

Urban poverty, climate change and built environment

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BANGLADESH is considered highly vulnerable climate change and climate variability. Various predictions of sea level rise puts 55% of its population on the threat of inundation. It will affect infrastructures including water systems, housing and settlements, transport networks, utilities, and industry. In recent years the recurrence of natural disasters has increased the vulnerability of the urban poor who are considered to be most affected by climate change and climate variability. The prevalence of diseases will increase their vulnerability and constrain economic activities.

Urban poverty in Bangladesh is evident in all the towns and cities. It is estimated that 43% of urban households live below the poverty line among which 23% are considered extreme poor. Around 35% of the population of six major cities live in slums which cover only 4% of their land area with limited or no access to services. Fighting poverty in urban area requires a multi faceted approach of economic, social, cultural, political as well as physical agenda. The development practitioners and designers of built environment, working to improve the condition of the urban poor, now face new challenge to accommodate issues arising from climate change and climate variability.

Designers of built environment can contribute in three areas for improving living environment for the urban poor: in building design; in settlement planning and design as well as in urban planning. Within these three areas they are to work with housing standards, environmental sustainability, economic affordability, structure as well as aesthetics for individual structures. Issues like infrastructure development, upgrading and designing community facilities affect ability of the urban poor to improve their living environment. Broader scale of urban planning, zoning and planning control may help to provide appropriate and safe locations for low-income households.

Working with urban poor needs a favourable environment created by policy orientation of the government. The policies help to ensure security of tenure, access to

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much needed services as well as access to finance for upgrading living environment. Governance and people's participation in the planning and implementation process can help to work for a climatic risk resilient built environment for the poor. The government's ability can be more effective by using existing social capital of the people.

There are advantages for the designers of built environment to work in

Bangladesh. Bangladesh Climate Change Strategy and Action Plan 2008 reiterate Government of Bangladesh's vision to eradicate poverty and achieve economic and social well-being for all the people through a pro-poor approach prioritising adaptation and disaster risk reduction. The national building code that guides minimum standard housing requirements identifies the flexibility of compliance with all the requirements of the

code.

Several NGO and donor funded projects have worked to develop infrastructure and services. These include constructing sanitary latrines, hand tube wells, paved pathways, drains and streetlights. Although the achievements are limited, but learning from such works can emphasize community initiatives to adapt cost effective locally based infrastructure development in the absence of formal provisions in the face

of increasing demands from climate change.

The major challenges will be getting security of tenure for the urban poor. This will ensure access to services and infrastructure development. Climate induced hazards tend to increase in scale in absence of infrastructure. Attributes of any such incidents like the flooding of 2004 can be questioned as being not only the result of climate change but also of absence of infrastructure to cope with such scales of disaster. Furthermore it can be questioned whether it is possible for the government to acquire capacity to meet this high demand of infrastructure? Realistically, in the present situation the urban poor will continue to live in the most vulnerable lands as they can be illegally occupied, structures can be built informally with affordable materials following no 'standards' or building regulations outside official regularities.

Adaptation in built environment will have to emphasize exploring innovative measures affordable for the urban poor. Deriving a 'standard' can be an outcome of an interactive and spontaneous participatory and self mobilizing planning process. Bangladesh has experience on community based disaster management. There are enormous possibilities to explore how the built environment of the urban areas can be designed and improved to include the urban poor in city level development process. These can include how to invest in resilient infrastructure -- improving drainage, adequate disaster-safe housing, increasing access to services such as health, water and sanitation, increased security of tenure for the informal settlements etc.

Some of these issues are to be discussed in the upcoming international conference on Climate Change and Urban Poverty: Infrastructure of Development organized by the BRAC Development Institute, Department of Architecture, BRAC University with Brooks Poverty Institute of Manchester University.

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Vanishing vultures



White-rumped Vulture- Nobiganj © Samiul Mohsanin

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"WHEN I was a kid I used to see hundreds of vultures in my backyard but now a glimpse of these charismatic creatures has become extremely rare", utters Abdul Mia, the owner of a vulture turf in the plains of Nobiganj.

In May, 2008 I along with few birdwatchers visited Aushkandi in Nobiganj to raise conservation awareness amongst the locals to protect an existing White-rumped Vulture breeding colony. During our visit we found a few vulture carcasses near the colony.

"The decline of the Asian vultures has been quicker than any other wild birds, including the dodo" Says Chris Bowden of RSPB (Royal Society for the Protection of Birds). Populations of three species of vultures have declined by more than 95 percent in the last 10 years across the Indian subcontinent. In the wake of this vulture population crash, the White-rumped Vulture, Long-billed Vulture and Slender-billed Vulture were reclassified as Critically Endangered, placing them amongst the species most threatened with global extinction.

The White-rumped Vulture was considered fairly common and widely distributed in all districts of Bangladesh, especially in the plains and woodlands. But due to the alarming rate of decrease in the population, now this bird is a rarity. Currently there are only a few breeding colonies known to occur in Bangladesh -- one in Maulvi Bazar near Hakaluki Haor where a group of 1315 have been recorded along with a group of 15-20 in Nobiganj, Habiganj, and a smaller group of 5-10 in Mymensingh. Vultures have been spotted regularly in the Sundarbans near Mongla port but no breeding colony was recorded from that part.

Vultures have also disap-

peared from many parts of their former ranges due to food shortages and loss of habitat. However, the recent disappearance is attributed to the veterinary use of the pharmaceutical diclofenac, a widely used painkiller tablet and anti-inflammatory drug administered to livestock and humans. Research on vulture population decline in Pakistan by the Peregrine Fund, who joined forces with Washington State University and the Ornithological Society of Pakistan (OSP), has shown that the diclofenac can cause mortality in vultures. According to BirdLife International, in 2006, the governments of India, Pakistan and Nepal introduced a ban on the manufacture of diclofenac and pharmaceutical firms are now encouraged to promote an alternative drug, meloxicam, which is proven to be safe for vultures.

The manufacturing ban has had some success in reducing the drug's prevalence -- for example the use of diclofenac has dropped by 90 percent in parts of Nepal (BirdLife International 2008). Unfortunately, there is still no ban on the sale or use of the drug and the overall trend across South Asia remains one of continuing vulture decline. Widespread use of veterinary diclofenac in the current vulture range is expected but so far there has been no attempt to quantify the extent of its use, nor is there any evidence of the actual magnitude of vulture exposure to diclofenac in Bangladesh.

Abdul Mia added, "Few days back I saw a vulture dying right in front of my eyes; the neck of the vulture was dropping constantly, as if someone was pulling its neck downward and it suddenly fell from the tree top and suffered to its death". I was curious and his description of the vulture's death reminded me of something horrifying!

If a vulture feeds on a car-

cass which still contains diclofenac then it causes kidney failure of the vulture and in most of the cases they die within 24-48 hours. The vulture shows an unusual behaviour before death due to this trend that is "Neck Drooping". According to the Ministry of Environment & Forests, Govt. of India the phenomenon of "Neck Drooping", though reported in Eurasian vultures, had never been observed in our region before the period of decline. It was first observed in Keoladeo National Park in Rajasthan, India, where birds would exhibit this trend for protracted period of several weeks before collapsing and falling out of trees, at the point of, or just prior to, death.

As I was well aware of the perpetrator diclofenac, I instantly interviewed the locals on the neighbouring usage of diclofenac, which turned out to be positive. According to them, they regularly use the drug to cure their cattle. For further investigation I visited a local pharmacy and found the tablet A-FENAC VET (each bolus contains Diclofenac Sodium BP 100 mg). If we put all these happenings together then the conclusion would be that the death of the those vultures were primarily due to diclofenac, because the locals treated their cattle with the deadly drug and when those cattle died the vulture merely fed on those carcasses which led them to death.

However, without any adequate scientific research we cannot take the statement as absolute conclusion. Hence, a proper scientific investigation is imperative to get a clear idea on vulture and diclofenac relationship in our country to save the last legs of these vanishing vultures.

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INDUSTRIAL ECOLOGY

Beneficial for both entrepreneurs and environment

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THE term "Industrial Ecology" has been evolved as an outcome of thoughtfulness to carry on industrial activities without impairing the environmental quality. The concept of Industrial Ecology (IE) though initially based on mainly engineering and natural science aspect is needed now to be integrated into the management and policy aspects to establish it as a sustainable business strategy.

A significant and systematic change in patterns of production and consumption is unavoidable if society is to restore and maintain stable natural resources (Opoku, H. 2004). The ever growing customer aspirations for environmentally friendly products are pushing the business and industries to enhance IE in their business strategy. To succeed it will need to be adopted by many stakeholders in industrial regime, across the levels or scales (e.g. individual company/firm, region, and national).

Most of the world reputed industries or business enterprises have taken the IE

principles as a design for environment, greening supply chain, life cycle assessment, eco-certification, extended producers' responsibility into their core business strategies. And these strategies undoubtedly have given them benefits both financially and socially and beyond the level of operations i.e. regionally and globally.

Policies to implement IE

Boons and Roome (2001, p. 52) maintain that "Industrial ecosystems are not simply ecologies. They are driven and guided by human thought and action. Industrial ecologies are, therefore, more precisely viewed as human ecologies..." Thus besides the analytical tools of IE namely material/energy flow analysis, life cycle assessment, there is an obvious need for analyzing human behaviour which in turn establishes a cultural and academic domain that affects realization of relation between industrial activities and ecosystem.

The integration of policies across the levels: For imple-

For implementing sustainable IE policies, it is necessary to integrate the sustainability principles beyond levels i.e. global, regional and local. This can be facilitated and sustained through a well designed information flow and stakeholders' structure network. Through this network the stakeholders of different level interact, contradict and in turn come out with certain feedback.

menting sustainable IE policies, it is necessary to integrate the sustainability principles beyond levels i.e. global, regional and local what Prof Kua calls "Coherently Integrated Policy Making". This can be facilitated and sustained through a well designed information flow and stakeholders' structure network. Through this network the stakeholders of different level interact, contradict and in turn come out with certain feedback. With development and management of industrial symbiosis at the local and regional level in mind, Fredrik von Malmborg takes a closer look at the role of local authorities in the transfer of knowledge, information and ideas to actors in inter-organizational networks related to management for regional sustainable development. He stresses the

importance of mutual trust among the potential members of a network as a basic condition for successful inter-organizational collaboration.

Greening the supply chain: This policy should be applied for the core supplier of raw materials for ultimate finished products which requires the inter-organizational management of industrial system. Thus the buyer should be ensured that their suppliers have also complied with the environmental standards they adopted.

Organization and management of inter-firm stakeholders: IE focuses on groups of firms and their stakeholders thus their management is of huge importance regarding integration of corporate environmental management into IE principles. Stakeholders can also be



seen as providing new opportunities like getting new business for wastes generated in an industry which had no previous value (Korhonen, J. et al). Thus material cycles and energy cascades would be enabled by cooperative networks

between manufacturing firms, energy industries and other societal actors including, e.g., agriculture, forestry and households (Chiu, A et al) Sometimes this, however, organization seems very difficult due to conflict of interests among the stake-

holders and firms.

Development and management of IE Industrial ecosystem is not isolated from natural ecosystem but unlike the latter it is much self controlled and complicated system. Only various human actors can develop and manage the industrial ecosystem and this can be possible through public-private partnership with central role of authorities. Design for environment, economic regulations and policies for promoting innovations, partnership and agreement between government bodies and business enterprises can be taken into consideration for this policy.

Extended producer responsibility: This is towards further thinking the industrial ecosystem development where the producers are obliged to perform some kind of responsibilities like taking back their products after their end of life for recycle or disposal in an environmentally friendly way.

Certification: The certification and labeling of the products that have been produced and achieved certain environmental standards will promote the mar-

ket of those products to rational consumers. This will also ensure the greening of its supply chain and life cycle assessment.

Servicizing: Another possible policy to be implemented is the sense of sharing product rather than owning it. If any product can serve more than one or two persons, then they can mutually share that service which will enable less resource consumption and in turn less waste generation.

Conclusion

The implementation of the discussed policies will undoubtedly be beneficial for both industries and environment but the main problem is with the availability of funds for the firms. Especially this problem is acute in South-East Asian region. Another problem in this region found by Prof Chertow is the organization of proliferated small firms. But the intra-organizational network and information flow can make it easier to overcome the short-time difficulties.

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