

IMPACT OF DIFFERENT SECTORS ON SOCIETY AND CITY

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ABSTRACT

The concept of a sustainable city is designed with consideration of various elements of a city. The basic concept of this city is to maintain and preserve the existing socio-economic and environmental elements of the current population so that future generations get to experience the same. In metropolitan cities of India such as Mumbai, Delhi, and Bangalore, waste production and environmental degradation have increased several folds over the last decade, both private

and government organizations now see the need to preserve the environment and prevent further deterioration of all ecosystems. Sustainable Cities and communities are the future we will be living in.

Problems addressed here are the waste generated by various industries and how to tackle this issue in a highly populated city, mass migration being one of the main reasons for increasing population density in cities and its effect both on the economy and environment. It is important to spread awareness about sustainability through quality education so that future generations can be more self-sustained.

Keywords - Sustainable Cities, WasteWater Recycle and Reuse, Mass Migration and Quality Education

I. INTRODUCTION

A sustainable city is also known as a smart city, focusing mainly on minimizing required inputs of energy, water, food, and reducing the waste produced and pollution to achieve urban sustainability. A sustainable city promotes the social and economic growth of the community and meets their basic needs while creating sustainable living conditions. Like most cities, today struggle with the rise of environmental degradation, traffic congestion, lack of basic services such as water supply, sanitation, and waste management, the need for sustainability has increased.

A key factor to achieve various sustainable development goals is to spread awareness about sustainability in various communities of the city. Social Sustainability revolves around the human aspect as a prerequisite for a sustainable city and a sustainable society. Social sustainability means creating a necessary framework in the city for all the groups in a community, especially the groups who struggle to support themselves. Everyone should participate in social development and have equal opportunities, regardless of their background. A sustainable community makes sure that there is a balance between factors such as cultural diversity, power distribution, and equality in a city. The social factor of a sustainable city is very critical and it consists of social spaces where the inhabitants can meet and socialize regardless of their backgrounds and these physical spaces also provide accessibility to everyone in a city.

There is no solid definition of a sustainable city, the concept differs from one city to another, or one person to another, depending on the current state of development of the city and the possibilities of change or reformation of the city, the definition of sustainable city changes. Nowadays urban planners and developers focus on developing a city as an entire urban

ecosystem. The main areas of development that are targeted are physical aspects such as infrastructure and socio-economic equality in the community. The objective of a sustainable city is to provide basic facilities to the community and good quality living to its inhabitants along with a clean environment and smart innovations.

The most important factors in a sustainable city would include clean water supply, electricity supply, sanitation, waste management systems, efficient mobility, and public transport, affordable housing for everyone, and quality education.

SDG- 11 i.e. Sustainable cities and communities can be understood and resolved by studying and understanding the following indicators:-

1. WASTEWATER RECYCLE AND REUSE:

Wastewater generation, recycling, and reuse from different sectors are taken into account to make a city sustainable. In the present study, an attempt is made to identify which sector is responsible for the generation of more wastewater.

One viable method of diminishing water utilization is to reuse wastewater delivered at the household level and from various sectors.

Industrial wastewater is produced through various sectors like chemical, electrochemical, electronic, petrochemical, paper and pulp, food processing, etc, which contain hazardous impurities and gases. Industries should not be established near water bodies, residential areas, and markets.

2. MASS MIGRATION

Mass migration alludes to the migration of huge gatherings of individuals starting with one geological area then onto the next. Mass migration is recognized from an individual or limited scope migration; and furthermore from the seasonal migration, which may happen consistently.

Mass Migration is a major problem in developing countries such as India. Metropolitan cities have become densely populated due to which so many people are facing various issues such as lack of resources, increasing amount of waste, and environmental degradation due to various pollution.

Major reasons for mass migration are as follows:

a. Environmental and climatic problem (Natural Calamities)

Residents are migrating and leaving their homes, because of unexpected or long-haul changes in climate, such as cyclones, earthquakes, floods, or drought. Environment exiles may escape or move to another country, or they may relocate inside their own country. For example, the people from drought-prone regions, due to water scarcity, leave their places and home and migrate to other areas and become refugees there.

b. Employment opportunities

Migration is largely done by the working-class people due to a lack of employment opportunities. For example, as agriculture is the main occupation of India, the decline in agriculture gives rise to the need for employment. Due to this reason, there is an increase in the number of migration from rural to urban areas.

c. Poor development

The basic needs of human beings are food, water, and shelter, but over these needs, there is another important need and that is sanitation. Sanitation is a major problem in rural areas, and it is not provided properly in the many villages of India. In poorly developed areas, water is available in large quantities but it is not used for drinking purposes, because of a lack of treatment facilities. In some areas, there is a lack of quality education, which also leads to an increase in migration towards cities.

3. QUALITY EDUCATION

Quality education targets building up the abilities of kids they need to turn out to be monetarily gainful, create economical occupations, add to serene and majority rule social orders and upgrade singular prosperity. Education must not be limited to developing skills for employment but it should be included in the study for the environment, sustainable development, and social development.

It should be a benchmark for children to take education up to a decided academic benchmark. For example, In Indian villages, the Zilla Parishad schools are only up to 4th Class, so for higher education teens and adults in the village need to migrate to the cities. So, for these purposes, the

government should provide every possible help to spread awareness regarding education and its benefits.

A. N. Angelakis & S. A. Snyder (2015) simplified the study on the treatment of wastewater & how wastewater can be reused for various purposes with the help of different advanced & modified technologies. They concluded in that research work that, by applying some modern & advanced technologies they treat the wastewater & also the process is safe, reliable & cost-efficient, & can be used for the future purpose as well.

G. Kamizoulis & A. Bahri et al., (2003) describes how wastewater can be reused & recycled for the current scenario, for Mediterranean region, they justified that if they reuse & appropriately recycle the wastewater in their region, it will not only protect the environment but also maintain the quality of water.

G. Bertocchi & Chiara Strozzi (2006) reported on mass migration in the 19th century with particular attention on institution quality which attracts them to migrate. They simplified in their research that mass migration occurs due to the poor economy of the country, institution quality & policies. The government has to implement policies & put in efforts at their level, where labor mobility & migration should be stopped.

Lokanath Suar (2013) simplified natural disasters & their various effects or impacts on the growing population which leads to people migrating to safer regions. They found out that most migration is seen due to natural calamities like floods & drought. Forced migration takes place which increases the population density of that region which leads to environmental degradation.

Rehaf A. Madani (2019) describes how education is an essential tool for the social & economic growth of a country. A finding of their paper is, education helps individuals to grow their personality & improve their skills & other qualities day by day. Education should be given to all children irrespective of their background so that they can secure the future.

Arundhathi Thangeda et al. (2016) reported that education is the most important weapon that can be used to change the current status of our county. They justified that students must be made aware of the importance of quality in education as quality education plays a vital role in employment, self-sustainability which will finally turn into Sustainable development.

II. METHODOLOGY

1. SURVEY:

Survey form of Sustainable Cities and Communities is circulated at different Round-Tables during the RISE Summit 2021 to collect socio-demographic data which will include various parameters and research findings.

2. PARAMETERS:

- To identify the age group generating maximum waste
- To study the industries responsible for producing waste
- How the sustainable cities are helping tackle the climate crisis

1. QUESTIONNAIRE

1. In your view which economic section do you belong to?

- a. Low b. Middle c. High

2. In your opinion which age group is generating the maximum quantity of waste?

- a. Teens b. Adults c. Elderly

3. Which industries are playing a major role in the production of waste in a smart city?

- a. Industrial Sector b. Entertainment Industry c. Construction Industry
d. Residential Sector e. Municipal Services f. Manufacturing Sector
g. Healthcare/Medical Industry

4. Do you think sustainable smart cities are helping communities tackle the changing climate/natural disaster?

[Your Answer]

The survey conducted during RISE Summit 2021 produced collective data of 57 people who attended different round-tables of the summit. Based on this questionnaire, responses are received and produced from the data used in this paper. Illustrations of this data are included in the research findings.

III. RESEARCH FINDINGS

This section analyses the data collected and presents it according to the outlined objectives which are wastewater recycle and reuse, mass migration, and quality education. The analysis was done through an online survey, by circulating a Google form. A total of 57 respondents of various age groups have given responses on the SDGs questionnaire which were circulated. Based on these research findings the following tables, graphs, and bar charts are plotted.

1. WASTEWATER RECYCLE AND REUSE:

The following tables show the wastewater produced by sectors:

Table 1: Wastewater Produced by Industrial sector :

Age	Industrial Sector
Below 18	2
18- 30	5
31- 45	2
46- 60	1
Above 60	1
Total	11
%	19.30

Table 2: Wastewater Produced by Residential sector :

Age	Residential Sector
Below 18	0
18- 30	3
31- 45	5
46- 60	1
Above 60	0
Total	9
%	15.79

Table 3: Wastewater Produced by Construction Industry sector :

Age	Construction Industry
Below 18	0
18- 30	3
31- 45	2
46- 60	2
Above 60	0
Total	7
%	12.28

Table 4: Wastewater Produced by Health Care/ Medical :

Age	Health Care/ Medical
Below 18	0
18- 30	1
31- 45	2
46- 60	1
Above 60	0
Total	4
%	7.02

Table 5: Wastewater Produced by Manufacturing Sector :

Age	Manufacturing Sector
Below 18	0
18- 30	2
31- 45	1
46- 60	1
Above 60	1
Total	5
%	8.77

Table 6: Wastewater Produced by Multiple Sectors:

Age	Multiple
Below 18	0
18- 30	1
31- 45	1
46- 60	1
Above 60	1
Total	4
%	7.02

Table 7: Wastewater Produced by Entertainment Industry :

Age	Entertainment Industry
Below 18	0
18- 30	0
31- 45	1
46- 60	0
Above 60	0
Total	1
%	1.75

Table 8: Wastewater Produced by Municipal Services :

Age	Municipal Services
Below 18	0
18- 30	0
31- 45	1
46- 60	2
Above 60	1
Total	4
%	7.02

The above tables represent the percentage of the wastewater produced by the various sectors. The highest percentage of wastewater produced from the **Industrial sector is 19.29%**, the **Residential sector** is generating **15.78%** of wastewater, and the **construction industry** generates **12.80%** of wastewater, other sectors include the health care or medical industry, the manufacturing sector, the entertainment industry, and municipal services are also responsible for the production of wastewater as mentioned in the above table. Therefore, wastewater recycling and reusing become important parameters of a sustainable city.

The age group **below-18**, the maximum percentage of people i.e. **100%** thinks that the **industrial sector** produces the maximum amount of wastewater. In the age group between **18-30**, the maximum percentage of people i.e. **33.33%** thinks that the industrial **sector** produces the maximum amount of wastewater. In the age group between **31-45**, the maximum percentage of people i.e. **33.33%** thinks that the residential **sector** produces the maximum amount of wastewater. In the age group between **46-60**, the maximum percentage of people i.e. **25%** thinks that the **industrial sector, manufacturing sector, multiple sectors, municipal services** produce the maximum amount of wastewater.

2. QUALITY EDUCATION

Table 4: Social Strata according to age group

Age	Lower	Middle	Higher
Below 18	0	2	1
18- 30	2	15	1
31- 45	2	16	1
46- 60	1	9	3
Above 60	0	4	0
Total	5	46	6
%	8.77	80.70	10.53

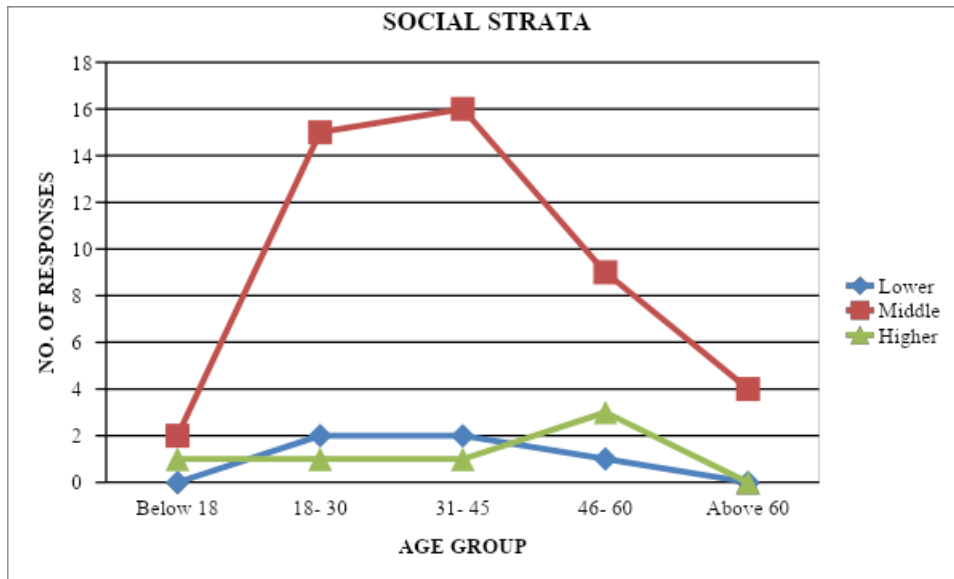


Fig. 4 Social Strata according to age group

This graph shows the economic statuses of the people in three different sections i.e., lower class, middle class, and higher class.

Table 5: Education status according to age group

Age	High school	Graduate	Undergraduate	Post Graduate	PhD	M. Phil
Below 18	1	0	0	0	0	0
18- 30	0	5	9	4	0	0
31- 45	0	1	0	15	2	1
46- 60	0	0	1	4	6	2
Above 60	0	0	0	3	1	0
Total	1	6	10	26	9	3
%	1.754	10.526	17.544	45.614	15.789	5.263

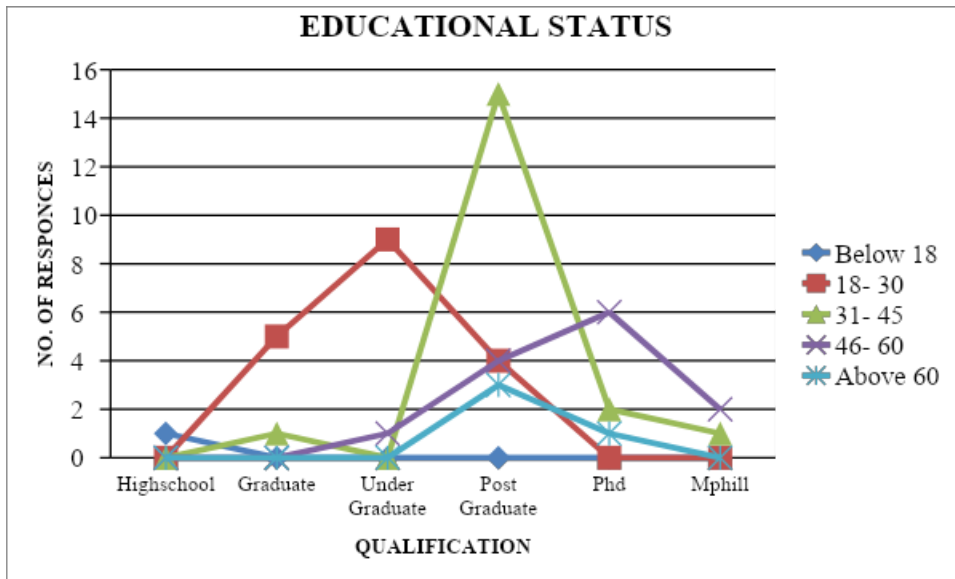


Fig. 5 Education status

The above table represents the highest level of educational qualification of the respondents. The maximum number of people who attended the summit were post-graduates, about 45%. Around 17% of people were under-graduates followed by PhDs about 15.78% and graduates were 10.52%. The remaining were high-school and M. Phil and the percentages are 1.75% and 5.26%.

3. Do you think sustainable smart cities are helping communities to tackle the changing climate/natural disaster?

The responses were received such as follows:

Response 1- Yes, wherever the smart city program is implemented.

Response 2- Definition of sustainability is always debatable. Extremely eco-friendly smart cities will definitely be elitist. And most of the smart cities actually increase such class differences. So, it's time to revisit the smart city plans to balance social, economic and class disparities.

Response 3- I do not think smart is in papers only.

Response 4- I think the concept of sustainable smart cities have a lot of potential and it can help communities to tackle climate/natural disaster.

IV. DISCUSSION, RECOMMENDATIONS AND CONCLUSION

1. Wastewater which comes from various sectors such as (Industrial Sector, Residential Sector, Construction Industry, Health Care/ Medical, Manufacturing Sector, Multiple, Entertainment Industry, Municipal Services) can be recycled and reused for gardening, agriculture activities, irrigation, and for public use, road washing and firefighting.
2. Quality education should be included in the basic needs of a self-sustained society in order to achieve sustainable communities and cities.
3. Affordable housing for the masses with minimum resources and livelihood can be achieved by using Green construction technologies for building materials and ecological aspects, and by using less land to fit a large number of population through urbanisation.

The present study is conducted for sustainable development goals, to maintain accuracy which will apply for analysis of SDGs parameters by conducting an online survey. The study is conducted on an important parameter (wastewater reuse and recycling, & Quality education) of SDGs which governs human life.

The following conclusions are drawn from the study:

1. The present study concludes that from the online survey of Wastewater Producing Sectors, the maximum quantity of wastewater produced by the industrial sector is 19.30%, and minimum quantity of wastewater produced by the Entertainment Industry is 1.75 % as shown in table no.1.
2. According to table no., 5 maximum number of people who attended the summit were post-graduates, about 45.614%.
3. From the literature survey, it is observed that industries should not be located near natural aquifers because they can pollute groundwater tables.
4. By creating sustainable communities, mass migration can be stopped, and thus sustainable cities can be established.
5. By providing quality education, awareness can be spread about a sustainable environment.

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