of language survival; why is language preservation needed?

This paper scrutinizes language specific issues in the wake of globalization. The issues dealt with here are: status of world language and their chances of survival; factors contributing towards language loss and language survival; effects of language loss and need for language preservation; suggested steps towards language preservation.

Keywords: Globalization, Language Homogenization, Lingua Franca, Language shift, Language Survival, Language, Culture and Identity, Language Preservation

Paper

Globalization, is certainly not a new phenomenon, yet, never before it was so fast paced as it is today. Advances in technology and telecommunication have contributed majorly towards furthering economic and cultural interdependence and have greatly paced up the globalization phenomenon. Swedish Journalist Thomas Larsson in his book “The race to the Top: The Real Story of Globalization” (2001) defines globalization as:

> "The process of world shrinkage, of distances getting shorter, things moving closer. It pertains to the increasing ease with which somebody on one side of the world can interact, to mutual benefit, with somebody on the other side of the world."

Wikipedia offers the following definition for Globalization, "The process of international Integration arising from the interchange of world views, products, ideas and other aspects of culture."

Both the definitions put some stress on 'interchange of views' and 'interaction between world denizens'. Also Globalization has brought about a tendency towards: i) migration to economically viable nations ii) exchange of cultural denominators iii) increased frequency of interaction; all of which inevitably demands a common medium. Thus arises the concept of 'Lingua Franca' i.e. a shared language bridging gaps between various cultures and communities. A few world languages have emerged as lingua franca, (English at the top of list) and are posing a strong threat to other world languages. There is no denying that globalization has led to this situation, at this juncture though one needs to look into two areas: i) How is a lingua franca different from a native speaker's mother tongue (not from the phonetic perspective but from the utilitarian perspective and ii) what factors contribute towards the thriving of lingua franca (often at the cost of extinction of other languages).

To find some answers one needs to understand the concepts of 'language utility' and 'language value' for a speaker. A lingua franca offers its speakers more value and utility by increasing the speakers' mobility and by offering more social and economic benefits. Thus happens 'language replacement', and much language shift and language loss could be attributed to this. Thus languages that are considered lacking in offering its speakers certain benefits like economic progress and social mobility are considered to be devoid of any 'instrumental or practical value' and albeit some amount of 'sentimental value' remains attached to the native language or the mother tongue, it is often not enough to lend the language enough vigor for sustenance. A shift towards language offering 'instrumental value' is considered a sensible option by majority of speakers, yet it remains a mystery that why this shift has to be complete, or to reframe the question, why the language holding 'instrumental value' and the one holding 'sentimental value' remain mutually exclusive choices?

Language codes definitely are dying off at a much faster rate than ever, and it is estimated that out of approximately 5000-6000 living world languages (Dixon 1997), about half would vanish by the end of the present century itself. Also linguists believe that the number of languages that are not exposed to the threat of extinction is very few. As one delves deeper in order to find out the major identifiers to speakers' language choices, the

following factors emerge strongly: i) demography ii) economic factors iii) Social Identifiers iv) mass media (Fishman 1991). Cerny presents ostler's statistics in "Language Death versus Language Survival" (2010). The statistics lists world's top twenty languages and covers both L1 and L2 speakers:

Figure1 Top twenty languages in terms of the number of speakers

List of languages	Number of speakers	List of languages	Number of Speakers
1. Chinese-Mandarin	1,052,000,000	11.Urdu	104,000,000
2. English	508,000,000	12. Korean	78,000,000
3. Hindi	487,000,000	13. Chinese-Wu	77,000,000
4. Spanish	417,000,000	14. Javanese	76,000,000
5. Russian	277,000,000	15. Telegu	75,000,000
6. Bengali	211,000,000	16. Tamil	74,000,000
7. Portuguese	191,000,000	17. Chinese-Yue	71,000,000
8. German	128,000,000	18. Marathi	71,000,000
9. French	128,000,000	19. Vietnamese	68,000,000
10. Japanese	126,000,000	20. Turkish	61,000,000

If one focuses on the presence of Indian languages on the list, two factors emerge: Hindi definitely is emerging as a lingua Franca with being third on the list. Similarly languages like Marathi, Tamil, Telegu, and Bengali also show bright chances of survival in the coming times according to the list. This could be attributed to the demographic factors like population of the speaker community, yet one cannot deny that there must be some other factors contributing towards large number of speakers of these tongues. The answer probably lies in the fact that these communities attribute 'real value' to the 'sentimental value' attached to their mother tongues. They take a lot of pride in their languages and despite being fluent in the lingua franca (which might be Hindi within the nation or English), the people belonging to the community would insist on interacting in their native tongues whenever possible. Also there is a strong insistence on passing on of the mother tongue to the next generation by the elders of community. The richness of culture and heritage is often conveyed through stories shared in the mother tongue, and children are encouraged to speak only in their mother tongues within the community. A strong majority from such communities are known to opt for an educational alternative that would give them an opportunity to increase proficiency in their mother tongue along with their chosen lingua franca. Quite interestingly places or states where speakers' community have shown strong inclination towards the mother tongue, government agencies are found to be using the native language along with English for official purposes. These factors, along with demographic factors like population, birth and death rates seem to have worked favorably for

these languages. This offers a small ray of hope, that the solution to language attrition lies somewhere in increasing the language prestige and value within the speakers' community, and a combined and sustained effort from community and policy makers may save at least a few more languages from sure death.

But before we delve further into the area, we must look at a counter perspective that is strongly emerging within the linguistic community, that whether there is a need for such an effort. The anti survival supporters argue that language extinction is not a recent phenomenon, languages have always died and they lobby for language homogenization instead. The strongest pro-survival argument that one can offer is that languages lend diversity to the world culture and acts as windows to the knowledge unique to the culture to which any particular language belong.

Kenan Malik, in his essay 'Let them Die'(2000), argues against language renewal theories declaring that, " the whole point of language is to communicate, the more dynamic our cultures will be, because the more they will be open to new ways of thinking and doing. "

For those who believe that language and culture are mutually interdependent entities rather than mutually exclusive ones, the presence rate of language attrition remains a huge concern and must act as a bugle to action. Thus there is a need to look for tangible options towards ensuring language renewal.

A solution lies in changing the speaker's attitudes towards their native tongue. Language attitudes play a major role in deciding the chances of a particular language's survival. A community's attitude towards its native tongue may vary from being positive to negative to indifferent. These attitudes as it is observed are often linked to the degree of socio economic value or so called utility value of the language. The key towards an attitude shift is attaching more 'sentimental value' to the language; making the language a strong cultural denominator, also certain policy measures like making language policies all inclusive, instituting bilingual policy, an increased use of regional languages in official and media purposes; would all help in bringing about an attitudinal shift and thereby increasing the chances of survival of many world languages.

There is no glorification in homogenization if it comes at the cost of multiculturalism nd multilingualism. True that the death of certain languages is inevitable, yet we must preserve and save as many as we can, if only to maintain diversity. The threat to languages not only threatens cultural diversity, it leads to the extinction of a community's identity. A language never dies alone, along dies the vast reservoirs of knowledge, and each last speaker of a particular tongue carries to his grave thousands of years of shared knowledge.

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SOCIAL ISSUES IN THE AZERBAIJAN OIL INDUSTRY AT THE END OF THE XIX CENTURY

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Abstract

This article is about social issues in the Azerbaijan oil industry at the end of the XIX century when Azerbaijan was colony of Tsarist Russian Empire. Workers' wages and work hours, living and working condition, religious issues, education and health problems have been studied in this article.

Keywords: Azerbaijan, oil industry, social issues

Introduction

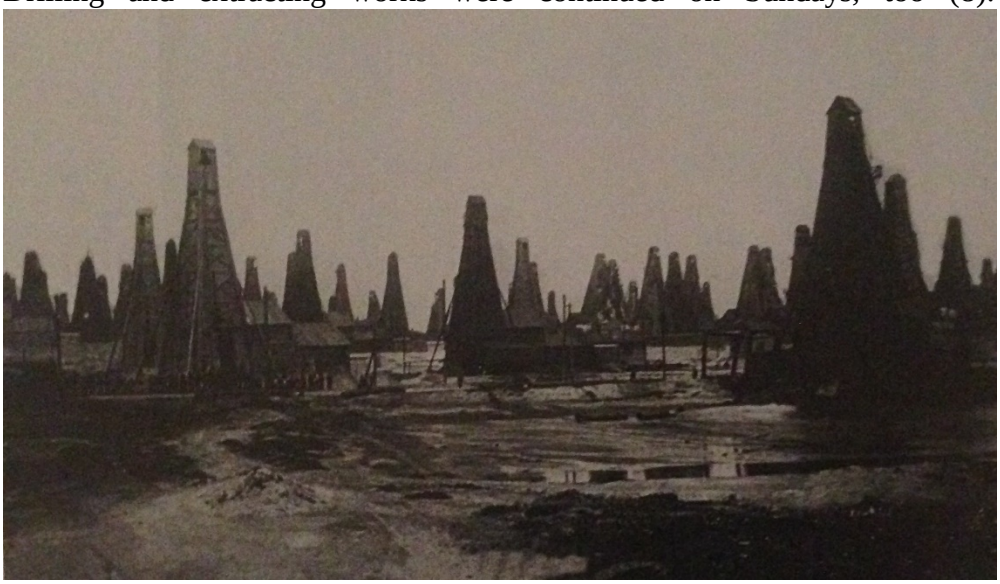
Azerbaijan's oil has a long history. People of this region used oil in ancient and middle ages. There are many notes about Azerbaijan's oil in travelers' notebooks of middle ages. Arabian historian Mohammed Bekran visited Absheron peninsula and wrote his book about extraction procedure of oil from wells in Balakhani region (1). Italian traveler Marco Polo wrote in XIV century that people of this region used oil for treatment purposes and sent it to adjacent countries (2).

In the XIX century oil extraction in Absheron peninsula enhanced and at the end of this century Baku oil industry developed rapidly. Beginning from 70s of the XIX century foreign oil industry company began to invest in Baku oil industry. People from other region of the Russian Empire, also from other countries came to Baku to work in the oil industry. At the last years of the XIX century Baku became one of the biggest oil industry cities of the world (3).

In 1897 107 oil industry firm functioned in Baku and these firms extracted 421.727.161 poods of oil in this year (4). Next year 485943348 poods of oil was extracted in Baku (5). In 1899 160 oil industry companies functioned in Baku city and these companies extracted 525.247.415 poods of oil in the oil mines of Baku city in this year (6).

I.

The oil industry workers' work condition was unbearable in the oil mines and oil industry factories at the end of XIX century. Workers worked from 06:00 till 18:00 in the workshops. They have 2 hours free time to rest and to have dinner every day. In the result they worked for 10 hours every day in the workshops. In the workshops work days in a year were 360 days (7). Drilling and extracting works were organized in 2 shifted regime. Every shift was 12 hours. In every shift workers' had 2 free hours to rest and to eat. Drilling and extracting works were continued on Sundays, too (8).



Oil mines in Baku in XIX century

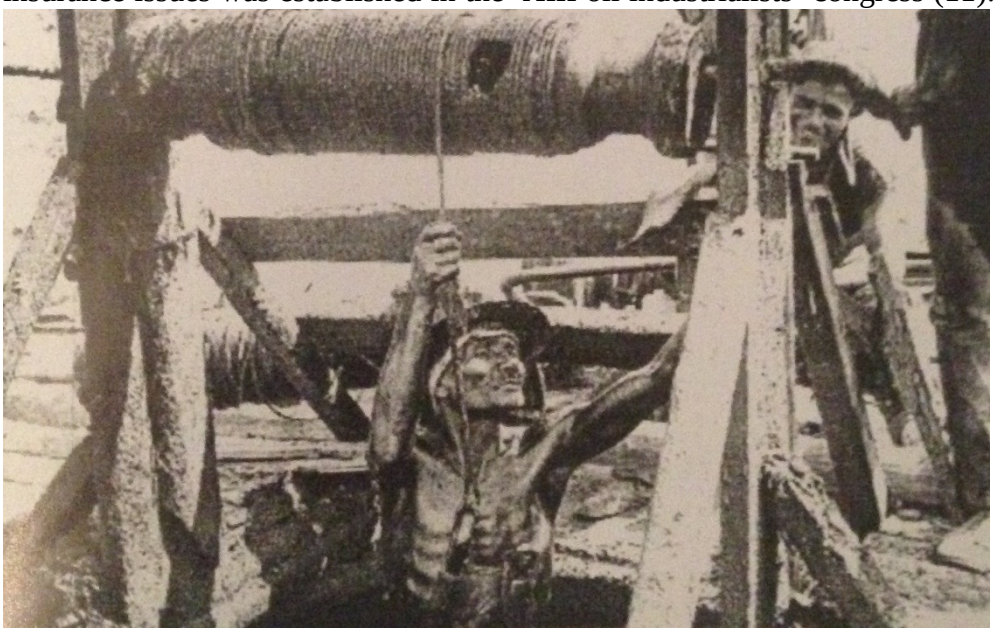
There was not labor protection in the oil mines and factories. There were 43 accidents in 1873-1886 years in Baku oil industry and in the result of these accidents 86 men were injured and 30 men were dead. The next years number of accidents was increased. In 1887-1897 years there were 309 accidents and in result 349 men were injured and 108 men were dead (9). But this is not reality. In the reality men injured were more. Owners tried to hide real number of accidents in their oil mines and factories.

Medical aid in the oil industry regions of Baku city was not enough. In the result of hard working and living conditions workers were ill. 1884 Baku oil industrialists established their organization "Baku oil industrialists' congress Council". From January 1889 this organization began to organize medical aid and opened hospitals and out-patient hospitals in the oil industry regions. In 1893 hospital of Baku oil industrialists' congress was opened in Balakhani region of Baku. This hospital had 40 beds. In next year hospital of Baku oil industrialists was opened in Black city region of Baku. There was out-patient hospital in the Black City region and serviced with donation of Nobel brothers company since 1898. From 1898 this hospital began to

service with funds of “Baku oil industrialists’ congress”. On January 1899 out-patient hospital of Baku oil industrialists’ congress began to function and on February of next year out-patient hospital was opened in Ramana region by Baku oil industrialists’ congress.

In 1900 Baku oil industrialists’ congress Council had these hospitals and out-patient hospitals: Balakhani mine hospital, Black city hospital, Balakhani out-patient hospital, Sabunchu out-patient hospital, Black city out-patient hospital, White city out-patient hospital, Bibiheybat out-patient hospital, Ramana out-patient hospital (10).

There wasn’t insurance system in oil industry of Baku and oil workers didn’t insured. In 1899 special commission for oil industry workers’ insurance issues was established in the XIII oil industrialists’ congress (11).



Oil well drilling in XIX century in Baku

Some of oil industry workers lived in barracks. The most part of these barracks hadn’t windows. Some of oil workers lived in mines. In summer months they slept on the land. Well-known Russian writer A.M.Gorki was in Baku mines two times and wrote: “Oil mines stayed in my remembrance as view of horrible hell painted well” (12).

Instead of this living and working conditions oil industry workers’ wages were very low. The wages for a month were as follows: mechanics – 70 rubles in minimum and 250 rubles in maximum; mechanics’ assistants – 50 rubles in minimum; 125 rubles in maximum; head masters of drilling - 125 rubles in minimum and 350 rubles in maximum; masters of drilling - 35 rubles in minimum and 200 rubles in maximum; drilling workers’ assistant - 28 rubles in minimum and 90 rubles in maximum; head workers – 30 in

minimum and 50 rubles in maximum; unskilled workers – 10 rubles in minimum and 30 rubles in maximum; guards – 15 rubles in minimum and 36 rubles in maximum; and etc. Wages were different among workers for their length of service and their nationality. Wages in oil mines of Baku were low than central regions of Tsarist Russian Empire and wages in mines of Tsarist Russian Empire were low than England and United States. At the end of XIX century oil mine workers' wages in Baku were 4,6 copeck for an hour, in Moscow province were 5,07 copeck for an hour, in Egland were 19,45 copeck for an hour and in United States were 25,60 copeck for an hour (13).

In 1893 costs of some of oil industry companies in Baku for workers' and employees' wages of oil mines were as follows: Nobel brothers Petroleum Production Company 396.640 rubles, Lianozov firm 38.460 rubles, Balakhani company 16.470 rubles, Zubalov firm 15.900 rubles, Caucasus company 15.030 rubles, Kolesnikov brothers company 8.300 rubles, Armavir company 5.500 rubles, Vartanov brothers firm 4.450 rubles, etc (14). In 1894 costs of some of oil industry companies in Baku for workers' and employees' wages of oil mines were as follows: Nobel brothers Petroleum Production Company 378.684 rubles, Lianozov firm 48.228 rubles, Zubalov firm 21.264 rubles, Caucasus company 17.472 rubles, Kolesnikov brothers company 9.648 rubles, Asadullayev firm 8.700 rubles, Armavir company 7.512 rubles, "Oil" company 5.196 rubles, Nabatov brothers firm 5.040 rubles, Araks company 4.992, Tumayev firm 3.060 rubles, etc (15).

At the end of XIX century as a result of fast develop of oil industry began stream of people belonging to different religions to Baku. "Baku oil industrialists Congress" organization paid financial funds for building worship houses for people. Baku oil industrialists confirmed to pay 2000 rubles for construction worship houses in costs estimate of 1899 in the XIII congress and 21.535 rubles in the costs estimate of 1900 in the XIV congress (16). Branobel company respected workers' traditions and various religions. Nobel ships took on names of various religious and philosophical personalities - Zoroaster, Mohammad, Buddha, Brahma, Socrates, Spinoza and Darwin. The logo of the Nobel Brothers' Petroleum Company depicted the Surakhani Fire-worshippers' Temple. Religious ceremonies took place within the Nobel Factory Compound. In religious holidays workers were free from work. Moslems had more religious holidays than Christians. On the days before holidays works finished an hour earlier than other days (17).

The oil mine and factories workers were uneducated. Special courses were organized for the workers in the West Europe at the end of XIX century. But there weren't these courses in Baku which were very important for workers. Only at beginning of XX century Baku branch of Russian

Emperor Technical Society opened technical courses for oil industry workers (18).

Conclusion

Administrative organization of Tsarist government didn't care workers. Workers did not provided by houses. Insurance system wasn't created at the end of XIX century. Medical aid wasn't enough. In the results of accidents and fires workers were dead or disabled. Workers' living and working conditions were hard than central provinces of Tsarist Russian Empire.

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THE NEED TO OVERHAUL SCIENCE RESEARCH- CHALLENGES OF WASTED FUNDING AND IRREPRODUCIBLE RESEARCH

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Abstract

Global science research involves finances to the tune of billions and millions of people. In 2010, the expenditure on Life Sciences research globally was US$240 billion. Still one third of science information on the net is incorrect. 85% of investment in biomedical research is wasted due to inadequate reporting. Half of the published research cannot be replicated. The most striking findings have greatest chance of making it to the leading journals that impose high rejection rates to the tune of 90% of submitted manuscripts forcing scientists to exclude inconvenient data which may otherwise be significant. The time lag for translational research is an average 17 years with huge investments for research evidence to reach clinical practice. The way science research initiatives are chosen, designed, carried out, recorded, analysed, reported, regulated and published is under scrutiny. There is a dire need to redefine priorities and ways of conducting and reporting research in order to reduce waste and inefficiency in science research. A serious re-look is required into the kind of projects funded, systematic review of previous data, conduct, writing and publication of research.

Keywords: Science research, irreproducibility, wasted funding, sequestration

Introduction

Science research has progressed over the decades and is giving rich dividends as evidenced from the quality of publications from the prestigious laboratories all over the world. There is a marked increase in competition to report research in quality journals whether at the cost of pruning inconvenient data or manipulating results to show significant outcomes [Glasziou et.al 2014; Chalmers et.al. 2014][16,17]. However, it is also very clear that a significant number of the research projects contribute nothing or very

little to knowledge, practice or policy. There is often a debate amongst the best known researchers across the world that the research we need is much less in terms of the real output that we are getting now. The research we should be investing in should be done in a better way, done for the right reasons and documented for better use by future researchers as irreproducibility and waste in research has become a major issue that is rendering presently conducted and reported research misfit to be cited and used in future. This again points to huge waste in science research already under crisis due to huge sequestration that points to a dark age for science research [Stokes, 1997; Altman, 1994; Chalmers and Glasziou, 2009; Macloed et. Al. 2014][1, 2, 3, 4,].

As an example of one area of science research, it has been reported that investment globally in biomedical research is increasing with an annual estimate of around $240 million [Rottingen, 2013][5]. Still the validity of information on the internet and in journals is questionable for a variety of reasons. The level of irreproducibility and doubtful reporting has become a serious issue and needs to be addressed for more meaningful outcomes for economic reasons and in terms of scientific contribution. This article details a study made to find out the deficiencies in research decisions, design, regulation and reporting. It highlights the aspects in these four areas which have led to scientific and economic wastage in research. Though it does not offer solutions for the crisis, which are still under study, there is a clear articulation of what needs immediate attention.

I.
The waste in science research

The investment in terms of funding, experimentation, regulation and reporting of science research has come under serious scrutiny as the way research is thought of in terms of application for funding, selected, sanctioned, conducted and reported is becoming questionable. The aspects under scrutiny are the following:

1.Research decisions based on questions relevant to users of research
2. Research design, methodology and analytical interpretations
3. Regulation and management of scientific research
4. Reporting of research as unbiased, reproducible and usable

Hence, almost every aspect of the way science research needs overhaul to overcome present crisis science funding is facing. Seven aspects of wasted funding and irreproducible research are covered in the following section of the paper that call for urgent attention.

The dangers of playing safe and lack of special effort

Low priority questions continue to be answered by several scientists without realizing the relevance it may or may not have today. As continuation to work done in past, the scientists who have been in the field for sometime and have earned a name because of some initial prestigious work continue to get funding though they may be addressing the areas that need most attention today. This also points to lack of intiatives to undertake research in unexplored areas/aspects. This aspect of wastage goes undetected as the scientists have earned a name for themselves and may have 'sought-after' laboratories but their actual contribution to science research and in addressing questions which are relevant today is negligible.

Research- Basic or Applied?

Relative investment in basic and applied research is also under scrutiny. Half of the investment in research in US and UK goes to basic research. It is also reported that most clinical research stemmed from basic research [Collins, 2012; Comroe and Dripps, 1976; Grant *et.al.* 2003][6, 7, 8]. However, basic research is not valued highly as most intially promising findings with future application appear to be false positive and exaggerated. The time needed for translation of basic research is generally long with estimates between 10-20 years [Morris *et.al.* 2011][9]. This also calls for exhaustive investment in applied research which may not lead to any positive outcome after such a long period and hence, is wasted. However, efforts are being made to minimize time for application of research based on the design of the experiments and trials. The funding for applied research is also picking up with the hope of quicker solutions for the future in the 'bench to bedside' format but it requires more efforts to reduce wasting of resources. There has also been a huge disconnect between what basic research can do and what users of research really want which needs to be addressed at the earliest.

Another facet of this problem is that basic research does not provide a sufficiently reliable basis for areas like drug development [Prinz *et. al* 2011][10]. Out of 53 significant reports on cancer from basic research, Amgen, a private company, has not been able to replicate 47. This problem has also been reported by a large number of other pharmaceutical firms who have tried to pick up promising results and work further on them to develop drugs for the future. It has not been possible to reproduce what has been reported in most of the cases. Obtaining funding for replication what is already reported is always a huge struggle. However, validating the initial results is a must before experimenting further on any promising aspects [Nat. Immunol][11].

Hence, the decision of investment in the right projects having real world application is as important as the decision on funding basic or applied research and the proportion of each in the overall funding scenario.

Ignorance of previous work and absence of systematic review

An investigation into publications of highly cited journals indicates that there has rarely been a systematic review of the previous work before undertaking clinical trials [Goudi et.al. 2010][12]. In fact, many scientists were not even aware of the evidence that existed for research and trials conducted in that area [Cooper *et.al.* 2005][13]. Only four out of 446 clinical protocols studied by British research ethics committees had planned their target trials based on exhaustive study of previous data available in the field [Clark *et.al.* 2013][14]. Ignoring or not putting considerable efforts into finding out what is already known is a serious lapse and difficult to defend scientifically and ethically. It is also economically draining as rather than addressing lapses in previous study and working on the promising aspects, the same study may have been replicated with the same deficiencies and reported again in a different form. Such a huge drain on precious resources is highly unacceptable and leads to huge wastages. Without a systematic review and regard for previous study, the animal experiments are unnecessarily replicated which could have been easily avoided and animals saved for other more relevant projects. If the studies are about drugs with toxic effects or life threatening side effects, it could lead to unnecessary deaths. Also, if the previous study on any drug has shown no effect, then unnecessary enrolment into clinical trials could also be avoided. An enrolment of 7000 stroke patients in a clinical study of nimodipine could have been avoided if systematic review of previous studies had been done as the drug was already found to offer no protection [Horn *et.al.* 2001][15].

Bias in selection of previous study and designing protocols to favour desired outcomes

Lack of a systematic review is one reason for wastage, however, selecting only those studies that favour your research and promise desired outcomes is also a source of waste and falls under the scientifically unacceptable category. Conveniently pruning those findings which will put your research to doubt, selecting and reporting only those which enhance the significance of the research undertaken misleads the reader into believing something which is doubtfully reported. It also misleads users of research and future reseachers into believing and working on what is not authentic. When such results are selected for future studies, these distortions can be misleading and any replication will yield negative results.

Inadequate statistical optimization show variable outcomes

The statistical method used may also effect the outcome of research as inadequate statistical optimization may make a study irrelevant for users of research and future researchers. If similar studies chose different statistical methods for interpretation, the outcomes expected are different. This will have a significant effect in studies like clinical trials as interpretation may be different for similar trials and confusing for future studies as decisions like taking it to the next level or abandoning it depend on reported findings and their analysis. Hence, a considerable effort must go into selecting the most robust method of statistical analysis for most reliable interpretation of results.

Under reporting of research and absence of detailed written protocols

The methods of reporting research has come under severe scrutiny as documentation of research has been found to be faulty in most cases as reported earlier. Reporting of all facets of the experiments conducted in a sequential manner with the steps involved sequentially and exhaustively reported is essential for replication of the results for any future study. Writing detailed protocols before the start of the study is also not an accepted practice but investment in replicating reported research has necessitated funders and publishers to take this aspect seriously. Several standard reporting guidelines like CONSORT, STARD, PRISMA, ARRIVE etc. have been issued by prestigious publishing groups which ensure adequate reporting and set standards for future publications. There is also a move to make detailed protocols publicly available so that the exhaustive process of writing of protocols is not repeated and standard protocols are available for all studies.

Inconsistent regulatory process

Regulatory processes, government approval and ethical clearances have become extremely burdensome and time consuming. These are projected to be in the interest of safe research and for prptection of individuals involved as subjects but they are exceedingly inconsistent and vary resulting in inefficient management and wastage of precious time and funds with huge inconvenience to individuals involved. Much depends on the committees and regulators involved in these processes who must work with researchers, policy makers and subjects to see what is really needed and harmonise the guidelines and processes to specific needs rather than unwanted paper work and huge drainage in terms of time and resources.

Conclusion

The seven aspects discussed here are not the only ones which ail science research, make it irreproducible and cause wastage. However, if these are adequately addressed, most of the problems that science research is facing today can be managed for better efficiency and output. The wastage in science research due to not aligning basic research to the needs of the user, inadequate reporting of research and defective regulatory processes has led to huge economic losses. These funds could have been used to address numerous other questions which require urgent attention and are not being addressed due to funding deficits. The solutions offered at the level of policy makers, funders, researchers, users of research and future researchers is still under study and will be detailed in another paper in due course.

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PROMOTING LOCAL ISSUES BASED TEACHING AND RESEARCH IN A GLOBALIZED WORLD – A CASE STUDY OF A LARGE PRIVATE UNIVERSITY IN PAKISTAN

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Abstract

In 2015 a small study was conducted at one of the largest private universities in Pakistan. It confirmed earlier observations about the disconnect between foreign curriculum being taught in the Masters and Bachelors programs at the university and the issues facing employers in the country. A specific research exercise was then planned to interview 50 faculty members and understand the causes behind reliance on foreign books, the minimal use of local case studies as well as examples and lack of on-going exposure of the faculty to the hiring organizations in Pakistan. The study yielded interesting causes behind the disconnect including the mass commercialization of education, the need for globalizing content, easier access to foreign over local content, overloading courses on faculty, faults in matching teachers and courses due to large-scale intake of students, poor human resource management, performance appraisal and remuneration policies as well as the inattentive attitude of the university towards research and the professional development of faculty members. The impact of this disconnect on the learning experiences and achievements of students is discussed and recommendations are provided for developing systematic and strategic professional development programs for promoting local issues based teaching and research while maintaining a globalized outlook.

Keywords: Academia-industry disconnect, university reputation, globalization, local knowledge, mass commercialization of education

Introduction

The university selected is one of the largest private sector universities in the country with a total student body close to ten thousand. It's business school has a student body in excess of four thousand students. Higher education faces the need to change in order to better address the

requirements of modern society (Watson and Watson, 2013). This study was conceived with the idea of identifying whether a disconnect exists between the curriculum and the issues being faced by employers. The understanding was that it is critical for educational institutions to know their purpose (Ferguson, 2014), to understand the needs of their stakeholders, i.e. employers of graduating students and to keep their curriculum aligned with those needs.

Methodology

Face to face individual interviews were carried out with the permanent faculty members of the business school at the university. A total of eighty teachers were invited to take part in the survey. However 20 responded. Each faculty member was taken through a structured interview consisting of thirteen questions. Each interview took approximately 20 minutes and was conducted with an assurance of complete confidentiality. Respondents included senior to junior faculty members, both in terms of duration of service as well as designation. The highest ranked respondent was a Dean and the lowest ranked a lecturer. Both quantitative and qualitative data was requested and received.

Key Findings

Faculty members were asked who the top five employers, by name, of their business school's students were. More than fifty percent literally said they had no idea. The banking sector was quoted by some respondents while many referred the interviewer to the Director External Linkages at the university. Those who named him felt that he was required to have that information, not them.

When asked if the faculty understands what the current top issues being faced by employers of business school students are the respondents gave a slightly positive overall average score of 2.5 out of 4 with 4 being a strong yes. Their self-assessments were then verified when they were asked to identify the top three growth opportunities those organizations were currently facing. Again half of the respondents said that they had no idea. The rest of the responses received were vague and generic. Similarly when respondents were asked about the top three overall performance challenges being faced by the same organizations 40% said they had no idea. Some of the responses given included competition, inflation, power cuts, terrorism, liquidity issues and corruption. None of these responses were specific to any single organization.

In response to a question asking for the form of value addition to their organizations consistently expected by employers from graduating students 34% said they had no idea. Some respondents felt that the students

were consistently expected to work hard on low salaries as the university's ranking was poor. One respondent said that the students were expected to be "hard working, confident and vocal, have good business knowledge and problem solving skills."

The majority of the respondents had no clear idea when asked which of the needs of employers were left unaddressed by the curriculum being taught. Some were of the opinion that superficial knowledge was being delivered were others felt that there was lack of relevance with local needs. 85% were of the opinion that practical implications of concepts taught were not touched upon. One went to the extent of saying that students are unable to write even a simple application due to their very poor communication skills, especially in English.

When asked which of the needs of employers were being addressed by the curriculum again the respondents were at a loss for clear, specific and consistent answers. The overall impression was that basic concepts were taught to students but there was no clear line of connection between the curriculum and the needs of employers of graduating students.

Faculty members were given a scale of 1 [strong no] to 4 [strong yes] and then were asked to rate their university's business school with respect to the following forms of disconnect. Their overall average scores are given below.

Reliance on foreign books	3.5
Use of foreign case studies only	3.13
Lack of exposure of faculty to local organizations	2.87

Respondents were asked to identify the reasons why an apparent disconnect exists between the curriculum being taught and the issues being faced by the employers of the business school students. Their responses included the following:

1. An over reliance on the IT portal governed attendance system, which is highly inflexible, thus making it very difficult to schedule visits to organizations.
2. Lack of a forum for interaction between the faculty, the university and employers. Structured and formal feedback mechanisms do not exist.
3. A culture of focus on grades rather than on learning, on the part of the students and the faculty, is to blame.
4. The curriculum does not incorporate the Pakistani context as foreign content is easier to download and use as compared to the process of developing local content, for which there is little incentive, demand

or support.

5. Lack of experience of faculty members is also to blame. The faculty has little international and practical experience. Their interactions with organizations have mostly taken place before their employment with the university.
6. The faculty is short on time as they are overloaded with teaching assignments. Each instructor has to teach four courses in a semester and also has to perform administrative duties.
7. The university does not provide learning and development opportunities to its faculty. It only requires them to teach, teach and teach.
8. The human resources processes of how teaching staff is recruited and utilized also encourage the disconnect. Poor quality students attract poor quality faculty and vice versa. Those teaching courses are at times not the best match for them but given the complex task of matching teachers with over 400 sections compromises have to be made. It is a classic case of quantity over quality.

Respondents mentioned the following impacts of this disconnect on students, the faculty and the university:

1. Students – They don't get jobs and if they do get them they are offered low salaries. They are not retained. Students can not practically implement what they have learned. They are not prepared for the very different challenges they face when employed. Students are demotivated as the curriculum is useless for them. Students suffer from lack of confidence and the university is unable to attract the best ones.
2. Faculty – They are affected by poor evaluations by students who want locally relevant content and thus they lack personal satisfaction which leads to turnover. The faculty suffers from lack of confidence as well in taking initiatives. They fear that if they develop new course outlines they would have to teach the same, which would be difficult given their traditional academic backgrounds. Course outlines have been more or less the same for the last four years, except for the revisions made by the current Dean.
3. University – It is impacted by low rankings and employability problems for its students. It is unable to attract good students and faculty. Growth of the university will falter in the long term as students will not be hired in good organizations and positions.

Discussion

What we see from the findings above is a complex mix of intentions and actions gone bad with strong implications and lessons for a thriving

private education sector which holds the responsibility for meeting the learning needs of an entire local and regional economy. At the heart of the disconnect, which lies proven in this case, is a mass commercialization and money making mindset of a private university enterprise. The university is functioning as a large-scale production line where students are passed through a heartless money minting set of processes. The university's need for income and the students' need for a paper degree are the two most dominant forces in the supply and demand heavy equation of higher education of the country. The manner in which human capital is treated is also highlighted through this case study. In this university teachers are treated as limbs. Their intellectual growth and margin for innovation are minimized. They are policed into conforming and delivering teaching sessions one after the other without intellectual nourishment opportunities. The aim of the establishment seems to be maintaining a large bureaucratic system which can keep the revenue streams in place. The entire learning experience is very superficial but in a high demand situation any product or service would sell and the university knows it.

Research and the development of local content that accurately and effectively prepares students for the local job market requires a lot of motivated effort on the part of teachers and the university. Not many teachers are motivated enough to take on this gargantuan task in the absence of research encouragement and in the face of human resource management processes which are not perceived to be completely transparent and fair in terms of the dictates of the tasks, assignment of job titles, remuneration packages and incentives. They hide under the garb and convenience of globalization and tend to use concepts, models and examples from the most easily accessible online and in-print sources while fending off criticism by saying that global knowledge needs to be imparted for a global mindset. While there is nothing wrong with learning about global ideas and practices it is wrong to ignore local knowledge, issues and thus relevance.

Students are caught between not caring and not having the opportunity to care. They have to take what they get maybe only because they don't create a position for demanding better. They are caught up in this vicious circle as much as the faculty is.

Employers, as key stakeholders, suffer when the human capital they receive from universities is below par. Academia represents a critical source of knowledge and ideas for these organizations (De Fuentes, et al) and thus a grand opportunity for growth is missed when students come in ill-prepared to solve problems and make decisions.

Universities in the market for educational services are ranked based on the quality of their contacts (Shirin, 2013) and thus it is critical for

universities to maintain close and productive connections with their most important stakeholders, the employers of their students.

Conclusion and Recommendations

It can rightly be concluded that there is a major disconnect, at the university in question, between the curriculum being taught and the issues being faced by the employers of students. The students, as a product, are being prepared without any on-going strategic market needs assessment. The faculty generally has no idea who the employers of their students are. They also lack clarity about the growth issues and performance challenges being faced by these organizations. The faculty is overburdened with teaching assignments in a restrictive attendance and portal governed environment. The university is ignorant of it's necessary role in providing learning and development opportunities to the faculty. There are very few incentives, monetary and non-monetary for research. The university is failing in attracting high quality talent in the forms of teachers as well as students. Students lack zeal for learning as they find it hard to relate their curriculum with the practical issues they face in their workplaces. Active liaison with employers to review curriculum and seek feedback about alumni is missing. There is lack of overall coherence between what is being taught by each faculty member. This disconnect is a major reason behind the university's poor market rankings and the employability of its students. All in all the university, based on the responses received, is functioning more as a tuition center than as a true university.

Recommendations include the following:

1. Faculty and employer interactions in universities are needed on a regular basis. The Human Resources departments of these organizations need to be probed for consistent feedback about the performance of alumni working there. Alumni should also be called in regularly to share their post education feedback about the practical relevance of what they have studied.
2. Faculty members should be provided the resources, reasons and incentives to prepare local case studies and to write local chapters as well as books.
3. Mentoring opportunities should be provided to junior faculty by senior faculty, especially in terms of how to make curriculum relevant for students and their employers.
4. Guest speaker sessions and joint projects with industry are needed on a regular basis.
5. Industry visits and projects should be graded and part of the assessment processes used, including examinations.
6. Top employers need to be regularly surveyed and their top issues

both in terms of growth opportunities and performance challenges need to be tracked. The curriculum needs to be adjusted accordingly.

7. Budget allocations for maintaining a connection with employers are necessary.
8. Local knowledge has the ability to be immediate and tangible (Goldenberg, et al. 1991) thus all academic content should be reinforced with local and regional case studies based on workplace issues. Possible solutions and real world advice should be provided, topic by topic.
9. A formal setup with clearly defined responsibilities is needed to take on this full time responsibility. It would be unwise to add the responsibility for liaising with employers as an administrative task on already overburdened staff.
10. University rankings and perceptions should be monitored. Trend data should be developed and an overall culture of being accountable to external and internal stakeholders needs to be developed and maintained.

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Fuentes, Claudia De, and Gabriela Dutrénit. "Best Channels of Academia–industry Interaction for Long-term Benefit."*Research Policy* 41.9 (2012): 1666-682. Web.

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DID UN PROMOTE THE RIGHT TO SELF-DETERMINATION TO THE PEOPLE IN EAST TIMOR?

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Abstracts

Started 1998, Indonesia faced political instability due to the social unrest and the step down of Indonesian President Soeharto. The condition impacted into the East Timor condition to have self-determination right to have its independent. Indeed, historically The Dutch colonialized Indonesia; meanwhile East Timor was colonialized by the Portugal. Therefore, the creation of UNAMET initiated by the United Nations to give the right to the people in East Timor for referendum whether they choose to be independent or still be apart of Indonesia. This paper will try to prove that UNAMET was not promoted the right to self-determination for people in East Timor for several reasons. Firstly, the peace keeping forces of the UN in East Timor were led by Australia, which had a special interest to East Timor regarding the East Timor Gap Project. Secondly, UNAMET staff proved to be partial in supporting the pro-independence and intimidate the people in society who supported the integration with Indonesia by attacking the members of society who flew the Indonesian flag. Thirdly, the United Nations proved they were only there as a means to protect the US and Australian interests by postponing the referendum through the United Nations Security Council, which created more instability among the people in East Timor.

Keywords*:* UNAMET, East Timor, Referendum, and self-determination,

Introduction

Based on the agreement of May 5, 1999 between Indonesia and Portugal, both countries agree to offer the East Timorese people a choice by referendum between special autonomy and independence[49]. Hailed by the United Nations Secretary General as providing an historic opportunity for a

[49] Malone, D, M. (2004). The UN Security Council from the Cold War to the 21st Century. A Project of the International Peace Academy. London. Lynne Rienner Publisher

just, comprehensive, and internationally acceptable solution to the case of East Timor, The New York Accords compromised three separate agreements. First, the general agreement between Portugal and Indonesia to set forth the lynchpin principle to request the United Nations Secretary General to conduct a popular consultation[50]. As a result, the establishment of UNAMET under the United Nations Security Council resolution no. 1246 was to organize and conduct a popular consultation for the implementation of a Referendum in East Timor on the basis of direct, secret, and universal ballot in order to ascertain whether East Timorese people would like accept the special autonomy or reject integration, thereby leading to East Timor's separation from Indonesia[51]. The two supplementary agreements were tripartite between Portugal, Indonesia and the United Nations and dealt with the modalities for the popular consultation or the Modalities Agreement[52] and the security arrangement[53].

Based on the security agreement, which crucially laid down a second lynchpin principle that a secure situation devoid of violence or other forms of intimidation is a prerequisite for the holding of a fair and free ballot, as a mission of the world body UNAMET was obliged to exercise its mission with full responsibility and without the slightest bias for or against either side (pro-independence or pro-integration). Nevertheless, in fact UNAMET failed to show its integrity as an international arm of the UN and favored one side over the other by supporting the pro-independence groups. Likewise, the UN peacekeeping forces in East Timor were lead by Australia[54]. In that circumstance, Mr. Santos[55] view that Australia has a special interest in East

[50] Drew, C. (2001). The East Timor Story: International Law on Trial. European Journal of International Law/2001, volume 12/Issue 4. 1 2 (4):651

[51] See United Nations Security Council resolution no. S/RES/1246 (1999). 11 June 1999. Retrieved on March 12, 2014, from: http://www.un.org/docs/scres/1999/sc99.htm or http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N99/174/13/PDF/N9917413.pdf?OpenElement

[52] Agreement regarding the Modalities for the Popular Consultation of the East-Timorese a Direct Ballot (Modalities Agreement), A/53/951, Annex II of Report of the Secretary-General, S/1999/513, supra note 11. Retrieved on March 11, 2014, from; http://www.un.org/en/ga/search/view_doc.asp?symbol=S/1999/513

[53] East Timor Popular Consultation Agreement Regarding Security (Security Agreement) A/53/951, Annex III of the Report of the Secretary-General, S/1999/513, supra note 11. Retrieved on March 11, 2014, from; http://www.un.org/en/ga/search/view_doc.asp?symbol=S/1999/513

[54] The Australian Army. (2012). East Timor peacekeeping mission to conclude. Retrieved on May 6, 2014, from: http://www.army.gov.au/Our-work/News-and-media/News-and-media-2012/News-and-media-December-2012/East-Timor-peacekeeping-mission-to-conclude

[55] Chris Santos, a former senior journalist at *The Sun*, travelled to East Timor just before the Portuguese relinquished it as a colony in 1975. He became a member of the Fretilin independence movement during that year's civil war, which preceded the Indonesian

Timor due to the huge Timor Gap Project dealing with the oil of East Timor that Australia wanted to invest in[56] meant that the UNAMET members' staff forced the society to choose independence, where most of them were coming from Australia and the United States of America[57]. Furthermore, the western countries interests, especially the interests of Australia and the United States, could be seen in the case of East Timor. These countries were supporting East Timor to be a part of Indonesia in 1975, but conversely the US and Australia were also supporting the independence of East Timor when the calls for a referendum were starting and when the UN began to become involved in it. Both Australia and the United States simply changed their attitude into not supporting Indonesia at all, as they used to in the era of the Cold War.

Therefore, this paper will try to analyze whether or not UNAMET, as a UN representative, was neutral in organizing and overseeing the process of a ballot by discussing three concerns: Firstly, it will briefly discuss the historical background of the conflict between Indonesia and East Timor, and ask why the United Nations needed to become involved and create a special body to deal with it. Secondly, the effectiveness and role of UNAMET as a UN mandate will be discussed. Thirdly, it will analyze the international pressure, especially from the United States and Australia, in supporting East Timor independence through UNAMET.

Chronological Background

Historically, Indonesia was colonialized by the Dutch, while East Timor was colonialized by the Portuguese. East Timor was only of marginal importance to Portugal's Empire because The Portuguese had a limited amount of control over East Timor, Portugal had little permanent cultural impact on East Timor. By 1749 the Dutch, who had replaced the Portuguese as the main colonizer in the eastern archipelago, took the western half of the island, and the border between East and West Timor was not delineated until

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invasion months later. He had become Fretilin's information officer, but was forced to flee to Australia just before the invasion. He became a close associate of Mr Ramos Horta during this time and returned to East Timor after the country voted for independence in 1999.

[56] Hazibuan, M, R. (1999). UNAMET must not take sides. The Jakarta Post. Retrieved on March 11, 2014, from; http://www.thejakartapost.com/news/1999/08/11/unamet-must-not-take-sides.html

[57] Chusna, M. (2007). *KKP Ungkap kecurangan UNAMET di Timtim* (Fact and Alliance Committee revealed UNAMET's fraud in East Timor). Retrieved on March 11, 2014, from: http://news.okezone.com/read/2007/07/23/1/34957/kkp-ungkap-kecurangan-unamet-di-timtim

1913[58]. The Dutch held on to West Timor until, with the rest of the Dutch East Indies, West Timor become independent of the Netherlands in December 1945 and became a part of Indonesia. When the dictatorship was overthrown in Portugal in April 1974, so much political activity boiled to the surface so quickly that it was obvious that the underground had been active. Three major political parties were formed: the *Uniao Democratica Timorense* (UDT) in early May 1974 and, less than two weeks later, the Social Democratic Union (known as FRETELIN). Both supported independence. The third party was the Indonesian-backed APODETI (*Associacao Popular Democratica Timorense*) which was already committed to integration with Indonesia.[59] The APODETI party was prepared to consider a merger with Indonesia, which expected East Timor to govern itself and enjoy the same privileges as other Special Regions such as Yogyakarta and Nanggroe Aceh Darussalam. It would take place in accordance with international law through a properly organized referendum, following a transitional period of one or two years in which the people of East Timor could get to know Indonesia as a whole and learn the Indonesian language (*Bahasa Indonesia*).[60] Coming shortly after the formation of APODETI and with the growing awareness amongst Dili's elite of its ties with Indonesia, Indonesia felt that East Timor was part of the Indonesian archipelago in the first place.

Starting from the civil war in East Timor, Fretelin, which is known as a Marxist sectarian group, acquired help with weaponry. This help came from the Portuguese, Australia, and New Zealand offering armaments, and made them a particularly powerful group in East Timor[61]. On 28 November 1975, Fretelin unilaterally proclaimed independence and the founding of the Democratic Republic of East Timor, with Xavier do Amaral as president, Ramos Horta as foreign minister, and Nicola Lobato as prime minister. Responding to that proclamation, the majority of the society under Arnaldo dos Reis Araujo refused to accept it, and then civil war was unavoidable.

[58] BBC News Asia. (2013). East Timor Profile. Last updated 25 July 2013 at 11:14. Retrieved on March 14, 2014, from: http://www.bbc.co.uk/news/world-asia-pacific-14952883

[59] Wurfel, D. (2007). Democracy, Nationalism, and Ethnic Identity: The Philippines and East Timor Compared. Democratization and Identity – Regimes and Ethnicity in East and Southeast Asia. Plymouth. Lexington Books. p.210

[60] Carey, P & Cox, S. (1995). Generations of Resistance – East Timor. Cambridge. Cambridge University Press. p. 15-16

[61] Adiguna, M. (2013). *"Masa Integrasi adalah Masa Terindah Bagi Timor Timur"* (Integration Era was The Best Era in East Timor). Retrieved on March 11, 2014, from; http://politik.kompasiana.com/2013/03/07/masa-integrasi-adalah-masa-terindah-bagi-timor-timur-539975.html

Indonesian naval, air, and land forces invaded the territory[62]. Soon afterwards the Indonesian Foreign Minister announced the establishment of a "provincial government". Consequently, in the new order of Indonesia under President Soeharto, East Timor was the 27th province of Indonesia, and the Indonesian parliament approved a bill for the incorporation of Indonesia's new province on July 17, 1976[63]. However, in December 1976 the General Assembly of the United Nations rejected the claim that East Timor had been integrated into Indonesia since the people in the territory had not been able to freely exercise their right to self-determination.[64] The United Nations never recognized the integration of East Timor into Indonesia because East Timor is administered by Portugal as an overseas province.[65] As a result, the UN believed that it needed to have an agreement between Indonesia and Portugal, as the previous East Timor colonializing nation, to make East Timor become integrated into Indonesia. That is why the UN decided to create UNAMET.

The UN created UNAMET (United Nations Mission on East Timor) to facilitate the referendum that was offered by BJ Habibie as the next President after Soeharto because of international pressure, especially from Australia and the United States. In fact, initially the US gave Soeharto a green light to invade East Timor. Ninety percent of the weaponry used by the Indonesian forces in their invasion was from the United States (despite a U.S. law that bans the use of its military aid for offensive purposes), and the flow of arms, including counterinsurgency equipment, was secretly increased.[66] The United States also lent diplomatic support to the invaders. In the United Nations, U.S. ambassador Daniel Patrick Moynihan successfully worked, as he boasted in his memoirs, to make sure that the international organization was ineffective in challenging Jakarta's aggression. Under the presidency of Jimmy Carter, there was a further increase in U.S. military aid to Indonesia. Since 1975, the United States has sold Jakarta over $1 billion

[62] Purnawanty, J (2000). Various Perspectives on Understanding the East Timor Crises, 14 Temple International and Comparative Law Journal 65.p.79-80

[63] Clark, R, S. (2000). East Timor, Indonesia, and the International Community. 14 Temple International and Comparative Law Journal 75-87. p.81

[64] General Assembly Resolution. GA Res 31/53 of December 1, 1976. Question on Timor. Retrieved on March 11, 2014, from; http://www.un.org/en/ga/search/view_doc.asp?symbol=A/RES/31/53&Lang=E&Area=RESOLUTION

[65] United Nations (2000). The United Nations and East Timor - A Chronology Retrieved on May 8, 2014, from: http://www.un.org/en/peacekeeping/missions/past/etimor/Untaetchrono.html

[66] Chomsky. N. (1999). East Timor Questions and Answer. Retrieved on March 14, 2014, from: http://www.chomsky.info/articles/199910--02.htm

worth of military equipment.[67] In addition, the integration of East Timor into Indonesia was acknowledged by the USA. The reason behind this was because the staunchly anti-communist regime of Indonesia was considered by the United States to be an essential counterweight, and a friendly relationship with the Indonesian government was considered to be more important than the decolonization process in East Timor for the containment policy toward communism[68]. Furthermore, in September 1974, Australian Prime Minister Gough Whitlam met with Soeharto and indicated that he would support Indonesia if it annexed East Timor, and Australia became the only government to officially recognise East Timor as a province of Indonesia.[69] Indonesia conducted some very serious diplomacy with the Portuguese. On 12 June1974, Deputy of the Indonesian Parliament John Naro, a member from Eastern Indonesia, argued in parliament that Indonesia should 'work out a special policy on Portuguese Timor so that the area could once again return to Indonesia's control'[70]. It proves that historically, before the Portuguese were coming into East Timor to colonialize it, East Timor was basically under the control of the Majapahit Empire, which was the largest empire in Southeast Asia and covered South Thailand, Malaysia, Singapore, Brunei Darusslam, Indonesia, and Timor Leste.[71]

The atmosphere of the Fretilin movement to separate from Indonesia was not being stopped by the Indonesian declaration in having East Timor as part of their integration. When Indonesia was under crisis politically and economically in 1998, Soeharto resigned as President, and this made the separation movement even bigger due to the violation of human rights carried out by the Indonesian Army, and this made Australia report them to the United Nations.

The International Pressure on Indonesia

Australian governments saw a good relationship and stability in Indonesia (Australia's largest neighbor) as providing an important security

[67] Ibid

[68] Schwarz, A. (1994). *A Nation in Waiting: Indonesia in the 1990s*. Westview Press. p.207

[69] Dunn, J. (1996) *Timor: A People Betrayed*. Sydney: Australian Broadcasting Corporation, Australia, John Wiley & Sons Inc. p.345

[70] Taylor, J, G. (1991). Indonesia's Forgotten War-The Hidden History of East Timor. Australia. Pluto Press Australia. p. 29

[71] Cribb, R. (2010). Digital Atlas of Indonesian Hisotory of Majapahit's Overseas Empire. Retrieved on March 6, 2014, from: http://www.indonesianhistory.info/map/majapahit.htmlstory.

buffer to Australia's north.[72] Australia was a secondary actor. Australia is not a major actor but is a securitizing actor which positioned itself in a double line, thus indicating a very good relationship with East Timor. Australia began to involve itself in the conflict in East Timor at the time of the referendum in mid-1999 and continues to do so to the present day. Led by Australia, who contributed the biggest number of 5,500 personnel and the force commander, Major General Peter Cosgrove, it was tasked with restoring peace and security, protecting and supporting UNAMET, and facilitating humanitarian assistance[73]. Australia gives effect to East Timor as a non-material form of political support in the United Nations, and with the involvement of Australian troops in the UN peacekeeping force through UNAMET.

Australia's foreign policy influenced East Timor's fate; from the approval of the Indonesian invasion to Australian peacekeeping forces ensuring independence. By opting for a foreign policy that promoted a good relationship with Indonesia above any other obligations, Australia benefited from the oppression and murder of thousands of people. How and why Australia betrayed, and then 'saved,' East Timor is a heady mix of economic and political self-interest with media coverage[74].

Some opinions said that the real case of East Timor was basically the formation of the interests of the West. Mark Aarons and Robert Domm, in the book East Timor: *A Western Made Tragedy,* reveal that the dual attitude and hypocrisy which Australia and the United States showed that both countries had become accomplices over one big tragedy after World War II.[75] It could be seen that Australia showed support for the integration of East Timor into Indonesia, but the attitude of Australia was puzzling. Supposedly, Australia and the United States revealed that Indonesian violence against East Timorese was unacceptable,[76] but in reality Australia and the U.S. were pressing tacitly by ensuring that Portugal handed over the territory peacefully. In addition, the U.S. also persuaded Portugal to run a 10-year program that is associated with the right to self-determination for East Timor. Australia and the U.S. used to support East Timor attempts to

[72] National Achieve of Australia. Australia's Prime Minister. Australian Government. Retrieved on March 15, 2014, from: http://primeministers.naa.gov.au/primeministers/keating/in-office.aspx

[73] Australian War Memorial. (2000). Australians and Peacekeeping. Retrieved on March 14, 2014, from: http://www.awm.gov.au/atwar/peacekeeping.asp

[74] Wilson, B (2009). How Australia Betrayed Then "Saved" East Timor. Retrieved on March 11, 2014, from: http://www.onyamagazine.com/australianaffairs/history/how-australia-betrayed-then-saved-east-timor/#sthash.u8wmP5Fp.dpuf

[75] Aarons, M & Domm, R. (1992). East Timor – A Western Made Tragedy. United Kingdom. Left Book Club.

[76] Ibid

integrate with Indonesia, but this turned into accusations of human rights violations by Indonesia against East Timor[77]. Australia has actually long been concerned that East Timor does not fall into the hands of hostile parties, and Australia looked for many ways to avoid this, including making East Timor a controlled area of Portugal. This suggests that there were definitely foreign interests involved in the East Timor case.

Large oil and gas reserves lie in the sea between the two countries in an area known as the Timor Gap. Territorial disputes over control of this resource, which some geologists estimate could pump out over $10 billion of oil and gas, have colored diplomacy over East Timor, both when it was an Indonesian possession and since. Australia broke with many of its allies and recognized Indonesia's annexation of East Timor in 1976 in what was widely seen by analysts at the time as a quid pro quo for a treaty favorable to Australia involving oil and gas exploration in the area. Since East Timor's independence, disputes over how much of a split Dili would receive when the resource is finally developed have been an occasional strain on an otherwise close relationship.[78] Australia then led a United Nations backed International Force for East Timor to end the violence, and order was restored. While the intervention was ultimately successful, the Australian-Indonesian relationship would take several years to recover.[79]

According to US Secretary General of State, James B. Foley, the United States is proud to have supported UNAMET in its administration of a successful election in East Timor.[80] In the UN Security Council, the United States voiced support for the introduction of an international force into East Timor.[81] Fifteen Senators, led by Russell Feingold (D-WI), wrote to President Clinton in 1996 stating that people in the US believed that the moment was right for the United States to take a leading role in advocating

[77] Singh, U, B. (2000). Indonesia: From Economic Crises to Political Turmoil. Retrieved on March 14, 2014, from: http://www.idsa-india.org/an-nov-00-9.html

[78] Marks, K. (2004). Australia casts a shadow over East Timor's future. The Independent News. Retrieved on March 14, 2014, from: http://www.independent.co.uk/news/world/australasia/australia-casts-a-shadow-over-east-timors-future-6168509.html

[79] Wessel, I & Wimhofer, G. (2001). How many deaths? Problems in the statistics of massacre in Indonesia (1965-1966) and East Timor (1975-1980). Retrieved on March 15, 2014, from: http://works.bepress.com/cgi/viewcontent.cgi?article=1001&context=robert_cribb

[80] United States Department of States. Office of the Spokesman For Immediate Release August 31, 1999 Statement By James B. Foley, Deputy Spokesman. Indonesia: UNAMET Carries Out Successful Vote. Retrieved on March 14, 2014, from: http://1997-2001.state.gov/www/regions/eap/ps-indonesia_990831.html

[81] Schenier, C. (1999). United Nations Takes Over East Timor, Belatedly and Reluctantly. Voice of East Timor Action Network/US. ISSN #1088-8136. Vol. 5, No. 3. Autumn 1999

for the right of the East Timorese to choose their own government through a UN-sponsored referendum.[82]

On July 10 1998, the Senate unanimously adopted S.Res.237, introduced by Feingold and Jack Reed (D-RI). This resolution called on President Clinton to encourage the new leadership in Indonesia to institute genuine democratic reforms. The resolution also urged the President to work actively to carry out the UN resolutions on East Timor and to support an internationally-supervised referendum on self-determination[83]. During his first presidential campaign, candidate Bill Clinton said that the U.S. approach to East Timor had been "unconscionable." In a 1993 press conference, President Clinton turned aside the argument that pressuring Indonesia on East Timor and human rights would have an adverse impact on business. The relationship of U.S. corporations in Indonesia meant they were engaged in many lines of business, and the relationship with Jakarta is one of mutual profit, a basic fact unaffected by Timor policy.[84]

Critiques towards United Nations

The United Nations General Assembly placed East Timor on the international agenda in 1960, when it added the territory to its list of Non-Self-Governing Territories. But the UN does not have much to show for almost four decades of work. Nearly 40 years later, an agreement between the UN, Indonesia and Portugal gave the people of East Timor a historic opportunity to decide their own fate.[85] The 1975 session of the UN General Assembly coincided with the announcement of the de facto Fretilin government and the subsequent Indonesian invasion. The General Assembly adopted resolution 3485 calling for the withdrawal of Indonesian forces, and they recommended that urgent action needed to be taken by the UN Security Council in order to protect East Timor's territorial integrity and the Timorese right of self-determination. All General Assembly resolutions are non-binding, and so Indonesia was free to ignore it without breaking its international obligations[86].

In contrast, the UN Security Council had far more power. Under the UN Charter, all member nations pledge themselves to follow Security

[82] East Timor Action Network. (2010). Background on East Timor and US Policy. Retrieved on March 14, 2014, from: http://etan.org/timor/BkgMnu.htm
[83] Ibid
[84] Ibid
[85] UN News Centre. (2002). Timor-Leste: UN admits newest member state. Retrieved on March 11, 2014, from: http://www.un.org/apps/news/infocusRel.asp?infocusID=27&Body=timor&Body1
[86] Suter, K. (1997). East Timor, West Papua/Irian and Indonesia. Minority Right Group International. London. MRG. p. 13

Council resolutions. Portugal complained to the Security Council about the invasion of "its territory". As a result, on 22 December 1975 the Security Council adopted Resolution 384, calling for the withdrawal of Indonesia's forces. East Timor has also appeared on the agendas of other UN bodies, such as the Commission on Human Rights and its Sub-Commission. Annual sessions have been marked by Indonesia lobbying to get East Timor dropped from the commission's business. This had not been successful. For example, at the 1993 session of the Commission on Human Rights, and again in 1997, a majority of member states supported a strongly-worded resolution condemning Indonesia for gross and systematic human right violations in East Timor.[87] The United Nations claimed that the serious problems faced by East Timor were serious crimes and defined as genocide, war crimes, crimes against humanity, murder, sexual offenses and torture.[88] Those phenomenon were claimed by the United Nations, which made the United Nations Security Council consolidate, facilitate, and save Timorese people by making up the special mission called the United Nations Mission on East Timor (UNAMET).

In implementing its vision and mission in East Timor, UNAMET found some frauds that stood by UNAMET before the referendum, such as the recruitment of local staff who were only taken from the pro-independence group. Moreover, most of the polling stations, from 274 polling stations with more than 700 voting booths, were located near settlements in the pro–independence area. UNAMET also seems to be very reckless as to who it lends its vehicles to, who it employs, (approximately 91 percent of about 4,000 local staff are pro-independence supporters), and whose house they decide to illegally search.[89] Other reports have been circulated by non-partial NGO charity organizations and independent observers, The Forum for Peace, Democracy and Justice (FPDK) has discovered more than 100 rule violations committed by UNAMET personnel during the August 30 popular consultation. Most of the violations were acts by UNAMET staffers to force voters to choose independence.[90] The UNAMET staff intimidated and threatened people with the Indonesian flag in front of their house, and forced them to lower it under threat of violence

[87] Ibid, p.14

[88] Shaw. M, N. (2008). International Law. 6th edition. Cambridge. Cambridge University Press. p. 425

[89] Sangster, G, K. (1999). UNAMET Rails. The Jakarta Post. Retrieved on March 11, 2014, from: http://www.thejakartapost.com/news/1999/08/19/unamet-rails.html

[90] Damiri. A (2007). Ballot-Violations: Forum Discovered More Than 100 Cases of UNAMET. Antara News. Retrieved on March 11, 2014, from: http://www.antaranews.com/berita/57510/adam-damiri--unamet-bertanggungjawab-atas-lepasnya-timtim

from dozens of people if their orders were not adhered to immediately.[91] On July 16, 1999 in the village districts of Ritabo Maliana Bobonaro, 3 members of the public force of UNAMET removed clothes labeled pro-autonomy and which were supporting integration, and they lowered the flag of Indonesia that was still flying in people's homes.

Within hours of the results, paramilitary groups had begun attacking people and setting fires around the capital city of East Timor-Dili. Foreign journalists and election observers fled, and tens of thousands of East Timorese took to the mountains. Islamic gangs attacked Dili's Catholic Diocese building, killing two dozen people, and the next day the headquarters of the ICRC was attacked and burned to the ground. Almost one hundred people were killed later in Suai, and reports of similar massacres poured in from around East Timor[92]. Those violations happened because UNAMET was proven to be impartial and not neutral, and then it started the pro-integration to mutiny by attacking the pro-independence group.[93] Therefore, the riots and chaos were unavoidable because of the anger of the pro-integration group, who felt unfairly treated by the UN. Therefore, UNAMET was the organisation responsible with that.[94] It should be taken into consideration by all foreign personnel in East Timor that they are guests there, and as guests they should behave accordingly.

UN Secretary-General Kofi Annan also behaved in the same way by arbitrarily postponing the referendum date. All of the unfavorable things happening in East Timor, as far as the referendum was concerned, might result from a policy which was too lenient on the part of the Indonesian government in dealing with violations of referendum procedures.[95] He knew that the arrangement was a recipe for disaster, but no government - certainly not the United States - would pressure Indonesia to improve the conditions for the referendum. As militia violence continued and their links to Indonesia became more obvious to the international community, Annan was unable to make significant changes in the process. He delayed the vote twice, and increased the number of Military Liaison Officers (MLOs), unarmed international soldiers who consult with the Indonesian army in a similar way

[91] Ibid

[92] Nevins, Joseph (2005). *A Not-So-Distant Horror: Mass Violence in East Timor*. Ithaca, New York: Cornell University Press. p. 100-104

[93] Op-cit

[94] Kontras. (2007). PBB Dinilai Delegitimasi KKP : Kecurangan Unamet di Timor Timur Dibeberkan *(UN delegitimize the Fact and Alliance commission: The Frauds of UNAMET in East Timor Revealed).* Retrieved in March 11, 2014, from: http://kontras.org/index.php?hal=dalam_berita&id=1149

[95] Op-cit

to the unarmed Civilian Police Advisers (Civpols) who advised the police.[96] Those conditions made it easier for the pro-independence group to spread their wave of terror among pro-integration groups for much longer.

Conclusion

The creation of UNAMET initiated by the United Nations was not promoted the right to self-determination for people in East Timor for several reasons. Firstly, the peace keeping forces of the UN in East Timor were led by Australia, which had a special interest to East Timor regarding the East Timor Gap Project where Australia's interest into the East Timor's oil projects. Moreover, geographically East Timor is so close with Australia, so it would be so efficient for Australia having oil from its neighborhood with extremely cheap prices. Secondly, UNAMET staff proved to be partial in supporting the pro-independence and intimidate the people in society who supported the integration with Indonesia by attacking the members of society who flew the Indonesian flag. Thirdly, the United Nations proved they were only there as a means to protect the US and Australian interests by postponing the referendum through the United Nations Security Council, which created more instability among the people in East Timor.

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SPATIAL ANALYSIS OF VOTING PATTERNS IN RESERVED CONSTITUENCIES: DELHI ASSEMBLY ELECTION, 2015

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Abstract

Electoral geography is interested in the study of elections to understand spatial variations of political phenomena, which are deeply embedded with the environment occurring at the time of election and the people's perception about various political parties. The voting behaviour of the electorates is greatly influenced by their perception existing at the time of elections. The voters perception about election's environment and political parties are vary over one constituency to another constituency. Electoral geography viewpoint, the changing scenario of party competition and electoral behaviour of the electorate of Delhi is a very interesting problem area for study. The electoral behaviour largely influenced by the socio – economic conditions of geographical area. In 2013 Assembly election BJP tops Delhi and Aam Aadmi Party came out as a show-stopper. **Aam Aadmi Party** secured absolute majority in 2015 assembly election, winning 67 of the 70 seats and came out as a ruling party. Here attempt have been made to see the electoral participation and party competition in the reserved constituencies of Delhi. Attempt has been made to establish whether the location of a reserved constituency in a particular point of space is important or the reservedness of the constituency is important in predicting the electoral behaviour. For the analysis of voting data important indicators have been taken like to show the spatial distribution of seats won by various contesting parties' areal structural approach were used. The results are depicted by means of choropleth maps. This gives a quick visual idea of the areal pattern of party stronghold. Beside that integrated approach applied to show the spatial structure of voting behaviour as revealed in election results. This is based on highly generalized voting data.

Keywords : Electoral Geography, Electoral Behaviour , Party Competition, voter turnout

Introduction

Electoral Geography is the analysis of the methods, behavior, and results of elections in the context of geographic space and using geographical techniques. Specifically, it is an examination of the dual interaction whereby geographical traits of a territory affects political decisions and geographical structure of the election system affects electoral results. The purpose of this analysis is to identify and understand driving factors and the electoral characteristics of territories in a broad and integrative manner. Elections serve as the central political expression and exercise of power within democratic states, and conducting elections in democracies requires the translation of the political decisions. The territorial unit with boundary distinctions in representative elections is commonly termed the constituency, district, or precinct, and serves as both a region for the tabulation and study of the electoral result. These boundaries are defined in various methods, which are unique to each state, and can cause alterations or skewing of aggregate vote results and by extension the true decision of the electorate's spatial distribution and variation of the voting populace in conjunction with the demographic characteristics and delineation of voting regions provide a geographic context for the analysis of elections. Along with purely physical characteristics, distribution of economic resources, lines of communication, governmental and party platforms, and gender, ethnic, or class groups creates an interwoven fabric of people and opinion, which is accounted for in electoral analysis. A population settles for various social, economic, and cultural reasons which create a defined contour of both population density and related political opinion. However, this contour is not a static condition and changes in electoral results must be considered with respect to the change in the type of people and not just the change in their chosen politics. The distribution of politics has been attributed to various factors, one of which is described as a convergence of external stimuli. These stimuli can come in the form of state-supplied information, local cultural norms, religious affiliations, economic opportunity, and media presentation of issues. The degree of effect for each particular stimulus is then a result of the susceptibility of a particular geography. For example, policy dealing with the governmental treatment of an urban population would have greater importance to those in a territory with an urban densities and a far smaller importance in a sparser region. A state or its political organizations has some power to affect these stimuli and are therefore considered as a contributing factor in the changes of election outcomes. Electoral geography considers the way in which the physical characteristics of a territory directly affect the population and thus the election decision of these people. The geographic location and associated natural factors are directly related to the potential in a specific region for political development and have an additional relationship

with the electoral processes and policy decisions of the region. The study of electoral results has been shown to identify the regions of specific politics and the relative cohesion amongst these similar regions. Regions which share large numbers of physical or demographic characteristics, or both as these two factors are related, will demonstrate significant similarities in voting participation and patterns of outcome.

The economic development within a given region is also related to the development of its politics and the issues which are important to the electorate. A state with disproportionate economic development will necessarily come under pressure from the poorer constituencies to take action to redistribute wealth and level the economic prosperity, which will be observable in the electoral results. The range and availability of communication and issue awareness can affect perception of issues and skew rational decision making. If a populace is generally unaware of the implications of policy decisions they are less able to make informed decisions and are more readily manipulated by candidate or party claims and marketing techniques, which can make analysis difficult as no predictable rationale may exist for voting outcomes.

All socials processes of **Electoral geography**, for example, studies regularities and patterns of election results develop non-uniformly in geographical space. There are no exceptions **Electoral geography** is a constituent component of political geography, a science which studies development of all political processes inside geographical space. However, election results are only natural result of numerous social, economic and political processes. Studying the geography of elections is senseless without knowing what is behind these results and what political processes preceded them and what these results mean. It is also senseless to study electoral geography without thorough knowledge of the socio-economic characteristics of the territory where the election is taking place. That is why **electoral geography** is an exceptionally integrated science: it cannot exist without its constituting sciences, especially political science and geography. However, history, economics and sociology also play important roles.

In 2013 Assembly Election in Delhi the Bharatiya Janata Party won a plurality, closely followed by Aam Aadmi Party, in its first election; this resulted in a hung assembly. After the BJP refused to form a government in the hung assembly, the Aam Aadmi Party's (AAP) Arvind Kejriwal became chief minister with "not conditional" support from the Indian National Congress (INC).

In the Delhi assembly elections of 2015, the AAP cavalry came bludgeoning and trampled everything that came its way. The BJP was at the receiving end this time. The 49 day rule of AAP and Arvind Kejriwal proved more than enough to enable them to win comfortably against an ever

strengthening BJP. The AAP has got the number, better than it ever imagined. The Aam Aadmi Party (AAP) formed the government in Delhi within the shortest span of time since its formation. The party came into existence in November 2012 and formed the government in Delhi in December 2013.

Aims and Objectives

The basic aims and objectives of the study are:

- To trace out the changing patterns of voting behavior in one election as compared to other election in reserved constituencies.
- To understand the changing scenario of party performance in one constituency as compared to other constituency in 2015 assembly Election.
- To Show the spatial variations in Party Competition in reserved constituencies.

Study Area

The total population of Delhi in 2011 is 16753235, total male population is 8976410 and total female population is 7776825 out of which 86% are literate. In 1952 assembly election Delhi has 48 constituencies out of which 6 constituencies are reserved for SC category. In 1972 to 1983 assembly election Delhi comprised 56 constituencies in 1972, 7 seats are reserved for SC category and in 1977 and 1983, 9 seats are reserved for SC category. The number of electors involved has increased rapidly. There were nearly 744668 electors in 1952 the first assembly election in Delhi, their number went up to over 83, 64,733 electors in 1998 assembly election out of which 48,17,794 electors were male and 35,46,979 were female. In 2003 assembly election the numbers of electors were 8420141 in Delhi out of which 2468791 were male and 1656195 were female. The electoral data of 2008 assembly election shows rapid increase in number of electors, the total number of electors went up to 10726573 out of which 5966895 were male and 4759678 were female electors. In 2008 assembly election the total polling percentage was 57.58 percent. While in 2013 assembly election showed tremendous increase in voting the number of electors were 11936360 out of which 6614238 were male and 5321572 were female. The polling percentage has also increased at a very fast rate it was 65.63% out of which male recorded 66.03% and female recorded 65.14% and the number of valid votes also showed high increase total 7823820 valid votes were recorded. 2015 assembly election also shows the increase in poll percentage it was 67.47% and around 8942372 valid votes were recorded in Delhi.

Delhi Assembly Constituencies 2013-15
Table No.1.1

1.Narela	38.Delhi Cantt
2.Burari	39.Rajendra Nagar
3.Timarpur	40.New Delhi
4.Adarsh Nagar	41.Jangpura
5.Badli	42.Kasturba Nagar
6Rithala	43.Malviya Nagar
7.**Bawana(SC)**	44.RK Puram
8.Mundka	45.Mehrauli
9.Kirari	46.Chhatarpur
10.**SultanpurMajra(SC)**	47.**Deoli(SC)**
11.Nangloijat	48.**Ambedkar Nagar(SC)**
12.**Mangolpuri(SC)**	49.Sangam Vihar
13.Rohini	50.Greater Kailash
14.Shalimar Bagh	51.Kalkaji
15.Shakurbasti	52.Tughlaqabad
16.Tri Nagar	53.Badarpur
17.Wazirpur	54.Okhla
18.Model Town	55.**Trilok Puri(SC)**
19.Sadar Bazar	56.**Kondli(SC)**
20.Chandni Chowk	57.Patparganj
21.Matia Mahal	58.Laxmi Nagar
22.Ballimaran	59.Vishwas Nagar
23.**Karol Bagh(SC)**	60.Krishna Nagar
24.**Patel Nagar(SC)**	61.Gandhi Nagar
25.Moti Nagar	62.Shahdara
26.**Madipur(SC)**	63.**Seemapuri(SC)**
27.Rajori Garden	64.Rohtash Nagar
28.Hari Nagar	65.Seelampur
29.Tilak Nagar	66.Ghonda
30.Janakpuri	67.Babarpur
31.Vikaspuri	68.**Gokulpur(SC)**
32.Uttam Nagar	69.Mustufabad
33.Dwarka	70.Karawal nagar
34.Matiala	General Constituencies=58 **Reserved (SC) Constituencies=12** Total Constituencies=70

Source: General Election 2013 and 2015 to Delhi Legislative Assembly, Report and Statistical details, Chief Electoral Officer, Kashmiri Gate, Delhi.

Methodology and Techniques

The present study is basically based on secondary sources of data. The secondary data have been taken from: The electoral data for (1993 and 1998) collected from the reports on the Assembly Election published by

Election Commission of India, New Delhi ; Indian Decides Elections *(1952-1991)* Butter David and Other ; Election in India Major Events & New Initiatives (1996-2000) published by Election Commission of India, Nirvachan Sadan, Ashoka Road, New Delhi ; Electoral Maps and voting data , Chief Electoral Office , Kashmiri Gate , Delhi and Vidhan Sabha library , Delhi . Findings from surveys conducted by the Centre for the Study of Developing Societies (CSDS) in Delhi.

The areal structural approach, under this approach studies are primarily concentrated on the spatial pattern of voting example; spatial distribution of seats won by various contesting parties. The results are depicted by means of choropleth maps. This gives a quick visual idea of the areal pattern of party stronghold. The **integrated approach,** under this approach the stress only on the spatial structure of voting behavior as revealed in election results. This is based on highly generalized voting data.

For the analysis of voting data many indicators have been taken. In the, electoral participation the percentage of votes polled and percentage of invalid votes have been taken. Whereas spatial distribution of party victories, number of seats won by political parties were included to analyze the party performance. Statistical techniques have been also used to analyze the party competition like Margin of Victory.

Electoral Participation in 2015 Assembly Election of Delhi

Regional variations are found in electoral participation in elections. Spatial variations are found from one constituency to another constituency. Voter turnout describes the fluctuations in electoral participation within the state and it divides the state in to various regions of very high, high, moderate and low electoral participation. **Constituencies have been divided in to four categories: To know the regional variations of electoral participation in Delhi, *on the basis of voter turnout percentage* :**

I. **Where more than 70% of the electorate cast their votes are constituencies of very high voter turnout.**
II. **60 to 70% of voters participated in election are high voter turnout regions.**
III. **50 to 60% of electorates recorded their choice in election, those are moderate voter turnout regions.**
IV. **Below 50% of electorates participated in election those is considered low voter turnout regions.**

- *In 2015 Assembly election all the 12 reserved constituencies' recorded High and very high voter turnout (see table no. 1.2). It shows that reserved categories constituencies voters are aware about their voting rights.*

Electoral Participation in Reserved Constituencies, 2015

Table no. 1.2

S.No.	***Constituencies***	***Districts***	***Voter Turnout***
			High Voter 60-70%
1.	***Bawana(SC)***	***North West Delhi***	***61.81***
2.	***Karol Bagh(SC)***	***Central Delhi***	***68.44***
3.	***Patel Nagar(SC)***	***Central Delhi***	***68.11***
4.	***Deoli(SC)***	***South Delhi***	***67.58***
5.	***Ambedkar Nagar(SC)***	***South Delhi***	***69.76***
6.	***Kodli(SC)***	***East Delhi***	***70.15***
7.	***Sultanpur Majra(SC)***	***North West Delhi***	***67.97***
			Very High above 70%
8.	***Seemapuri(SC)***	***North East Delhi***	***73.23***
9.	***Gokalpur(SC)***	***North East Delhi***	***74.19***
10.	***Trolokpuri***	***East Delhi***	***71.70***
11.	***Mangolpuri***	***West Delhi***	***72.07***
12.	***Madipur(SC)***	***West Delhi***	***71.30***

Source: Delhi Legislative Assembly, Report and Statistical Details 2015 Chief Electoral Officer, Delhi.

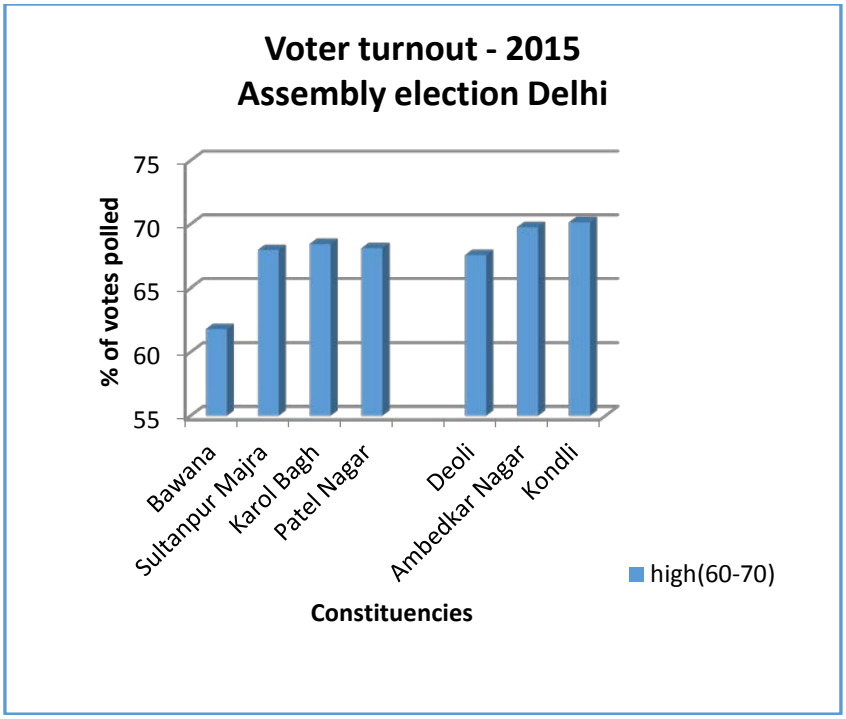


Figure:1.1

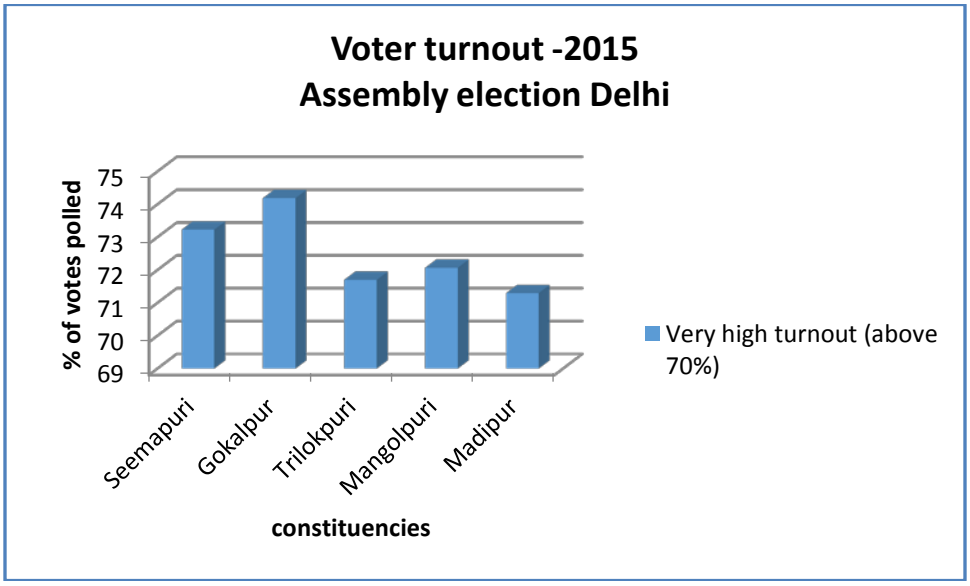


Figure:1.2

Source: Delhi Legislative Assembly, Report and Statistical Details 2015 Chief Electoral Officer, Delhi.

It is clear from the above figures and table 1.2 that in 2015 vidhan sabha election in Delhi all the reserved constituencies generally recorded

high and very high voter turnout out of which seven constituencies like Bawana , Sultanpur Majra , karol Bagh , Patel Nagar , Deoli, Ambedkar Nagar and Kondli recorded high voter turnout where 60 to 70% voters cast their votes in the election . While five constituencies witnessed very high voter turnout percentage like Mangolpuri , Trilokpuri , Gokalpur , Madipur and Seemapuri where above 70% voters cast their votes .

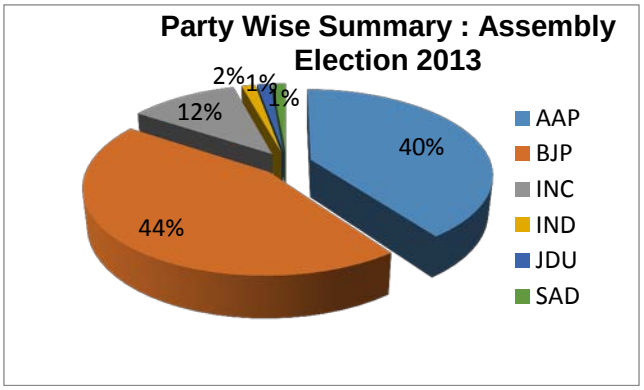
Party Competition in Reserved Constituencies: Delhi Assembly Election 2015

This study describes the nature of party competition, what have been the main patterns of party competition? Indian politics commonly has been portrayed as a one party dominant or a multi-party system. In part , such classification probably have developed from the existence of a large number of political parties in India and the control of the national government by one major party during the entire period since independence . An adequate understanding of the nature of party competition in India however must be based on a careful empirical investigation of contests between the parties within local political districts or constituencies[97]. The struggle of power makes political parties to compete with each other and form a strong support base. Since this competition takes place in a given area, it has a spatial dimension too. Although the practices of understandings , adjustments, agreements and even alliances are quite common at the state level , the nature and composition of these alliances vary from one state to another and from election to election . The party competition stand in sharp contrast to much of the period after independence , When the Congress was either the dominant party or one of two major parties . After the 1993 election in 1998, 2003 and 2008 Vidhan Sabha election Congress emerged as a big ruling party in Delhi and electorates elected Congress party for governance. But in 2013 assembly election AAP gave very tough fight to BJP and Congress and emerged as a second largest party while BJP emerged as a largest party but failed to secure majority of votes to form government. After that again in 2015 assembly election in Delhi Aam Adami Party secured majority of vote and this time they got more than enough seats to form government in Delhi.

[97]. O.P.Goyal and Harlan Hahn , "The Nature of Party Competition in Five Indian States", Asian Survey ,Vol.6, No. 10, Oct. 1966, University of California Press , pp. 580-588 .

Party wise summary
Table no.1.3

PARTY NAME	SEATS
Aam Aadmi Party	28
Bharatiya Janata Party	31
Independent	01
Indian National Congress	08
Janata Dal (United)	01
Shiromani Akali Dal	01



Source: Chief Electoral Officer , Delhi. Figure:1.3

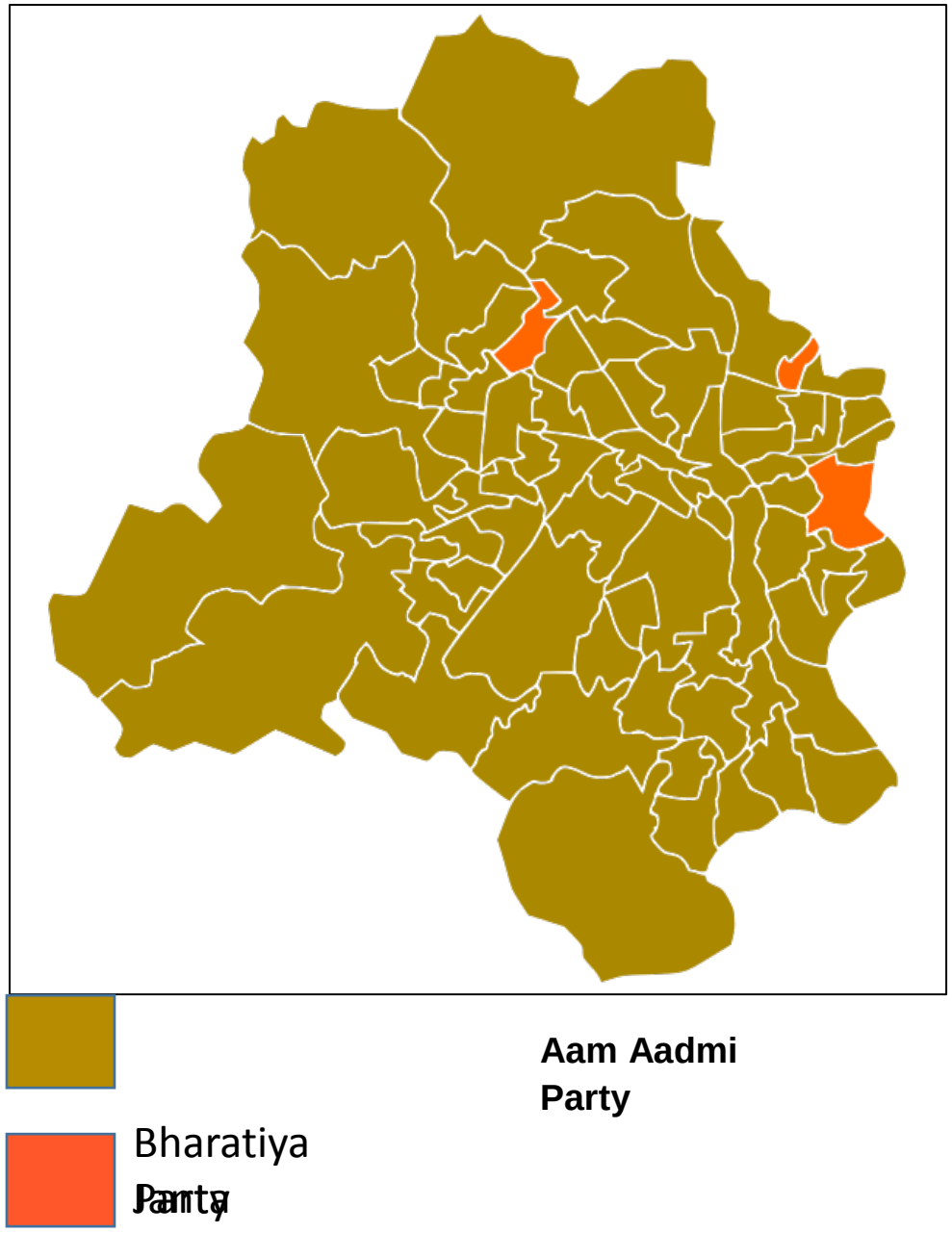
In 2013 assembly election around 880 contestants in fray and in 2015 673 contestant in fray, this shows very high competition. Moreover , it is clear that the larger the number of candidates the greater is the competitiveness .

Table no. 1.4

All 70 seats in the Legislative Assembly of Delhi (2013-15)

	First party	Second party	Third party
Leader	Arvind Kejriwal	Kiran Bedi	Ajay Maken
Party	AAP	BJP	INC
Leader's seat	New Delhi	Krishna Nagar (*lost*)	Sadar Bazar(*lost*)
Last election	28 seats	32 seats	8 seats
Seats won	67	3	0
Seat change	39	29	8
Percentage	54.3%	32.3%	9.7%
Swing	24.8%	0.8%	14.9%

Results of the 2015 Vidhan Sabha election -Delhi



Map not to Scale
Source: chief electoral officer Delhi

Delhi Assembly 2015 Party Wise Results

Table no. 1.5

Political Parties	Seats	Vote Share
Aam Adami Party	67	54.3%
Bhartiya Janta Party	3	32.2%
INC	0	9.7%
Others	0	3.8%

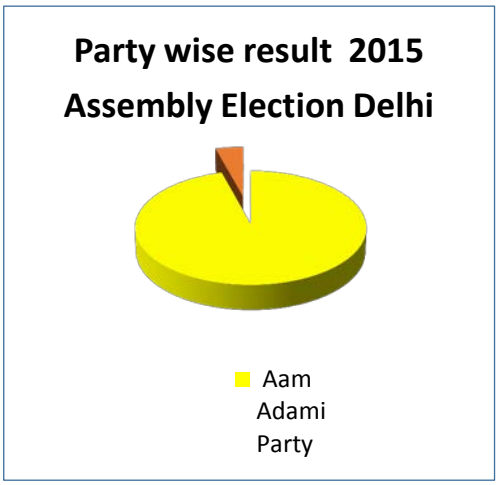


Figure:1.4

Source: Delhi Legislative Assembly, Report and Statistical Details 2015 Chief Electoral Officer, Delhi.

Delhi's historical folklore was already enriched with a vast number of tales and anecdotes, but on 10 February 2015, another glorious chapter was added to it. In the Delhi assembly elections of 2015, the AAP cavalry came bludgeoning and trampled everything that came its way. The BJP was at the receiving end this time. Aam Aadmi Party won 67 seats out of 70 and BJP won only three seats beside that Congress party failed to win even a single seat in Delhi assembly polls.

Party competition has been measured in terms of margin of victory. Margin of victory is the crude measure of degree of competition but the merit of this method is that it shows the competitiveness between the two nearest rivals easily. ***Margin of victory is calculated :***

$$\frac{\textit{votes polled by the winning candidates} - \textit{Votes polled by the nearest rival candidates}}{\textit{total valid votes polled}} \times 100$$

The margin of victory was divided in to 3 categories to highlights the variations in the degree of competition between the two nearest rivals, these categories are following:

(i) below 20 % (Low Margin Victories) (ii) 20-30% (Moderate Margin Victories) , (iii) above 30% (High Margin Victories). If we look at the

detailed study of party competition spatially in reserved constituencies many interesting facts were came out related to party competition. Table no.1.6 presents the clear picture of margin of victories between various political parties.

Table no.1.6

Margin of Victory in Reserved Constituencies, 2015

S.No.	Constituencies	Margin of Victory in %	Wining Party	Districts
	Low Margin Victory(Below 20%)			
1.	Mangolpuri(SC)	17.67	AAP	west Delhi
2.	Kondli(SC)	19.92	AAP	East Delhi
	Moderate Margin Victory (20-30%)			
3	Patel Nagar(SC)	29.82	AAP	Central Delhi
4.	Madipur(SC)	25.40	AAP	West Delhi
5.	Gokalpur(sc)	21.94	AAP	North East Delhi
6	Bawana(SC)	27.11	AAP	North west Delhi
7	Karol Bagh(SC)	29.27	AAP	Central Delhi
8	Trilokpuri(SC)	23.37	AAP	East Delhi
	High Margin Victory (above 30%)			
9.	Sultanpur Majra(SC)	56.04	AAP	East Delhi
10	Deoli(SC)	46.94	AAP	South Delhi
11.	Ambedkar Nagar (SC)	43.79	AAP	South Delhi
12.	Seemapuri	38.73	AAP	North East Delhi

Source: Chief Electoral

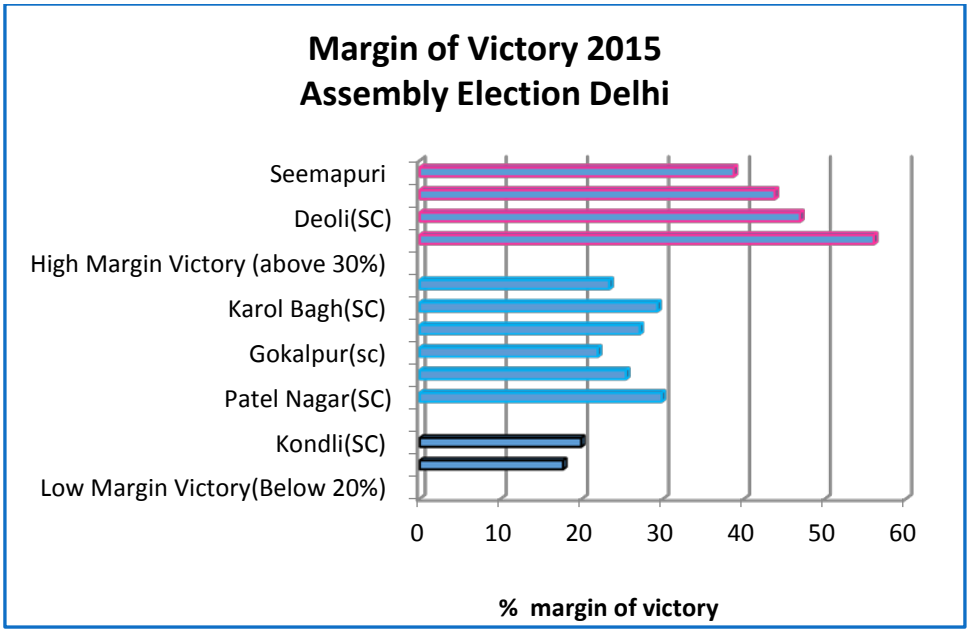


Figure:1.5

Source: Delhi Legislative Assembly, Report and Statistical Details 2015 Chief Electoral Officer, Delhi.

It is clear from the above figure that in 2015 assembly election in Delhi only two reserved constituencies Mangolpuri and Kondli recorded low margin victories which shows tough fight between the two nearest rival. Six reserved constituencies Patel Nagar, Madipur, Gokalpur, Bawana, Karol Bagh and Trilokpuri recorded moderate margin victories where two nearest rivals are close to each other in electoral support . While four reserved constituencies Sultanpur Majra , Deoli, Ambedkar Nagar and seema puri recorded high margin victories which shows that winning party have won majority of votes as compared to others .

Delhi elections 2015: Arvind Kejriwal-led AAP breaks rules of identity politics.

The arrival of the Aam Aadmi Party on Delhi's electoral scene in 2013 upset the traditional support base of various parties across various castes and communities. The usual pattern of upper castes voting mainly for the BJP and the OBCs and Dalits voting largely for the Congress stood disrupted.

The AAP broke the rules of identity politics and made a dent in the core vote bases of both the established political players. Findings from surveys conducted by the Centre for the Study of Developing Societies (CSDS) in Delhi estimate an average of 40% of the voters in Delhi belong to the upper castes. About 12% are Brahmins, 7% are Punjabi Khatris, 7% are

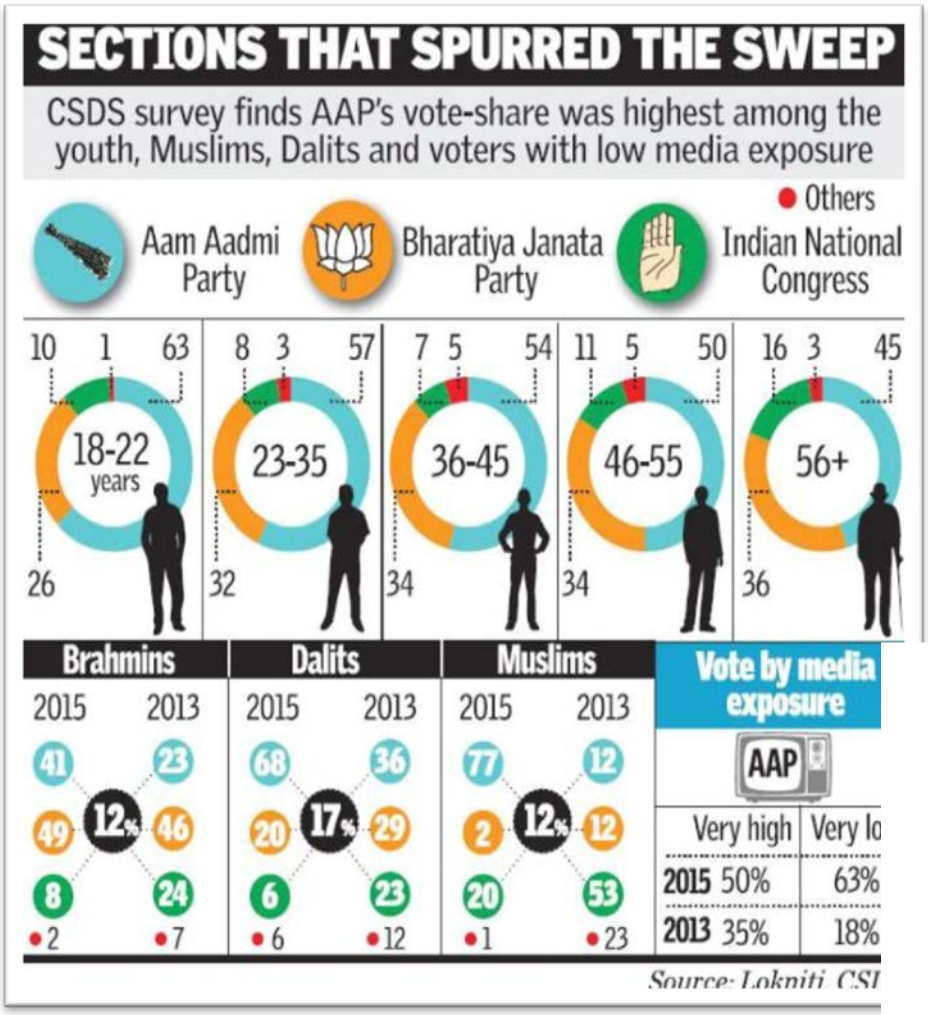
Rajputs, 6% belong to the Vaishya (Bania) and Jain communities and 8% are from other upper castes Traditionally, the upper castes of Delhi had voted for the BJP in sizeable numbers, particularly the Punjabi Khatri and the Bania communities.Support for the BJP among these two communities was consistently above the 50% mark in the 1998, 2003 and 2008 Vidhan Sabha elections. However in 2013, the AAP succeeded in taking away a big chunk of the BJP's Punjabi Khatri and Bania votes. Among the Punjabi Khatris, it garnered 39% of the votes compared with the BJP's 36%, while among the Jains and Banias , the party ended up with 29% of the vote and gave the BJP a decent fight.

OBC communities such as the Gujjars, Yadavs and the lower OBCs together form about 18% of Delhi's population. Traditionally the backbone of the Congress's base (along with Muslims and Dalits) in Delhi, they switched over to the AAP in 2013 in large numbers. The Dalit communities (17% of Delhi's population), in fact, have been instrumental in AAP's spectacular rise in the city. Having mainly been with the Congress and the Bahujan Samaj Party in the past, they shifted in massive numbers towards the AAP in 2013 and the AAP emerged as the leading choice of Dalits. About 36% of the Dalits voted for the AAP in the 2013 election as opposed to 29% for the BJP and 23% for the Congress. This sizeable support among Dalits for the AAP resulted in the party winning as many as nine of the 12 seats reserved for Scheduled Castes in the 2013 Assembly elections[98]**.** In 2015 assembly election AAP also came out as a winning party in all the twelve reserved constituencies in Delhi.

[98] The Economic Times, Politics and Nation, ET Bureau Jan 23, 2015**.**

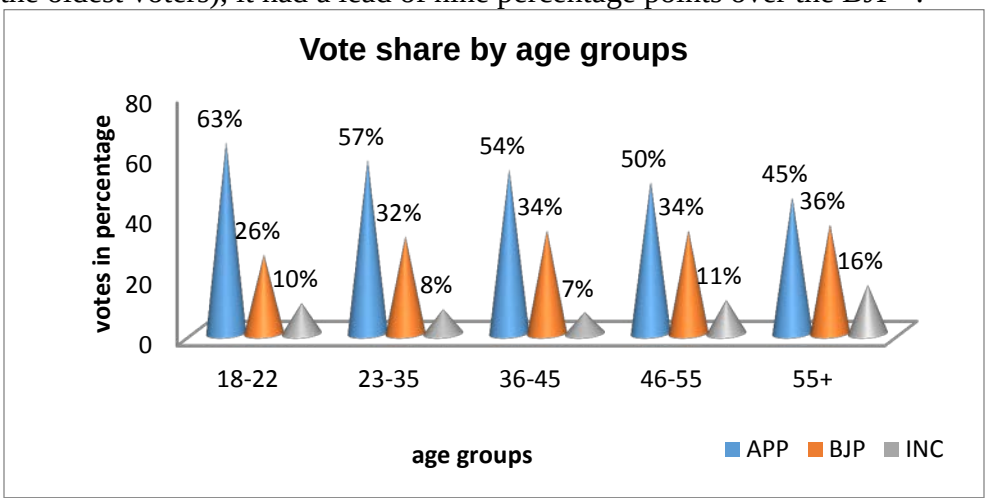
Figure: 1.6

In every age group, AAP's vote share was significantly higher than that of BJP



The sheer scale of the Aam Aadmi Party's sweep – winning 67 out of 70 seats and over half of all the votes – would indicate that the party won the support of all segments of Delhi society. While this is true, the party's support base leaned on slightly younger, poorer voters and those from more marginalised backgrounds, according to a post-poll survey by Lokniti at the Centre for the Study of Developing Societies. The survey was conducted soon after voting ended on February 7, among 2,060 respondents in 120 locations across 24 Assembly constituencies in the city; the sample's demographic profile closely resembled that of the city, and the declared vote

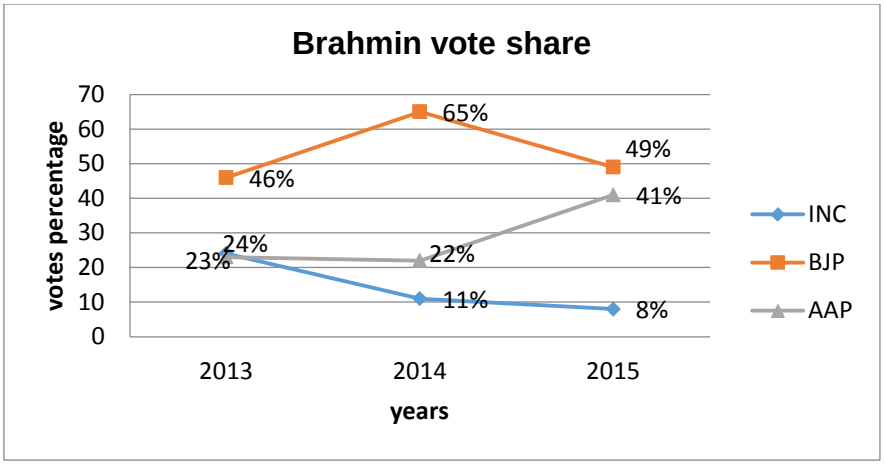
preference of the sample matched the ultimate actual vote share, the survey said. AAP's vote share was the highest among Delhi's youngest voters – aged 18 to 22 – rising even further among young Dalit voters. The party's vote share then gradually declines by age, falling to 45 per cent among those aged 56 and above. In every age group, however, the AAP's vote share was significantly higher than that of the BJP, and even at its narrowest (among the oldest voters), it had a lead of nine percentage points over the BJP[99].



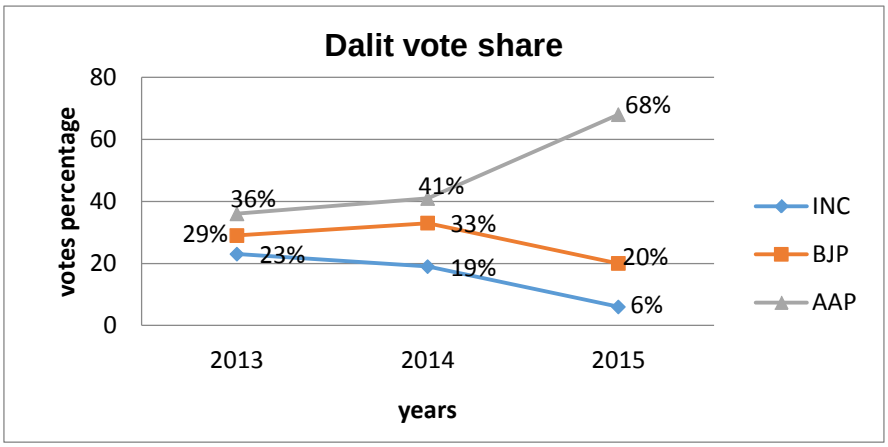
Data Source: CSDS.
Figure:1.7

Among the various social groups analysed by Lokniti, the AAP's vote share was highest among Muslims and Dalits, 77 per cent and 68 per cent respectively. In the case of Muslims in particular, the growth in the AAP's popularity has been remarkable, going from 12 per cent in 2013 to 77 per cent in 2015. Relatively, its popularity was lowest among upper castes; Brahmins, Vaishyas/Jains and Jats were the only caste groups among whom the BJP had a higher vote share than the AAP.

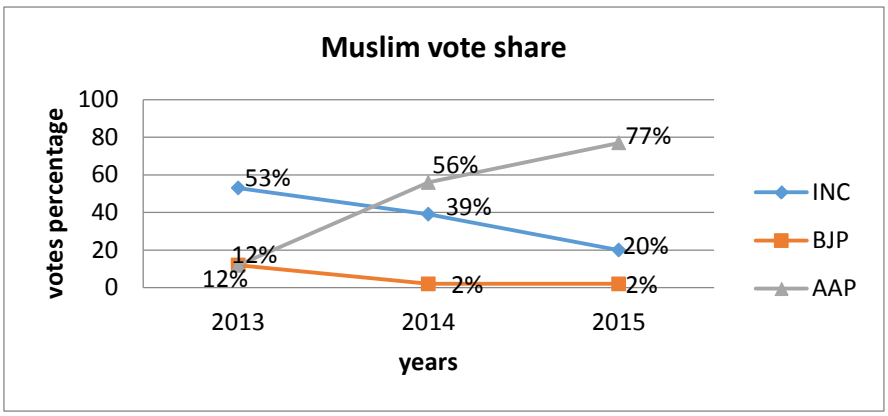
[99] The Hindu, NEW DELHI, February 13, 2015.



Data Source:CSDS
Figure:1.8



Data Source: CSDS
Figure:1.9



Data Source: CSDS
Figure:1.10

The AAP's support was highest among the poorest voters surveyed by Lokniti, and lowest among the richest, whose preferences were split between the BJP and the AAP. It is clear that in the relatively rural and more far flung (from the urban agglomeration) areas in west and north-west Delhi predominantly, the AAP's vote share was lower than in the urban concentrations of south, central, east and even some places in northern Delhi. The ability of the AAP to mount a door-to-door campaign, promising alternative forms of governance driven by innovative ideas such as "constituency based manifestos" and other measures were responsible for their successes in these urban agglomerations, which invariably have high densities of population. As Maidul Islam says- ***"the AAP also finds support in a section of the traditional middle class that is linked to the public sector, petty shop owners, small merchants and the professionals (doctors, teachers, lawyers, journalists), which is exasperated with the existing political parties on everyday issues such as inflation, and the lacunas in the public delivery system, power tariff, water supply, urban infrastructure etc. Moreover, under a neoliberal regime, the old contract between the state and the people has been redefined with the social welfare schemes targeting mainly the poor and not including this section of the middle class which emerges from the public sector, small trade and the professions. In a world where the public sector is rapidly vanishing to make way for the corporate, sections of this old middle class are now looking for a political alternative that could articulate their grievances[100]".***

Reasons behind Aam Aadmi Party's massive win in Delhi

It is a fairy tale comeback for a party and leader who had been written off by everyone after the 49-day government in Delhi and the mauling in the 2014 Lok Sabha elections. But soon after the Lok Sabha election disaster, the much-maligned Aam Aadmi Party and its founder-leader Arvind Kejriwal started the ground work to regain Delhi's trust. Kejriwal started with doing the unthinkable. He tendered an apology to the Delhi voters claiming that he had made a mistake and not any crime by resigning in 49 days. The voters, unaccustomed to politicians apologising, came to Kejriwal's rescue and decided to give him one more chance. With

[100] The Aam Aadmi Party's win in Delhi: Dissecting it through Geographical Information Systems, Economic and Political Weekly, Vol - XLVIII No. 52, December 28, 2013

stories of how corruption had come down during his brief rule, the Delhi voter flocked to AAP as the party gathered strength[101].

Here is what worked for AAP and Kejriwal in Delhi:

1) Arvind Kejriwal's image, his apology and fighting elections on his name
2) Started campaigning 3-4 months back
3) Sticking to local and constituency specific issues
4) Anti-corruption stand along with the promise of slashing of power and water tariffs
5) Collapse of Congress
6) Dalits, Muslims and the poor moved enbloc to AAP, giving the party a major boost.
7) Divided BJP and the negative campaign
8) Overreliance on Narendra Modi. The Narendra Modi card failed badly in Delhi.
9) Kiran Bedi's projection as CM
10) Challenging BJP leaders directly. Kejriwal was called "bhagoda" (runaway) by his rivals but he never shied away from taking on the opposition.

Conclusion:

The 2013 Assembly elections witnessed the remarkable success of Aam Aadmi Party (AAP), a new political party. The Congress which was in power in the capital for the last 15 years faced a major defeat winning only 8 out of the 70 Assembly constituencies. BJP won the most with 31 seats, falling short by just 4 seats to reach the half-way mark. The nascent AAP debuted in the Delhi elections winning as many as 28 seats. Other political parties bagged 2 seats. AAP President Arvind Kejriwal defeated Sheila Dikshit in the New Delhi constituency with a huge margin of over 25,000 votes. AAP's success took most political rivals by surprise, who with support from the Congress, went on to form the government. But Arvind Kejriwal's resignation from the Chief Minister's post led to President's rule in the state.

The Congress party, that governed Delhi for three consecutive terms from 1998 to 2013, seems a mere shadow of its past. BJP fails to capitalise on the 'Modi Wave' once again and fails to emerge as the single largest party BJP won only three seats . While AAP gave tough competition to the BJP and Aam Aadmi Party won highest 67 seats .

[101] 10 reasons behind Aam Aadmi Party's massive win in Delhi, Priyarag Verma, IBN Live.com | Feb 10, 2015

Delhi seems concerned about the same lot of grim issues that have continued to hurt its status as the national capital for long. Poor water supply and power outages, weak infrastructure, corruption, crime against women, problem of law and order, unemployment and pollution are the issues that was the core of the assembly elections.

Findings

- 2015 assembly election shows rapid increase in voter turnout it went up to 67.47% as compared to 2013 and 2008 assembly election held in Delhi.
- It was found that reserved constituencies also showed the trend of High and Very high electoral participation.
- Party competition has been measured in terms of margin of victory. Most of the constituencies recorded moderate and high margin victories .
- It was observed that in reserved constituencies only two constituencies Mangolpuri(sc) and Kondli(SC) recorded high degree of competition , where tough fight was found between two nearest rival .
- Six reserved constituencies recorded moderate margin victories , where the nearest rivals were close, though not very close, to each other in electoral support.
- Only four reserved constituencies witnessed high margin victories, In this study a big margin would show that the winning party or leading party secured majority of votes .

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IMPORTANCE OF INTERPROFESSIONAL EDUCATION, PRACTICE AND RESEARCH IN THE PHARMACY CURRICULUM IN THE ERA OF GLOBALIZATION

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Abstract

The profession of pharmacy has evolved gradually for more than a century and has seen many educational challenges and reforms. The pharmacy curriculum is science-based and varies widely in different parts of the world in both content and outcomes. The global pharmacy curriculum could be broadly categorized as product/industry-focused or patient-focused. In the United States (US), the baccalaureate degree has been replaced with the entry level Doctor of Pharmacy (Pharm.D.) curriculum. This change was designed to enable practicing pharmacists to provide patient care services that optimize medication therapy outcomes and promote health, wellness and disease prevention. This shift from a product-centered to a patient-centered curriculum has offered tremendous benefits to patients, society and healthcare. It has further been realized that working as a collaborative team with an inter-professional approach produces effective patient-centered outcomes. Implementation of inter-professional education (IPE), practice and research was recognized by pharmacy educators and accreditation authorities in the US in the early part of 21st century. IPE is now considered a standard for pharmacy accreditation. This review will compare some of the pharmacy curriculums of the world and the difficulty in harmonization of pharmacy curricula. The factors that facilitate and hinder IPE, practice and research in the curriculum will be discussed.

Keywords: Inter-professional, Education, Research, Pharmacy Curriculum, Globalization

Introduction

Pharmacy, as a profession, dates back to the ancient Sumerian population living in today's modern Iraq (1). The profession is grounded in science, research and scholarship. The word "pharmacist" was first used in England in 1834.

Globally, the level of recognition and respect for pharmacists, as healthcare professionals, varies widely. This is due in part to the country and culture as well as how pharmacists practice their professional duties for the public. Likewise, the pharmacy curriculum, training, and professional expectations vary widely. These factors create the large discrepancy in knowledge, skills and expertise that exists among pharmacists globally. The pharmacy curriculum in particular has experienced a dramatic change over the past three decades. Advancements in drug manufacturing and dosage forms, the sheer number of drug products, and the increasing geriatric population have driven some of these changes experienced by pharmacy over this timeframe. The purpose of this manuscript is to provide a comprehensive review of the current global pharmacy curriculum and the changes and challenges faced by the pharmacy academy today.

Key Periods Relative to the Pharmacy Curriculum in Different Parts of the World

- Pharmacy education, globally, has closely followed medical education. The first pharmacy/drug store was reported in 754 in Baghdad, Iraq. The practice of pharmacy in the United States (US) dates back to the founding days of the country. At that time, there was no single curriculum to train a pharmacist. Pharmacy was considered an art and no theoretical knowledge was required to practice this art. Practitioners were trained through apprenticeship. The first college of pharmacy in the US began in 1821 as the Philadelphia College of Pharmacy.
- An important law relative to drug products in the US was the Pure Food and Drug Act of 1906. This legislative act prescribed penalties for misbranded or adulterated drugs. However, this piece of legislation did not address drug product efficacy. The unfortunate deaths in 1937 from sulfanilamide elixir consumption forced the implementation of the Food and Cosmetic Act of 1938 and allowed greater authority to the Food and Drug Administration (FDA). These legislative actions influenced subsequent pharmacy curricula.
- Pharmacists are accessible and frequently visited by patients. In most rural areas, they are generally considered as the first source of entry into the healthcare system. This is becoming more and more apparent especially in underserved areas by physicians. These facts influenced

pharmacy curricula in the areas of patient-centered care, necessitating the addition of physical assessment and drug therapy monitoring.

- The period from 1910-1965 is generally considered as the era of academic reform for pharmacy in the US. The state of New York passed a law requiring all pharmacists registered after 1910 to have a pharmacy school diploma. The educational reformer Abraham Flexner in 1915 called pharmacy a non-profession and the War Department refused to commission pharmacists as officers in the Great War. This was a turning point for pharmacy education. Pharmacy leaders pushed the educational requirement for pharmacy and by the 1940s, colleges of pharmacy agreed to institute a mandatory 4-year baccalaureate (BS) degree as the minimum for graduation (2). Professional organizations, such as the American Association of Colleges of Pharmacy (AACP), also pushed for a required a 4-year baccalaureate degree program for all colleges of pharmacy.
- In the 1990s, the BS degree program was completely replaced by an entry level Pharm.D. program in all US pharmacy schools. The goal of the entry level Pharm.D. curriculum is to produce practicing pharmacists who have the abilities, attitudes and skills to accomplish the following professional outcomes:
  Provide pharmaceutical care to patients
  Ability to manage a pharmacy
  Develop and manage medication distribution and control
  Promote public health
  Provide drug information and education

The pharmacy profession has thrived in the US and is considered a highly respected profession. Public trust and benefits for this profession has seen a steady growth over the past few decades. However, this professional experience is not shared by pharmacists in other parts of the globe.

A Comparative Look at Some of the Major Pharmacy Curricula Globally

Throughout the world, pharmacy education does not use a single curriculum. It varies from country to country and continent to continent. Overall, pharmacy curriculums in the world may be classified into two major focus areas. The first curriculum is one that is product/industry-centered, and the second one is the patient-centered curriculum. In the US, the product-oriented curriculum such as the BS in pharmacy has been transformed into a patient-focused Pharm.D. curriculum. Such a change took more than three decades to accomplish. Such a dramatic shift in the curriculum has not yet been seen in other parts of the world. However, there is a global move for

such curricular reform. It is not practically feasible to compare the pharmacy curriculums of the entire world. Therefore, an attempt has been made to compare a few curriculums as shown in Table 1(3-6).

Current Challenges in the Pharmacy Education

Globally, pharmacy education faces many challenges. Even though these challenges vary from country to country, there are some common themes. Interschool competition, pressure from accreditation organizations and governments, demand from rapid healthcare changes, pressure from within the profession and other healthcare professions, students' demand and need for professional recognition and placement in the work force are some of the common challenges faced by this profession in many countries. A shortage of well-trained faculty and clinical mentors to train future clinical pharmacists is also a challenge faced by many. The most striking difference in the pharmacy curriculum is to meet the societal needs of a country, which varies widely. The minimum professional degree requirement to practice pharmacy also varies extensively from country to country. This creates a challenge for workforce distribution to meet the global and societal need and shortage. One such challenge as described earlier is the older product/industry-focused pharmacy curriculum versus the newly developed patient-centered pharmacy curriculum. Even though the world has seen a dramatic shift toward this curricular change, there still exist many barriers and challenges in terms of pharmacy practice being patient-centered rather than product-centric.

Product/Industry versus Patient Focused in the Pharmacy Curriculum

Comparing the pharmacy curriculums globally, one can see two distinct differences between the BS degree and the clinical pharmacy (Pharm.D.) degree. The BS and Pharm.D. curricula place different emphases on Basic Sciences, Pharmaceutics, Pharmacy Practice and Therapeutics. The BS degree curriculum is more product-oriented and drug distribution-centered, and suits the needs of community pharmacy where little direct patient care services are provided. On the other hand, the Pharm.D. curriculum focuses not only on product distribution, but also on the provision of patient care and medical therapy management (MTM) and is more focused on patient health outcomes. In the Pharm.D. curriculum, the pharmacist works with other healthcare personnel to improve patient medication outcomes.

Recent advances in medicine and therapeutics, the explosion in drug products available, the pharmacokinetic and pharmacodynamic aspects of these medications, the understanding of pharmacogenomics, the increased costs of drug products, and the greater understanding of the complexities of

treatment options available to a patient of the 21st century have forced societies to examine how medications may be used more effectively, safely and reliably. These changes in therapeutics have provided the opportunity for today's pharmacist to prove that the profession can improve medication therapy and patient health outcomes. Pharmacy is now at a crossroads – pharmacy can address many of the issues facing healthcare systems such as costs, therapeutic complexities and medication safety. Overall, the opportunity to be recognized as a key healthcare provider responsible for patient outcomes now exists. This public recognition as well as that by other healthcare providers is fundamentally more important to the profession before attempting to achieve curricular harmonization. In highly populated countries of the world, shifting the pharmacy curricular and practice focus to a clinical, patient-centered focus may have a tremendous impact on overall patient care and outcomes. With proper planning and development for clinical pharmacy education, improvements in both patient care and overall healthcare costs can be realized.

Global Trend in Curricular Changes in Pharmacy Education

Curricula belong to faculty and any change in existing curriculums is not a simple task. Substantial curricular changes are usually stimulated by external drivers, including standards drafted by accrediting organizations and societal needs. When one thinks about the dramatic shift from a product-centered curriculum to a patient-centered one in an underdeveloped country, the task becomes more daunting. Such challenges are faced by many countries and these challenges are some of the greatest barriers for harmonization of pharmacy curricula globally. In order to make such a shift, one has to take a grassroots approach, and the US can serve as a model since there is a proven track record of successful change over the past three decades.

Inter-professional education (IPE), inter-professional practice (IPP) and research can also serve as stepping stones for such a change. Working with other healthcare professionals in a team-oriented approach (e.g., IPP) to patient care can improve patient outcomes and reduce healthcare costs. The clinical pharmacist, as a member of this team, can maximize medication therapy, improve medication safety, and reduce medication costs. Going to a team approach breaks down professional silos that exist among healthcare professionals in most parts of the world today. Working together, towards the common goal of improving patient outcomes while understanding both the strengths and limitations of each profession's contribution to the team, will enhance mutual respect and appreciation for each team member. Inter-professional education is aimed at achieving just such a goal. By educating healthcare students side by side, professional barriers and misunderstandings

among all parties should dissipate. Further, IPE should lead to IPP, where a healthcare team is used to maximize patient health while minimizing healthcare costs.

What are Inter-professional Education, Inter-professional Practice and Inter-professional Research in the Pharmacy Curriculum?

Inter-professional Education (IPE)

IPE is a concept based on a multi-professional approach, building teamwork and becoming a critical part of a healthcare team. IPE and its importance in healthcare education were first recognized by the Institute of Medicine (IOM) in 2003 (7). The IOM report on "Health Professions Education: A Bridge to Quality" first identified both the importance of integrating inter-professional experiences into healthcare education and developing core competencies for IPE. This was based on a hypothesis that inter-professional collaboration may have a positive impact on patient care outcomes (8). The IOM report developed five core competencies for health professional education that include (i) provide patient-centered care, (ii) work in inter-professional teams; cooperate, collaborate, communicate and integrate care into teams to ensure that the care is continuous and reliable), (iii) employ evidenced-based practice (iv) apply a quality improvement approach, and (v) utilize informatics (9). These five core competencies were also recognized by both AACP's CAPE Educational Outcomes 2004 and ACPE standards 2007 (10-12).

Aside from IOM, the World Health Organization (WHO) also recognizes the importance of inter-professional collaboration in education and practice and hope this will mitigate the global health workforce crisis. WHO, with its partners, has defined Inter-professional education and collaborative practices as follows (13):

"Inter-professional education occurs when students from one or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes."

Inter-professional Practice

"Collaborative practice happens when multiple health workers from different professional backgrounds work together with patients, families, caregivers and communities to deliver the highest quality of care. It allows health workers to engage any individual whose skills can help achieve local health goals." WHO's 50 years of data have identified that inter-professional education allows effective collaborative practice that leads to improved health outcomes (13). Collaborative practice can be seen in these six important building blocks of health systems that include health workforce,

device delivery, medical products, vaccine and technology, health system financing, health information system and leadership and governance (14).

Inter-professional Research

According to Richard D. Kahlenberg, one of the important purposes of higher education is "to advance learning and knowledge through faculty research and by giving students the opportunity to broaden their minds even when learning does not seem immediately relevant to their careers (15)." Research and scholarship are part of the pharmacy academy's standards in the US and Canada. They are built into the accreditation standards for pharmacy education and curriculum. This inclusion in the accreditation standards ensures that pharmacy continues to be recognized as a research-oriented and evidence-based health profession. The terms *research* and *scholarship* have been viewed as synonymous in the pharmacy academy, but in general, scholarship is considered a much broader concept that includes research (16). According to Boyer, scholarship can be classified into four groups that include (i) the scholarship of discovery (traditional research), (ii) the scholarship of integration (connecting information across disciplines and fitting one's own research into larger contexts); (iii) The Scholarship of application (Translational Research); and (iv) the Scholarship of Teaching (studies of student learning and advancement) (17). Lack of funding and limited financial resources for research are becoming more and more a reality in academic pharmacy today. Research partnerships with multiple professions may be an alternative approach to address these funding issues. Multi-professional collaborative research can address complex research areas in which each collaborator's research strength more efficiently addresses the research question and maximizes talents and resources.

Efficient data collection, research and dissemination become more evident from such collaborations. Recently, the National Institutes of Health (NIH) has recognized the importance of inter-professional research collaboration and translational research. NIH's new initiation of the Clinical and Translational Award (CTSA) is an attempt to encourage inter-professional research to support collaborative partnerships between academia and community centers to enhance clinical research. Some graduate programs and post graduate programs in clinical translational sciences have been developed to facilitate and advance inter-professional research. The Association of Academic Health Centers in their 2004 report have recommended that the US federal government should create new funding opportunities to create and test various models of IPE and practice (18).

Why and How It Helps

Evidence-based research over many years has shown the benefit of collaborative practice. Collaborative practice has been shown to improve access and coordination of health services, better utilization of the clinical specialist, better health outcomes of chronically ill patients and overall improved patient care and safety. It has also been documented that collaborative practice can decrease patient complications, total hospital stay, conflict among care givers, clinical errors and mortality rates. Collaborative practice in community mental health settings has shown increased patient satisfaction, greater acceptance of treatment options, reduced duration of treatment and cost, reduced outpatient visits and suicidal attempts. Health systems have also experienced benefits from collaborative practices. IPP reduces the cost of primary care for elderly and chronically ill patients, minimizes redundant tests and overall costs. IPP also improves cardiac care, as well as costs for total parenteral nutrition in the hospital setting (19,20).

Integration of IPE in the Curriculum

The educational outcomes that need to be incorporated into the learning objectives for IPE should include team work, understanding one's role and responsibilities in team dynamics, effective communication among team members, learning and critical reflection, ethical practice and how to work collaboratively for the best interests of patients. ACPE standards (Standard 11) now identify the implication of IPE in pharmacy education. With all of the initiatives on the horizon for integration of IPE into pharmacy curricula, many barriers still exist (21). This ACCP White Paper clearly identifies these barriers and provides some solutions and alternative approaches. These barriers may be organizational, operational, cultural, communicational, or personal. In order to overcome these barriers and to change the learning culture, one has to understand clearly the root cause of these barriers. Once identified, this can be minimized and IPE can be implemented and benefits can be drawn from such implementation (21).

Conclusion and Closing Remarks

The profession of pharmacy has evolved gradually for more than a century and has seen many educational challenges and reforms. The major change in the USA educational system is a move from a product/industry focus to a patient-centered focus. This change was designed to enable practicing pharmacists to provide patient care services that optimize medication therapy and promote health, wellness and disease prevention. This shift from a product-based to a patient-based curriculum has offered tremendous benefits to patients, society and healthcare. It has further been realized that working as a collaborative team with an inter-professional

approach, including pharmacists, produces effective patient-centered outcomes. This team approach to healthcare will contribute to improvements in healthcare with reduced costs. Future pharmacists will have the knowledge and skills needed to take up their new role and responsibilities and to function as collaborative members of the healthcare team. Besides core content knowledge in the curriculum, the future curriculum will include education and training that prepares them to meet the healthcare needs of society. More emphasis on critical thinking, real word problem solving, working as a team, and adapting to the new opportunities and challenges will be included. For future pharmacy educators, what they teach in the classroom will be equally important as how they teach it. The linear curriculum based on classroom lectures will be supplemented with students learning through direct patient care, service learning, leadership opportunities, and hypothesis-driven research or quality improvement-driven inquiry.

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Table 1: Highlights of a comparison of Pharmacy Curriculum (3-6) *

Criteria	**USA**	**UK**	**Canada**	**Australia**	**Middle East**	**India**
Registrable Degree Awarded	Pharm.D.	M.Pharm.	B.Sc.Phrm.	B.Pharm. or M.Pharm.	BSc, MSc, Ph.D., BSc-PD, PD	D.Pharm. B.Pharm. M.Pharm. Pharm.D. (Some)
Average Age at Entry	24-25	19	20	19	19	<19
Admission Criteria	GPA, prerequisite, PCAT, essay, reference, and Interviews	A levels and interviews	GPA, prerequisite, PCAT, (some Interviews	BPharm: ATAR, pre-req, UMAT MPham: GPA, pre-req, interview	GPA	Varies Grades in HS Exam Entrance Exam GATE (for M.Pharm.)
Curriculum	Different emphasis on Basic Sciences, Pharmaceutics, Pharmacy Practice and Therapeutics					
Compulsory pre-registration	None	52 weeks after graduation	12 weeks after graduation	48 weeks after graduation	Requires an internship (unstructured)	500 hrs (D.Pharm.)
Undergraduate Experimental Component	300 hrs IPPE 36 weeks APPE	2-22 days in undergraduate course	16 weeks as undergraduate	12 weeks in undergraduate courses	10-36 weeks	1 yr internship Six months (Gen Medicine) 2 months x3 other specialty Dept
Degree Awarded for Registration as a Pharmacist	Pharm.D.	M.Pharm.	B.Sc.Phrm.	B.Pharm. or M.Pharm.	BSc, BSc-PD	D.Pharm. B.Pharm. M.Pharm
Entry Requirements	Entry after minimum 2 years university	Entry from secondary school	Entry after one year university	Entry from secondary school	Entry from secondary school	Entry from secondary school
Duration	4 year courses	4 year courses	4 year courses	4 year courses	5 year courses	2 year courses D.Pharm. 4 years

						course B.Pharm. 6 yrs Pharm.D.
Research Projects	Possible but not mandatory	Mandatory	Possible but not mandatory	Possible but not mandatory	Possible but not mandatory	Not Mandatory
Challenges					Shortage of well-trained faculty and clinical mentors	

* This is a partial list of the Pharmacy Curricular Comparison.

COLOUR-BLIND GLOBALIZATION AND DEVELOPMENT

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Abstract

Globalization as a narrative seldom extends well beyond the vicissitudes of interpretations. But be it Hyperglobalists, Sceptics or Transformationalists, for all of them, it is understood and practiced in terms of 'Global Connectivity' and 'Global Community'. Many a time, this global connectivity and community is assumed to be given and inevitable. But reality belies the truth as globalization comes to many with so many filters. Many of the agents of globalization are colour blind, of course not literally but in generic sense. They pose themselves as custodians of globalization and development and thus decide up to a greater extent who becomes the part of the global connectivity and global community. What is mind-boggling in all this customized version of globalization is the fact that this stake-out is based on the colour of the body! One can easily guess by now that this particular colour would be most probably 'black' or some variant of it and also can smack of racism instantly. There are many people in the southern part of India who share the black colour of their bodies. At the same time there is a sizable population of people who share the fair complexion of their bodies. Based on a primary survey this paper explains the modus operandi through which the people sharing black colour of their bodies have been kept out of bounds in regard to globalization and its fruits and also depicts the saga of struggles of these black people and the niche they have carved out in society for themselves with the help of Christians.

Keywords: Globalization, Black, Stake-out, Christians

Introduction

India was never a tranquil haven, untouched by the global agents and forces. From the dawn of Indus valley civilization, it has its link beyond its borders. Philosophically, Globalization is not a brand new phenomenon at all. Be it trade, intellectual or cultural exchange, it has always been there, of course may not be with the same intensity and stage as we witness today, as argue many Marxist Scholars. Keohane and Nye (2003)[xv] clarify that

globalization is not a recent happening. It has always been there but its degree and intensity have varied. They explain about 'thin globalization' and 'thick globalization'. 'Thin globalization' refers to a phase when global connectivity was limited only to certain places and certain people. 'Thick globalization' indicates an age where global connectivity encompassed many nations and many people. This present age is categorised under 'thick globalization'. But there are some scholars for example, Stoics philosophers who trace out the roots of globalization in antiquity and as far as India and study area of this paper, Kerala, is concerned, globalization within its borders is not a recent phenomenon. Mohan (2005)[xvi] documents that Kerala had linkages with the world outside even before the early centuries of the Common Era.

Before the real issue is dealt with, it is imperative to get right with the notion of globalization, at least for the present study. One has to really grapple hard to grasp the meaning of globalization as Perry (1998)[xvii] confesses that it is "Glimpsed, but not grasped". "It [Globalization] is not a singular, linear narrative, nor is it just a matter of economics. It is cultural as well as commercial and in addition it is legal: it is about power as much as prosperity or the lack of it" (Held et al., 2005)[xviii]. The term 'globalization' was used for the first time in webster's English dictionary in 1961 in the sense of interconnectedness of social events and relationships (Waters, 1995)[xix]. Held (1997)[xx] defines globalization succinctly and it fits properly with the notion of globalization being discussed in this study. He says, "Globalization today implies at least two distinct phenomena. First, it suggests that many chains of political, economic and social activity are becoming interregional in scope and, secondly, it suggests that there has been an intensification of levels of interaction and interconnectedness within and between states and societies". British sociologist, Anthony Giddens also echoes the same idea. He considers globalization as "the intensification of world-wide social relations which link distant localities in such a way that local happenings are shaped by events occurring many miles away and vice versa" (Giddens 1990)[xxi].

Main Discussion

Definitions of globalization bring out two elements at the forefront i.e. interaction and interconnectedness. Both of these elements find their roots at individual level. Though philosophical, it is reality that a person may not actualize the real interaction even with himself. Other individual can pose a threat to one's interpersonal interaction, thus distorting or destroying the larger societal interaction at regional and global levels. This is exactly what happened to certain people in Kerala whose interaction was distorted and destroyed even at individual level let alone regional and global level.

They are still bearing the brunt of that ruptured interaction and interconnectedness which is reflected in their relative socio-economic standing in the society. It was an intriguing enigma as to what happened to this section of people that they are still long way behind from others in terms of global connectivity and feasting over the fruits of globalization. As in most cases of this sort, past serves as key to the present, this case not an exception. The fault line started in the early centuries of Common Era.

Survey for this study has been carried out in two districts i.e. Kottayam and Pathanamthitta of Kerala, one of the advanced states of India. People from three sections of the society namely, Syrian Christians (people having their origin in the 'upper caste' Hindus), Christian Dalits (people having their origin in the 'lower caste' Hindus), and Hindu Dalits ('lower caste' Hindu people) were considered for the survey. Around 450 households, consisting proportionate number of households from all the three sections were surveyed during 2013-2014. Further discussion is based on the personal narratives and data captured during survey as well as historical literature available on the subject.

People who comes from the lowest rung in the society are known as '*Pulaya*' in Kerala. They have other nomenclature (*Paraya and Kuruva*) too but it is the most widely known lowest caste in Kerala. Some scholars like Thoma (Thoma, 1992 as quoted in Palakkappillil 2007)[xxii], considers them as original inhabitants of Kerala. According to Thoma, about the 4th century, Aryan Brahmin had come to kerala and settled there. After some time these Aryan Brahmins started oppressing the original inhabitants of Kerala and made them to occupy the lowest rung in the society. As the time passed by oppression became severe and took the ugliest form of slavery. *Pulayar, parayar, kuravar, vettuvar* were rendered as the slave castes (Palakkappillil 2007)[xxiii]. People from these slave castes were traded like any other commodity (William adam as quoted in sanal mohan)[xxiv]. Owners had a right to kill a slave if he wished not to sell him (Mohan, 2005)[xxv]. This was a severe blow to the interaction at individual level. A slave did not have any right over his body. Body as a space is the primary means to connect to and experience other spaces (Valentine, 2001)[xxvi]. Bereft of their inborn right over their bodies, these slaves became nonentities. Their spouses were sold to a different owner and children to another owner, who then will go on a spree of sale to many hands (Travancore and Cochin Diocesan Record of 1912, as quoted in Sanal Mohan)[xxvii]. This was the beginning of curtailing the connectivity at household level, the primary unit of a community. Every landlord has his own slaves and they were not allowed to interact to the slaves of other landlord. This was the second blow to the intra connectivity. Their black bodies were considered ominous and a dirt. They possessed nothing. Every day they were made to work on the fields of 'upper caste

people'. They were not allowed to walk on the road as and when they wanted. They had to maintain a distance of 64 yards from the other caste person. They were not allowed to visit markets or other public places (Mateer, 1883)[xxviii]. This all ensured that people from slave castes were never able to interact with the larger society. This made intercommunity interaction non-existent among slave castes. Distortion and destruction of interaction at every level hinges on their bodily attributes. This point was affirmed during survey as many upper caste people accepted that black colour of their bodies is the main hindrance behind their level of interaction with others.

Globalization indicates towards a global connectivity to a global community. In case of these slave castes both the terms 'global connectivity' and 'global community' seem to be ironical as they did not have even an effective societal connectivity and community let alone global connectivity and global community. In fact, they were never allowed to establish 'intra-community' as well as 'inter-community'. When a person is reduced not only to the level of 'sub-human' but also downgraded to the level of commodity, expecting community formation from such a person would be cruel. This was not the story in moments, hours, days, months, years but of centuries and it still evades the capture of exact temporal dimension. They were all groaning under this 'Racism' which was more inhuman than racism because slavery in the form of caste was religiously sanctioned and they have no religious say at all. They earnestly desired an escape from the landlords and the rotten system of slavery. But no saviour was in sight. A breakthrough came in the form of Christian missionaries and mission.

Christian missionaries from London missionary society (LMS) and Church Missionary Society (CMS) as harbinger of hope treated slaves differently. Mateer (1883)[xxix] documents the change accurately. These missionaries tried to expose the cruelties of system of slavery to the various officials. They bought some slaves to start the process of a future change. They were not cruel to them. They provided them holidays from their work, started evening informal classes in the church premises to impart the basic knowledge of language and accountancy. Teachings of the Bible became instrumental in educating them. They instilled within them a message of hope in spite of all the cruelties in their life. They preached about the equality of all human being. They stood with them in odd instances, ensuring their entry into the forbidden realms of Christianity and larger society (Mohan, 2007)[xxx]. The most important effort of these missionaries was to leave no stone unturned to ban the oppressive system of slavery. By 1819 slavery was abolished in those areas which were directly under the Britishers. But in Travancore it was abolished only in 1855 (Saradamoni, 1980)[xxxi]. Although slavery was abolished on paper but it was still practiced in the public. Even the native followers of most 'egalitarian religion' i.e.

Christianity were not ready to mingle with the new converts (Fuller, 1976)[xxxii]. They still thought them to be untouchables. Missionaries had to hold the hands of new converts and ensure their entry into the churches. People who were regarded as 'black devil' and 'brute beasts' (Hunt, 1918)[xxxiii] were breaking the bastions of barbarism.

No historians would deter to accede to the fact that it was the genuine effort of Christian missionaries which witnessed abolition of slavery and opening up of new vistas in the lives of slave castes. Missionary intervention alone paved a way for the global connectivity. Their struggles reclaimed following spaces:

1. **Interaction at individual level**: Slave castes got the forlorn right over their body, a cardinal space which connects a person and enable him to experience other spaces. If this space is robbed of a person, he cannot be globally connected. This was revolutionary in regards to global connectivity.
2. **Interaction at household level**: Abolition of slavery ensured that slave castes could live as a family, a primary unit of any society.
3. **Interaction and interconnectedness at society level**: As free human beings they could interact with the other people from their castes and forge a unity at societal level. They could also connect to the people from other castes and claim their own social space. This brought 'black devils' to the launching pad of the globalization.

Discussion till now makes one thing crystal clear that 'brahmins' and 'nairs' landlords would have never given them any space to escape from the slavery and thereby slave castes would have never experienced even the interpersonal connectivity let alone global connectivity. This is affirmed by the fact that even today so-called Brahmins and Nairs and others hesitate to interact with these 'black devils'. Even the Christians who boast of equality amongst themselves practice casteism and consider *'pulayas', 'parayas'* and *'kuruvas'* as lesser human beings. They face blatant discrimination at every level and in every institutional space in the society. They did not spare even the graveyards from this cruel reality. So called Syrian Christians do not have matrimonial alliances with the 'black devils'. They will preach that God has made human beings equal and God has also made black colour and then they will treat the people with dark skin as black devil and erect separate edifices of worship place for 'black devils'. How can one be convinced that people with such stinking mentality will budge a step to impart connectivity at any level unto these 'lesser human beings'? Survey results seldom approve this idea. But the interesting fact is that these 'black devils' in spite of all the snag and scorns are building up on the foundations of liberty and equality visualized and concretized by Christian missionaries. Of course they are least globally connected today but the game has begun.

Global connectivity was an issue to look into while surveying people in Kerala. Language is considered as a powerful medium of global connectivity. People from Kerala use Malayalam as their mother tongue. As far as global connectivity is concerned Malayalam cannot help much. English is considered the lingua franca of globalization. Table 1 gives the glimpse of the use of English by various communities.

Table 1: Use of English by various communities

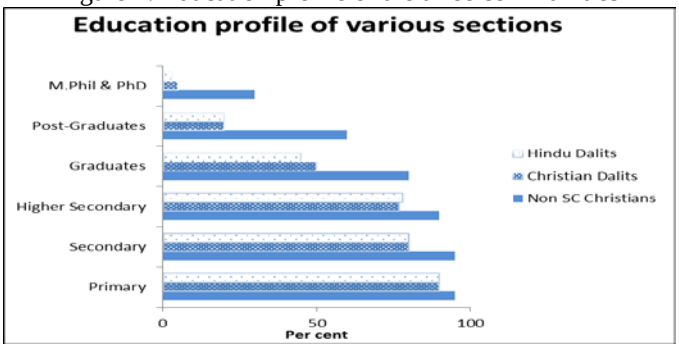
Use of English /Communities	Syrian Christians (in per cent)	Christian Dalits (in per cent)	Hindu Dalits (in per cent)
Can understand	90	60	40
Can write	85	50	30
Can speak fluently	50	30	15

Source: based on primary survey data (Figures show approximate values)

It can be understood well from the Table 1 that Christian Dalits are faring better in comparison to their Hindu counterparts. Christian missionaries helped them to start interaction with the larger Syrian Christian community and it is paying well as Christian Dalits get motivation from their interaction with Syrian Christians. Being Dalit Christians, it becomes easier for their wards to get an admission in Christian schools and colleges and that enable the present generation to claim the global connectivity.

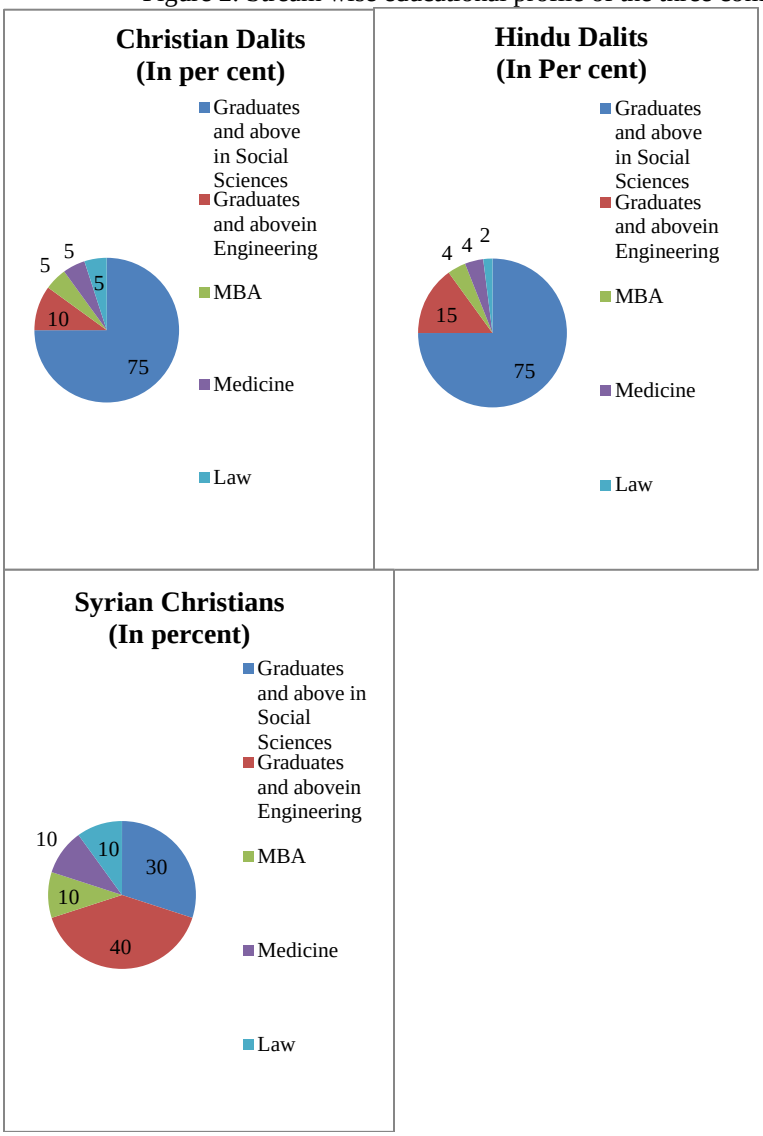
Language alone cannot get one very far if he has not got a desired level of education and professional skills. As globalization today is driven by economic gains for both the parties involved, it becomes imperative to excel in professional education. Figure 1 & 2 will help to understand the educational scenario of people from the three communities.

Figure 1: Education profile of the three communities



Source: *based on primary survey data. (Non SC Christians=Syrian Christians)*

Figure 2: Stream wise educational profile of the three communities

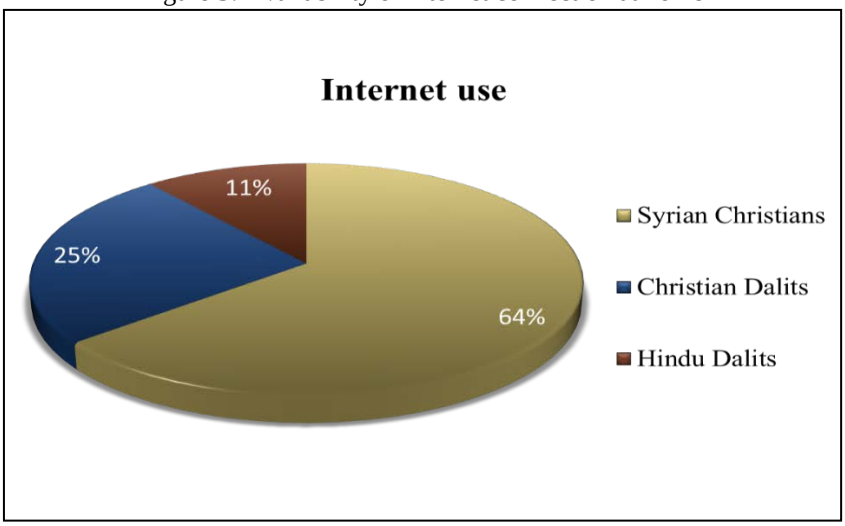


Source: *based on primary survey data*

Figure 1 and 2 points out the glaring disparity between Syrian Christians, Christian Dalits and Hindu Dalits. First of all, many Syrian Christians have got the privilege to attain higher education while in Christian Dalit Community and Hindu Dalit community there are less students in higher education and that that too they are concentrated in social science subjects considered to be having low returns in terms of employment at global level. But Christian Dalits are still doing better in comparison to Hindu Dalits and this has been possible mostly due to Christianity.

Information technology has played a greater role in global connectivity. Now one can sit at home and the same time be globally connected. But for this one must have internet connection. Figure 3 presents the internet availability at home amongst three communities.

Figure 3: Availability of internet connection at home



Source: *based on primary survey data. (Non SC Christians=Syrian Christians)*

Figure 3 makes it clear that Christian Dalits have a limited global connectivity in terms of internet connection. In this era when almost everything is available online, be it online information through e-newspaper, blogs, social networking sites, online courses, online advertisements, online exams, online applications, internet connection becomes inevitable for everyone in a community if it want to register its global presence and reap the gains arising out of it.

It becomes easier for a person to connect globally if somebody from his relatives, family or familiar ones is already living or working abroad. This is a snowball process and facilitates interaction at global level in many ways and has higher returns in terms of attaining economic stability. During survey a question was asked to the informants whether they have somebody amongst his relatives, family or familiar ones who is/was already living or working abroad. Table 2 provides some insights.

Table 2: People living or working abroad from three communities (presently and recent past)

Community/people Already abroad	**Person from family (in per cent)**	**Amongst relatives (in per cent)**	**Friends and familiar Ones (in per cent)**
Syrian Christians	80	80	80
Christian Dalits	30	20	15
Hindu Dalits	10	5	5

Source: *based on primary survey data. (Figures show approximate values)*

Table 2 shows clearly that most of the Syrians have at least one from their family, relatives or friends who is presently or have been abroad in recent past. This global connectivity has brought them better economic standing in the society and it is well known fact of this present age that finance facilities or fails many things in one's life. Their global connectivity has given them a powerful social status and say in the society. On the other hand Christian Dalits are just entering into this arena. Discrimination and destitution of various kinds restricts their movement at global level. Hindu Dalits are way behind from others as their interaction at global level is very limited due to the thin presence of predecessor abroad in their community.

Concluding remarks

Thus, it can be concluded that 'chromatism' practiced by Syrian Christians and others has played havoc in Christian Dalits community. Before embracing Christianity this choromatism pushed them into slavery. As they were branded as 'black devil' and 'brute beast; the biggest blow came in the form of forlorn and fractured interaction at individual level. Absence of interaction at this cardinal level resulted into distortion and destruction in interaction at household and family level and ultimately at global level. Personal narratives, historical literature and survey data, all of them establish the fact that but for Christian missionaries as harbingers of hope, Christian Dalits would have never reclaimed their interpersonal, societal and global space.

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