The Next-Generation Mauritius: Smart, Resilient & Sustainable

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Introduction

Mauritius celebrated its 50 years of independence two years ago. It has been more than fifty years of nation building premised on the core values of good governance, rule of law, and also upholding human rights, and territorial integrity. Implementation of the Sustainable Development Goals (SDGs) is key to Mauritius future development. The Country moved from being a low income with the target of reaching a high-income country notwithstanding its inherent vulnerabilities as a Small Island Developing State devoid of natural resources, subjected to the oppression of distance, natural disasters and the effects of climate change and highly vulnerable to external shocks. It has simultaneously invested in its welfare system spanning free education, health care, universal old age pension and other measures aimed at providing a minimum social protection to citizens.

Since the 1990s, countries have invested in information and communication technology and infrastructure renovations to create smart, machine-to-machine interactions aimed at achieving cost savings and improving efficiency, governance and transparency within their communities. The smart city concept initially meant at dealing with numerous urban problems, in specific, those related to the urban environment and infrastructure. As it developed, the concept is now broadly used to quicken the process of urban management by using IT technology with the availability of big data. ICT and modern technology are considered the key aspect of the smart city concept. The developing world is in a motivating position to help lead the way forward as new models are defined and shaped. Phrases such as climate proofing, empowerment, disaster planning and recovery, information access, resiliency, social equality, sustainability, technology justice and urban competitiveness are finding their way into today's language.

The Country as a complex system should have the ability to be resilient, especially when technology fails either due to technical or natural disasters. This article aims to redefine the smart country concept in the context of planning using a resilience approach. Factors of resilience will lead to a soft infrastructure approach, such as enhancement in many aspects, e.g., knowledge inclusion, participation, social innovation, and social equity.

Small Island Developing States

The concept of sustainability is very important in Small Island Developing States (SIDS) and this was primary recognized at the Earth Summit in 1992. The vulnerabilities of SIDS arise from a number of physical, socio-economic and

environmental factors. SIDS small size, limited resources, geographical dispersion and isolation from markets, place them at a disadvantage economically and prevent economies of scale. Due to the small size of their economies, SIDS are highly dependent on trade but lack the factors that are decisive for competitiveness. Similarly, international macroeconomic shocks tend to have higher relative impacts on SIDS small economies. The combination of small size and remoteness leads to high production and trade costs, high levels of economic specialization and exposure to commodity price volatility. Furthermore, in SIDS, the following natural resource base: energy, water, mineral and agricultural resources are limited and resource extraction tends quickly to meet the carrying capacities of the small islands. The latter also face unique threats related to global environmental issues, mainly climate change, biodiversity loss, waste management, pollution, freshwater scarcity, and acidification of the oceans.

As a SIDS, much progress has been achieved in Mauritius due to benefits derived from the Welfare State, namely: free access to education from pre-primary to university levels, transport to students and the elderly and health services to all and also from bilateral and multilateral trading agreements, the skilled work force, entrepreneurship, a stable democratic government and peace. However, despite its performance, the country is now facing the brunt of a number of global challenges, namely, the global economic, financial, energy and food security crises. The impacts of climate change, sea level rise, natural disasters and biodiversity loss are also having their toll on progress achieved so far.

Evolution of the Smart City Concept

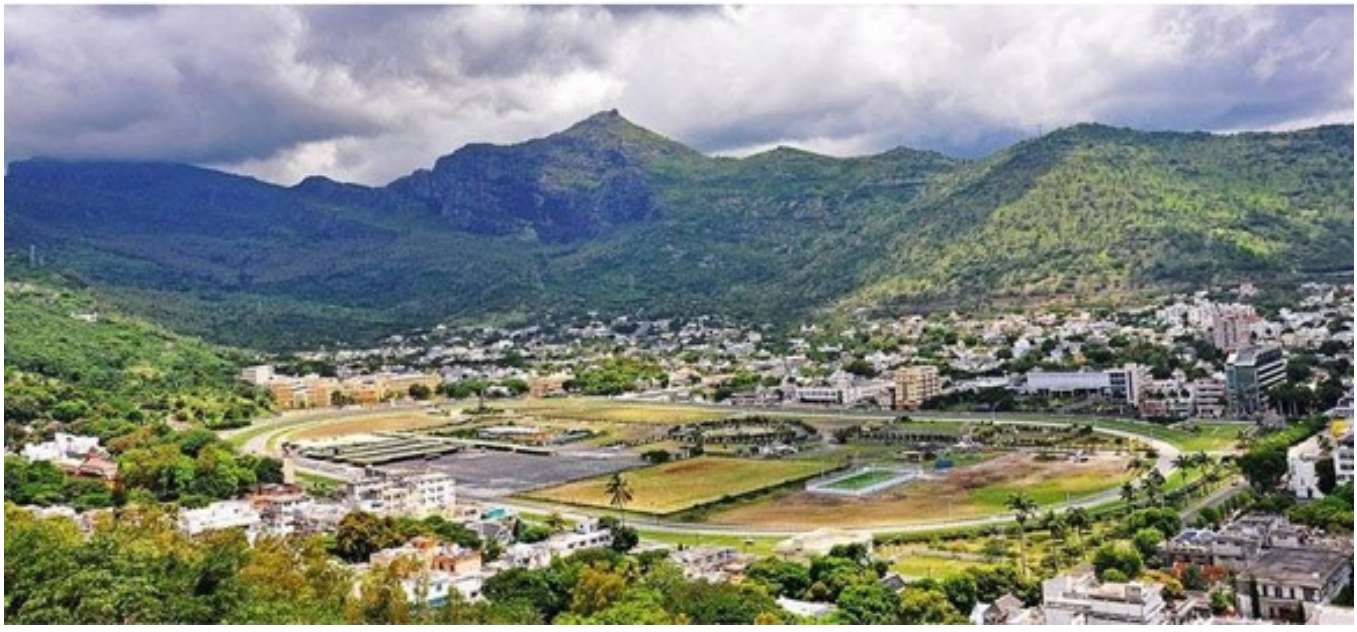
The busiest part of the island is the Capital, Port Louis. Port Louis needs an urgent uplifting and a regeneration programme which should be under implementation; On a daily basis around 200,000 commuters travel in and out of the Capital, incentives to the private sector under the Smart City Scheme to build sustainable and integrated housing projects need to be given. A scheme based on the work-live-play concept is recommended. Decentralizing the activities and the relocation of many offices out of Port Louis is also needed to solve the problem of congestion in the city.

Port Louis Mauritius

The combination of technologies, considerately applied and integrated, can primarily alter nearly every dimension of quality of life. To get there, Mauritius needs to plot innovations across a range of fields—mobility, infrastructure, buildings, public space, social and community programs, even governance—that are available today or will be soon. By implementing a set of technologies—autonomous vehicles, modular building construction, or new infrastructure systems cost of living can be reduced by 15 percent. With new mobility services and radical mixed-use development that brings homes near work, Mauritius can give people back an hour in their day.

Technology has a dramatically shorter lifecycle than most infrastructure assets, which are often built to last 100 years or more, Mauritius have to plan and design the infrastructure so that it is as flexible as possible. We are using nowadays the analogy of the smartphone as a platform, however what makes the smartphone magical is not necessarily the hardware, which evolves over time with new releases, or the software, which is upgraded every few months, it's really the fact that there are millions of application developers who are using the infrastructure to create something that no one imagined before.

Officials have to think about the country as a platform. The hardware equivalent is the traditional infrastructure; the roads, utilities, and now digital infrastructure. The infrastructure itself must be as modular, replaceable, and upgradeable as possible. For example, take utility networks in cities. Today, if you want to change or update a utility, you have to dig up the streets, which is very disruptive to pedestrians and traffic and very expensive. But if you designed a city with accessible utility channels, you could make it easier and cheaper to upgrade utility networks and reserve space for new types of connections we haven't yet imagined. Then you need design guidelines to bring coherence and consistency. Finally, you need some launch applications to make the place inhabitable at the beginning, such as traffic management systems or air-quality monitoring systems.



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Expanding Needs For Expanding Countries

Cities are evolving into smart cities capable of collecting and analyzing vast quantities of data to automate processes, improve service quality, provide market signal feedback to users, and to make better decisions. While city governments can and should manage much of this transformation, national governments have an important role to play in accelerating and coordinating the development of smart cities. Indeed, the long-term success of smart cities in any particular nation will likely depend on whether the national government supports their development.

Modern countries depend on composite systems for energy, transportation, medical care, emergency response, and security. We have observed over recent years in cases of utility and transportation infrastructure failures, natural disasters and terrorist attacks complex systems fail. As the Country anticipates massive infrastructure investment to address such failures as well as to address a growing economic crisis, we propose that a government, industry, and university consortium focus on system resilience.

By 2050 more than two thirds of the world's population are expected to live in cities, a significant jump from the 54 percent living in urban areas today, according to a thought piece by Zurich Insurance Company Ltd.

Rapid urbanization and the increasing frequency and severity of disasters, due to extreme weather events exacerbated by the impact of climate change, are putting more people and assets at risk, and the situation is only getting worse.

Growing urbanization can create great opportunities for social mobility, both for men and women. However, not everyone automatically benefits from urbanization, and some disadvantaged groups face barriers to thriving in urban areas. efficiently connect workers with jobs and opportunities. Growing urbanization can create great opportunities for social mobility, both for men and women. However, not everyone automatically benefits from urbanization, and some disadvantaged groups face barriers to thriving in urban areas.

COVID-19 has truly accelerated the digital transformation of cities. Not only many people are working from home and increasingly reliant on IT, city governments have had to shift how they deliver services under lockdown restrictions. Yet, despite efforts to rapidly digitize processes and systems, a city cannot truly become technologically inclusive without considering barriers to access. Digital transformation is a critical part of urban resilience. We know that increasingly it is digital solutions that will support and enhance infrastructure development in cities. These types of solutions enable resilience by helping to integrate, amplify, and innovate diverse public and social services that are key to cities' well-being. Technology offers a lot of promise, but also carries risk and inequities that must be examined and addressed.

Conclusion

Cities are complex human machines, webs of services, needs, livelihoods and behaviors. The interconnectedness and dependencies of cities' many systems mean coordination is central to achieving effective resilience. It's vital to examine the intercorrelation between systems. Resilience strategists must compile a list of critical infrastructures vulnerable to malfunctioning under the effects of various natural hazards and extreme scenarios, defining potential improvements now. Investing in resilience takes us beyond the familiar concerns of cost, quality and time. The current pandemic shows us that only an integrated response will work, one informed by shared responsibility and financial accountability, transparent use of data, strong ethics, public participation, and maintenance of natural capital. A global problem must have a solution that works for everyone.