

DELHI TECHNOLOGICAL UNIVERSITY



ECONOMICS PROJECT

HU-202

ROLE OF SCIENCE AND TECHNOLOGY IN IMPROVING THE CONDITIONS OF SLUMS

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Acknowledgement

We would like to thank our teachers Ms. Seema Singh and Ms. Itishree and the Department of Humanities of DTU for providing us this wonderful opportunity and guiding us through the project on the topic 'Role of science and Technology in improving the conditions of slums'. This encouraged us to dwell upon the adverse conditions of people in slums and our possible role in their upliftment as engineers. This project helped us learn about our social responsibilities. Moreover, we worked as an efficient team and learnt interpersonal skills as well.

Introduction

How do we identify slums?

A group of individuals living under the same roof in an urban area can be identified as a slum household if they live in the one or more of the following conditions:

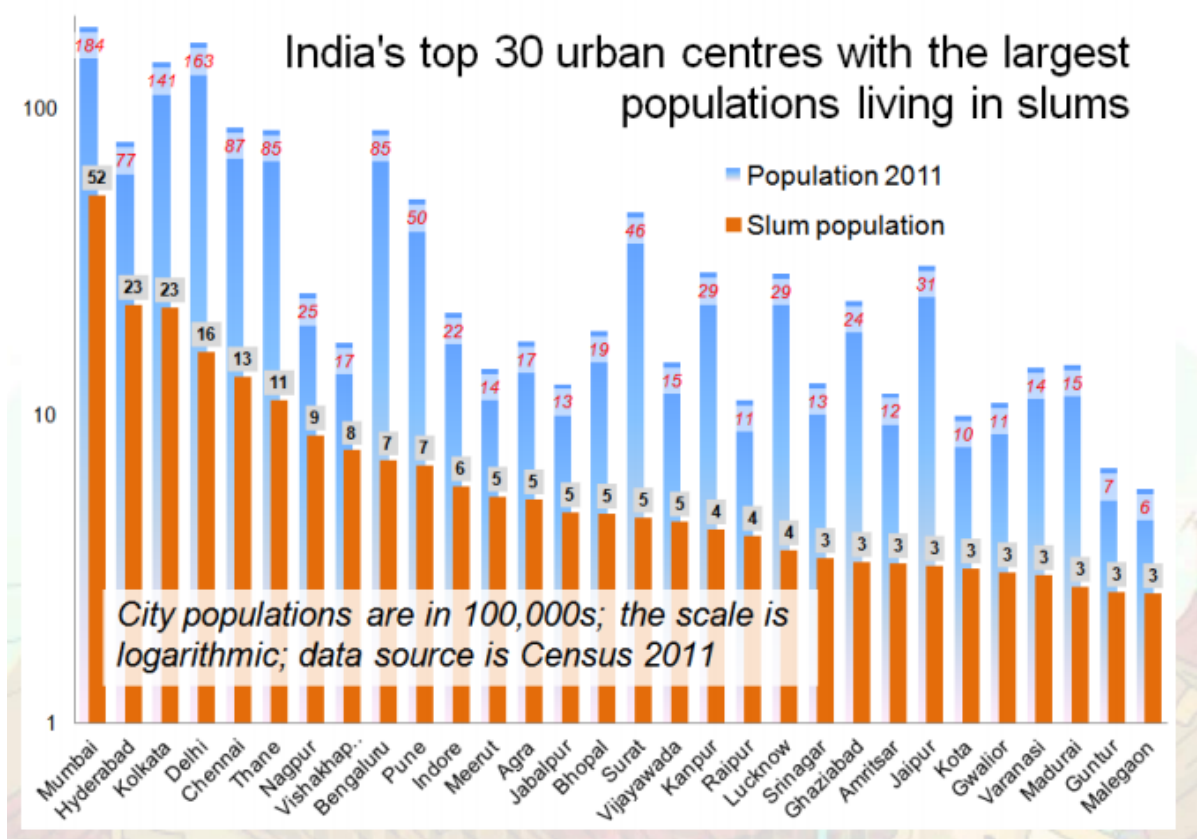
1. Absence of pakka housing- there is no protection against extreme climatic conditions.
2. People living in large numbers within a limited space
3. Lack of access to safe water at affordable prices.
4. Lack of access to adequate sanitation in the form of a private or public toilet
5. Security of tenure that prevents forced evictions.

Why do slums get formed?

Reasons such as over population and poor governance lead to formation of slums. India is urbanising rapidly as more people migrate from rural areas to the cities and natural population growth continues to occur. Urban migration happens because of low income from agriculture which is the main activity in rural area. Thus, people find better job prospects in cities as they offer more in job opportunities and housing. Urban migration become the survival strategy for rural household. Moreover, governments often fail to recognize the rights of the urban poor and incorporate them into urban planning. People are migrating to cities way faster than the planning process can incorporate them. They find their own land and build a shack before the government has a chance to make a note of their them living there. Moreover, they believe that if they provide urban services to the poor, it will attract urbanisation and cause the slums to grow. Simply put, governments deal with a passive approach to urbanization – government does not have the planning tools to deal with the rapid urbanisation that is happening, or the tools in place are not sufficiently responsive to the reality on the ground.

Statistics related to slums

India



Delhi

TABLE 3.4: DISTRIBUTION OF SLUMS BY LAND STATUS

Sl. No.	Zone	Government land	Private Organization	Private individual	Total
1	Central	60		1	61
2	East	87			87
3	North	68			68
4	South	128			128
5	West	132	1		133
	All	475	1	1	477

Source: CGDR research

TABLE 4.2: DISTRIBUTION OF SLUM HOUSEHOLDS BY THEIR STATE OF ORIGIN

Rank	State	Distribution across States						Distribution across Region					
		Central	East	North	South	West	All	Central	East	North	South	West	All
1	Uttar Pradesh	76.5	66.5	72.8	62.6	47.8	61.5	1.7	20.6	21.6	35.6	20.5	100
2	Bihar	15.9	19.3	19.2	25.6	27.6	23.7	0.9	15.6	14.8	37.9	30.8	100
3	Rajasthan	3.8	3.7	2.4	4.0	11.9	5.7	0.9	12.4	7.7	24.2	54.8	100
4	Madhya Pradesh	0.0	6.8	2.9	2.1	7.6	4.6	0.0	28.3	11.6	16.3	43.8	100
5	Haryana	0.8	0.7	0.8	1.9	1.1	1.3	0.8	10.4	11.9	53.2	23.7	100
6	Chhattisgarh	0.0	0.5	0.2	0.6	1.4	0.7	0.0	13.0	6.1	27.8	53.1	100
7	West Bengal	0.8	0.4	0.5	1.0	0.7	0.7	1.6	10.2	11.6	49.7	26.9	100
8	Jharkhand	0.8	0.5	0.5	0.6	0.1	0.4	2.7	24.0	20.2	46.2	6.9	100
9	Nepal	0.0	0.3	0.1	0.3	0.6	0.3	0.0	16.2	3.3	29.7	50.8	100
10	Punjab	0.0	0.2	0.2	0.2	0.5	0.3	0.0	15.6	12.5	25.5	46.4	100
11	Uttarakhand	0.0	0.2	0.1	0.3	0.2	0.2	0.0	21.0	5.0	48.6	25.4	100
12	Orissa	0.0	0.1	0.0	0.3	0.1	0.2	0.0	15.5	0.0	70.1	14.5	100
13	Maharashtra	0.0	0.2	0.2	0.1	0.0	0.1	0.0	31.0	38.0	31.0	0.0	100
14	Gujarat	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	22.4	54.3	23.3	100
15	Pakistan	1.4	0.0	0.0	0.2	0.0	0.1	24.6	0.0	0.0	75.4	0.0	100
16	Andhra Pradesh	0.0	0.2	0.1	0.1	0.0	0.1	0.0	42.6	13.9	30.3	13.1	100
17	Himachal Pradesh	0.0	0.1	0.0	0.0	0.1	0.1	0.0	41.1	0.0	24.4	34.5	100
18	J&K	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	22.7	20.2	57.1	100
	Other	0.0	0.3	0.0	0.1	0.1	0.1	0.0	44.3	0.0	24.4	31.3	100
	All	100	100	100	100	100	100	1.4	19.1	18.2	35.0	26.4	100

Source: CGDR research

Data of one of the facilities provided to them

TABLE 3.8: DISTRIBUTION OF SLUMS WITH TOILET FACILITY INSIDE THE SLUM BY PROVIDER OF THE FACILITY

Sl. No.	Zone	Percentage of Slums with Toilet	Agency wise coverage of slums for provisioning of toilets (Per cent)			Agency wise penetration of provisioning in provided slums (percent of slums with facility)		
			Government	Sulabh International	Others	Government	Sulabh International	Others
1	Central	83.61	59.02	44.26	8.20	70.59	52.94	9.80
2	East	59.77	11.49	51.72	1.15	19.23	86.54	1.92
3	North	58.82	29.41	35.29	2.94	50.00	60.00	5.00
4	South	82.81	39.84	60.16	2.34	48.11	72.64	2.83
5	West	78.95	21.80	61.65	2.26	27.62	78.10	2.86
	All	74.21	30.61	53.46	2.94	41.24	72.03	3.95

Source: CGDR research

Samaypur Slums



“On the periphery of Delhi, the hub of development, yet miles away from it.”

Visit to Samaypur slums



Our team planned to visit the samaypur badli slums and get photographs clicked just for the purpose of completing the economics project. However, this visit turned out to be a way more eye-opening experience and instilled in us the zeal to work for the upliftment of slum people. In the first few minutes of reaching the decided area, we encountered a small boy, hardly 11 years of age, shabbily dressed with a bowl in hand, trying to collect the maximum possible pity from everyone around in the form of one or two rupees. On being asked about his background, he told that he lived with his siblings in that

very slum area. It was disheartening to know that he was trying to earn the little amount that he did, without any elderly guidance, barefoot in that scorching heat and he did not have anything to eat from the morning. Instead of giving him money, which may even end up with someone else, we provided him some fruits to have. Those glittery eyes when he shouted, “Vo khana hai, seb, seb!” gave us immense joy and satisfaction. While dealing with the vendor for his apples, the boy hastily grabbed one or two grapes to eat. We tried to capture this moment but in vain as the boy seemed to be too quick with his actions. This made us realise that if the conditions were worse, the people here might even resort to stealing for a living. The boy with the apples in his hands ran away carefree for the world. Little does he care about the world and little do we know about his dreams confined to that small bowl.



Next, we decided to head to a paan shop and met Mr. Naarad Prasad, the owner of the shop. He is originally from Bihar and has been living in Delhi for the past 35 years. Quite opposite to what we expected, he presented a life view of contentment and optimism even in

that little shabby establishment. Rather than complain and weep about the scarcity of resources and healthy living conditions, he gleefully stated, “Vaha to koi kami nahi hai.” He informed us that they received 24 hours of supply of both water and electricity. When asked about the provision of toilets and sanitation, he pointed towards the five public toilets constructed in the “Jhuggi-Basti” and was quite satisfied. However, we could not stand the scattered garbage all around and were constantly irritated by the flies attracted to it. We asked him about any political leaders who might have visited them and any political reform that might have been implemented to which he insisted that all of them only make false promises. He named a political representative Mr. Udit Raj, whose posters they are all habitual of seeing during election season but have never seen in real life even after more than four years of his tenure. However, to no more surprise, his response to this ill-governance was just, “vayede to sab karte hain, nibhaata kaun hai”. The only issue that he complained about was the constant fear of MCD that they had to live under, “Rediyaan utha ke le jaate hain”. He stated that they were not the ones blocking the road and the auto-rickshaw pullers were the ones actually responsible. They earned their honest





livings and wish to continue to do the same, fearlessly. If the injustice by MCD would not stop, they might have to resort to stealing and other illegal activities to earn their bread and butter. We also asked him about his family- he has three children- the elder most boy in ITI, the daughter in class 12 and his little son who goes to a private school. His wife stayed at home and took care of the house and the children. The entire samaypur slum consists only of kutcha houses. Enquiring about the common occupation of people living in the basti, he listed jobs such as putting up a paan or fruit stall, a butcher shop on a small scale and as factory labour. On one hand, we were joyful to learn how Mr. Naarad knew the importance of education and did not let his children work at a tender age but on the other hand, he himself was disappointed as not all of his fellow mates followed the same ideology. There are many who cannot even afford primary schooling for their kids or still do not understand the need of basic education in one's life due to mere lack of awareness and lagging lifestyle. Such people make the women and children at their homes work in poor and harmful conditions just to earn a handful amount. As a whole, Mr. Naarad is a happy family man, full of grit, passion and contentment. He experiences utmost happiness in what he has and does not seek for more in his life. Mr. Naarad was also accompanied by a middle-aged man, who refused to disclose his name after the little talk he had with us. As we were heading back to our place after this

hopeful conversation with Mr. Naarad, this man asked us to stop and was eager to share some hitherto unknown scenarios prevalent in Samaypur slums. He told us that the reason as to why majority of the people do not send their kids to schools is that they spend their entire earnings in liquor and smoking. He whispered to one of us, “yaha bohot avaidh daaru ke theke hain.” Hard-working men like his friend Naarad lived under a constant fear of MCD but these illegal dealers would earn gold just because of the unreasonable habits of men. He even told us some of the men hit their wives at home under the influence of alcohol. What is more heart wrenching is the fact that even small children are into these things and are ruining their lives as no one would ever stop them. Sadly, one of our teammates witnessed this and saw a group of five to six year olds with bottles of liquor in their hands. He was quite saddened by all this and reflected a pessimistic approach. Unlike Mr. Naarad Prasad, this man feels a lot of things can be improved and looked upon in their area but is totally hopeless about the possibility for the same.



PROBLEMS

1. IMPROPER TOILETS

Lack of proper toilets cause the people to defecate in open areas in the waste, giving rise to unhealthy living conditions. The women suffer from lack of dignity and privacy. This also gives rise to many diseases such as diarrhoea, cholera, etc. which claims many lives every year.

2. POOR SEWERAGE

Slums do not have proper sewer systems. The drains are open and dirty water stagnates in them, causing foul smell and a place for mosquitos to breed. This further causes a number of diseases like dengue, malaria, swine flu, chikungunya, etc.

3. LACK OF FRESH WATER

Slums do not have water pipelines reaching every house as in the urban areas. Many households share a common water tap. Hence, it generally becomes the responsibility of women to go far away to fill water and carry it long distances. This water may be safe for household works but generally is not safe for drinking. Thus, the slum dwellers are prone to water borne diseases.

4. LACK OF ELECTRICITY

Slums do not have proper arrangement for electricity.

Since they do not have permanent houses and live illegally in the area, they do not have registered electricity meters. To fulfil their need for electricity, they generally resort to power theft.

5. EDUCATION

Although the literacy rates are rising among the slum dwellers, there are still many children who are deprived of basic education.

6. POOR STRUCTURE OF HOUSES

The houses in slums are mostly made up of plastic sheets, mud, wood and garbage material. Poor housing leads to diseases and the effect of disasters like floods and earthquakes is amplified.

Role of Mathematics & Computing in **Improving Life in Slums**

The main objective of engineers from Mathematics and Computing branch is the analysis of a given data. We can predict possible solutions for the prevalent issues using our intellect and skills in this analysis. The lack of up to date data is a major obstacle to understand the scale of rapidly growing urban slums. Routinely collected data on urban poverty may be obtained through national census and can be used to study the concentration of population and their financial conditions. Statistics can be used to examine the trend of urban poverty and give policy relevant insights. We can collect data, analyze it and then use this analysis to plan our approach towards helping people in slums. Steps for doing the same are as follows:

1. **Data Collection**: We will assign specific slums to different teams and collect data from each slum. Data will consist of family sizes, family income, sources of largest income in family, seasonal nature of the income, monthly expenditure and savings.
2. **Data Analysis**: Based on the collected data we will find average income per person in a family. We can look for expenditures which can be cut back. Most importantly, we can come up with suitable skills which are not seasonal and easy to learn. Hence, provide a constant income to the families and uplift their status.
3. **Business Planning and Development**: Using the supply and demand of these skills, we can develop small business plans that will become self-sustaining in the long run.
4. **Financing**: A large initial investment is required to kick start the project. We can find and convince organizations that are willing to invest in such a business venture.

After the business model is implemented and raw material and initial capital is in place, we can employ all the willing people in the business. Profits earned will be partially divided between the sponsor organization, the people of the slum and for reinvestment purposes. Once, the sponsor is paid off, the control of the business will be transferred to the people in the slum.

The end result would be a group of people running a successful business who formerly survived in the worst conditions imaginable and had negligible sources of income,.

One such initiative was by an Enactus team from University of Melbourne called “Street Stories” project. Street Stories aimed to break the cycle of homelessness and create public awareness for the varied causes of homelessness to enable change.

Street Stories

A recent survey suggested that there are more than 4,000 people in Melbourne who are physically homeless. And as if life on the streets wasn't tough enough, community misconceptions about homeless people often create obstacles to help. Specifically, many believe the problem is simply a matter of shelter. The greater reality is most homeless individuals are not just lacking a permanent address but a host of social and economic resources as well. Beyond housing, Melbourne needed to correct misunderstandings and de-stigmatize these individuals to truly make a difference for these vulnerable members of their city.



Seeing Opportunity

The Enactus team at the University of Melbourne aimed to enable homelessness individuals by providing them with an opportunity to generate income and engage with the broader community. The way they sought to accomplish this was through an enterprise where homeless individuals conduct walking tours of Melbourne. The tours would offer customers a chance to discover unseen

aspects of the city as well as a unique insight into the daily experience of a homeless person in that area.

Taking Action

The team worked with the Council to Homeless Persons to identify individuals willing to conduct tours. The project was piloted at the Melbourne Fringe Festival, one of the largest liberal arts festivals in the city. The group ran 10 tours with three tour guides. The project was the first ever event in the festival's history to sell out before the festival even began. In one activity, the community gained insights into the larger issues surrounding homelessness and the guides gained the resources they needed to leave their lives of unrest on the streets.

Enabling Progress

The "Street Stories" project has not only increased awareness about homelessness among more than 100 people who have participated in the tours, it has also helped three formerly homeless individuals gain valuable skills as well as needed income. For these men, the cycle of homelessness has been broken. Thanks to the effort, they have each gained the skills and confidence to integrate back into their local society, obtain full-time employment and have permanent addresses.

CONCLUSION

Slums are not 'problems' that have to be 'solved' - but are indeed results of lopsided and vested urban policies covering land ownership, infrastructure provision and maintenance, and other socio-economic issues. The need of the hour is to find light in the darkest of the dark scenario and infuse life in the lives that are still waiting for the silver lining. The despair of the underprivileged has to be replaced with hope, their fear with security, and their ignorance with knowledge. Give them the opportunity to secure good health, immunity from curable diseases, employment opportunities, sufficient and nutritious food, clean water and a clean environment, capability to protect their children against exploitation and discrimination. Their children should have the right to get adequate education for becoming responsible citizens of India. Corruption and political manipulation are still a problem in the slums, but a glimpse of hope can be found in technological solutions provided in this report. It is a hope that future generations, especially the young people of the slums, will live to tell about the difference made by technology and the extra power it gave them to improve their living conditions in more effective ways than their parents could.

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