Infotopia – A study on smarter sustainable cities

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The cities of the developing world are growing at a fast pace, with the potential to add to it, the huge influx of people, amidst the physical, social, political and cultural pressures. An ironical tool that has shaped our cities to grow in an organic way impeding its definitive/ structural growth is the "slum". I term it as an "Infotopia" (Informal Utopia) that is in itself a genesis of the people. Over the years the growth of infotopia has been unprecedented. A search for a place to dwell, a shed to work and food to eat is the agenda in most minds considering migration. With such dynamics as the foundation, there has been an efficient way these utopias practice conventional way of living. This efficiency exhibited leads to economic as well social sustainability. Based on the study, the cases revealed the efficiency of spatial typology, communal living, pattern and morphology of settlement and inefficiency in sanitation and hygiene systems. This would be contrasted by exploring master plans of another high density living, of a similar scale that includes innovative technologies and an introverted way of living. The high investment cost in the settlement would do nothing more than being socially non viable, provide encouragement to the private domain and cultivate the lack of a sense of belonging. The paper focuses on an argument that "a need" in human settlements is directly proportional to the amount of sustainability they illustrate. It demonstrates how people in informal utopias adapt to crisises and move in search of an environment that is socially and economically sustainable as well. The cases will be explored based on the authors experience in these utopias in the third world. The conclusion would be suggestive on policies that include economic and social viability in such newly formed settlements (master plans). It focuses on how the emergent and fast building technologies could compliment the traditional ways practiced in infotopias for the betterment of their livelihoods. However, one has to keep in mind, "Where there is a need, there will always be greed". Our present scenario in developing cities is dealing with environments where there are huge housing deficits in the deprived areas. When smarter technology is added on to the traditional ways of living, the investments required become lower, thus facilitating economically viable environments. This is best concluded in the statement," If you don't provide them an environment to live and an economy to sustain, then where is the question of environmental and ecological sustainability?"

1. INTRODUCTION

India – rich in culture, heritage and human resource, is in fact a developing country of prime importance for many global investors. The cities of the developing world are growing at a fast pace, with the potential to add to it, the huge influx of people, amidst the physical, social, political and cultural pressures. The cities of the third world take an important position in the global outlook by means of their rate of urbanization, amount of resource within and the cheap human labor they offer. Though these cities may exhibit these variables as a whole, sustainability is one parameter that judges the suitability of a city for global markets. This paper explores sustainability more on the terms of a system, a connectivity of things that

work together as a whole, thus being efficient and self sufficient.

1.1. What is the current state of Indian cities?

Urban population could be simply defined as the number of people living in cities. The urban population always had shown an almost impossible increase in case of Indian cities. Statistics reveal that the urban population shows a gradual shift from 17% in 1951 to 31% in 2011 and is projected to be as high as 42.5% by 2025. Despite the proportion living in urban areas being comparatively low, the problems caused by their presence are enormous. Unemployment, underemployment, and shortage of basic amenities like water supply, sanitation, sewerage and electricity would add to that list. The biggest concern here is housing. These cities have a huge influx of population and this coupled with housing shortage have led to very large slum populations. "*Mumbai has almost 50% of the population living in slums. Kolkata has 32% of the population living in slums.*"

An ironical tool that has shaped our cities to grow in an organic way impeding its definitive/ structural growth is the "slum". I term it as an "Infotopia" (Informal Utopia) that is in itself a genesis of the people. This sums up the scenario where, there are neighbourhoods unfit for human habitation on one side while there are policies dictating the growth of new technology fronted development of sustainable smart cities.

1.2. Sustainable development

Sustainable development could be arguably explained based on three domains, society, environment and economy (Figure 1). These must be coherently optimized when designing a product, a process or a city. Economic and environmental sustainability has remained the constant focus of researchers, academicians and policy makers over the years and has an in depth perspective of its own. Social sustainability is one issue that has always been shaded over, and left wanting propagation in the process of growth. Stephen Mckenzie says: "*Social sustainability is a positive condition within communities and a process within communities that can achieve that condition*". Social sustainability could be defined in a word as nature – society relationships. It is achieved only when the working within the society satisfies an extended set of human needs. In other words, a development that fosters

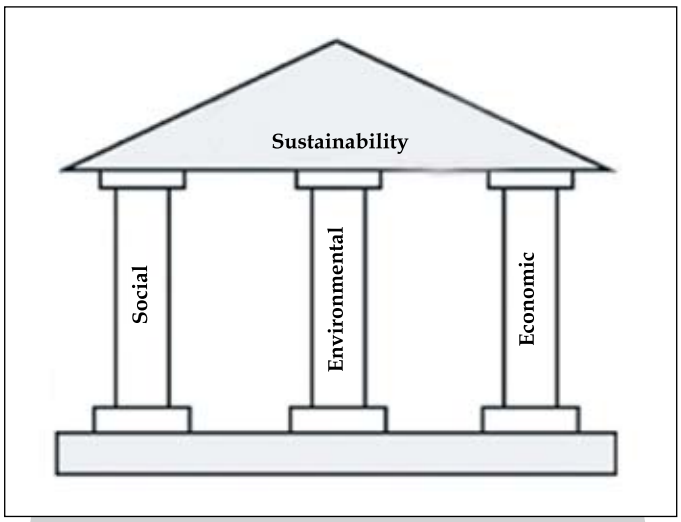

Figure 1. Three pillars of Sustainability
Source : thwink.org

an environment conducive to arguably diverse cultural and social groups to dwell, while at the same time encouraging social interaction.

1.3. A need in human settlements and world as a system

The crisis in terms of livable neighborhoods has always been present in our society. A simple reason for this is the "human need". This need dictates a person to move from his conventional way of living in search of a new life, to these cities in a third world country. The lack of favorable opportunities and an immediate requirement for a place to dwell for a person migrating to a city marks the inception of an Infotopia. For instance, consider the world as a system that could be in 2 states: a) A system that connects space b) A system that connects time.

A system that connects space is one in which physical cause from one geographical location shows an after effect in another geographical location. For instance, the need for an industrial set up of manufacturing in a developed nation might result in an informal set up of smaller industries and support infotopias (E.g.: Dharavi).

A system that connects time is one where economic policies that are endorsed today will have an impact on urban poverty when our children are adults. This infers the lack of planning and opening up of free markets in

the developing nations, to see the effect of globalization. The net result of this is the formation of Infotopias that are self-sustainable.

This paper has a key relation to the statement mentioned above and focuses on an argument that "a need" in human settlements is directly proportional to the amount of sustainability they illustrate. It demonstrates how people in informal utopias adapt to that crisis and move in search of an environment that is socially and economically sustainable as well. The cases will be explored based on the authors experience in these utopias in the third world.

2. SMART SUSTAINABLE CITIES OR SUSTAINABLE SMART CITIES

Orthodox master planning in India has always resulted in private realms. The private realm mentioned here refers to the practice of closing oneself from the society and creating a private domain. On the other hand would be a public realm that fosters community development and marks a sense of sociability. As discussed earlier, social sustainability is one aspect of sustainable development that encompasses human rights, living conditions, human interactions, nature-society relations and governance. This study picks on two cases and illustrates the amount of sustainability achieved in each through demonstration of certain parameters.

The government of India has been keen in developing smart cities that are technology driven and introduce to us new ways of sustainability. This would be our first case where, environmental sustainability is achieved driven through technology, inhibiting the community growth. The other case would be on the organic growth of an informal settlement, illustrating the existence of social and economical sustainability that has evolved through their needs. Despite having such stable growth these informal settlements fail in terms of achieving environmental stability due to the factors of poverty, lack of sanitary facility and environmental degradation. The paper limits the research only to a housing neighborhood both in the case of master planning and informal settlement to illustrate the scenarios. In short, informal settlements are "smart sustainable" and are like a city on their own, while the planned growth of housing complexes and new towns are "sustainable smart cities" achieved through design.

2.1. Case of high dense housing complexes by private developers

The current solution for housing problems in India is to build houses. Whatever the condition may be, housing just remains a place to dwell. The housing complexes built with an intension of high density environments just serve to be pockets of introverted neighborhoods. The investor readily encourages a highly commercial and luxurious apartment complex, with the intention of quadruple profits The net result is a highly non-sociable environment in the city. The paradox is such that, these environments are rated to be sustainable ones through the measure of elements of such design. The elements of sustainable design include natural, site-specific design; energy conservation, healthy environments and use of specified LEED rated materials. It is not surprising that these remain to be rated based on the environmental sustainability, but the factor of social sustainability is lost.

In a city like Ahmedabad, where the cost of an apartment soars high, the affordability is an issue of prime importance. The people do afford such kind of luxurious environments, with sociability at stake. A sense of communal living flourished in the housing environments of POLS (vernacular style of housing blocks) that contradicts the present day construction techniques as well as conditions of living. A designer who envisions the building to be environmentally sustainable persuades the investor to invest on such technologies namely engineered wood, low energy materials etc. Similarly the case of Chennai where once the community of Agraharams and other cultural housing environments flourished is now contradicted with the newly formed multi storied sustainable concrete jungles. All these now point to a knot where sustainability in terms of these environments is considered to be in single dimension i.e. environmental sustainability.

2.1.1 Economical sustainability

"*Economic sustainability is the term used to identify various strategies that make it possible to use available resources to their best advantage. The idea is to promote the use of those resources in a way that is both efficient and responsible, and likely to provide long-term benefits.*" This type of sustainability encourages responsible use of resources making sure

that operation doesn't cause any imbalance on the local community, thus maximizing profits.

2.1.2 IT SEZ, Vadodara, Gujarat – Learning from the pilot project

To fill the gap in housing, The National Urban Housing and Habitat Policy (NUHHP) suggests a regional planning approach that involves " New integrated townships and Greenfield developments\. The current scenario in India resembles a 550-acre Special Economic Zone integrated with residential, commercial, retail, civic facilities that would be self sufficient of its own. The current proposal also includes 100 new smart cities to be developed at various cities or fringes of identified cities in India. One such case is the IT SEZ, Vadodara, Gujarat.

From an investor point of view, these townships are much easier to build. The land and labor are available at an extremely low cost, in addition to which the township development policies have simpler procedures to acquire land. These new cities or utopian like massive developments retain high levels of privacy and lack a sense of integration with the surroundings. They fail to recognize the importance of walkable and workable neighborhoods. "Jane believed that people on the street walking, talking, playing, sitting, watching and working all made for a viable and safe street. The interactions and constant activity produced a place with a high degree of social contact for residents, children and business owners as well as pedestrians passing through neighborhoods."

A notable quip in this project is the demonstration of socially inclusive and accessible environments. EMBARQ India has worked on this pilot project to show sustainable mobility in the housing projects in the township. The strategy developed was a bottom-up approach that defines sustainable mobility as "*development of infrastructure that enables and promotes travel by walking, bicycling, mixed land uses, public space creation and connectivity*". The "need for socially viable environments of the city" has led to the demonstration of such neighborhoods of an urban scale. In other words, the lessons sought from the existing neighborhood developments and housing complexes, where the necessary facilities are provided within, the environment completely is introverted losing its sustainable factor, has been the factor of change in recent architectural developments.

Figure 2. An illustration of morphology of an Infortopia, showing intimate streets and community activities.

2.1.3 Infotopia – a smart sustainable city

On one side, where the demand is negligible and the towers soar high, the other side is tentatively invisible. These are the Infotopias that sprawl the urban face of the cities, occupying pockets from the Central Business District's (CBD) to the suburbs. Houses everywhere, neither temporary, nor permanent, with neither electricity nor water. Over the years the growth of infotopias has been very high. A search for a place to dwell, a shed to work and food to eat is the agenda in many minds anticipating migration. With such dynamics under consideration, there has been an efficient way these utopias practice conventional way of living. Firstly, the morphology of the settlement itself dictates intimacy in terms of built environment. The streets are organized in an organic way that ends in a cul-de-sac (Figure 3d), promoting various communal activities/ gatherings around it (Figure 2). The massive compounds by the developers are an exact contradiction, with higher road widths, promoting vehicular traffic. The informal utopias, through their narrow streets foster community development and structure the community. The built environment is compact, cozy and ensures a visibility domain with in the house and encourages interactions among individuals (Figure 3b and 3c). The need dictates the amount of efficiency achieved in spatial planning. Moreover, the domestic life within the house is more tuned

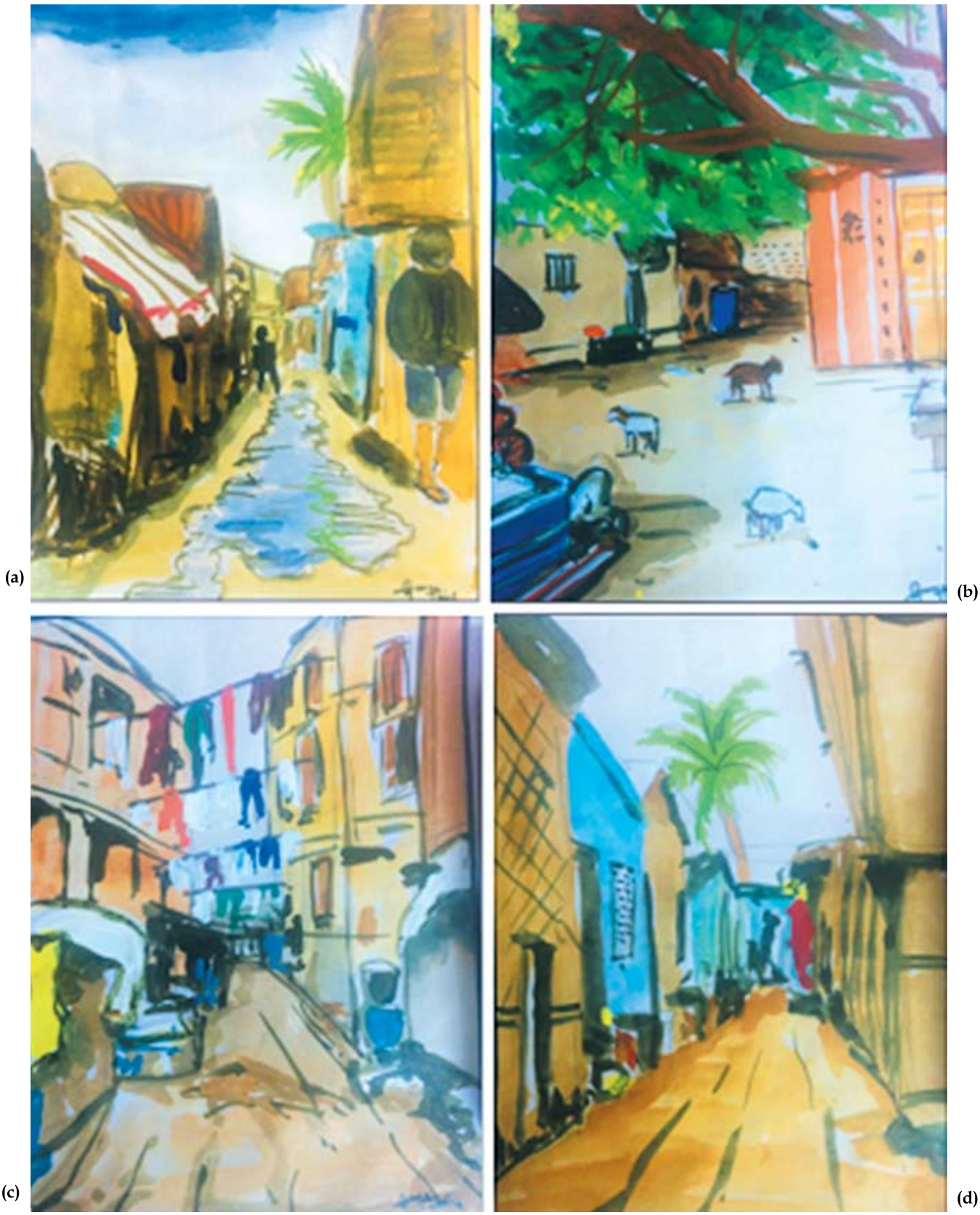

Figure 3. (a) An illustration showing improper management of water in these utopias (b) A breathing space for the communities and domestication (c) An interaction triggered through drying of clothes (d) A typical cul-de-sac

towards the parent monitoring the child's actions and growth. The affordability in terms of a shelter is achieved in these narrow alleys, at the same time cutting down the transport costs as the people prefer settling down close to their work places. Whilst the social and economical sustainability have been explained above, the infotopias fail in terms of achieving environmental sustainability. Rather, they are more tuned towards environmental degradation. Lack of sanitary facilities (Figure 3a) within cause pollution to near by water sources, illiteracy makes them urinate and defecate in the open. There are on the whole, infinite problems but the city within is composed of immeasurable transactions and human interactions. Its sociability factor is not designed, but naturally endowed.

3. CONCLUSION

The evidence from research demonstrates that the development of such introverted housing leads to the breaking up of communities. An approach to housing, especially in the newly developing cities, has a measurable, real world impact that has to be rigorously capitalized upon. The present scenario in developing cities is dealing with environments where there are huge housing deficits in the deprived areas. When developers instead cater to the demand for residential, un-walkable, gated communities, the discrepancies between the envisioned safety leads to building a community with decreased personal security and declined public experience. Reimaging the housing developments in the townships is critical to create a sustainable, equitable and accessible urban future for developing cities in India.

The policies endorsed related to housing/township/ urban developments should: cater to the demands of the society, foster community development, ensure safe walkable neighborhoods, ensure socially viable environments, incorporate three pillars of sustainability (economical, social and environmental) and lastly learn from the existing smart sustainable cities.

More than creating an introverted environment, endorsement should provide necessary gap to fit in socially workable environments. These infotopias have a great need. When smarter technology is added on to the traditional ways of living, the investments required become lower, thus facilitating economically viable environments. This is best concluded in the statement," If you don't provide them an environment to live and an economy to sustain, then where is the question of environmental and ecological sustainability?"

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