

TOWARDS GREEN TOURISM

- REIMAGINE MAURITIUS HOTELS -

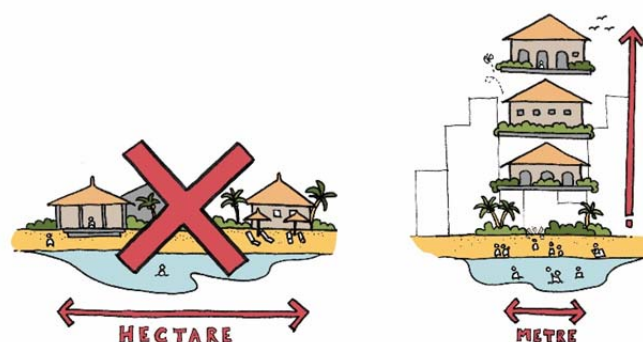
BACKGROUND

Located just above the Tropic of Capricorn, Mauritius the rising star of the Indian Ocean keeps shining due to its natural beauty and strong economy. The Island is a dream holiday destination offering a sub-tropical climate, clear postcard beaches, tropical fauna and flora complemented by a multi-ethnic and cultural population. This high-end paradise makes Mauritius one of the most popular tropical destinations for tourists from all over the world. These tourism assets are the country's main strength and it is one of the main pillars of the local economy, following the manufacturing sector and agriculture. It is a significant contributor to the economic growth and has been a key influence in the overall development of Mauritius.

SPATIAL JUSTICE

In the last decade, Mauritius tourist industry has experience drastic growth and this exponential progression is the result of the amount of resorts and hotels along the coastline. The hotel industry is invading and stealing our beaches leaving only 10% for the local population. The spatial justice situation is real, and it is unfair that we, locals, benefit only one quarter of the coastal land of the ratio of the tourist sector. It is detrimental to the general well-being of the country. This is due to the fact that most resorts and hotels are built low rise in landscape, overtaking hectares of beach areas.

We cannot go back... we cannot stop the growth of the tourist industry, but we can mitigate the impact and plan for future hotel typology that will be beneficial for all. Hence, this project is an opportunity to give back the beaches to the nation and explore the possibility of having luxurious paradise resorts/hotels in a vertical typology.



CLIMATE CHANGE

Today, we are all faced by climate change. It is not something new and it is already striking and impacting our surrounding environment and our globe. Mauritius is not an exception to this disaster and the small island can really feel the influence and impact upon its society, economy, and ecosystem. In this early period of the 21st century, it is time for the country to be resilient and to explore new system to adapt, survive and grow no matter what kind of weather change occurs.

Due to its sub-tropical climate, Mauritius is facing more cyclones yearly and this phenomenon largely affects the overall productivity and well-being of the country. Our main sectors are truly affected and this situation results in socio-economic challenges. For instance, the hotel industry finds a drastic decrease in its economy during the cyclonic period. The beaches are not usable, tourists can barely go out and it is hard to run and manage the hotels in such natural disaster. There is a need to adapt and reverse the effect of climate change. Therefore, the key concept behind this project is to have internalised environment, where the occupants will be able to enjoy their stay and circulate everywhere in the hotels; while being sheltered and protected. This concept is named the “Paradise Within”, and a maximum emphasis is given on designing the internal spaces. These spaces will provide a well-being for the users and will maintain the economy of the industry.



A NEED FOR ZERO ENERGY LIVING

The hotel industry, because of its expected characteristics, functions and services, consumes substantial amounts of energy, water, and non-durable products every year compared to the average household and other commercial industries. The huge energy consumption in hotels is mainly from cooling and lighting, as tourists tend to leave the air-conditioner and light on, even during the day. In Mauritius, around 85% of the primary source of energy is imported fossil fuel, and this contributes to the CO₂ emission. Additionally, the large amount of fresh water that hotels use yearly affect the water supplies of the local community. These demands generate the needs for costly increases in water infrastructure that could raise the water price for local people. Furthermore, hotels waste lots of food and general products every

day, as most of the hotels offer food buffer that results in left overs and hotels need to replace new items in each rooms daily.

In the early 1980, the United Nations Environment Program saw environment management as the control of all human activities that could potentially have significant impact on the environment (Toolba, 1982). Today, there is a need for environmental awareness through environmental management – there is a need for Zero Energy buildings - there is a need to a greater and greener society. This achievement can be our solutions to reduce the carbon footprint for a greater climate resilience. A clean environment is a basic element of quality service and is thus significant for the development of tourism and hotel industry.

THE URBAN STRATEGY

The hospitality industry clearly would not exist without any means of transport for customers, employees and supplies. Transportation does contribute to the greenhouse gas emission. For this reason, this project has chosen its location in the heart of the capital, Port Louis, where the occupants will have easy transport access and will enjoy the public beaches same as the locals. In this way, tourists will learn more about the cultural aspects of Mauritius and will interact more with the locals. Hotels have to rethink in climatic terms, so that urban components and its nation can be connected and opened out, rather than being separated and sealed in.

The site is an actual green plot not far from the waterfront and the mountain. Therefore the green has been reinforced and extended on the building, as if, it is integrated with the existing green area – reflecting and promoting its green hotel practice to reduce negative impacts on the valuable environment. This strategic location is a plus for the hotel marketing, as each room offers splendid views. The shape allows for more rooms with unique views on the city without getting obstructed by the adjacent buildings. It is also controlled by the spacious internal space in-between each block. These internal spaces will be the “Paradise Within” and will allow natural ventilation and lighting throughout. Moreover, the form is extruded in such a way that it minimizes its footprint on the ground floor and the building is segmented into clusters with inverted block in-between at the corners to allow a free-generous space for hotel amenities. This porous massing allow for sky gardens at intermediate levels, which will act as natural sun screen, noise buffer, cooling elements and will reduce the carbon emission in the city.

As a new hotel typology, the ground floor has been sacrificed to a semi-private zone (the Lobby) and a completely public space (The Market) below the elevated parking area. This will make the hotel a friendly neighbour and allow the market to showcase the Mauritian spirit and culture. It will engage its surroundings and rejuvenate the green park beside. On the upper floor of the hotel, urban farming is

proposed for self-sustainability and obtaining fresh vegetables for the kitchen. This can also be a great activity and experience for tourists, thus encouraging them to cultivate green behaviours.

BUILDING URBAN RESILIENCE

Hotel design and the introduction of renewable energy technologies play a major role to develop a Zero Energy building. The passive design of the vertical hotel will decrease the usual consumption of energy and will reduce the overall running cost. By using a green ledge perimeter as planter and a recessed façade made of local bamboos for the hotel rooms, it will block direct sunlight from penetrating inside and allowing sufficient daylight to illuminate the interior. The openness of the façade will also allow for natural ventilation wherever possible and will open up the view towards the city. These bamboo materials are recycled from the scaffolding after the construction of the overall building. They are treated on site and installed accordingly to the designated rooms' façade.

The key features that produce most of the energy for the hotel to run by itself are the photovoltaic arrays on the roofs and the wind chimney core. Based on the calculation, if the full roof area is considered to be solar energy generating system, a total of 2570MWh per year can be collected and this will add a substantial saving for the hotel. The innovative addition to the energy contribution is the stack effect in the chimney. With the cooling appliances on the upper level of the building, coils are connected and installed in the chimney to produce a greater temperature difference. Thus, with a greater stack effect – a wind of average 5 m/s is produced inside and go through the wind turbines at the end of the chimney. The turbines are then connected to a generator, producing electricity. Eventually, the energy collected is sent to a transformer and is stored for the general usage.

The cooling system of the hotel relies on a new technology, called the Sea Water Air Conditioning. This system harness the thermal energy of sea water 1100m deep at 5°C, by pumping it to the surface and experiencing an energy exchange process. It will cool the fresh water in an urban network that will in turn cool the air conditioning systems of the hotel. The system is not just a proposal for the project but a loop system for the major buildings in Port-louis. As a downstream strategy, the pumped water from the heat exchange can be redirected to other business activities such as aquaculture, seaweed farming as the water is rich in nutrient.

Another green hotel initiative is the rainwater harvesting. The roofs have been designed as rainwater collectors with piping following the chimney core, filtering and distributing the water at intermediate levels. The water is then cleaned and processed in the M&E rooms situated at the amenities levels that is further distributed to the rooms. The water is not potable but can be used for other domestic usage. In addition, a water loop system is designed, to recycle and reuse the grey water as flush water for toilets. In this way, the hotel will consume less water and will rely less on the main supply.

The sustainable approaches are surely not cheap solutions today, but on a long run, they will contribute to great savings and reduction in the operating costs. Eventually, there are lots of simple strategies that can be implemented to the overall hotel system. For examples, the hotel can include occupant sensors to control lighting at night, make use of energy saver power cards, use computerized building management systems and opt for low-flow showerhead and eco-toilet fittings. The hotel can also implement some eco-programs such as the towel reuse, or on-site composting of waste to provide valuable soil and fertilizer source for the urban farming.

GREEN MARKETING CONCEPT

To cultivate a green behaviour in the tropical climate, the project caters for 2 room categories: The Typical room and The Green Rooms. By adjusting the price ratio of the rooms to 2:1 respectively, visitors will opt for the green tropical rooms, which uses mostly passive strategies and less energy. This concept will allow the occupants to understand that passive design can be luxurious and comfortable. It will raise a green awareness and encourage them to practice the behaviour in the future. Moreover, it will be good to know that they have been contributing to a better world, and save energy during their stay.

VISION - TOWARDS GREEN TOURISM

This project is a trigger for Mauritius to rethink about the hotel industry. It is high time for this country to rethink the way it uses its coastal zones in order to conserve its natural and cultural heritage and enable its citizens and tourists to enjoy those assets in a non-discriminatory manner whilst generating revenue. Being the first green building in the Capital will encourage the neighbourhood and future developments to adapt similar strategies and to integrate Zero Energy buildings. It will help to envision a greener Mauritius, a breathable urban city and a resilient world. It might be a dream, but the future always belonged to dreamers for they shape the minds of tomorrow. Be wary of dreamers.