

**ICRIER's Program on Capacity Building and Knowledge Dissemination on Urbanization
in India: *Preparing for the Urban Challenges of the 21st Century*
*Focus: Solid Waste Management***

5 Guwahati Workshop

April 29 and 30, 2013

Summary of the Proceedings

Participating states: 8 (Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura)

April 29, 2013: Solid Waste Management in Urban India

Inaugural Session

Respected Chief Minister of Assam Shri Tarun Gogoi inaugurated the workshop by stating that waste management was a matter of concern for all states in that region. Over the last 12 year as the cities were growing waste was also growing as a serious problem. But was a sign of wealth because people were getting wealthy and they were producing more and more waste. Along with waste, other problems for the state were water borne diseases, high infant and maternal mortality rates. Soil erosion and floods were major environmental problems and needed to focus on climate change. Dr. Isher Ahluwalia welcomed the Chief Minister and shared highlights from the High-Powered Expert Committee's report with the audience. She specially highlighted trends relevant to the North Eastern States.

Mr. Deepak Pavlankar, Kirloskar Integrated Technologies Ltd. Pune

1. Bio-waste plant used a lot of recycled water to create Bio-CNG which completely replaces CNG and manure sold in the market. They had partnered with a company in Pune to replace organo- phosphates that showed the potential to substantially reducing import of chemical fertilizers for the country as a whole.
2. Liquid output from biogas digester can be also used as liquid manure. This anaerobic digester has a net energy positive solution with completely segregated gas and waste.
3. Each of the cities had Sewage Treatment Plants with biogas digester to break down the Chemical Oxygen Demand of the sludge. Organic waste plant next to STP generated additional CNG. A pilot project in Pune with 5 tonne waste created 300-400 kilowatts power per day or 150 kg of CNG and around 100 kg of manure.

Ms. Mangalam Balasubramanian, Managing Trustee, Exnora Green, Pammal

1. Pammal was a Municipality with 75,000 population and 15000 lived in slums in 7 wards out of 21 wards with total area of 14 Sq. Km. Main challenge was that of solid waste management in 323 leather industries in the southern and western part. Then there was stone quarrying. Cleaning the Nullas was routine.
2. Daily door to door waste collection generated solid waste of 35 metric tonnes, 20 metric tonnes was organic waste, 20 metric tonnes was food waste, 10 tonnes was filth 10 tonnes was recyclable waste. For this they employed 110 people 90% were women. Referred to as 'Green ambassadors' they conveyed the green message between the community and the management.

Session II

Chairperson, Mr. J B Singh, Principal Secretary UD and Panchayats, Assam presided over the session.

Mr. Yama Tachi Member Secretariat, District Urban Development Agency, Arunachal Pradesh

1. Arunachal Pradesh had 30 urban towns with a floating population of 10000 to 150,000. Due to rapid urbanization and improved economic conditions, solid waste management was a challenge. Till the year 2000 in Arunachal Pradesh cities had neither the services for street sweeping, collection, storage, lifting, disposal of solid waste, nor was any identified land fill.
2. Now collection bins were provided and collection points identified in the city. Waste was transported from collection points to landfill site but was not disposed off very scientifically.
3. Lack of proper sewerage and drainage system was a major requirement as Arunachal Pradesh got heavy rains and the hilly terrain was a major hindrance in proper solid waste management. There were financial constraints too. But they had started segregating wastes into domestic waste, agricultural waste, and industrial waste and the first two composted.
4. In Itanagar due to rapid urbanisation construction debris collection and disposal was an issue. District administration was now taking interest in that and Biomedical waste disposal. But only 50% of waste was treated rest dumped.

Mr. B. Dutta, Director, Meghalaya Urban Development Authority

1. Along with Shillong, the capital of Meghalaya that were nine census towns in the state constituted as a tribal area (Khasi). The centralised municipal waste disposal facility was

located 9 km away from the city civic centers. The composting plant there was set up in 2000 and was functioning well. But absence waste segregation practice at source, had led to increased load on the compost plant and final disposal. A lot of rejects were dumped in the composting Plant. Rag pickers segregate at dump sites under extremely unhygienic condition. There was no dedicated authority for collection of waste, that led to blame game among different agencies. Open dumping of rejects in the compost plant was leading to environmental pollution. Citizens were not charged for garbage collection or littering on roads.

2. Bilateral funding program was supporting community awareness building, and capacity building of ULB. Staff from ULB visited other cities in other states and was impressed by the projects. They were advised to build a short term landfill for immediate needs that would last for 4 years, with a commitment to the long term landfill for the future requirement upto 30 years.
3. Government land allotted for it was a hill that needs to be flattened to create a land fill and had to go through an EIA clearance from MoEF. But the project was stuck in litigation under RTI and public hearing. Private company has shown interest in setting a pelletisation plant along with sewage plants for waste to energy project in the PPP mode that the private company would operate for 10-15 years. Government had realised that without public participation and co operation the project would not succeed.

Mrs. Kavitha Padmanabhan, Municipal commissioner Guwahati Municipal Corporation, Guwahati

1. Guwahati Municipal Corporation engaged Guwahati IIT for doing a survey on solid waste management to plan a strategy. Guwahati Municipal Corporation had PPP with a private and public company created by the Municipal corporation for this purpose. This company was engaged for city waste management, and covered primary - door to door collection, secondary collection and sorting, establishment of compost plant and waste to energy plant in future.
2. Door to door collection was new idea to resident of Guwahati, and were charged Rs. 50 per house as collection charges, people resisted. at first because we imposed a neutral charge of Rs.50 per house for door to door collection. Now the primary garbage collection was deposited in the nearest bins and dumpers and other vehicles carry it to the dumping site. The composting plant was fully operational. But door to door collection was done by *thelas* and auto vans that covered only 1 lakh out of 2.5 lakh houses.
3. Government has assigned a landfill site of 40 acres at Baragaon, 20 km away. It had composting facility of 100 TDP and dumping of 400 TPD in the landfill. Residents were not willing to pay user charges, objected to locating waste bind in their neighborhood and disposing waste in the bins. The Municipality did not have enough conservancy staff and had to hire daily wage labor for it.

4. There were no transfer stations but two stations are planned for the future. Besides other problems were, access to collection bin was a problem due to narrow roads and collection timing. The municipality encouraged use of biodegradable waste for festival celebration with incentives of free collection for one month.

Mr. K. Lalthawmmawia, Director, Urban Development Mizoram

1. Mizoram with 70 lakh population was the most urbanised states in the North- East. Capital city of Aizol had a population of a little over three lakhs. Solid waste management was transferred to Aizol Municipal Corporation Recently government framed and notified Mizoram Solid Waste Management Policy, 2011, to achieve methodical scientific solid waste management in Mizoram.
2. Municipal Corporations to collect and dispose their solid waste within the respective council area and funds have been provided by the AMC. 90% of the expenditure is borne by the Municipal Corporation and remaining 10% is collected from the public. Sweeping starts around 5.30 in the morning and sometimes earlier depending upon the traffic condition as the work had to be completed before the traffic congestion. Waste generation is 165 tonnes per day. But only 476 gms of waste was generated per person per day.

Ensuing discussion initiated by the chair person focused on the question of whether and at what scale the biomethenation or power generation became sustainable, viable or scalable. The biomethenation technology was viable at 200-500 Kg per capita per day, total 5 tonnes and above was needed for a biogas digester plant, approximately costs Rs. 80 lakhs. Electricity generation became economical at 5 TPD upwards. But for IRR went up beyond 50 TPD where by your vehicles can be converted into CNG. Volume of waste generated, type of waste, distance over which it was transported and finally availability of land was discussed at length.

Dr. Ozukum Additional Director Municipal Affairs, Urban Development Nagaland

1. Kohima the capital of Nagaland had only one municipal election so it is a young Municipal body. It received heavy rain for almost six months in a year. Health and environmental issues due to solid waste were major concerns.
2. Residents aspired for better quality of life The population was 1, 46,000 growing rapidly and spread over 19 wards. 60 tonnes of solid waste was generated per day that worked out to be 408 gm per household. This was managed by composting.

Mr. L.B Chettri, Special Secretary Urban Development & Housing, Sikkim

1. Sikkim has 46 towns and *bazaars* and 106 rural marketing centres. In 10 years the 106 rural marketing centres would be convert into *bazaars*. Sikkim attracted tourists as floating population.
2. Gangtok Municipal Corporation, had 4.2 hectare landfill site with 50TPD compost plant situated about 20 kms from Gangtok and a landfill site at Silchury, South Sikkim which

caters to the south and western part of Sikkim. as part to be integrated in the Municipal Solid Waste Management Project. Another is planned under bilateral funding for Gangtok under the NERCG project.

3. In Gangtok waste collection was through bins at every doorstep, at every location and collected by sweepers, who use bells to announce their arrival for collecting waste.

Mr. Mr. Mahendra Ram Director UD Agartala Tripura

1. Tripura , the capital of Agartala had 35 wards and 4 zones spread in 58.4 sq km area. Two rivers Howrah and Katakhal flow across the city to Bangladesh. It shared borders with Bangladesh and trade takes place through Akhaura check post.
2. The garbage generated was around 200-250 metric tonnes per day. House hold garbage was collected , lifting, transportation and processed 52 NGOs, 200 tricycle pullers and covered only 30%-40% houses.
3. Two heavy machines were procured to eliminate this manual sorting of drains. Then suction pumps cleaned the sewage drains. One zone had sewerage project, but everywhere else septic tanks were mandatory. Like other South East Asian countries, like Kualalampur they practiced cleaning of septic tanks every 10 years as they had no sewage lines. The machines catered to the need of 6000 septic tanks per year.
4. There was no proper garbage collection system only 30 MT per day of garbage was processed, which was not adequate. Rest of the waste was dumped in the open in Disinagar landfill 11 km away. They planned to set up a 250 TPD plant, and land was made available for landfill for next 50 years.
5. A sewage scheme for Agartala was under construction to cover entire North zone of 15000 houses, 9 public stations, 3500 manholes and 95 km sewerage line with sewerage treatment plant of 8 million liters per day capacity.

Mr. Gitkumar Singh Director Municipal Admin., Housing & UD and Chief Town Planner, Manipur

1. Imphal in Manipur generated an estimated 70 tonnes of garbage with no proper treatment plant. Garbage was dumped at the land filling site. House to house collection was entrusted to 5 NGOs, every house hold paid Rs.50 and every commercial organisation paid Rs. 100 to the NGO. 70%-72% households were covered with the vision to make Imphal city a bin less city.
2. A Solid Waste Management Project was under construction on 20 acres of land and clearances from Pollution Control Board and Airport Authority of India had been obtained. The facility planned to make 15-20 tonnes of good quality compost annually.
3. Cleanliness awareness programmes in clubs, essay competitions as part of zero awareness programme was introduced at every ward level.

April 30, 2013: Solid Waste Management in Urban India

Session I

Chairperson, Mr. J B Singh, Principal Secretary UD and Panchayats, Assam continued to preside over the session.

Dr. Isher Judge Ahluwalia gave a ten minute summary of High Powered Committee on Urban Infrastructure and Services set up by the Ministry of Urban Development. How much investment was needed for a 20 year period if India were to bridge its deficit in Urban Infrastructure? Forty lakhs crores was suggested beginning 2012-2013. Indicated increase in urban infrastructure spending at the rate of 15% per year for the first 5 years, 12% for the next 5 years and 8% for the next 10 years. It assumed GDP growth rate to be 8% and operational maintenance costs are excluded. For O& M finance urban local bodies were important, while some were not able currently to pay staff salaries. Municipal finance listed certain taxes collected by the ULBs or states transferred them their share. Most important recommendation was from Goods and Services Tax states will give some small percentage to local governments, both to rural and urban. Urban Local Bodies would thus get some relief. Creating a Municipal Cadres was recommended under institutional reforms that ensured continuity in built capacity. A utility regulator was recommended. One innovation was by Karnataka state. Municipal Reform Cell was created that shared information from all Urban Local Bodies called *tulna(Comparison)* and that was enough to inspire Urban Local Bodies to perform better because their performance was seen by State Government. So there were lot of ways in which municipal reforms can be created and implemented. She would take back specifics that applied to North-East cities.

Mr. J B Singh, Principal Secretary UD and Panchayats, Assam stated that funds were not sufficient for urbanization even though they had multiple sources of funding, but they were better off than 10 years ago. Matching technologies were an issue due to peculiar problems of distance and topology etc. In North-East in Public Private Partnership had limited scope. Lands were not individually owned but were owned by district councils and non residents could not own lands. They were at nascent stage of urbanization, compared to the national average our urbanisation is still very low and major source of funding came from the State Finance Commission.

Shillong was a good example for sharing experience in urbanisation in the North-East along with Himachal Pradesh and Uttarakhand were suggested as appropriate states sharing experiences some best practices in urbanisation. More importantly the opening of trade with Bangladesh and Myanmar as emerging markets that became accessible. Sikkim had used its competitive advantage in horticulture through exports. ULBs do not have resources to run projects and finances.

Intra state connectivity was improved due to central funds. National Highway, inter-state roads, railways, waterways would become important when they open up to South-East Asia. This was

the critical gaps in North-East that needed funding. After the presentations he thanked the ICRIER team.

Ms. Tanushree Bhan ICRIER team member

1. After providing the general overview of the HPEC she focused on the annual growth rate of GDP from 2001-2002 to 2012-2013 of the eight participating states remained steadily above India's GDP growth rate. GDP growth rate of Arunachal Pradesh was higher than that of Mizoram and Assam in 2007-2008 but Mizoram's GDP declined after that. Assam showed a steady increase in growth rate. Growth rate of GDP of Nagaland declined in 2005-2006 but maintained a steady growth at 6%-7% thereafter. The growth rate of Manipur's GDP which had remained below Nagaland and Meghalaya was catching up. The growth rate of Meghalaya's GDP has seen an upward trend in 2007-2008. Growth rate of Sikkim had been increasing in 2006-2007 more than doubled between 2007-2008 and 2009-2010.

Dr. Isher Judge Ahluwalia intervened to point out the policy debate at higher circles about urbanization and industrialisation was necessary to maintain high growth rates? She answered positively. She gave example of growth in most agriculturally progressive state to be never more than 4% and therefore to maintain 7 to 8 % growth rate she argued industrialisation and service sector development was a must.

2. Ms. Tanushree Bhan continued. As compared with China, if we were to convert the demographic opportunity into demographic dividend and empower the youth through skill development. This implied improved cities with ease of living and doing business. But the ground reality was cities were visibly deficient in the quality of services they provide and was not adequate to realize the economic potential of urbanization.
3. The way forward was to create urban infrastructure, follow reform processes, improved service delivery, and minimum service standards for all including the poor. That needed synergies among different departments, emphasize on urban transport and integrate transport with the town planning and metropolitan planning. So reforms were needed to regulate finances and improve service delivery. A dedicated Municipal Cadres was needed. JNNURM had created dynamism in the Indian urban sector which had long suffered neglect. But progress in implementing projects under JNNURM was slow.

Dr. Isher Judge Ahluwalia intervened by stating that State governments would have to enter into a constitutionally mandated revenue sharing arrangement with the ULBs. Such predictable transfers along with levied taxes gave ULBs guaranteed finances with which to plan budgets. Central Finance Commission's recommendations had made devolution from state to ULBs mandatory through the constitutional amendment. But that by itself was incomplete as the state effectiveness would be judged by ULB performances. This was what we want the Chief

Ministers to register. JNNURM had empowered Municipal Commissioners and Urban Local Bodies to some extent. For the first time they had seen some money. So now to enable them to deliver build their capacity. Functioning land markets would generate revenue to create infrastructure.

Someone from audience shared that Municipal Corporation of Guwahati had entered into significant activities after that devolution. In fact Guwahati received an award under JNNURM for reforms in the city.

Dr. Isher Judge Ahluwalia approved and requested more details on this so it could be shared with other states in the future.

Dr. Ajay Kalamdhad Assistant Professor, IIT Guwahati

1. All the Municipal Corporations were worried about waste disposal. What kind of waste they receive? What were the major factors to determine a particular processing technique? To answer these questions he presented an elaborate plan for collecting samples and analyzing it. They planned to bring out a manual based on their efforts.
2. The sampling plan to determine TPD value and composition of the waste was elaborated. This consisted of vegetables, plastic, textile, glass, metal, rubber, plastic, food.
3. Contents that were combustible particles for waste to energy project planning were mainly rubber and plastic while other were used for composting.
4. Brahmaputra River needed sewerage treatment plants along the whole North-East region. So they had prepared a plan along the road network over 60 wards and they found 330 points to locate waste disposal bins. A mechanical waste disposal collection station was planned at the cost of Rs. 10,000/- using aerobic process. This was the fastest way of composting waste. Total 150-200 Kg of any kind of waste takes only 10-15 days for total composting.

Dr. Isher Judge Ahluwalia closed this session by thanking the organizers from Assam Administrative Staff College. Mr. Das and Mr. Sinha, her team members Sonali, Sabyasachi, Tanushree Bhan and Kartik Mishra and each and every member of the audience. Requested every one to stand up and take their applause.