

ISSN NO.-0975-7287

Population and Environment Bulletin

Volume 10

No. -1

2013



IPRT

(स्थापना/ Established in 1956)
बेहतर भविष्य के लिए क्षमता निर्माण
Capacity Building for a Better Future



Environmental Information System
Collect, Collate, Disseminate
INDIA

ISSN NO.-0975-7287

Volume 10 No. 1 2013

ENVIS TEAM

Faujdar Ram	(Director IIPS)
Aparajita Chattopadhyay	(ENVIS Co-ordinator)
Dhananjay W. Bansod	(ENVIS Co-ordinator)
Chandrakala Ramnayan	(Research Officer)
Archana Basu	(Research Assitant)

PUBLISHED BY

**Environmental Information System (ENVIS)
International Institute for Population Sciences**



(Deemed University)
Deonar, Mumbai
Maharashtra-400 088



SPONSORED BY



**Ministry of Environment and Forests
Government of India
New Delhi**

From Editor's Desk....

Greetings!

The Pop-Envis of International Institute for Population Sciences has taken a new initiative to interact and disseminate knowledge on environmental hygiene and health related issues to the slum dwellers of Mumbai. This is our basic step of building up of a better civil society. Slums in Mumbai cover almost half of its population. A constant communication with Envis team and IIPS student volunteers with the slum dwellers can help enriching our experience, awareness and may facilitate in reaching the community.

This issue also includes our interaction with a well known scientist Dr. Naik who is working endlessly for a better environment. I sincerely thank him for sparing his valuable time for us.

I express my appreciation to all my supporting staffs and Prof. R. B Bhagat for their keen interest in this project.

Your comments and suggestions are appreciated.

Editor,

(Dr. Aparajita Chattopadhyay)

Pop – Envis newsletter

(Population, Human Settlement & Environment)

popenvis@iips.net

Designed By: Chandrakala Ramnayan

30-11-2013

CONTENT

- I. Progress of Pop-Envis.** **04**
Population, Human Settlement and Environment (Pop- Envis) project of IIPS.
- II. Slum Situation in Eastern Mumbai: A Case Study** **05 - 12**
Mumbai is well known for its skyscrapers and squatters. Large number of people lives in slums where living environment is very poor. The poor environmental conditions in the slums make their health vulnerable.
- III. Conferences.** **13 – 14**
- IV. Interaction with a social change maker.** **15 - 17**
- V. Data and Graph.** **18 - 20**
- a. Rural: Availability and Type of Latrine Facility: 2001-2011
 - b. Urban: Availability and Type of Latrine Facility: 2001-2011
 - c. Graph



PROGRESS OF POP-ENVIS, 2013-2014

Population, Human Settlement and Environment (Pop- Envis) project of IIPS started in 2004, redesigned its objectives and website in 2013 with some innovative contents. The centre have also recruited research staffs in the month of May-June, 2013. The objectives of the centre are compilation of data and information related to population and environment, publication of newsletter and research activities, developing new website with regional language interface, dissemination of knowledge to government, academia, business and Non Governmental Organizations.

The Annual Action plan of Pop- Envis is as follows:

1. Compilation of research article, abstract of published paper, environment related news, short notes, photos, essays, book reviews related to environment and population, a note on your research area (if linked with environment), title of published paper and other associated details for publishing in the newsletter. Three – four newsletters will be published in a year.
2. Reformatting of the web page with a new look and adding more information related to population and environment. Also creating web site with regional language.
3. Usual updating of the web site with relevant data, environment related news, short notes, photos, book reviews related to environment and population, conference links, activities of IIPS – ENVIS centre, letters etc.
4. To create an option in the web page where IIPS ENVIS can write answers to the queries in the web page.
5. To create community level awareness by disseminating information related to Population and Environment to local schools and colleges. We can take up help of IIPS students in doing so and they can be paid a small token of honorarium for delivering such actions.
6. Doing workshop for capacity building for students and teachers where experts can be invited to deliver lectures.

During the past six months the project has achieved the following:

1. Publication of newsletter Vol-9 (1&2) 2012, Vol-10 (1) 2013 and policy briefs (1 and 2), 2013. The documents are uploaded in <http://iipsenvis.nic.in>.
2. Developing the new web page which included uploading of current data, conversion of old data and graphs.
3. Works that are being done on day to day basis and uploaded in the web page are: compilation of research article, environment related news, short notes, photos related to activities of Pop- Envis, essays, book reviews related to environment and population, creating website in Hindi, usual updating of the web site with relevant data, conference links, developing kids section with information and videos etc.
4. Doing workshop for capacity building for students and teachers is our near future plan. We are expected to do a workshop in January/February, 2014.
5. We interacted with a renowned scientist of Bhaba Atomic Research Centre (BARC) Dr. D. B Naik who is working for environmental sustainability. Full report is available in the web page. (<http://iipsenvis.nic.in>).
6. The Envis team of IIPS did a small qualitative assessment in September, 2013 on slums of Deonar area of Mumbai.

Slum Situation in Eastern Mumbai: A Case Study

Aparajita Chattopadhyay, Kaveri Patil, Rajan K Gupta, *

Photography: Kaushik Datta

IIPS, Mumbai

Census 2011 defines slum as:

- (i) *All notified areas in a town or city notified as 'Slum' by State, Union territories Administration or Local Government under any Act including a 'Slum Act' may be considered as Notified slums.*
- (ii) *All areas recognised as 'Slum' by State, Union territories Administration or Local Government, Housing and Slum Boards, which may have not been formally notified as slum under any act may be considered as Recognized slums.*
- (iii) *A compact area of at least 300 populations or about 60-70 households of poorly built congested tenements, in unhygienic environment usually with inadequate infrastructure and lacking in proper sanitary and drinking water facilities. Such areas should be identified personally by the Charge Officer and also inspected by an officer nominated by Directorate of Census Operations. This fact must be duly recorded in the charge register. Such areas may be considered as Identified slums.*

Mumbai is well known for its skyscrapers and squatters. Large number of people lives in slums where living environment is very poor. The poor environmental conditions in the slums make their health vulnerable. Four slum clusters of Mumbai often hit headlines news. Govandi-Mankhurd of eastern suburb is one among these four, where sixteen children died of severe malnutrition within a span of nine months (Times of India 6th July 2011). Mumbai poses unique challenges in handling urban poor who have little knowledge and access to sound healthcare practices. In October 2012, the Maharashtra government revealed that Shivaji Nagar of eastern suburb had as many as nine percent cases of severe malnutrition (Deccan Herald, Dec 18, 2012). The Human Development Report of Greater Mumbai, 2009 showed that the M-West Ward of Mumbai, where the slum of eastern suburb is located, had the highest rate of infant mortality (66.47 per 1,000 live births). It is double the rate of Maharashtra.



GIRLS PLAYING IN THE COURTYARD

*We would like to acknowledge the support of Mrs Archana Basu and Ms. Chandrakala R who accompanied us during the slum visit.

We all know about the negative side of slums. Yet, people breathing there also make out their living, they try to educate themselves within the given constraints, they also have dreams that they cherish. Let us describe the experience of our group who visited slums of Govandi area in Eastern Mumbai Suburb. We visited on 20-21st September, 2013. We entered into the western side of Govandi slum and chose three different directions. In total, we interacted with 20 families, spoke to boys and girls returning from schools or playing, discussed issues related to water and sanitation, economic constraints, health, education and aspirations, inquired about their household energy use pattern, chatted with youths watching televisions to understand their thoughts, observed quarrels inside households, watched ladies cleaning utensils and cloths and listened to their dreams.



A BOY WATCHING US

Livelihood and living condition:

Most of the slum dwellers are engaged in the informal sector, thus the incomes are highly insecure. Serious illnesses and health-related expenses often lead to financial strains on households. Their average monthly household income is Rs.5000-10000/-. Slums of Govandi area in Mumbai consist mainly of migrants who have moved to cities in search of livelihoods. Percentage share of household monthly expenditure on electric bill and fuel varies from a highest of 27% to a lowest of 6% of their total monthly income of household.

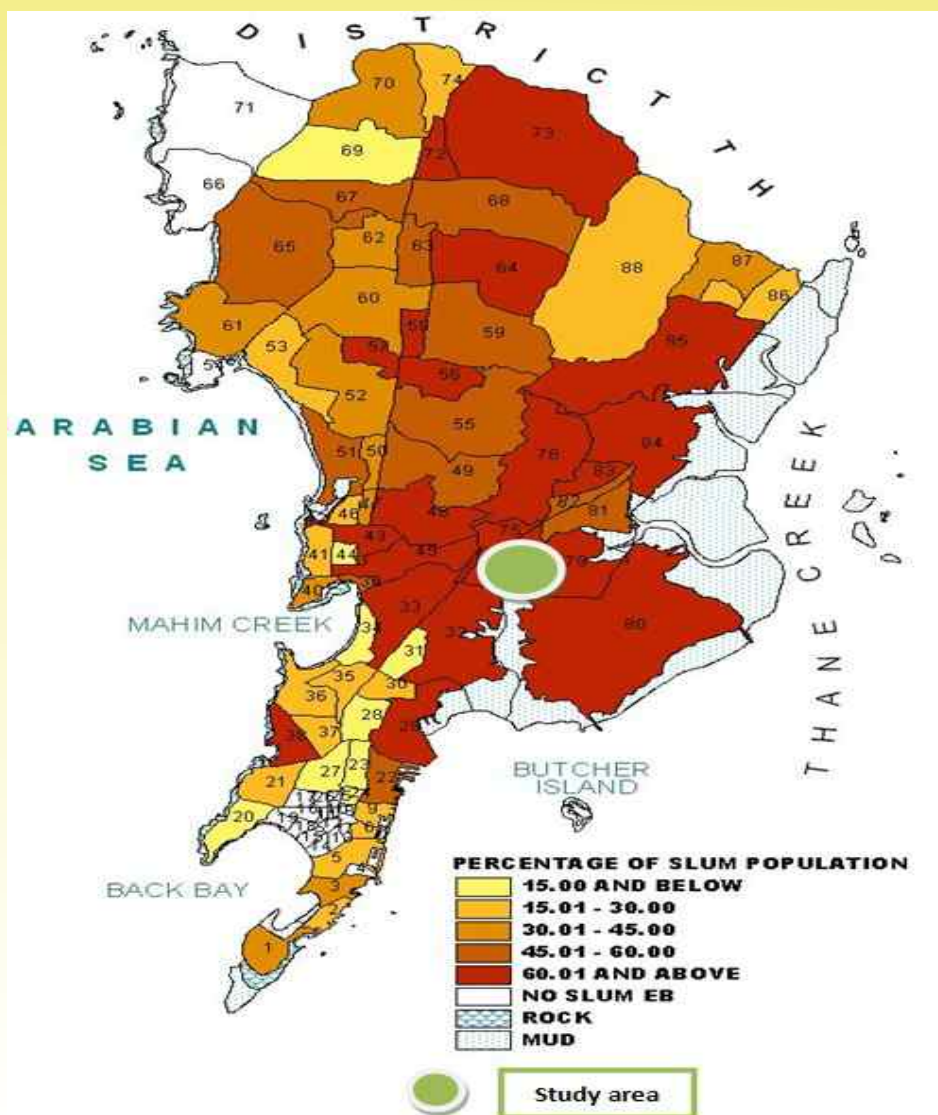
Household member ranges from 3- 10 per household. Television and fan are common appliances of all households. Some households also have refrigerator and washing machine. Usually one working member has five- six dependents. *'My husband is 30 years old, had completed his 8th standard and is a tailor master. I am 30 year; my education is only up to fifth class. He earns Rs.10,000 monthly. I am lucky because I have own house. But expenses are increasing. Currently we have to deposit monthly fees for education, cost of food items are day by day increasing, we are paying for the toilet, water, electricity every month; LPG gas is very costly.....I would like to do job, but I am not getting any'*. When we asked whether in the last one month she faces the condition that due to shortage of money she could not eat or child could not eat? She replied *"na na Alla ke dua se abhi tak aisa nahi hai"*.

In another family, father often drinks out of frustration. Out of five family members, no one is educated. Age of the respondent (father) is 55 years. He was an employee of the Deonar slaughterhouse. But during last 3 years he is not working because his hand got damaged in machine accidently while doing the job. He has spent more

than Rs.11,000/- but still have problems in his hand. He has three children; they all not earning. Even if sometimes they earn meager money, they spend in drinking and playing cards. He said '*every day, in the morning I go to the market to bring vegetables and my wife sells that. I am very worried for my children; they all are doing nothing; only quarreling to each other. I and my wife are very much sad, what we can do, if we are unwell?*

We visited another family of four members where the monthly income Rs.10,000/-. They said that they have BPL card and aadhar card but are not getting ration. Occasionally *chori*, rape, quarrel goes on in this area. At night community toilet is unsafe, as there is no light. The area is not safe for child development, so '*our two kids are living in the hostel. We do not have that much money to stay elsewhere in Mumbai*'. People of this area get water from BMC. One tap is available for 4-5 families, one time water is supplied. Normal timing is 6 to 9 am, in some other localities it is 10 am to 12 am. Common sanitation runs by BMC as well as agency like *sulabh souchalaya* exist. Each *Sulabh* is serving near about 50 to 60 families. So, '*you can imagine what happens in the morning hours. Children & ladies are facing tremendous health problem due to lack of sanitation facility. Cleanliness of this area is also a challenging part. BMC imposes charge for cleaning some part of this slum area. They are least bothered to clean the drains. Dirty open drains causes difficulties to sustain a healthy environment*'.

GREATER MUMBAI MUNICIPAL CORPORATION PERCENTAGE OF SLUM POPULATION TO TOTAL POPULATION 2001 (SECTIONS)



A seven member family with three male members earns Rs.25000/- monthly. Respondent is a sofa set maker, and other two are working as daily wage helper. The household head is satisfied with family. His education is tenth class pass. He also mentioned that the community toilet facility is not clean. *'For this reason we are going to private toilet. However, contrary to the previous household he mentioned 'every day one BMC worker comes to collect the garbage. No water, electricity problem is there in this area. We use LPG gas for cooking food. But this area is not safe for the ladies'.*

To clarify this contradiction, we inquired further and got to know that the legal slum is being cleaned by BMC almost regularly. However illegal households do exist in specific areas which are very unhygienic. Some even said that *'you will not find any educated people like us in Muchi pada, the area is dirty'*. In the legal part of the slum, all houses are 'pucca'. Yet, due to scarcity of toilet facility, children use open drain even for defecation.

A lady said, *'We are family of five. My husband is an auto driver; he has taken loan for the auto. He earns around 12000/- per month. My daughter is asking for Rs100/- for last three days for her school project work. I don't have money. We are compromising to this situation, some time I feel very bad.... how will I fulfill of my child's wish.'* When asked whether economic condition could be a problem for future education of her children, she said *'my child would like to do more study, after completing education our problem automatically will solve, so I don't want to stop their education. I have two girls and one boy; they all are currently studying; one is in 9th, second is in 8th followed by 6th standard. We sometimes fail to deposit fees in time If my husband does not drive auto for two three days, that time it is very difficult to manage the house expenditure'.*

Immunization & medical check-ups are regularly performed by BMC. However, viral fever and malaria are very common. Minor ailments like cough and cold were mostly ignored due to financial constraints.

Household Energy Use:

We collected data from the households on energy use pattern. All households have LPG stoves for cooking but duration of adopting LPG stoves is different. Some households have started using LPG stoves for the last one-two years while one household is using it since last 10 years. Kerosene is easily available in market and is the main preferred fuel for cooking and water heating after LPG. All the households access the electricity connection and they are using electricity for lighting. Household prefer mix fuel for cooking and water heating. One household is using LPG for cooking and Kerosene for water heating. Another household have LPG stove, yet using kerosene stove for making *roti* daily and it take 10 litres kerosene for a month. Another household reported that they are using cold water for bath while another household is using LPG for cooking as well as for heating water.

When asked about the reason for switching energy from traditional chulha to LPG, one woman replied *'I was using chulha, it used to take lot of time to collect fuel (coconut cover from nearest dumping ground). I used to go once in a week and used to collect 2 bags of coconut residues i.e. around 25-30 kg. Also cooking in chulha leads irritation of eyes'*. Another lady replied that, price of kerosene has increased from Rs.20-30 per litre to Rs.50-60 per litre; so expense on kerosene increased compared to increase in LPG. Also LPG stove is convenient to use.

Subsidised price of one LPG cylinder is Rs.450 and otherwise (in black) its price goes to Rs.1000 per cylinder. Price of subsidised kerosene is Rs.16 per litre and in black it available in Rs.50-60 per litre. If, a household have 4-

5 members; then one LPG cylinder is enough to fulfil cooking and 10-12 litres of kerosene for water heating in a month. Those households registered for the LPG connection are getting only two litres of subsidised kerosene. On the other hand LPG non-registered household are getting six litres of subsidised kerosene per month. Amount of fuel that are getting in subsidised rate are not sufficient for a household having more than 5 members. One household where two families staying together have two ration cards, on one card they are getting gas cylinder and on another 6 litre subsidised kerosene; but in total that household requires 10 litres of kerosene. So they have to purchase remaining 4 litres of kerosene from market in high price.

'There is no scarcity of unsubsidised kerosene and LPG in Govandi slum. But to get subsidised LPG cylinder we have to book it first. Since last two months gas agency has started giving services by phone booking or sending the message to them. Before that, they used to go in person to book the gas and the supply was quicker. Now days, telephone booking confused us a lot, it takes longer time, we have to call 2-3 times and agency takes 2-3 weeks or more to supply the cylinder. How can we survive if we have one cylinder?' And majority do have only one cylinder.

Sometimes, women do not have knowledge about how to use LPG, about its safety measures. So they are scared to use gas. One lady told that *"mere patine LPG gas liya; lekin tab mai unake khilaph thi kyunki meri jethani gas se jalkar mar gayi isaliye muze gas use karane me dar lagata tha. Tab uhnone bola ki me tumhe sikha dunga ki gas kaise use karate hai aur humane gas kharid liya."* That means my husband forced me to buy LPG stove, I was afraid because my sister in law died due to accident of cooking gas cylinder. But my husband said *'I will teach you how to use gas and we bought LPG stove'*.



INTERVIEWING A COLLEGE GIRL



A BOY WHO GOES TO AN ENGLISH MEDIUM SCHOOL



Table 1: Schematic representation of household energy use

HH sr. no.	HH Size	Appliances	Main fuel for lighting	Expenditure on electricity (Rs.)	Main fuel for cooking	Monthly expenditure on LPG fuel (Rs.)	Main fuel for heating water	Monthly kerosene expenditure on (Rs.)	Monthly total income of HH (Rs.)	% Monthly income spent on energy	Switching to LPG since
1	7(5 adult + 2 children)	Tube Light, TV, Refrigerator, Fan	Electricity	1000-1500	LPG (1cylinder / month)	450 (subsidised)	Kerosene (10-15 litres / month)	50*13=650 (non-subsidised)	7000	27.1	9-10years
2	10(6 adult + 4 children)	Tube Light, TV, Fridge, Washing machine, Fan	Electricity	1200	LPG (1cylinder / month)	450 (subsidised)	-	16*6+50*4=296 (6L subsidized, 4L non-subsidised)	10000	15.0	Last two years
3	3(2 adult + 1 children)	Tube Light, Fan	Electricity	300-350	LPG (half cylinder / month)	500 (non-subsidised)	Kerosene (10 litres / month)	10*50=500 (non-subsidised)	11000	7.5	Last 3 years
4	5(all adult)	Tube Light, TV, Fan	Electricity	400-500	LPG (1cylinder / month)	450 (subsidised)	LPG	-	7000	6.4	Since 1 year

The table is based on observation and information collected from four households of Govandi slum on 20th September 2013.

Youth and aspirations:

Most of the children and youths are going to school. Even many of them are going to near by English medium schools and they feel proud for that. Some of them are going to *Madrasas*. A young girl said '*I study 9 subjects besides Urdu, In this you will not find anybody not going to school. Time has changed and we know the value of education*'. School timing is generally 7.00 am to 12.00 noon. A young schoolgirl replied '*I have two elder brothers, they all are studying. My eldest brother has a tattoo shop, he is in 12th standard, he wants to become a police. Another brother who is in 11th desires to become a doctor. I love science, maths as well as history. I want to become a doctor, or else a teacher. I need to score at least 75 percent in my 12th exam to be in the medical line*'.

A young boy aged 20 is currently studying in a college in Bandra. His parents want him to become a lawyer. But he does not feel like continuing his study. He loves B-boying or break dance which is a street dance very popular among African-Americans. It is a trendy dance among the youth in India too; '*We have formed a group with twelve members. It is existing for the last three years. Its name is "Dark shadow freezes crew". We performed in different places in India; even we qualified in the "India got talent" TV show. However, they asked to deposit surety bond money to move up in the ladder of competition. We do not have financial support. Whenever we get prizes, we save that money. Our money is spent in travel, food and accommodation when we go out of Mumbai for any competition. We practice in the cuttal khana (slaughter house) of Govandi. Every month we somehow deposit Rs.1000 per head and continue our group activity.*' He has proudly showed us the prize that they have received in *Phule- Ambedkar Jayanti Mahotsav 2012*. The boy is full of tattoos on his body, with long hairs and ponytail. He was watching TV with other boys in the afternoon hours.

A girl we interacted is in 11th standard, studying commerce in a college in Chembur. She scored 65% in 10th exam. Her father expired three years back. Her mother sales vegetables. Her monthly expenditure for education is Rs.600. She loves economics and book keeping. In the morning 7.00 she goes to college, by 1.00 pm she returns, studies 2-3 hours every day, then she cooks and does other household chores. "*My mother will never stop me in studying further, I am sure... and she will never force me to marry if I continue study. I want to become an accountant.*"



PRIZE RECEIVED IN "PHULE-AMBEDKAR JAYANTI MAHOTSAV"



GOVANDI- MANKHURD SLUM

Conclusion:

People in Govandi slum have aspirations, hopes as well as sorrows and misery. They come here as they earn more than what they used to earn before the move. The youth who are born and brought up in slums are full of smiles and vivacity. They are studying, want to be 'someone' in their life and wish to live in a healthy environment. They know well that to achieve a professional goal they have to be serious in studies. So within many limitations, they try to study as best as possible and want to accomplish their dreams. In slums they have some helping hands, to guide them, in giving tuitions and helping kids whenever they are in need. It is a good sign of progress. They observe their parent's struggle and that perhaps reinforce them to grow in life.

Women in the area do hardship. They keep up all household chores in the given constraints of water and sanitation; they are concerned about their children's future and are ready to face the world for the better future of their offspring. Men struggle to earn the livelihood. Their income fluctuates; sometimes they take loans to start small business. Sometimes due to husband's incapability, women also get engaged in economic activities. However, many men have the habit of drinking alcohol, smoking and playing gamble.

We rarely highlight the good part of slums in Mumbai. The community spirit, the helpful nature of neighbours, the cultural mix, and the small scale household industries gives the touch of Indian social bonding in urban slums. The only constraint that they have is availability of space and hygienic environment due to poor urban ecological base.

References:

1. The Times of India (July 6, 2011) Four burgeoning suburban slums dwarf Dharavi http://articles.timesofindia.indiatimes.com/2011-07-06/mumbai/29743095_1_largest-slum-dharavi-nivara-hakk-sangharsh-samiti
2. Deccan Herald (Dec 18, 2012) Mumbai slum kids malnourished, Mumbai.
3. Mumbai Human Development Report (2009) Municipal Corporation of *Brihan Mumbai*, Oxford University Press, Mumbai.



Visit on: www.iipsenvis.nic.in

CONFERENCES

1. Fourth International Conference on Health, Wellness and Society

Interdisciplinary forum for discussion of health, human physiology, and the conditions of social life. Proposals for presentations, workshops, and more now accepted. Possible publication opportunities in peer-reviewed companion journal.

Conference Date: 14th to 15th March 2014, Vancouver, British Columbia, Canada

Weblink: <http://healthandsociety.com/the-conference>

Contact person: Conference Director

Deadline for abstracts/proposals: 21st January 2014

2. 2nd National Seminar on Water & Sanitation in relation to Public Health

Please refer our website and send your abstract(s) latest by Friday 28th February 2014. A maximum of two papers will be accepted from individual authors. Kindly feel free to contact us whilst making submission(s)

Conference Date: 22nd March 2014 & 23rd March 2014, Dharmshala, Himachal Pradesh, India

Deadline for abstracts/proposals: 2014-02-28

Weblink: <http://gsaindia.org.in/index.php/environment-gsa>

Contact Person: Dr. Anil Pratap Singh

3. Global Public Health Conference 2014

"Multi-disciplinary Approaches in Public Health: innovations, practices and Future Strategies" The aim of this conference is to bring the public health professionals from various disciplines to a single platform and share their technical expertise.

Pre Conference Workshop: Thursday 20th February 2014

Conference Date: 21-23 February, 2014, Chennai, Tamil Nadu, India

Deadline for abstracts/proposals: 2013-12-31

Weblink: <http://gphcon2014.wix.com/gphcon>

Contact Person: Prof. Ch. Satish Kumar

4. 2nd International Conference on Environmental and Economic Impact on Sustainable Development Incorporating Environmental Economics, Toxicology and Brownfields

Conference Date: 14 - 16 May, 2014, Ancona, Italy

Conference Fees:

Includes conference proceedings, other documentation and refreshments.

(i) Registration Fee, €890

(ii) Conference Chairmen, WIT Fellows and members of the Scientific Advisory Committee, €750

(iii) Students, €500

Weblink: <http://www.wessex.ac.uk/14-conferences/environmental-impact-2014/page-3.html>

5. ICUE - 2014 International Conference and Utility Exhibition on: Green Energy for Sustainable Development

Conference Dates: 19 Mar 2014 - 21 Mar 2014, Pattaya City, Thailand

Abstract : ICUE 2014 on Green Energy for Sustainable Development, will be a venue to exchange research ideas, experiences, technical, social, financial, economic and policy issues covering energy utilization, particularly on using renewable forms of energy resources (green energy) for power and heat generation. Here, energy professionals, policy makers, researchers, members of the academe, engineers, members of the energy supply sector, just to mention a few, will have a platform to showcase research findings, technological innovations, transformative emerging technologies, and even to discuss burning issues that would influence environment policies and programmes in national, regional and global scenarios.

Full Paper Submission: 20 December 2013

Weblink: <http://www.icue2014.ait.asia>

Related subject: Non-nuclear Energy Production

6. 8th International Symposium on Ecosystem Behavior

Conference Date: July 13th – 17th, 2014, University of Bayreuth, Germany

Date:

- (i) **Second Announcement and Start of Registration :** 11/2013
- (ii) **Abstract Submission Deadline :** 2014-04-04
- (iii) **Acceptance Notification and Publication of Program:** 2014-05-30

Weblink: <http://www.bayceer.uni-bayreuth.de/biogeomon2014/>

7. 16th International Workshop on Quantitative Structure-Activity Relationships in Environmental and Health Sciences (QSAR2014)

Workshop Date: June 16-20, 2014 IRCCS - Istituto di Ricerche Farmacologiche “Mario Negri”, Milan, Italy.

The QSAR workshop's **main aim is to give participants the possibility to present their work and their results** to representatives of different communities (industry, regulators, developers, etc.). Indeed, the programme (talks and posters) **will be based on abstract submitted by participants!**

Weblink: <http://qsar2014.insilico.eu/>

8. 2014 conference - San Francisco

Conference Date: Crossing Divides March 12-16, 2014

Conference Program:

The full conference program will be available on this website by November 2013.

Website: <http://aseh.net/conference-workshops/2014-conference-san-francisco>

INTERACTION WITH A SOCIAL CHANGE MAKER

Dr. D.B. Naik, renowned scientist of Bhabha Atomic Research Centre, Mumbai

Q) *Sir, please tell us about your innovative project.*

Ans: My project concerns with work on reduction of volume of waste thermocol. Now a days thermocol is being used in variety of products, like packaging of electronic goods, decoration, in cutlery items like plates, cups. We find most of the thermocols on road side. Finally it goes to dumping ground or our seashore. As such, Thermocol is not biodegradable, most of this is dumped in dumping ground & space of dumping ground is also important concern for us. So, what I have been doing in last three years is to reduce the volume of thermocol. Thermocol is expanded polystyrene, more than 97-98% of thermocol is air trapped in it.



Mrs. A Basu and Ms Chandrakala of Pop-Envis, IIPS are interviewing Dr. Naik Sept, 2013

I take 50 ml acetone in glass bottle with a tight cover. I put pieces of thermocol in acetone. As long as free acetone is there thermocol collapses very fast. Then I get thin paste of thermocol. If I take 100 ml of acetone, I can put 10,000-11000 cubic cm of thermocol in it. Finally it becomes like dough, we can give variety of shapes to the dough.

In this method we can reduce 45-50 times volume of thermocol. Suppose if we are generating 20 trucks of waste thermocol, with this process it will be brought down to less than half truck of condensed material.

Q) *What motivated you to start this activity?*

Ans: Last 2 - 3 years I have been interested in this environment related issues. Initially I got interested in thermocol when I was a judge in a school science project evaluation. Thermocol can be put in solution in solvents like benzene, but these are carcinogenic (which is not good for health). So I tried for different solvents, I found that in acetone it (thermocol) just collapse.

In last 2-3 years I have been doing this & I am trying to propagate it to different schools & colleges, so that more & more people get interested in it.



I make different types of items, I made large number of Ganesh idols, recently I am making trays and decorative plate, etc.

Q) *Tell us some advantages or disadvantages of thermocol.*

Ans: Every material has its own value. Thermocol is very good thermal insulator as well as shock absorber. Hence it is used in packaging etc. Collection of waste thermocol and its transportation is a big problem. Thermocol making company gets fresh polystyrene, from polystyrene producing company. It is of low cost. They get polystyrene at Rs 70 - 80/- per kg. From that almost 50000 cm cube of thermocol are generated.

Transportation and collection cost of thermocol is high because of its volume. In western countries also thermocol waste is not treated properly. Burning of thermocol produces lot of smoke, which is harmful to environment. The advantage of acetone solution is, instead of transporting thermocol, we can dissolve thermocol in this solution & prepare whatever we want to do. Acetone, being organic solvent, is flammable, one has to take proper care of this during this process.

Q) *Do you have any other idea about recycling?*

Ans: In big cities lot of solid waste is generated, which is not being properly managed. Apart from thermocol, recently I have started work with small pieces of papers which people throw here & there; for example, bus and train tickets, bills etc. One can recycle it: cut paper into small pieces, put them in water for 2 days. We can make pulp of paper by meshing and put little amount of fevicol. After thoroughly mixing, one can make various objects like bowls, trays by putting pulp on cotton cloth placed on suitable mold.

Q) *What were your most satisfying moment/period during this activity?*

Ans: Last month I was with Jignyasa Trust (an NGO) in Thane. They are coordinating school science project competitions in Maharashtra. I did awareness programme of thermocol there. I met Thane Municipal Commissioner; they are interested with my project. In Anushakti Nagar also I did many awareness programme. Nearly 8000-10000 people at different forums got to know about my activity. Some social associations of Mumbai in their annual function arrange this awareness programme.

They provide me a table & some sheets of thermocol. I bring bottle of acetone solution & my thermocol products. I shown them how thermocol dissolve in acetone, soft dough will come out & I prepare various things out of that.

Last year I was in School No -6 of Anushaktinagar (BARC). Two years before also I made awareness programme in that school. Last year in this school, I saw one boy (who attended my earlier programme) have made items by using thermocol dough. It gave me great satisfaction. Newspapers have given some coverage about my venture. My ultimate agenda is to propagate awareness. Now this awareness programme has got some momentum.

Q) What is your action plan?

Ans: If these items are done in bigger scale it would be a great support for cleaner environment. If we can prepare powder from that dough (condensate thermocol) by machine, then we can give it to some industries, which can be used as polystyrene. In slightly higher temperature it would behave like thermosetting polymer. It can be remoulded into different shapes. With this thermocol soft dough, we can prepare small furniture items like stool, bench. This product is durable also.



Decorative objects made from thermocol by Dr. Naik

DATA

RURAL: Availability and Type of Latrine Facility: 2001-2011

Code	Union Territory	Total household		Percentage of households having							
		2011	2001	Water closet		Pit latrine		Other latrine		No latrine	
				2011	2001	2011	2001	2011	2001	2011	2001
00	INDIA	167,826,730	138,271,559	19.4	7.1	10.5	10.3	0.8	4.5	69.3	78.1
01	Jammu & Kashmir	1,497,920	1,161,357	20.7	2.9	5.9	16.4	12.0	22.5	61.4	58.2
02	Himachal Pradesh	1,310,538	1,097,520	57.4	6.4	9.0	15.0	0.1	6.4	33.4	72.3
03	Punjab	3,315,632	2,775,462	42.7	6.4	27.1	26.4	0.6	8.2	29.6	59.1
04	Chandigarh*	6,785	21,302	87.9	47.6	0.1	6.4	0.0	14.5	12.0	31.5
05	Uttarakhand	1,404,845	1,196,157	39.4	7.2	14.1	16.1	0.5	8.3	45.9	68.4
06	Haryana	2,966,053	2,454,463	32.6	2.1	23.1	20.5	0.3	6.1	43.9	71.3
07	NCT of Delhi*	79,115	169,528	70.0	19.0	5.2	32.9	1.1	11.0	23.7	37.1
08	Rajasthan	9,490,363	7,156,703	12.6	3.2	6.8	8.1	0.2	3.3	80.4	85.4
09	Uttar Pradesh	25,475,071	20,590,074	15.9	1.9	4.5	8.3	1.3	8.9	78.2	80.8
10	Bihar	16,926,958	12,660,007	14.9	4.2	2.3	6.0	0.4	3.8	82.4	86.1
11	Sikkim	92,370	91,723	68.5	24.3	15.4	29.8	0.2	5.3	15.9	40.6
12	Arunachal Pradesh	195,723	164,501	26.1	6.0	20.4	24.0	6.1	17.3	47.3	52.7
13	Nagaland	284,911	265,334	35.0	5.9	32.8	47.3	1.4	11.5	30.8	35.4
14	Manipur	335,752	296,354	37.9	4.6	40.4	66.8	7.6	6.0	14.0	22.5
15	Mizoram	104,874	79,362	38.5	4.1	45.4	70.2	0.7	5.5	15.4	20.3
16	Tripura	607,779	539,680	15.1	4.6	65.3	66.0	1.0	7.3	18.5	22.1
17	Meghalaya	422,197	329,678	25.9	3.7	26.3	29.8	1.7	6.5	46.1	59.9
18	Assam	5,374,553	4,220,173	20.6	8.6	37.2	46.9	1.8	4.0	40.4	40.4
19	West Bengal	13,717,186	11,161,870	18.2	7.0	27.0	15.3	1.6	4.6	53.3	73.1
20	Jharkhand	4,685,965	3,802,412	6.2	2.2	1.3	2.1	0.2	2.2	92.4	93.4
21	Odisha	8,144,012	6,782,879	10.0	3.3	3.4	3.1	0.7	1.3	85.9	92.3
22	Chhattisgarh	4,384,112	3,359,078	10.3	1.8	4.1	1.8	0.1	1.6	85.5	94.8
23	Madhya Pradesh	11,122,365	8,124,795	10.4	2.6	2.5	3.9	0.2	2.4	86.9	91.1
24	Gujarat	6,765,403	5,885,961	26.5	11.3	6.3	8.1	0.2	2.3	67.0	78.3
25	Daman & Diu*	12,750	22,091	50.8	20.2	0.4	9.4	0.2	2.4	48.6	68.0
26	Dadra & Nagar Haveli*	35,408	32,783	25.3	16.9	0.8	0.2	0.4	0.2	73.5	82.7
27	Maharashtra	13,016,652	10,993,623	23.7	5.3	14.1	10.2	0.3	2.7	62.0	81.8
28	Andhra Pradesh	14,246,309	12,676,218	25.8	8.6	6.0	6.4	0.4	3.1	67.8	81.9
29	Karnataka	7,864,196	6,675,173	13.4	4.7	14.7	9.5	0.3	3.3	71.6	82.6
30	Goa	124,674	140,755	63.8	20.8	5.8	18.9	1.3	8.5	29.1	51.8
31	Lakshadweep*	2,523	5,351	98.1	91.2	0.0	0.4	0.0	1.6	1.9	6.9
32	Kerala	4,095,674	4,942,550	59.1	62.0	34.0	12.8	0.2	6.6	6.8	18.7
33	Tamil Nadu	9,563,899	8,274,790	17.7	7.4	5.2	4.6	0.4	2.4	76.8	85.6
34	Puducherry*	95,133	72,199	37.8	19.8	1.1	1.0	0.2	0.6	61.0	78.6
35	Andaman & Nicobar Islands*	59,030	49,653	55.4	18.4	4.4	12.4	0.3	11.6	39.8	57.7

Source: Census of India: 2011

Note: * Union Territories



Write us: popenvis@iips.net

URBAN: Availability and Type of Latrine Facility: 2001-2011

Code	Union Territory	Total household		Percentage of households having							
		2011	2001	Water closet	Pit latrine		Other latrine		No latrine		
				2011	2001	2011	2001	2011	2001	2011	2001
00	INDIA	78,865,937	53,692,376	72.6	46.1	7.1	14.6	1.7	13.0	18.6	26.3
01	Jammu & Kashmir	517,168	390,411	68.5	26.5	4.3	20.2	14.7	40.2	12.5	13.1
02	Himachal Pradesh	166,043	143,113	87.0	49.7	0.8	12.0	1.3	15.5	10.9	22.8
03	Punjab	2,094,067	1,489,694	85.6	46.5	6.8	20.5	1.0	19.5	6.6	13.5
04	Chandigarh*	228,276	180,576	87.0	70.8	0.5	1.0	0.1	8.3	12.4	19.9
05	Uttarakhand	592,223	390,164	85.9	40.8	6.5	26.7	1.1	19.3	6.4	13.1
06	Haryana	1,751,901	1,075,179	80.5	31.0	7.7	26.5	1.7	23.2	10.1	19.3
07	NCT of Delhi*	3,261,423	2,384,621	86.0	47.4	1.7	15.2	2.1	16.5	10.2	21.0
08	Rajasthan	3,090,940	2,185,591	73.7	40.6	5.4	18.2	2.9	17.3	18.0	23.9
09	Uttar Pradesh	7,449,195	5,170,527	77.2	32.0	2.9	18.1	3.0	30.0	16.9	20.0
10	Bihar	2,013,671	1,322,583	63.4	43.4	4.6	11.4	1.0	14.9	31.0	30.3
11	Sikkim	35,761	13,015	91.8	87.0	3.3	1.9	0.1	2.9	4.8	8.2
12	Arunachal Pradesh	65,891	48,114	74.9	28.1	13.9	32.1	0.7	26.8	10.5	13.0
13	Nagaland	115,054	66,716	79.1	19.9	15.0	40.5	0.5	33.8	5.4	5.9
14	Manipur	171,400	101,302	63.7	20.5	23.3	67.0	8.8	7.8	4.2	4.7
15	Mizoram	116,203	81,604	80.9	34.5	17.2	54.5	0.5	9.0	1.5	2.0
16	Tripura	235,002	122,343	50.0	43.1	47.0	44.8	0.9	9.0	2.1	3.0
17	Meghalaya	116,102	90,568	82.9	43.5	12.3	33.1	0.6	14.9	4.3	8.4
18	Assam	992,742	715,185	71.0	58.9	21.0	26.4	1.7	9.3	6.3	5.4
19	West Bengal	6,350,113	4,554,045	61.6	55.2	22.5	22.9	0.9	6.8	15.0	15.2
20	Jharkhand	1,495,642	1,060,178	64.7	41.2	1.8	7.4	0.6	18	32.8	33.3
21	Odisha	1,517,073	1,087,248	58.8	43.1	4.2	9.5	1.8	7.2	35.2	40.3
22	Chhattisgarh	1,238,738	789,440	58.7	38.8	1.1	5.2	0.4	8.6	39.8	47.4
23	Madhya Pradesh	3,845,232	2,794,858	71.5	41.1	1.7	11.9	1.0	14.7	25.8	32.3
24	Gujarat	5,416,315	3,758,028	85.2	62.1	2.1	9.8	0.4	8.7	12.3	19.5
25	Daman & Diu*	47,631	12,251	84.2	60.6	1.1	3.4	0.1	1.5	14.6	34.6
26	Dadra & Nagar Haveli*	37,655	11,190	80.3	71.6	0.7	3.5	0.3	2.2	18.7	22.8
27	Maharashtra	10,813,928	8,069,526	67.3	44.4	2.4	7.1	1.6	6.6	28.7	41.9
28	Andhra Pradesh	6,778,225	4,173,639	79.4	47	4.1	15.1	2.6	16.0	13.9	21.9
29	Karnataka	5,315,715	3,556,960	71.6	44.9	12.0	20.7	1.4	9.7	15.1	24.8
30	Goa	198,139	138,461	80.6	38.9	3.5	18.7	1.1	11.6	14.7	30.8
31	Lakshadweep*	8,180	3,889	97.2	70.2	0.5	0.8	0.0	12.8	2.3	16.2
32	Kerala	3,620,696	1,652,656	75.3	74.8	21.9	11.1	0.3	6.2	2.6	8.0
33	Tamil Nadu	8,929,104	5,898,836	66.5	45.5	6.8	11.2	1.8	7.7	24.9	35.7
34	Puducherry*	206,143	136,456	81.1	59.4	0.6	2.2	0.3	3.4	18.0	35.0
35	Andaman & Nicobar Islands*	34,346	23,409	86.8	58.7	0.2	6.7	0.1	11.1	12.9	23.5

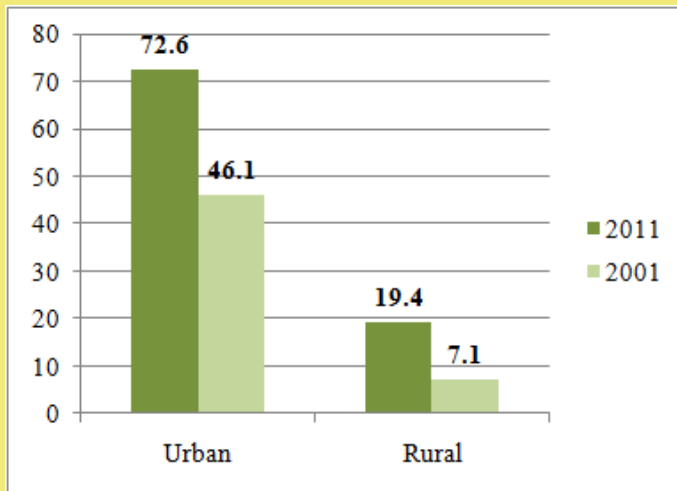
Source: Census of India: 2011

Note: * Union Territories



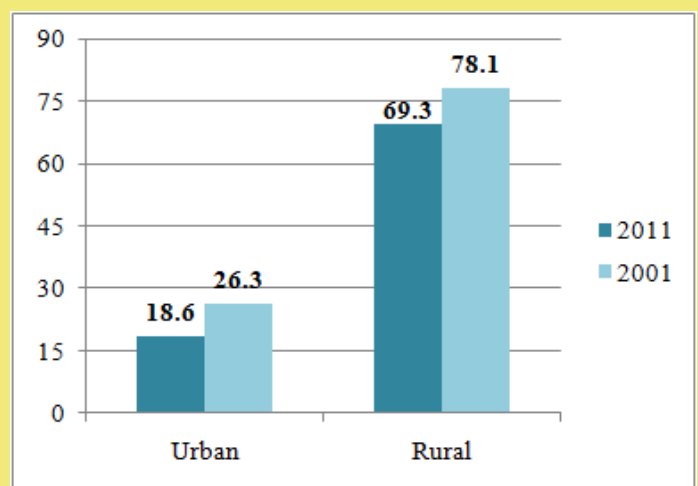
Visit on: www.iipsenvis.nic.in

Percentage of Households having Water Closet, India 2001-2011



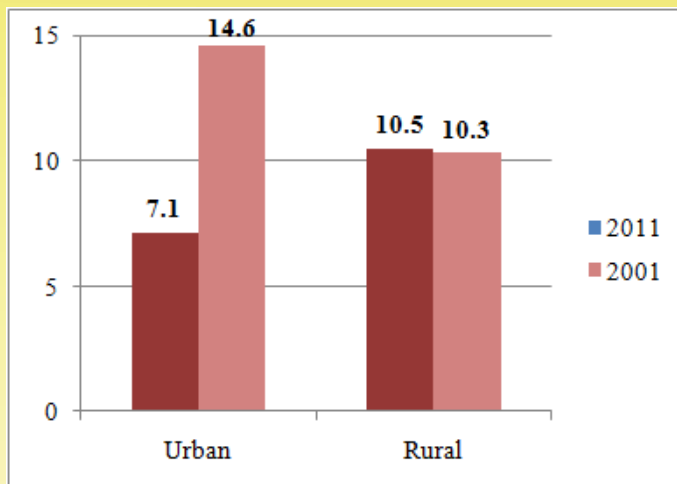
Source: Census of India 2001- 2011

Percentage of Households having No Latrine, India 2001-2011



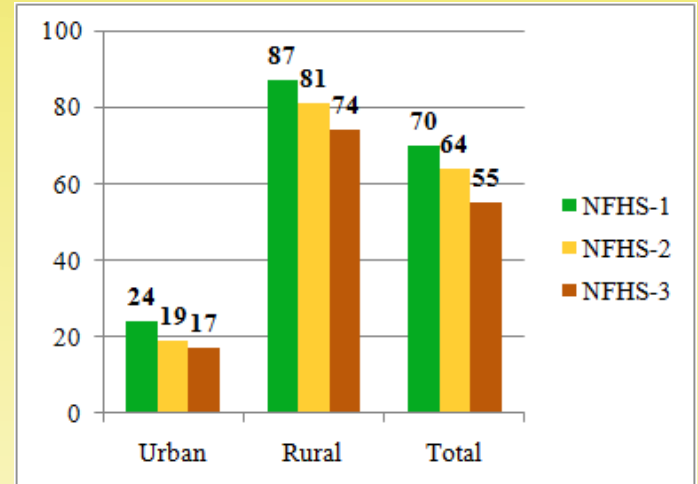
Source: Census of India 2001- 2011

Percentage of Households having Pit Latrine, India 2001-2011



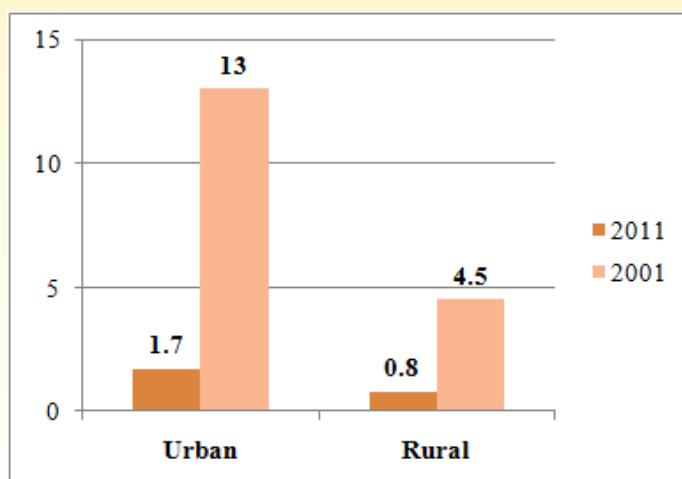
Source: Census of India 2001- 2011

Percentage of Households having No toilet Facilities, NFHS 2005 - 2006



Source: IIPS and Macro International, 2007, National Family Health Survey (NFHS-3), 2005-06.

Percentage of Households having Latrine other than Flush and Pit , India 2001-2011



Source: Census of India 2001- 2011

ENVIS CENTRE

International Institute for Population Sciences
 (Deemed University)
 Denoar, Mumbai
 Maharashtra-400 088
 Ph.No. 022-42372417, 42372626
 Fax No. 022-25563257
 Email: popenvis@iips.net