

## Cities

In 20 years, India's cities will have to accommodate 250 million to 300 million more people than they do today. That's the equivalent of 11 New Delhis.



## Electricity

Of the 1.4 billion people of the world who have no access to electricity in the world, India accounts for over 300 million.



## Water

Only 74% of urban households in India are served by piped water supply. No Indian city has piped water 24 hours a day, seven days a week—4 to 5 hours of supply per day is the average.



## Infrastructure

Despite increased investments in infrastructure, an estimated \$1 trillion in infrastructure improvements will be required to meet the country's resource needs over the next 5 years.

1. CHINA



2. USA



3. INDIA



## Pollution

By 2015, India is expected to become the world's third largest emitter of carbon dioxide—it ranked fifth in 2005.

## Transportation

The number of private vehicles in India is expected to grow by more than 3 times by 2021.



## Urbanization

India has witnessed major urbanization in recent times, with an estimated 30 people leaving rural India for urban areas every minute during the next 20 years. At this rate, the country will need some 300 new cities in the next two decades.



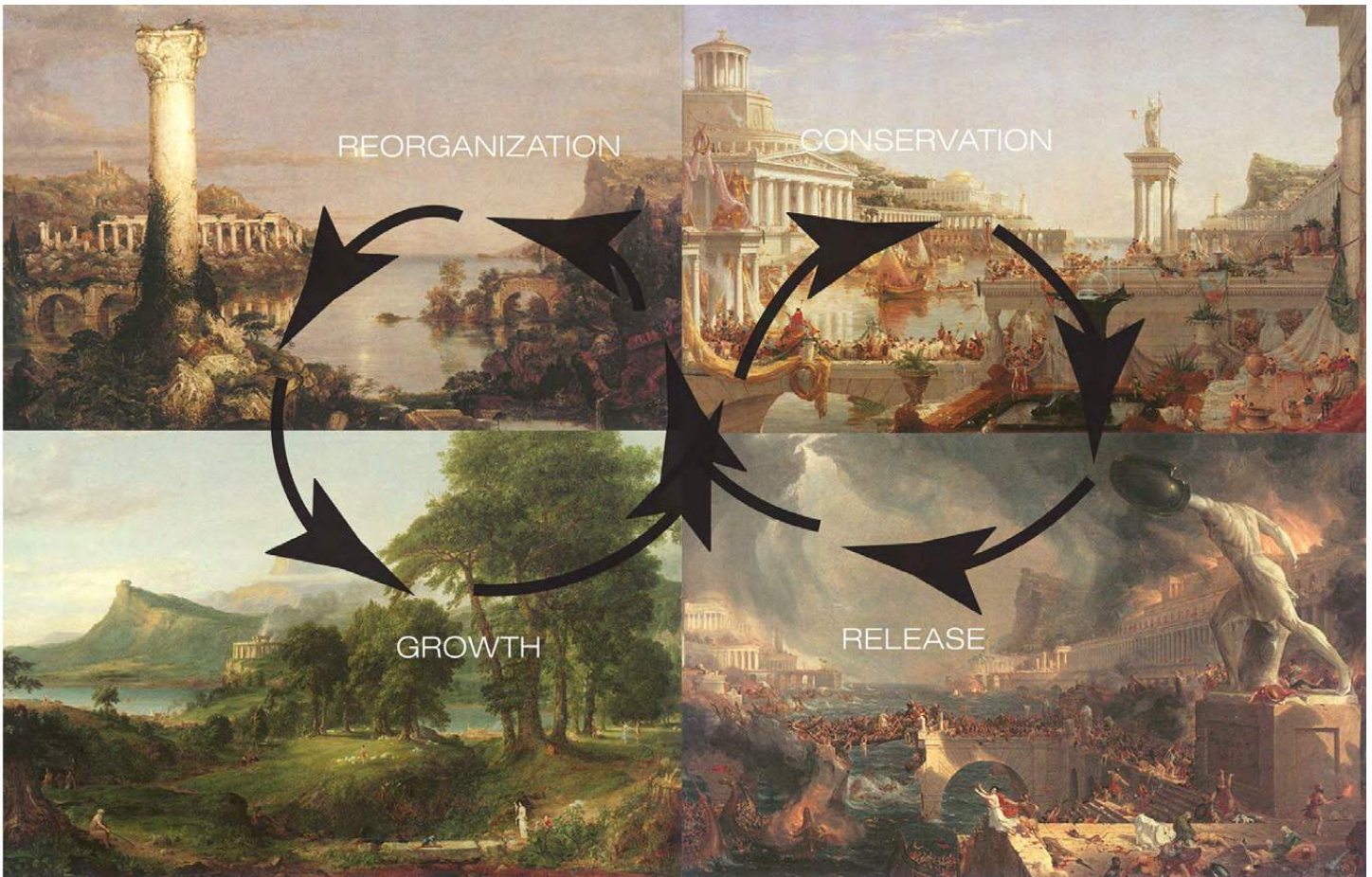
IBM

The image above is an Infographic by IBM published in 2012 depicting the predicted urban growth in India over the next 25 years. It indicates the increase in the number of people per square feet in major cities and subsequently the strain it applies on basic needs and infrastructure as well as its contribution to global pollution. Interestingly, Cochin has not been marked as a major city in the graphic, but it does indicate that Kerala has districts with a higher concentration of people per square feet than most parts of the country.

# DESIGNED URBAN VALUES

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In 2012, a United Nations report predicted that India over the next four decades will witness the largest increase in Urban population for any country in the world; 457 million as opposed to China's 341 million. This has been attributed two-thirds due to its urban growth and one-third due to overall population increase. Not much can be done about the latter issue, but the prospect of urban growth is one that has to be addressed with a carefully reformed notion of development and a strong emphasis on resilience. The strain on urban centers both large and small throughout the country, will have to be countered with two equally critical approaches. One, a traditional top-down "Urban design" methodology reliant on heavily engineered infrastructural projects and two, a bottom-up re definition and strengthening of existing urban values based on socio-cultural, political, economic and environmental relationships. Designers and architects have a key role to play in this second approach, by negotiating how cities or "man-made eco-systems" evolve and adapt to new states of equilibrium in the face of change, disastrous or otherwise. Designed urban values rely on a non-hierarchical systems based approach involving public engagement and focus on future measures for city resilience.



## DEVELOPMENT AND RESILIENCE

Most urban expansion plans intend to start with a “tabula rasa” or clean slate and grow into the peripheral environment of the city. Such layouts create suburban zones that contribute very little to the city’s fabric and strain the natural balance of the existing ecological landscape. Rather, the first recourse should be to efficiently re-organize and re-densify the existing city with stronger basic infrastructural framework with an eye on future growth and expansion. Well knit communal structures within the city, over time, will attempt to strengthen their weakest links. These issues may include matters of productivity and maintenance of basic needs such as food, water, shelter and income; addressed through participation in socio-political/economic decision making process. Designed solutions that pay careful attention to such urgencies can then create programs that not only satisfy present demands but then grow to accommodate the future influx of population. These act as systems of resilience that allow society to mitigate and bounce back from the effects of inevitable natural or manmade calamities that threaten urban centers. It is paramount that sustainable models of development think beyond efficiency in energy and resources and understand how it can bolster the involvement of stakeholders at the ground level. The priority in development plans cannot be to idealize what is best rather, it is to first take care of the worst.

*Above is an overlay of a “Panarchy” diagram over Thomas Cole’s painting, Course of empire, 1833-36. It talks about how the Roman empire grew into a Human civilization, thrived, prospered until it was destroyed. What the Panarchy system talks of is that this process of growth, stability and destruction and once again growth can be maintained as long there is a strength in resilience to undergo change. Beyond a certain extent of shock the civilization will not be able to recover and therefore it is important to mitigate such effects.*



## URBAN DESIGN AND URBAN VALUES

The question of how to implement change within the city is an important one, and what is typically seen is a “Top-down” methodology that attempts to organize the city’s functions based on broad, predictive means of development. However, what this approach often glances over is the fact that different sections of the city have their own set of social, cultural, religious, political, economic or environmental preoccupations. The success of urban plans rely heavily on the acceptance and involvement of its benefactors, but to start a conversation between the general public and the urban authorities is a daunting task. Designers with their skills in representation and communication, organization and implementation can act as a bridge between the planner and the public voice. For example, a city proposal to invest heavily in a massive infrastructural road network that would help relieve the vehicular congestion of the city, will have to be countered with concerns of the affected local communities on how this would alter their day to day lives and their contribution to the city’s productivity. Ideally such a plan would have to be rethought through reforms that improve public means of transport, or innovative design competitions that are focused on strengthening the contextual spirit of the area while altering its physical structure. Urban design imbued with urban values can create exciting opportunities.

*The Swaraj round specifically, the Thekinkadu maidan is a great example of designed urban values. Over two centuries ago, King Rama Varma created a public space that simultaneously responded to the religious, cultural, commercial and infrastructural aspirations of the city and to this day, it acts as a resilient symbol of the city’s identity. However, today the ring road network has been saturated by vehicular traffic and it is only going to worsen in coming years. City officials along with its inhabitants have to look at this, not as a problem, but as an opportunity to improve the urban environment they live in.*



## ECOSYSTEMS AND PUBLIC ENGAGEMENT

Cities have to be understood as artificial eco systems that consistently undergo change, sometimes within human control and at other times without. Most extreme cases of natural and manmade catastrophes lead to the utter failure of constantly relied upon administrative and infrastructural frameworks. The only means to reinstate a sense of stability in such scenarios is through a series of compassionate, swift and well informed responses at the ground level. When priorities of urban design shift to addressing such issues through promoting greater freedom in the flow of information and a sense of community, it takes on a whole new character. Architects are no more merely focused on single family residences on individual plots of land, rather we pay attention to dense urban structures that foster greater societal relationships. Resilient, flexible public spaces powered by alternate energy models are adopted, while traditional street sections with heavy vehicular traffic flows are abandoned. Focus shifts to improving pedestrian interactions, zero-carbon transport systems and digital networks that can enhance the city's efficiency. Our developing cities can learn from how their developed counterparts around the globe have shown resilience in the face of disaster; applying these lessons not only to major metropolitan centers but also smaller urban hubs that act as microcosms of similar phenomenon.

*The recent floods in the city of Chennai is a clear example of how short sighted urban planning can damage the city's ability to respond to natural calamities. Fortunately, despite the utter failure of basic infrastructure, first responders were able to co-ordinate with each other and the rest of the country through social media platforms and other modes of communication, to help those who were most affected or stranded by the floods. It is the spirit of the people and not larger governing bodies that helped the city immediately mitigate the effects of the disaster.*



Left above, old meatpacking line; middle, below, The Highline designed by James Corner and Diller Scofidio and Renfro, New York city, 2008

Right above, Power outage in New York city , Hurricane Sandy, 2011  
Right middle, below, BIG architects proposal for the coastline of Manhattan

## LOSS AND NEW STATES OF EQUILIBRIUM

Finally, cities will have to adapt to new states of equilibrium in post-shock scenarios, whether those losses were incurred by natural or manmade disasters . These adaptive processes can be explained through two recent projects in New York city, images of which are shown above. Each was a response to a different critical issue, one resolving infrastructural inadequacies due to shift in industrial practices and the other due to severe climate change. The images on the left are of the “Highline”. What was once an elevated meat carrying train line, was eventually abandoned with the closing down of non-frozen meat industries during the early 1980s. In 2008, spurred on by the local community, the tracks were redesigned into a linear recreational park space that not only improved the identity of a once undesirable neighborhood, but also gave an emphatic boost to the value of real estate and commercial properties along its path. The second example is the “Rebuild by design” competition. In the wake of Hurricane Sandy in 2011, many parts of New York were severely flooded and left without power and communicational infrastructure. Within months, the U.S. department of Housing and Urban development (HUD) announced a design competition that invited renowned architects, engineers, scientists and urbanists from all round the globe to interact with the affected communities of the city, and to work in teams to propose resilient design schemes against future disasters. Today, many of these ideas are being implemented at a city scale with community participation in making robust public spaces, better communication networks and natural infrastructure that mitigates the effects of climate change. These projects cannot be measured by success or failure alone, they act as yardsticks of the human will to survive, adapt and grow in their cities.