



Jammu City: Still a Step Behind Sustainability

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ABSTRACT: Urbanization is a complex dynamic process playing out over multiple scales of space and time. Cities experience a wide variety of shocks and stresses, such as industrial structural change (e.g. relocation or closure of a city's key firms); economic crisis (e.g. the global financial crisis of 2007/08 and the European debt crisis since 2009); population inflow/outflow; disasters (e.g. earthquakes, floods and hurricanes); disruption of the energy supply and leadership change. Urban resilience is a significant capacity to adjust to stress from hazards and to recover quickly from their impacts from catastrophe. Indeed, urban resilience can be seen in the context of risk and vulnerability assessments, institutional and social governance structures, resilience in (or of) different sectors (e.g. ecosystem, economy, etc.), and transformations of urban areas. In other words, to strengthen urban resilience is beneficial to reduce the influence of urban disaster. The very features that make cities feasible and desirable—their architectural structures, population concentrations, places of assembly, and interconnected infrastructure systems—also put them at high risk to floods, earthquakes, hurricanes, and terrorist attacks. Jammu though being the capital city of the state was not able get registered in even the 3rd list of smart cities out in September 2016. Jammu is a complex and interdependent city, extremely vulnerable to threats from both natural hazards and terrorism. This paper proposes a comprehensive strategy of urban hazard mitigation aimed at the creation of resilient city, able to withstand both types of threats.

I. INTRODUCTION TO SUSTAINABILITY

Urban sustainability is the idea that a city can be organized without excessive dependence on the surrounding countryside and be able to power itself with renewable sources of energy. The aim of this is to create the smallest achievable ecological footprint and to produce the lowest quantity of pollution possible, to efficiently use land, composed used materials, recycle it or convert waste-to-energy, and to make the city's comprehensive contribution to climate change minimal. A sustainable city creates an enduring way of life across the four domains of ecology, economics, politics and culture. The physical framework in addition to social and economic processes must involve acknowledging the challenges of growth.

Major development agencies such as the Asian development bank, the World Bank and the United Nations development program undertake significant work on urban development, however little research on urban sustainability has been conducted in Asia despite having 45% of world's population.

In a post-9/11 world, urban sustainability means protecting the urban environment not just from natural disaster, but also from destructive attacks. In Beijing, improvements in the power grid have led to the increased air conditioning use which actually heats up the environment and leads to more air pollution in environment. Urban settings are becoming increasingly reliant on alternative energy; we need to understand the vulnerabilities of emerging alternative energy structures.

In order for the next generation to successfully work the vision of today's researchers need to be able to think comprehensively about how all the systems in a city connect in order to form a sustainable city. Mexico City has dramatically cut CO₂ emissions and air pollution over the last 20 years through everything from vehicle emissions reductions to containment of urban sprawl. It is a proof that a solid plan can significantly improve air quality. San Francisco has an incredibly effective 11 years old zero waste program, which now sees 80% of all trash diverted from landfills.

By 2020, the city hopes to bring that up to 100% - a goal that seems quite possible. Rio de Janeiro aim is to formalize and re-urbanize all of Rio's favelas by 2020, with the combination of better landscaping, educational tools, infrastructure and more- a move that will help with health and wellness of 20% of the city's population. Singapore is a city made up of intelligent transport system, which is made up of an amalgam of smart transport initiatives, like real-time traffic data GPS/equipped taxis and an electronic road toll collection system resulting in lower congestion rates than most cities.

II. INDIAN CONTEXT OF SUSTAINABILITY

Indian cities are urbanizing at an unprecedented scale and pace. The main problem is country's existing urban transport. City bus services are and will remain primary mode of public transport for the majority of India's urban population. In major metropolitans like Delhi and Bangalore, buses accounts for more than 40% of all motorized trips. For medium and smaller sized cities buses will remain only cost efficient mode of transport. Improving the scale and quality of city buses, then, should be central to any city's strategy to promote public transport over private vehicle use. Redesigning bus networks and routes to make services more efficient and user friendly, as well as using technology to improve passenger information system will be essential. Sustainable development is to make cities and human settlements inclusive, safe, resilient and sustainable.

One of the obstacles in making Indian cities sustainable is "inefficient and uncontrolled" usage of energy. Although having 17% of world's population, only 3% of total energy that India consumes is generated energy. The rest is still coming from wood, charcoal, crop waste or other solid fuels to cook food, these emit CO₂ thus contributing to the changes in earth's climate. Biomass plants can be set up in various regions and each plant can fulfill the requirements of its respective locality, the other obstacle "shortage of drinking water." paradoxically, water is a renewable source and yet millions are denied this most basic need. The problem is not of quantity, but rather of the way it is distributed and used. In many places, extraction is taking place at an unsustainable rate, because of which water tables are falling, which can be seen in major grain producing areas in Punjab. At the same time, it causes older, shallower wells to dry up. Through better management and fairer distribution, the goal of providing every human being with access of clean water is achievable.

Like Chennai Municipal Corporation in every Indian city should start providing rebate on house tax as an incentive for houses installing rain water conservation

system, the private sector can also partner with local bodies and NGO's to protect local water bodies and aquifers. The third and last obstacle in our way is "low quality" education which is provided in our country. Literacy and basic education are essential for enabling the poor access the benefits offered by development initiatives and market opportunities. Basic education is hence a precondition for sustainable development. A major step in this regard can be providing quality educational infrastructure to our students at all levels. The socio-economic equality to improve human lives can only be achieved through education. This will also help in creating a more equitable society. While quality is a problem, contact to education is a bigger problem. Private institutes must collaborate with banks to make student loan available at an affordable rate. India has lately experienced industrialization, motorization and urbanization at once. This driven by globalization and increasing international economic cooperation which have made the cities flourish. After China, India has the second largest urban system in the world. This makes the Indian cities exposed to aggressive urbanization which is both a benefit and difficulty for the country. The urban areas in the country are increasing in population every day, the increasing growth and urbanization leads to urban poverty. Around 36.1% of the world's urban populations were settled in slums. The world's largest slum Dharavi is located in Mumbai, India. The slums usually consist of poor housing built on illegal land. This leads to a constant threat of eviction, diseases and enlarged effects of natural disasters like flooding. The people are also denied their safety and privacy.

III. DRIVERS AND COMPONENTS OF ECO-CITY INITIATIVES

The World Bank launched the Eco Cities Program to "give practical and scalable, analytical and operational support for cities in developing countries to achieve ecological and economic sustainability based on four key principles:

- A city based approach
- An expanded platform for collaborative design and decision making
- A one system approach
- An investment framework that values sustainability and resiliency.

The arrangement's goals include assessing the economic viability of eco-cities to explore the possibility that eco-cities might attract global businesses and allow lower costs relative to traditional cities, while holding resource, climate, and economic shocks.

The World Bank plans to partner with government, NGO and private sector organizations to help pilot Eco Cities develop.

Smart infrastructure, or the use of *information and communication technologies (ICT)* to better manage complex systems ranging from traffic patterns to the electric grid, is a related field that plays a key role in ecocity development. A key component is the integration of wireless sensors, which can collect and transmit information from almost any object, including water pipes, utility lines, roads, and buildings. Using sensors, advanced computer software interpret raw data to “monitor and optimize” these kinds of complex systems.

ECO-CITY DEVELOPMENTS. Our aim is to assess these geographically diverse initiatives, beginning with the earliest ones, and to examine their aims, business models, and partnerships, so as to identify factors associated with the development of successful ecocities.

MASDSAR CITY

Background And Goals. The government of Abu Dhabi established one of the most famous - and most widely criticized – eco-city projects to date. The 2.7 square-mile Masdar City, located in a desert 10.5 miles from downtown Abu Dhabi, was designed to house 40,000 residents, along with hundreds of businesses and a research university, and to play as a clean-tech city cluster. Masdar City officials illustrated that the city’s aim “is to play as a prototype for other sustainable urban development, assist the wider Abu Dhabi in lowering its eco footprint, contribute to Abu Dhabi’s economic diversification and establish the emirate as a global hub for renewable energy and clean technology.

Governance And Financing. The plan for Masdar City was conceived by the government of Abu Dhabi and administered by Masdar, a uniformly owned subsidiary of the Mubadala Development Company, a government-owned investment vehicle that manages a multi-billion dollar portfolio of projects to support the growth and economic diversification of Abu Dhabi.



Fig. 1. Future city of Masdar.

IV. INTRODUCTION TO JAMMU “THE CITY OF TEMPLES”

Through the middle ages, Jammu prospered. Changes of rule at Delhi or Lahore passed over without disturbing the affluence of the town. The fertile cultivable land around the town constantly generated wealth and unlike many medieval towns, Jammu was never depopulated. The town was also a major stopover for caravans on the trade routes to Kashmir, Asia Minor and beyond and was a base for the fabled Silk Route. Today, the city of Jammu has come to be known as the ‘*City of Temples*’. Innumerable temples and shrines, with glittering ‘shikhars’ soaring into the sky, dot the city’s skyline, creating the ambience of a holy and peaceful city.

RAGHUNATH TEMPLE

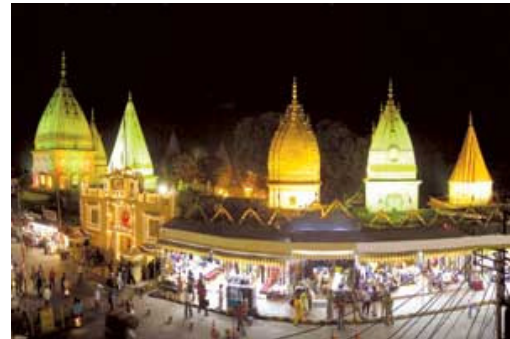


Fig. 2. Ragnunath temple.

130 years old it is the largest temple complex in northern India. The temple work started by Maharaja Gulab Singh, founder of the Kingdom of Jammu and Kashmir in 1835 AD was completed by his son Maharaja Ranbir Singh in 1860 AD.

Bave Wali Mata (Goddess Mahakali). Bave Wali Mata is the presiding deity of Jammu . Tuesday and Sunday are special days of worship for the devotees. Fort is surrounded by a beautiful terraced garden.

RANBIRESHWAR TEMPLE



Fig. 3. Ranbireshwar temple.

In Ranbireshwar Temple, there are twelve Shiva 'lingams' of crystal measuring 12" to 18" and galleries with thousands of 'saligrams' fixed on stone slabs.

PANCHBAKHTAR TEMPLE. Panchvaktar (five faces) Mahadev Mandir (temple) occupies a unique place, in Jammu, the city of temples. It is one of the oldest Shivalya in the city. Old tales and oral histories state that Adi Shankryacharya visited this site and stayed there.

SUSTAINABLE DEVELOPMENT FOR JAMMU CITY-A FRAMEWORK FOR SUSTAINABLE URBAN TRANSFORMATION

It has been commonly depicted as an amalgamation of economic, social and environmental spheres. Briefly summarized, sustainable development implies that society must strive to attain a balanced approach to socio-economic evolution that is based on a strong understanding and respect for ecological systems. Institutional and time dimensions have become more prominent in sustainability discussions, which highlight the importance of administration and democracy as well as processes and actions over time. Urban development has emerged as a key topic within debates on sustainability, particularly as a source of problems, when civic areas are not intelligently planned and developed.

Governance and Planning. The role of governance is closely connected to planning as well as to innovation, collaboration and socio-technical transitions. The city is major trade and commerce route for the Kashmir valley tourism and commerce items. The role of government is very important for Jammu city as it acts as a joining hand between Kashmir valley and the rest of india.

But since independence Jammu has not witnessed growth as it should have due to terrorism and less political will. The growth of the city suffered major constraint in the hand successive governments. Planning of the city must be done by developing a Special Purpose Vehicle which must have the power to work simultaneously with different departments.

Applicability Of "Three Pillar Basic Model" On Jammu. This is one of the most well-known representations made using the three dimensions - Economy, Environment and Society. The diagram shows three interlocking circles with environmental (conservation), economic (growth), and social (equity) dimensions. Sustainable evolution is modeled on these three pillars.

Economy Of Jammu. Jammu city is generally used as a transit hub for pilgrims visiting Katra. But due to political apathy the cities growth has not witnessed that must thrust which a city of this potential must have

encountered due to terrorism and political apathy of successive governments.

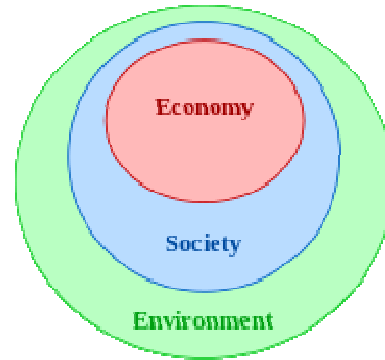


Fig. 4. Three pillar model.

Society. It generally depends upon the living condition and cultural integrity of the region. The city of Jammu have mix population of Hindu ,Muslim ,Sikhs and Buddhist .So by this criteria it is very must communal. The new Jammu city is much more liberal and have mix cluster of different societies. Society plays an important role for the economic growth of the city.

Environment. The ecology of the region generally makes the way for healthy living standards. As the city lives on the banks of river tawi, the ecology of the area is always sensitive to nature as in case there are heavy rains the low lying area of the city generally gets flooded and economic losses worth crores occur in just one go. There is no waste treatment plant in Jammu city nor there any solid waste site. So environment of the city is always at risk due to failure of successive governments.

CONCLUSION

This paper described a form of exploratory search where responsiveness was of the essence. The paper presented subject categories, publication patterns, outputs, international trajectories, new development and trends in the field of urban sustainability. The major reference, were keywords such as "Urbanization", "eco cities" and "sustainability". Future research work will focus on an idea that a city can be organized without excessive reliance on the surrounding countryside and be able to power itself with renewable sources of energy. It would mainly focus on creating cities with enduring way of life across the four domains of ecology, economics, politics and culture.

Despite the factor that a little research on urban sustainability has been conducted in Asia, our research will focus on a post 9/11 world where urban sustainability means protecting the urban environment not just from natural disaster but also from destructive attacks. We need to focus on the vulnerabilities of emerging energy structures. The major obstacles such as inefficient and uncontrolled consumption of energy are to be monitored. Problems we will be tackling are shortage of drinking water, literacy rate and socio economic balance. For the city of Jammu all these risks such as natural disasters, terrorist attacks and social economic balance are the main areas in which the city of Jammu must be sustainable. The sustainable development in the city implies that the society must strive to attain a balance approach to socio economic development that is based on a strong understanding and respect of ecological systems. As the area of Jammu is located in seismic zone 4, it is very vulnerable to earthquakes. Also the city has faced hazards like cloud bursts, forest fires and floods. The basic postulates for the development should be that it has to be planned in context of its region and the ecological balance should not be affected by it. River Tawi needs to be channelized for making available and

freeing large areas, to be developed for recreational uses to be integrated with other developments so that the river forms an integral part of the city, physically and visually. Natural forests need to be protected to maintain ecological balance. The old city should be treated as a special area. The pattern of development is such that there is no scope of further development in this area on the basis of standard planning policies and controls since it is already thickly populated. Mass transport system should be remodeled and urban development pattern to be adopted needs to be low rise low density in order to be responsive to city needs.

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