

Managing Water Resources via Water-Energy-Environment Approach for Smart Cities in Meghalaya (India): A Civil Society Perspective

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Abstract

Judicious management of water resources is the key to building smart cities because water is climate change and it is helpful in enhancing resilience to water-induced and environment-induced vagaries. The current trajectories of developing smart cities are usually based on 'sectoral or silo approach' and these are unlikely to help develop sustainable smart cities. Hence, there is need to focus attention on water-energy-environment nexus approach for developing viable and sustainable smart cities. Ensuring security of water, energy and environment is sine qua non for human survival. The sustenance of social and economic development can only be facilitated through enhancing resilience against the vagaries of climate change, availability of sufficient water and energy. The close links between water, energy, environment in management, analysis, planning and implementation are duly acknowledged under this nexus approach. In accordance with this approach, strategies and plans pertaining to water are worked out in tandem with the stakeholders, with the objective of avoiding cross-sector impacts and, perhaps more importantly, looking for combined solutions and synergies for more efficient resource use in building smart cities.

India Water Foundation, as knowledge partner of Meghalaya Basin Development Authority (MBDA), Government of Meghalaya, has helped in implementing water-energy-environment nexus approach which is being implemented under the flagship programme- Integrated Basin Development & Livelihood Programme (IBDLP) of the government of Meghalaya in a mission mode with more than 20 missions to develop both rural and urban areas in a sustainable manner. Development of many urban and peri-urban areas in Meghalaya is taking place on the pattern of 'smart cities'. IWF has facilitated this by capacity building programmes of the stakeholders.

Keywords: Climate change, Meghalaya, Nexus approach, Smart cities, Urban development, Water

Introduction

Population shift from rural to urban areas is occurring at a fast pace globally, especially in developing countries. According to broad estimates, currently half of world's population is living in urban areas and it is predicted that by 2050 about 64% of the developing world and 86% of the developed world will be urbanized (UNFP: n.d.).¹³ There is also rapid proliferation of urbanization in India as well. The percentage of population living in urban areas, according to 2001 census, which stood at 28.53%, crossed 30% as per 2011 census, standing at 31.16% and various UN reports project that by 2030, over 40% of India's population would be living in urban areas. This trend of rapid proliferation of urban population is discernible in the states of the India Union as well.

Meghalaya, which is located in India's North-East region, encompasses an area of approximately 22, 430 sq. kms. And having population around 3 million. About 20% of state's total population resides in urban areas. The state has 11

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districts and many townships which are witnessing gradual shift of population from rural to urban areas.

In the wake of rapid pace of urbanization, the notion of 'Smart Cities' has gained salience in the urbanization discourse in recent years. Scholars like Sanseverino (2014:1) have argued that the rapid transition to a highly urbanized population coinciding with the early 21st Century has made various societies and their respective governments around the globe to be confronted with unprecedented challenges regarding key themes like sustainable development, education, energy and the environment, safety and public services among others.

Almost all experts are seemingly unanimous in their view that there is standard definition of what constitutes a 'smart city'. However, experts in China's CAICT have provided a common denominator', according to which a smart city "is first and foremost a city – one that pushes the quality of resource management and service provision to the limit possible at the time. In such an integrated understanding of the smart city concept, smart city projects are part of a general concept of city modernisation. While the potential contribution and benefits of information and communication technology (ICT) to modernisation can be considerable, smart city projects should never be seen in isolation, but as one element in a city's (or a region's) continuous effort to find the next best way of operations".⁶

The CAICT suggests the inclusion of following criteria, all or some of them, to define whether a city is smart or not:

- Smart energy production and conservation
- Smart mobility
- Smart economy
- Smart living
- ICT economics
- Smart environment
- Smart governance
- Standard of living
- Smart society

In other words, a smart city entails balanced urban development that comprises technology, inter-connectivity, availability of sustainable resources, secure means of livelihood, safety of citizens and resilience to the vagaries of climate change.

Water Management and Nexus Approach

Water is a key component of sustainable development and all ecosystems are inextricably linked with water. The existing mechanism of Integrated Water Resource Management (IWRM) needs to be supplemented with water-energy-environment nexus approach because there is a close nexus between water, energy and environment, which seeks to find solutions based on convergence between various

sectors or disciplines and is being widely regarded along with resilience to attain sustainable development.¹ This nexus approach entails the potential of serving as a bridge that could engulf the gap between the social, economic and environmental pillars of sustainable development.

The IWRM facilitates a framework for water policy and strategy development at national level in an 'integrated' manner, involving the sectors that depend and/or impact on water resources. However, the process of IWRM being translated into action remains chiefly driven by the 'water/environment sector', with other sectors consulted but not substantially involved. Undoubtedly, the water demands and water quality requirements of all sectors may get addressed in the bulk IWRM planning; nevertheless, the policy and strategy developments within sectors seldom adequately consider the vital cross-cutting role of water. There exists no antagonism between the nexus thinking and IWRM principles; rather both are aligned, but the practice of true involvement, and ownership, of the food and energy sectors in IWRM is often falling back, which is what the water, energy and food security nexus approach aims to figure out. The nexus approach lays emphasis on exploring the opportunities of coordinated and integrated actions between water, energy and environment and aims to do away with the 'silo' thinking between the three development areas.

Water, energy and environment are intimately linked in myriad ways. The way people use water takes energy; the way modern society produces energy consumes water. Water and energy have much in common. Each is an essential input for productive, comfortable and healthy human society. Both are also derived from natural resources, and their use by humans creates a series of impacts on the sustainability of ecosystems. The close nexus between water and energy is based on two main factors: (a) Water use requires energy; (b) Energy production requires water.^{2,3}

The nexus approach is helpful in managing and achieving security in the water, energy and environment sectors thereby supporting a transition to sustainability by reducing trade-offs and generating additional benefits that outweigh the transaction costs associated with a paradigm shift to stronger integration across sectors.^{4,5} The nexus focus is on system efficiency, rather than on productivity of isolated sectors, and the benefits and efficiencies it produces for society as a whole through integrated policy-making and decision-making.

In the wake of growing global recognition that water is at the core of climate change, water is climate change and addressing climate change related issues warrant equal focus on addressing water related issues. In the wake of existing approaches to water and climate change, there is growing emphasis on ecosystem-based adaptation (EbA)

to climate change, which also addresses water related problems along with climate change. Thus, along with emphasis on IWRM and nexus approach, equal emphasis and significance is also being attached to ecosystem-based adaptation approach too.

Ecosystem-based adaptation (EBA) is the use of biodiversity and ecosystem services as part of an overall adaptation strategy.¹² EBA uses sustainable management, conservation and restoration of ecosystems, taking into account anticipated climate change impact trends, to reduce the vulnerability and improve the resilience of ecosystems and people to climate change impacts.⁷⁻¹⁰

There is growing recognition of the role ecosystems can play in helping people adapt to climate change. The concepts of EBA, working with nature, building with nature and green infrastructure, while having different scopes, follow the same rationale: healthy ecosystems and the multiple services they provide are part of our life insurance and are essential in any strategy for avoiding dangerous climate change, which ensures a carefully planned network of biodiversity-rich areas, is an essential pillar of green infrastructure that can also enhance resilience to natural disasters, such as floods, landslides or storm surges. This natural capital is now becoming even more valuable in the face of challenges that climate change presents.

Water and Environment Management in Urban Meghalaya

Meghalaya is one of the few states in India, which has harnessed water-energy-environment nexus approach as an integral part of sustainable development. It is integral to the IBDLP programme which was launched with inputs from IWF. The IBDLP programme is designed around four pillars – Knowledge Management, Natural resource Management, Entrepreneurship Development and Good Governance and is being implemented in a mission mode through over two dozen missions. Every mission is designed to leverage the comparative advantage that Meghalaya has in that sector and to generate livelihood opportunities for every household and to accelerate growth.

This nexus approach along with ecosystem-based adaptation (EbA) implemented with the partnership of India Water Foundation has yielded salutary results in managing water resources in a sustainable manner and enhancing urban resilience to climate change.

Shillong as an urban area and Cherrapunjee as a peri-urban area of Meghalaya have witnessed positive impact of EbA because an understanding of what makes resilient ecosystems and the services they supply is very much filtered down to the municipal officials of Shillong, through capacity programmes conducted by India Water Foundation, who work with local residents, communities

and vulnerable people to create local ownership and resilient local institutions. It is also ensured that local stewardship in Shillong enhances livelihoods and ecosystem management adequately.

In the peri-urban areas of Cherrapunjee, an Ecological Project has been launched under which awareness programmes on water and environment, sustainable livelihood activities, soil and water conservation, eco-restoration and agro-horticulture, construction of small check-dams and erosion control structures and eco-tourism development related activities are conducted. EbA has met with success in the urban areas of Shillong as well as in the peri-urban areas of Cherrapunjee in Meghalaya and the authorities are contemplating replicating this in other urban areas of the state.

Way Forward

India Water Foundation, as knowledge partner of Meghalaya Basin Development Authority (MBDA), Government of Meghalaya, has helped in implementing water-energy-environment nexus approach along with ecosystem-based adaptation approach, which is being implemented under the flagship programme-Integrated Basin Development and Livelihood Programme (IBDLP) of the government of Meghalaya in a mission mode with more than 20 missions to develop both rural and urban areas in a sustainable manner. Development of many urban and peri-urban areas in Meghalaya is taking place on the pattern of 'smart cities'.

We, at India Water Foundation, strongly feel that the ambitious Smart Cities Mission launched by Government of India under the leadership and according to vision of Prime Minister Shri Narendra Modi, needs emulation of 'Meghalaya Model,' evolved by India Water Foundation, that entails holistic approach to challenges emanating from water and climate change.

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