

Adapting island territories to climate change



Réunion island

Actions for island resilience

Call for applications

Topic document of the International Urban Planning Workshop
25 September 2021 - 08 October 2021
Réunion Island, France

Les Ateliers Internationaux de Maîtrise d'Œuvre Urbaine de Cergy-Pontoise

Immeuble le Verger, rue de la Gare
95020 Cergy-Pontoise Cedex
Telephone : +33 1 34 41 93 91

les ateliers
maîtrise d'œuvre urbaine



Les Ateliers de Cergy is a non-profit association created in 1982 at the initiative of the urban planners of the New Town of Cergy-Pontoise. Today, it is an international network of professionals, academics and decision-makers in urban planning. Focused on the practice of urban project management, the association organizes workshops conceived as spaces for collective design and creativity.

In France and abroad, these workshops provides project managers with an international perspective and illustrated proposals for territorial strategies and urban development projects. Through the convergence of different professions and cultures, they also serve to question learning processes and exchange at the highest level.

Island Territories workshop

Pilot committee:

Jean GREBERT – Mobility expert and architect
Barbara CHENOT – Urban planner and architect
Frédéric FOURREAU – Landscape architect and editor

Florence BOUGNOUX – Urban planner and architect
Michel JAOUËN – Urban planner and architect
Laurent PERRIN – Urban planner
Christine LEPOITTEVIN – Director

Coordination:

Véronique VALENZUELA – Director of projects
Simon BROCHARD – Geographer and urban planner



Contact : islands@ateliers.org

Translation: Susanna Hsing

Photo credits: Les Ateliers, unless mentioned otherwise

Cover photo: S. Gélabert

June 2021

Table of Contents

1.	A workshop unlike any of the others	05
2.	Facing climate change: A collective challenge	06
3.	Particularités et Constats	08
	A. The intense island: A spectacular geography	
	B. Diversity at the heart of the Réunionese identity	
	C. Social inequalities and territorial imbalances	
	D. An island under pressure: Saturation of infrastructures	
	E. Climate change increases threats and uncertainties	
4.	The workshop's main questions Les grandes questions de l'atelier	14
	A. Ecological, economic and social continuity between the Hauts and the Bas: The water's edge	
	B. Living with risks and preparing for the future	
	C. Housing patterns and land pressure	
	D. Towards inclusive economies	
5.	Réunion Island and the Indian Ocean	19
6.	Workshop format	22
7.	How to participate?	23
	Application form	24



1. A workshop unlike any of the others

The “Island Territories” workshop is an initiative of the French Development Agency (AFD) and its “Three Oceans” department, who have chosen to work together with Les Ateliers to examine the specific problems concerning the development of island territories in the face of climate change, based on a threefold objective:

- To integrate the context of insularity and its components
- To highlight the interest of regional integration and the importance of comparative situations with other territories in the Indian Ocean region
- To identify overlapping challenges, particularly in the Indo-Pacific (Indian Ocean-Pacific Ocean) region

In order to explore these dimensions, Les Ateliers, with the support of AFD, organized a series of trans-oceanic meetings in 2020. Entitled “**Island Voices**”, they explored a list of 10 major themes highlighting the vulnerability of island environments to climate change. These videoconferences brought together a broad spectrum of stakeholders from island territories in the Indian Ocean and even the Pacific Ocean to share their expertise and testimonies: presentations, debates, exchanges and sharing of good practices.

In order to maintain this dimension of reflection, the cycle will continue in 2021.

This work will take its roots in the regional dynamics of the Indian Ocean. Firstly, through **an international urban planning workshop to be held on Réunion Island** which will bring together fifteen professionals from across the world, all volunteers, from 25 September to 8 October 2021. Réunion as a territory serves an ideal working terrain for these reflections and for the production of proposals of various scales.

Secondly, a post-workshop collaborative project on the scale of the Indian Ocean and other territories will seek to draw lessons and perspectives for the region’s island territories based on the reflections produced by the Réunion Island Workshop

This document presents the topic of the urban planning workshop that will take place on Réunion Island, France. It also constitutes the international call for applications, which will allow for the selection of the professionals who will participate in this exceptional workshop.

It is the result of several months of collaborative work with local actors and Les Ateliers’ vast network – a reflection of the links forged during the Island Voices meetings, the field missions and the numerous long-distance exchanges due to COVID-19 lockdowns.

This international professional workshop is unprecedented in the extremely broad scale of work we have conducted over the last two years and how its reflections for Réunion Island will radiate far beyond its shores to other territories. Moreover, it comes during a pandemic which has greatly impacted every workshop we have held since 2020. This is true both from an organizational point of view, leading us to optimize remote working tools in order to be efficient but also enjoyable for all, and in terms of content, prompting us to further question approaches, city professions, uses, mobility as well as ways of living.

2. Facing climate change: A collective challenge

Sources and vulnerabilities of island resilience

The effects of climate change are reflected in unpredictable, shifting, contradictory meteorological episodes of unprecedented magnitude. The irregularity of the cycles, or even their inversion, strongly disrupts human activities and endangers food resources such as agriculture and fishing, and even vital resources such as water. As such, territorial development and economic activities have never been more susceptible to the need to take into account the management of natural ecosystems.

The accumulation and chain effect of these climatic deteriorations have a strong impact on the functioning of transport and energy infrastructures and essential services that are already overstretched by an ever increasing growth. The pandemic has further exacerbated the management of transit and cargo to their limits, leading to a scarcity of many raw materials following the rise in concentrated demand.

These effects are uniquely felt in island territories, as they are part of a constant dynamic of exchange and flow, while having limited resources and fragile ecosystems.

These territories find themselves caught between the sweeping considerations for exchange and production, the importance of being a tourist destination, and the need to ensure the daily survival of inhabitants on a local scale. Adaptation to climate change and the strengthening of their capacity for resilience in a governed and shared transition are the major issues facing their populations and governments.

Réunion Island: Assets in the face of inevitable adaptation?

In this document, we will start from the following definition of resilience: the capacity of human societies to adapt and evolve in the face of natural, human or economic hazards. The strategies developed do not aim to defend against a hazard which is often unpredictable, but to reduce its impact and to integrate risk management.

Réunion Island is a rich and diverse territory with invaluable natural and cultural assets. More than 850,000 people live in this diverse area, which is made up of volcanoes, cliffs, rivers, flatlands and an exceptional biodiversity depending on the proximity to the sea, elevation, wind exposure, etc.

Human activities, with their rich cultures and know-how, are part of the dynamic evolution of its immensely rich but also extremely fragile ecosystems. Dialogue and balance are therefore essential for the survival and enrichment of each party.

At the island level, populations must be able to develop food-producing activities while also respecting the reproduction of natural ecosystems.

What is the right territorial scale for resilience?

What forms of interplay should be developed in a perspective of a circular economy; an urban, agricultural and energy transition; the minimization of negative externalities through the redefinition of the boundaries of these "resilience basins"?

What kind of dialogue between scales is needed to address hazard and risk management in an integrated way?

How can the scales of institutional planning be combined with initiatives on the ground that come from the realities of daily life?

Among the preparatory reflections for this workshop, the Island Voices meetings explored the necessary association between production and consumption of food products, energy and space. What balance needs to be invented in a context of pressure on resources?

Ways of living in question: Between tradition and demographic realities

The island territories of the Indian Ocean are experiencing rapid population growth in naturally limited spaces. This issue of land availability sometimes contradicts traditional ways of living: inhabitants need space to maintain their link with the land. Furthermore, the limited resources available for construction and the scarcity of materials fuel a dependence on continental territories. The challenges in terms of architecture, use of materials and spatial organization are therefore at the heart of Réunion's concerns.

The act of living in a space encompasses architecture, transport, the economy, agriculture and leisure activities. It involves places, both built and unbuilt, private and public, as well as lifestyles, uses, interactions and social ties. Notably, the pandemic has revealed a sense of solidarity on a very local scale and the growing interest in community ties.



In Cilaos, near the centre of the island, and in Beauséjour, a new district in Sainte-Marie: various and evolving ways of living

Biodiversity: The key to understanding island ecosystems

Biodiversity is the diversity of living species in an environment. Island territories are closed milieus in which species have evolved in constant exchange, creating balance and collaboration. The prosperity of one species contributes to the overall balance and support of the others.

Biodiversity is a common good.

Diversity guarantees a plurality of situations, a broad spectrum of solutions, a variety of means, and a lessened depletion of resources: agriculture, energy, mobility. It allows for greater flexibility in adapting to risks; it is a strong lever for resilience as it avoids the exhaustion tied to a single solution.

In a geographical sense, the complementarity of the high and low elevations in the same human and institutional territory brings balance and diversification.

Nevertheless, Réunion is subject to major risks that affect the evolution of its biodiversity. Among them, the warming of marine waters prevents the calcification of coral. Rising water levels and the increasing impermeability of the soil are encouraging erosion and intensifying flooding in other areas.

How can a balance and dialogue between living species be maintained – allowing for their survival – in which the negative impact of human activities is minimized and the territory's resources are preserved and renewed?

3. Particularities and findings

A. The intense island: A spectacular geography

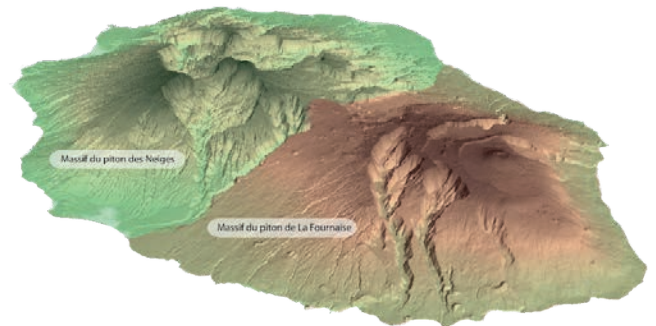
Réunion is a small tropical island roughly 50 by 70 km in size, located in the western Indian Ocean, east of Africa. A French Overseas Department and Region, it forms, with Mauritius, Rodrigues and other smaller territories, the Mascarene Archipelago. The territory, located in the middle of the African tectonic plate, was formed by a hot spot of rising deep magma: it is the result of five million years of volcanic eruptions.

This volcanic activity has forged a grandiose and striking geography – a rugged relief as soon as one moves away from the coast. This tormented topography is at the origin of the island's micro-territories, each bearing specific climatic characteristics based on the position and height of the pitons, cirques and remparts.

The "pitons" refer to the two main volcanoes: the Piton des Neiges (3070 m), which is dormant, and the Piton de la Fournaise, which is one of the most active volcanoes in the world. The "remparts" are the steep rocky walls that delimit the landscapes within the island; and the cirques are vertiginous massive natural amphitheatres. The combination of these three strong elements of the Réunionese landscape composes the "natural property" listed as a UNESCO World Heritage Site, and also corresponds to the heart of the Réunion National Park, a protected area covering more than 40% of the island.

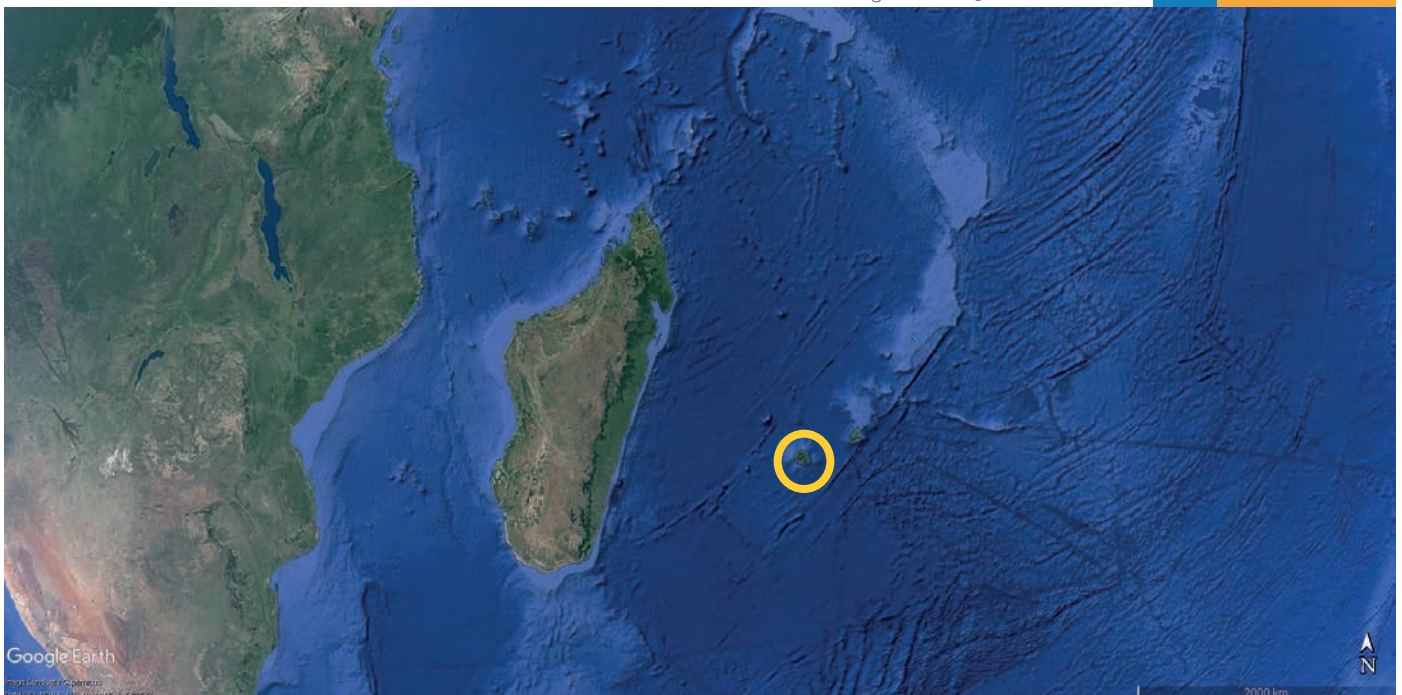
The cliffs, gorges and wooded basins in the heart of the national park are home to numerous plant and animal species, and are characterized by a high rate of endemism and exceptional biodiversity: this area is home to 94% of the island's biodiversity and more than 4/5 of the Mascarene Islands.

Réunion is thus a concentrate of biodiversity, a nugget of natural landscapes which serves as a source of pride for the island and its inhabitants. Nature occupies an important place in the representations and customs of the Réunionese, as shown by the widespread practice of picnicking: from dawn to dusk, with family or friends, people settle down in nature to enjoy the nearby landscapes without leaving any trace.



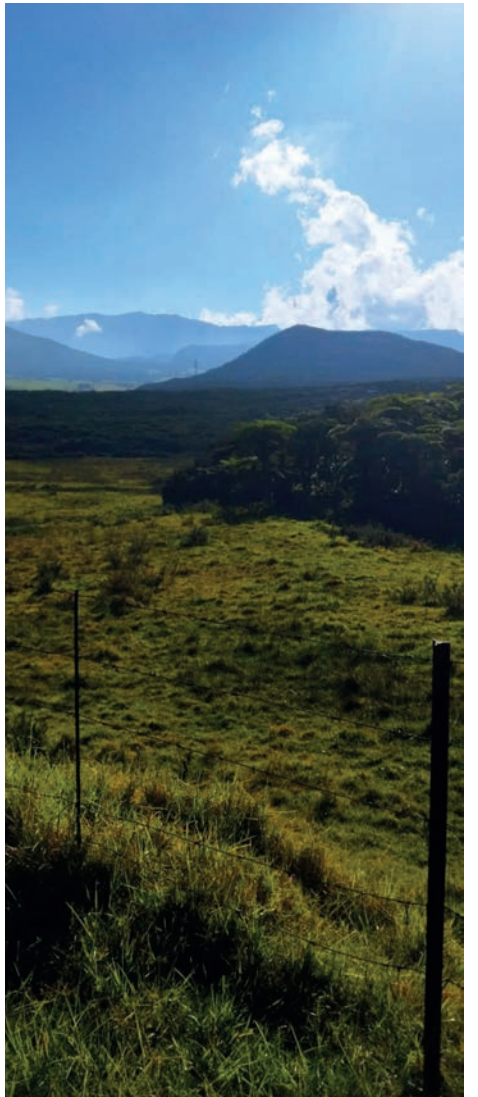
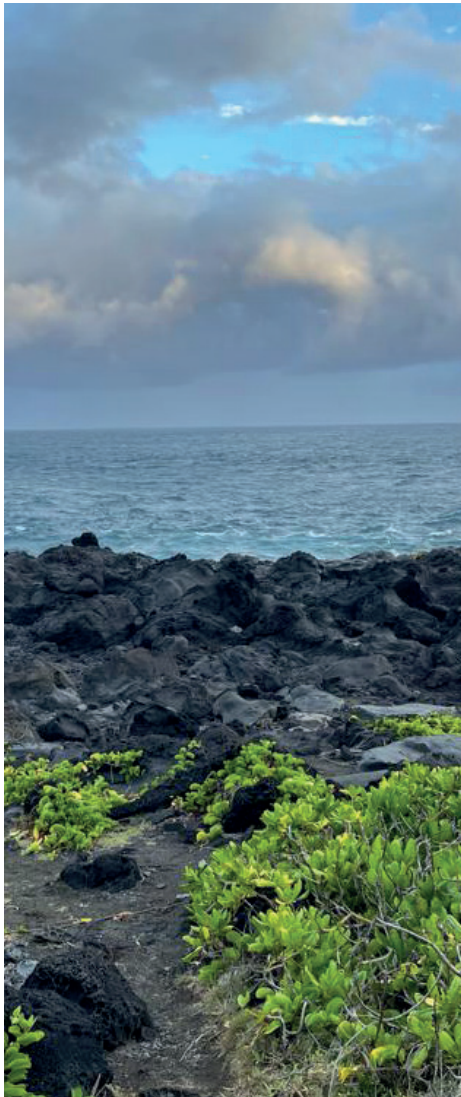
Relief modelling for Réunion (habiterlareunion.re)

Position of Réunion Island in the Indian Ocean, to the east of the African continent and Madagascar (Google Earth)





Extent and variety of Reunion's natural landscapes



B. Diversity at the heart of the Réunionnèse identity

The powerful topography of Réunion Island creates a diversity of landscapes and types of human settlement, which can be divided into three distinct units.

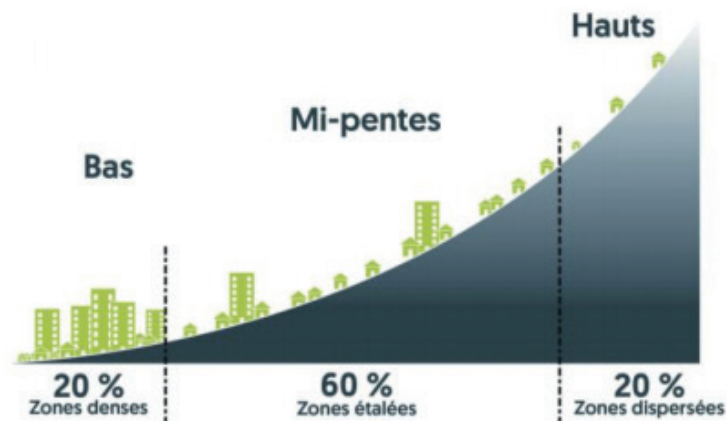
The coastline, or the Bas, extends over a narrow plain of less than 5 km along the ocean. It is home to the majority of the population (about 85% of the island's 850,000 inhabitants) and has a high density (nearly 800 inhabitants per km²). Linked by the coastal road, these urban areas concentrate most of the human activity on the island, and are highly developed.

The Mi-Pentes (mid-slopes) are the areas situated between 100 and 400 metres in altitude. Significantly cooler than the coastal areas, the Mi-Pentes have come to be home to some of the urban growth since the 1980s in the dynamic communes. Agricultural and rural dynamics mingle here as inhabitants commute to urban areas.

The Hauts, areas situated above 400 metres in altitude, represent an area of 1,835 km², i.e. three quarters of the island. These are mainly natural and agricultural areas, benefiting from temperature much lower than on the coast. Sometimes very isolated, the Hauts are still for the most part rural areas, removed from the dynamics of the coast.

This schematic stratification is then broken down according to local geographical particularities, resulting in numerous micro-climates within the island. This diversity of configurations and climates is a strength for agricultural and tourist activities, and has enabled a variety of lifestyles to coexist between the coastline, marked by urban life and collective housing, and the sparsely populated Hauts, with inhabitants who often own their land and maintain a traditional way of life.

Diversity, which is omnipresent in Réunion's landscapes, is also found within the population. Marked by French colonization in the 17th century and slavery, the island has since welcomed inhabitants from Africa, India, Madagascar, China and France. They practice Christianity, Islam, Hinduism and Buddhism in a harmonious and intermingled coexistence. Although these processes are constantly changing and do not exclude tensions or conflicts, interculturalism and creolization, which have been present since the origin of the settlement of Réunion Island, continue to contribute to the Réunionnèse tradition of "vivre-ensemble" (living together), a concept that is currently used by politicians as well as by the academic community of the island and country.



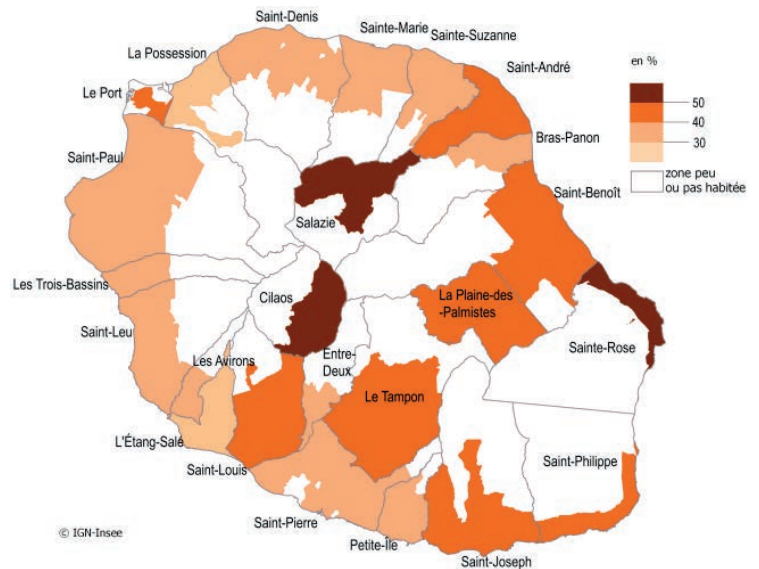
Conceptual schema of urbanization in Réunion (Agorah)

Mural by the street artist Méo





Schematic map of the Côte-au-Vent (windward coast) and Côte-sous-le-Vent (leeward coast) of Réunion Island (Nicolas Payet)




Poverty rate in Réunion by commune in 2018 (INSEE). The poverty rate refers to the proportion of the population with less than €1,063 per month per consumption unit (definition by the French Statistical Institute (INSEE))

C. Social inequalities and territorial imbalances

The “vivre-ensemble” character of Réunion does not mean that the society is free of tensions. Indeed, these are made worse by social and geographical inequalities. Although its GDP per capita is higher than that of its neighbours in the Indian Ocean region, living standards in Réunion are lower than in mainland France: half of the island’s population lives on less than €1,150 per month. The island is characterized by a significant lack of jobs, low incomes and a relative dependence on social assistance. Poverty is particularly concentrated in certain urban neighbourhoods of the main towns, and also in certain areas of the Hauts. The former are quite often single-parent families living in social housing, while the latter are schematically homeowners living on low incomes with less access to social assistance. The significant mobilization of inhabitants during the “yellow vests” social movement in November 2018, which paralysed the island for eleven days, showed that concern for these inequalities is still high.

Beyond the social stratification, the imbalances also concern the different geographical areas of the island, and in particular between the east and the west. Réunion’s climate is characterized by its duality, between the Côte-au-Vent (to the east, which receives head-on trade winds and is therefore very wet) and the Côte-sous-le-Vent (to the west, which is drier). Of the island’s 200 km of coastline, only roughly 20 km in the west boast beaches and calm waters for swimming, thanks to the coral reef and the resulting lagoons. These characteristics have made the West the territory of heliotropism, tourism and economic activity, while the East, devoid of any major structuring project but receiving enormous rainfall, has been largely devoted to agriculture.

In order to compensate for the striking hydrographic imbalance between the east and the west, the French State and the department, with the help of the European Union, carried out a major hydraulic infrastructure project between 1980 and 2014. The “water shift”, a network of aqueducts allowed for the irrigation of the land in the west and therefore the development of agriculture on the Côte-sous-le-Vent.

 A significant demographic and economic shift from the west to the east has yet to begin, but could offer a more balanced future for Réunion Island.



Congestion on the Route du Littoral (IPR)



Pierrefonds landfill site (Le Monde)

D. An island under pressure: Saturation of infrastructures

By definition, an island is a finite territory whose limits can be clearly seen: Réunion's surface area is 2,500 km², more than half of which cannot be used for housing or human activity. With nearly 860,000 inhabitants in 2020 and a projected population of over one million for 2040, the territory and its ecosystems are under constant anthropic pressure, intensified all the more by an unequal development.

This pressure is illustrated in particular by the saturation of infrastructures. With 618 kg of waste produced per inhabitant per year (in 2015), the island's two landfill sites will soon be unable to accept any more waste. Located in Sainte-Suzanne (north of the island) and Pierrefonds (in the southwest), just a few metres from the ocean, they create numerous inconveniences for local residents and long debates about their legacy. Incinerator projects, discussed for more than 10 years, are struggling to be formalized. The reduction of waste is also becoming more and more important in the public debate.

The road infrastructure is just as saturated: the significant "coastalization" of activities, the development of commercial zones and the predominance of the car for daily travel are the ingredients of an almost permanent congestion. The closure of Réunion's railway in 1976, which used to link Saint-Benoit to Saint-Pierre, has established the reign of the car as the chosen mode of transportation.

Add to this picture the threat of landslides, floods associated with cyclonic rains and volcanic eruptions that threaten the roads, and the daily difficulties linked to the use of the Réunionese road network become clear.

The New Coastal Road, a major project built on the sea, responds to the issues of landslides and connects the capital to the west of the island. The opening of new roads such as the Route des Tamarins in the west of the island does not solve the problems of congestion. The development of public transit and soft modes of transport and the evolution of lifestyles to limit travel (teleworking, etc.) are gradually appearing as alternatives to carbon-based mobility.

The saturation of Réunion Island's infrastructures highlights the problem of the limit of what a finite territory can give and receive in terms of resources and pollutants, and raises questions about the sustainability of the island development model of recent decades in Réunion.

The New Coastal Road under construction, May 2021



E. Climate change increases threats and uncertainties

The pressure on the island is also a pressure on its ecosystems. In the west of the island, in particular, wastewater from urban centres and run-off from agricultural land treated with phytosanitary products are threats to marine ecosystems, especially the fragile coral reefs. In this context, climate change is adding to the threats and creating uncertainty about the future.

Rising temperatures and water levels are the most widely known effects of climate change. The increase in temperature should lead to a rise in water levels, estimated at between 0.3 and 2 metres according to studies, and depending on the evolution of greenhouse gas emissions, by 2100. Réunion does not run the risk of being submerged because of its topography, but the coastal areas, which are often urban and therefore subject to erosion, will be particularly affected. In any case, the rising waters will reduce the island's surface area and the areas of habitable surface. The question of the urbanization of a non-expandable territory will continue to become increasingly difficult. Climate change also has uncertain effects on catastrophic weather events. The unpredictability of such events remains high, even if initial modelling does not suggest an increase in the magnitude or frequency of cyclones.



In Saint-Paul, the receding coastline can already be observed

These complex phenomena interact with each other and can have multiplying effects: for example, maintaining a healthy reef barrier, depending in particular on the degree of soil impermeability and the type of agriculture practiced in the catchment area, can help reduce the erosion of the western coastline. If not, the different phenomena feed each other and can lead to further erosion and permanently affected marine ecosystems.

Faced with these major challenges, the island's institutions have prepared ambitious strategies to move Réunion's development towards models that are less polluting, less energy- and resource-intensive, and more resilient in the face of possible crises.

By 2030, 100% of Réunion's energy should be produced from renewable sources, in particular from biomass, photovoltaic and hydraulic sources. The year 2030 is also the timeframe the Region has set for itself for becoming a "zero waste" territory, entirely converted to recycling. On a territorial level, the Region has had a Regional Development Plan (SAR) since 1995, which has helped to limit urban sprawl in order to preserve agricultural land. The inter-municipalities are implementing the Territorial Climate Air and Energy Plans (PCAET), applying these strategies on their own scale.

The speed of these transformations also implies radical changes in the way the island functions in terms of production, consumption, mobility and lifestyles.

The Dina (2002) and Gamède (2007) cyclones were the latest climatic events to have had a major impact on Réunion
Source : *Journal de l'île de La Réunion*



4. The workshop's main questions

The field missions in Réunion allowed us to observe and understand the specific morphology of the island, its particular form of urban occupation, which fits into the available strips of land rising from the coastline and then clings to the interstices shaped by hydrographic erosion. They were also an opportunity to meet a variety of territorial, institutional, private and academic actors, and professionals in the fields of planning, environment, energy, innovation, agriculture, anthropology, risk geomorphology, economy, art, etc. From the insights gained, four major questions emerged that will inform the proposals from the workshop's participants, who will respond to the challenge of reconciling demographic and economic growth with less consumption of natural resources, including space, while also safeguarding against climate risks.

A. Ecological, economic and social continuity between the Hauts and the Bas: The water's edge

Water, a vital resource for the planet, structures the territory and conditions human activities. Its territory is the watershed, a space of biological and ecological continuity, from the flow of rivers to the ocean.

In Réunion, the topographical context gives a visible reality to this notion of a watershed. The immediate horizon links the Hauts (sometimes in the clouds), the mid-slopes and the plain along the ocean in a continuity that the flow of water makes palpable. The bed of the torrents – the deep gullies – is not the element that unites the two sides of hydrographic system; instead, it often constitutes a border in the absence of any human structure.

Thinking about the relationship between the upper and lower parts of the island thus calls for a number of components. In terms of hydrography, although Réunion Island has no threat of a shortage of fresh water, land erosion and the presence of micro-pollutants

raise questions about the impact of agricultural and consumption practices on the health of ecosystems. Sugar cane is the dominant crop in the agricultural landscape, but market gardening and crop diversification in general are becoming more widespread.

The relationship between the Hauts and the Bas is also one of flows and mobility, particularly in terms of commuting. With places of residence being the starting and ending points of everyday life, access to the mid-slopes and the Hauts largely determines the unavoidable dependence on cars by inhabitants. How can other forms of mobility be envisaged for these local trips? Cable car projects are emerging in several areas and are providing some answers in this regard.

Mobility between the Hauts and the Bas is also social. While the Hauts has traditionally been home to rural populations, improved accessibility (particularly via the Route des Tamarins), the availability of space and the milder climate has made it more attractive to privileged classes.

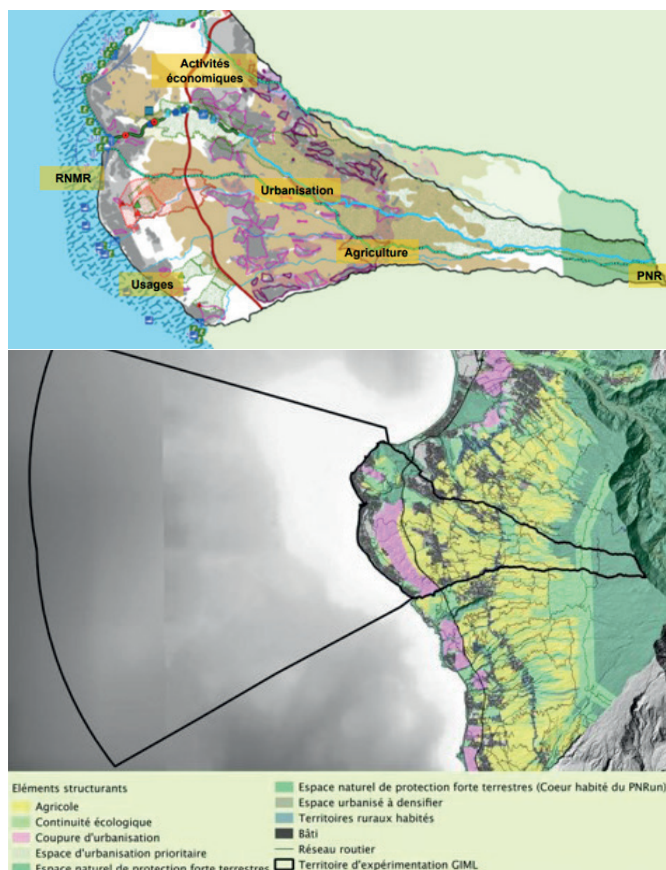
Approaching the territory in terms of its social stratification implies inviting a multitude of actors to talk to each other – to understand each other – in order to move forward together. The questions raised for the workshop are:

What complementarities and continuities can be found in the activities and exchanges between the Hauts and the Bas?

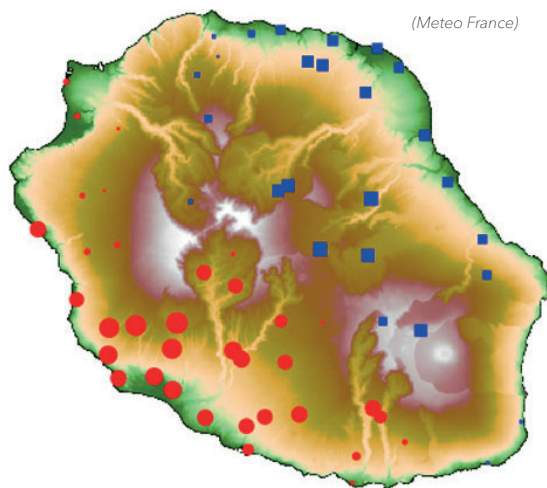
How can the diversity of landscapes and lifestyles be nurtured in local relationships?

Can these relationships and interdependencies establish a "resilience basin" based on sharing and the circular economy?

How can resilience basins be linked and interact on an island scale? How can they be articulated to address the imbalances between the east and west?



The Integrated Management of the Sea and Coastline (TCO, 2013-2015) prefigures a watershed approach, here applied to Saint-Gilles-L'Ermitage.



Rainfall anomalies for the winter months for the period 2071-2100



Harvesting rushes in the Gol Pond, an ancient practice that maintains the ecosystems in Saint-Louis (M. Sibout)

B. Living with risks and preparing for the future

Réunion is one of the French departments most exposed to the risks of natural disasters due to its highly marked relief, its geology and its geographical position. Of the 8 hazards considered as major natural risks in France, 7 are present on the island. In order of their importance, these are the risks:

- ❑ Cyclones
- ❑ Land movements
- ❑ Floods
- ❑ Volcanic eruptions
- ❑ Forest fires
- ❑ Earthquakes
- ❑ Tsunamis

In the absence of disasters and in particular major cyclones over the last ten years, the perception of risks has tended to decrease among the population. The major visible and invisible threats, reinforced by climate change, include rising water levels, cyclonic landings and erosion, all of which have major impacts on coastal areas. Furthermore, existing facilities pose potential problems: the Saint-Gilles-L'Ermitage centre is submersible, the Pierrefonds landfill could be washed away and waste could end up in the ocean in the event of a major cyclone. A wide range of factors come into play, catalysed by human intervention,

which can further degrade this balance. It is estimated that around 60,000 people are at risk of direct impact by cyclones.

Risk mapping is being developed and is known; the phase of creating a mitigation policy and an adaptation capacity has not yet begun.

How can urban planning reduce risks, by implementing corrective actions and preventive measures to mitigate run-off, to be able to endure cyclones, to temporize floods, while also mobilizing the population through changes in daily behaviour?

This means giving meaning to each individual's commitment. Education, prevention, ancestral know-how, memory, prevention and anticipation, behaviour and everyday actions are all linked together in order for this appropriation to work.



How can we involve the population and mobilize ancestral know-how and memory in the repair and preventive maintenance of the territory to prepare it for risks?

How can we draw on their ways of life and their culture of public and private space (including the practice of picnicking)?

How can we preserve natural areas without consuming them in order to maintain buffer and protection areas?



C. Housing patterns and land pressure

Living on Réunion Island is very much a way of life, which for a long time revolved exclusively around the *kaz*, the *kour* and the garden. The traditional habitat, which was omnipresent until the 1970s, is a house on the ground (on one level), in direct contact with the surrounding nature. Life takes place outside, often in the backyard, out of sight. The *kaz* is only entered once the sun has gone down. The garden, at the front of the *kaz*, is a staged space to welcome strangers. The outside spaces are also productive, with vegetable gardens, fruit trees and small livestock. The arrival of “villas” and especially of collective housing, driven by French social housing policies, considerably disrupted and fractured Réunionese habits and customs. The relationship with nature was broken: now life takes place within four walls, whereas the climate encourages outdoor living. Although living arrangements nowadays vary according to place and culture, the attachment to the “*kaz atèr*” remains strong

Nonetheless, land is scarce in Réunion.

In a constrained territory, which is home to an important national park (national biosphere reserve), only 1,000 km² of land is considered “useful”, capable of hosting human activities. Within this space, more than 300 km² already form the urban area.

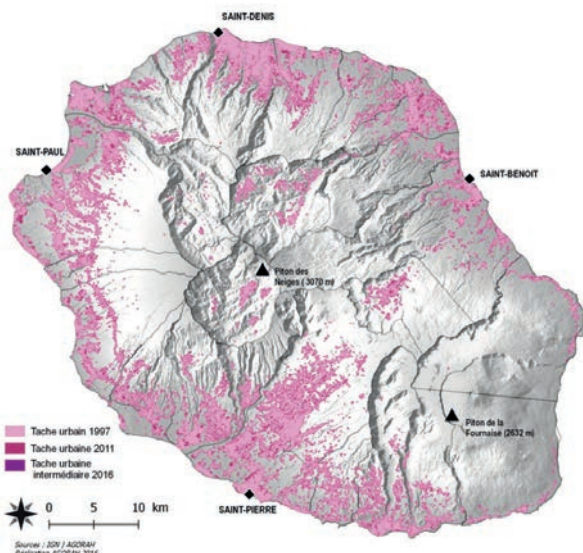
After years of expansion, urban sprawl has tended to decrease since the 1980s, from an average of 707 ha/year of built-up area between 1989 and 2002 to around 150 ha in recent years. This trend, which has been made possible by the implementation of the Regional Development Plans (1995 and 2011), whose main priorities were the protection of natural and agricultural environments and the densification of existing urban areas, has inadvertently led to an increase in the pressure on urban land in Réunion. The prospect of “Zero Net Artificialization”, a government objective to prevent further land artificialization, is unlikely to reduce this pressure.

Even though the relationship with the land, which is rooted in Réunion’s customs and way of life, is a means of being attentive to one’s environment and contributes to the collective awareness of the need to conserve and maintain healthy natural ecosystems, it seems more difficult than ever to offer everyone a “kaz atèr” in the context of the island’s demographic growth.



Traditional hut converted into a tourist office in Entre-Deux (S. Gélabert)

Extent of the urban area in 2017 (Agorah)



How can natural spaces and food-producing land be preserved while accommodating population and urban growth in an affordable way?

How can a diversity of forms of housing be encouraged – living on the coast, on the slopes, in the highlands, in the cirques, in natural areas differently?

How can island and tropical adaptations be envisaged to prepare for the uncertainties and changes of climate change?

D. Towards inclusive economies

The limited availability of resources on the island (available space for urbanization, agricultural land, preserved natural environments, water, energy, infrastructures, etc.), the approaching of critical thresholds in their management and the forecasts of demographic growth leading to increased urbanization represent serious challenges for Réunion.

These challenges are an opportunity to rethink growth and to propose a unique development model in which the question of urban form and density are central. It is important to make choices regarding the allocation of land in the light of the growing needs that are anticipated: 270 litres of water consumed per person per day, 1 million inhabitants in 2037, an objective of 84% renewable energy in 2028, representing 540 additional MW...

How can needs be combined to pool and diversify solutions?

How can the multifunctional use of spaces, not provided for in sectoral administrative processes, be organized?

How can sustainable sectors be promoted to benefit the whole population?

SECTORS CURRENTLY BEING DEVELOPED AS PART OF THE CIRCULAR ECONOMY

Réunion has many assets that can be used to develop economic activities specific to island territories and which could spearhead a green industry to be developed and disseminated.

A few ideas for the workshop:

- Urban agriculture and aquaponics are examples of innovation in which Réunion can make its mark.
- Specialized agriculture has a strong potential for re-development: cocoa, vanilla, rice, medicinal plants, etc. allow space to be occupied in a diverse manner. These crops, which are considered to be part of the Réunionese landscape and identity, also have a role to play in maintaining the soil. They can be used as a means of territorial marketing to develop the attractiveness of the territories, recreate links and develop skills.

- Agrivoltaics and the development of renewable energies are specific to islands due to the lack of space, the remoteness from fossil fuel production sources, and the generous amount of sunshine and wind. Their potential is far from being reached and constitutes an economic sector in the making.

- Bio-sourced materials are agricultural by-products that limit waste, promote the circular economy and reduce pollutants. They constitute a specific know-how that is half-craft, half-industrial and that brings improvements to the habitat.

- Responsible tourism, particularly adapted to the context of Réunion, could serve to convey messages of respect for the environment and is an integral part of the island's image.

Saint-Joseph agrivoltaic farm (Akua)



PAPAM (aromatic and medicinal plants) are valued in the eastern and southern parts of the island (Aplamedom)



ISLANDS: EXPERIMENTAL LABORATORIES FOR ADAPTATION TO CLIMATE CHANGE

Island territories, due to their isolation and scale, can be seen as territories propitious to experimentation.

Diversity is a driving force for experimentation, enabling the multiplication of full-scale “samples”. Supported by private and public stakeholders, innovative projects are being developed in Réunion, such as the Smart Island programme (energy autonomy) or the project for the heart of the city of La Possession, which received the Sustainable Islands prize (COP24) and is developing a laboratory within the perimeter of the eco-city that addresses the themes of urban agriculture, the built form, public spaces, bioclimatic construction and renewable energy production.

Innovation does not mean systematically implementing sophisticated technologies, but rather inventing innovative management methods with existing means. Innovation is also seen in terms of its legal framework: Réunion, a French Overseas Region and Department, is part of a national regulatory patchwork. Energy renovation, the dimensioning of public works and the setting up of agricultural sectors require dealing with a multiplicity of scales and institutional players within the same territory, a concentration and complexity of administration, a contrast between local agility and the cumbersomeness of central organizations, etc. The right to experimentation enshrined in 2020 by French local authorities may offer an opportunity to be seized.



How can an island innovation specific to Réunion be encouraged while structuring sectors?

What role should civic and private initiative play in future projects?

How can deployment strategies be organized and developed that combine contradictory fields of application?

Dos d'Âne, village in the Hauts of La Possession



5. Forging links in the Indian Ocean

Réunion Island is located 170 km from Mauritius, 830 km from Rodrigues, 700 km from Madagascar and 1,700 km from the Seychelles and the Comoros. On this geographical scale, the question of “creating an archipelago” arises, as well as the vectors capable of developing genuine regional cooperation. Beyond the specificities of each and their distances, what can be done to cement the issue of adaptation to climate change, particularly through land use planning?

On a regional scale, the islands of the Indian Ocean form a unique ensemble – the ultimate melting pot of Afro-Asian civilizations – forged in one of the last inhabited places on earth. This mosaic of geographical situations and human settlements has been designed by nature. The monsoon winds formed by the marine currents have contributed to the spatial demarcations and temporal articulations of the land and sea, both in terms of productive cycles (food, raw materials, crops) and of possible nautical routes and constrained anchorages.

Situated within a single cyclone basin, this insular space’s unity comes primarily from the shared climatic and geographical conditions present on its islands and volcanic archipelagos, with the exception of the granite and coral areas of the Seychelles. The Indian Ocean is also an area of acculturation – an interface where the intermingling of populations of diverse origins who circulate or have been displaced prevails, where the creolization of cultural transfers from multiple sources predominates. As such, strong cultural continuities are evident between island territories, especially between Zanzibar, Mayotte and northwestern Madagascar. Today, the fact that these is-

lands face similar existential challenges (rising sea levels, increased climate risks, questions of food and energy autonomy, etc.) is an invitation to pursue and reinforce this geographical community.

Beyond their unity are the strong contrasts found between these island territories as individual entities as well as within their proper limits. Each island ecosystem has its own endemic character: a (natural, human, cultural) specificity in the regional whole. Created by the reliefs and shaped by the southwest and northeast trade winds, their ecosystems and micro-climates are manifold. Their disparity is also economic: GDP per capita approached €26,000 in Réunion in 2014, far ahead of the Seychelles at €16,000 (mainly due to tourism) and even further ahead of Madagascar at less than €470. The Comoros were at €1,100, and Mauritius, one of the most dynamic economies in the region, reached €9,400. This socio-cultural patchwork of highly disparate economic levels is the basis for identities and singularities that need to be taken into account if each territory is to find its own way towards resilience.

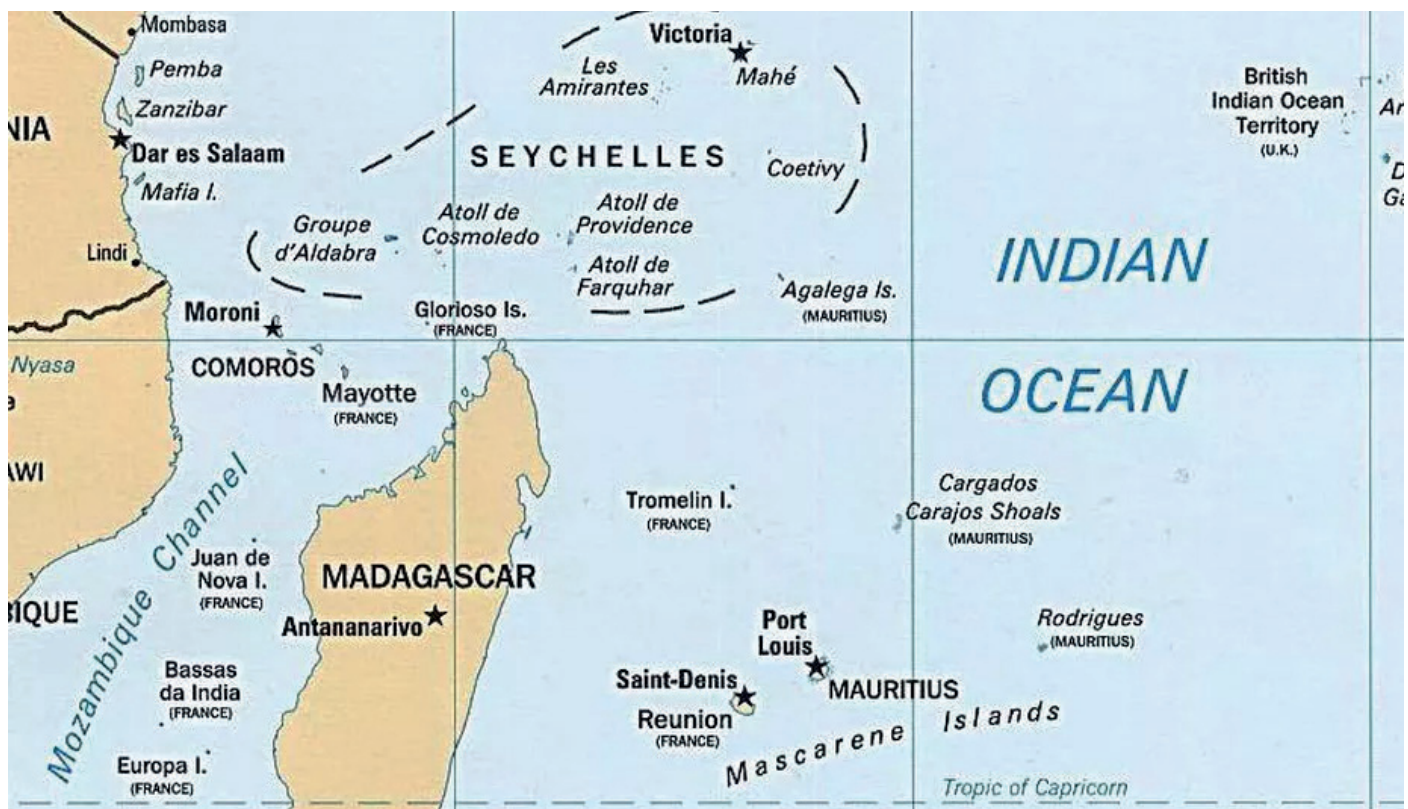


How can an island innovation specific to Réunion be encouraged while structuring sectors?

What role should civic and private initiative play in future projects?

How can deployment strategies be organized and developed that combine contradictory fields of application?

Position of the islands in the Indian Ocean



THINKING ABOUT THE INDIAN OCEAN ARCHIPELAGO

Institutional actors have provided a framework for trade and the exchange of know-how and solidarity between Indian Ocean island territories, in particular to tackle climate change: this is the mission of the Indian Ocean Commission, an intergovernmental organization created in 1982. The European Union, through the regional integration policy of its ultra-peripheral territories (Réunion and Mayotte), is also a juggernaut in regional cooperation.

That said, the issue of climate change is addressed in varying, sometimes asymmetrical ways for the island territories of the Indian Ocean, even if they possess a common and shared culture. **How can this part of the world come together as a region and develop partnerships and synergies for climate change resilience?**

How can a network of exchange and cooperation be set up on the issues of adapting to global warming? What are the continental implications?

What are the economic sectors to be deployed on a regional scale? What are the avenues of innovation, the threshold effects and the conditions for scaling-up in this region?

What complementarities and joint learning processes can the island territories of the Indian Ocean develop?

BUILDING ON THE SINGULARITIES OF EACH ISLAND TERRITORY

Réunion, Mauritius and Rodrigues, the Comoros Islands, the Seychelles, Madagascar, Mayotte... Each territory has its own history, geographical particularities and culture. The issues of governance, risk management and social ties have specific implications. The aim of the workshop is to identify the levers on which to act so that macro-structural regulatory policies and economic aid coincide with the capacity to modify individual behaviours and initiatives on the ground, and which are capable of organizing resilience on a daily basis. The history, culture and sensibilities of each entity offer perspectives for finding responses that reflect the diversity of the Indian Ocean's islands.

How can the local essence of each island territory be drawn upon as sources of resilience?

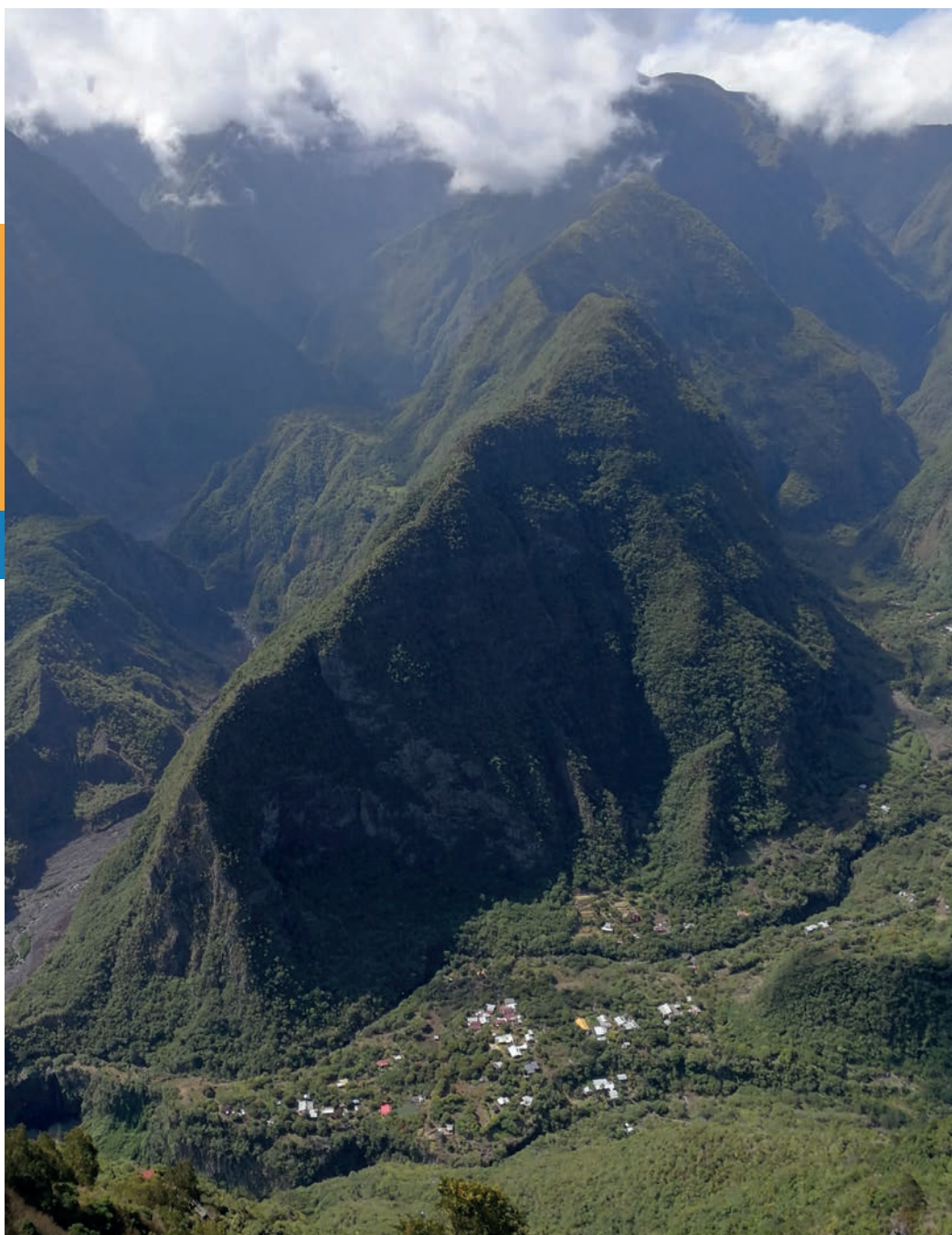
To what extent can the diversity – both human and natural – present in each island territory contribute to strategies for addressing climate change?

The urban planning workshop on Réunion Island will serve as a veritable laboratory of ideas: uniting and confronting visions and experiences to produce proposals and strategies of various scales, up to that of the working territory chosen in Réunion. But it will also open up avenues for other island territories. Following the main jury session, an Indian Ocean jury will be convened to continue to examine and debate the workshop's proposals. Then, a series of meetings entitled "Lessons and Perspectives" will be organized based on the workshop's findings as well as on the debates and reflections of the two jury sessions and the Island Voices meetings. They will have two objectives:

- To set in motion local adaptations at the level of each territory
- To use emerging policy issues to highlight regional synergies in the face of climate change

In the end, the context of insularity and its components, the interest in regional integration and the importance of comparative situations with foreign island territories in the region will make it possible to identify the core elements of island territories' potential to adapt to the effects of climate change and the vulnerabilities that must be addressed as a matter of priority.





*The isolated village of Grand Bassin,
from the Bois Court lookout*

6. Workshop format

Organized following the original method of Les Ateliers, 15 volunteers from a variety of countries and professions will be brought together and divided into multidisciplinary teams for the workshop to be held on Réunion Island from Saturday, 25 September to Friday, 8 October 2021.

The first days, in the field, will be devoted to meetings and visits which will allow participants to discover and appropriate the workshop's territory. During the opening ceremony, local authorities will have the opportunity to express directly to the participants their concerns about the topic and their particular expectations. The teams will then start working in groups, without computers. After a week, the exchange forum will take place. A crucial moment of the workshop, it is when the teams will present their analyses and first project ideas to the other teams and to a local committee who will openly react to the presentations.

At the end of the second week and work this time conducted with the aid of computers, a jury composed of local and international professionals – in particular from other island territories – and local decision-makers will be brought together to listen to and analyse the proposals and approach of each team. The presentations are public. At the end of the presentations, the jury will deliberate, not to choose a project, but to identify important and strategic elements that will give continuity to the work and create complementarities between the different groups.

Discussions to exchange and gain feedback will be organized with the jury in order to broaden the reflection to other island territories. These exchanges will make it possible to draw up an initial summary highlighting the jury's recommendations and the work of the three teams.



Saint-Denis seen from the sky

7. How to participate?

This workshop is open to professionals of all ages and nationalities, practicing a profession or with experience in urban planning. All disciplines are welcome: architects, sociologists, geographers, landscape designers, engineers, economists, environmentalists, artists, etc. Fluency in English is essential. Applications from island territories are particularly encouraged.

Participants will be accommodated on the island and will work in the premises provided. A document presenting the context and current projects is in the process of being prepared, as well as a collection of resource materials with the necessary maps.

Participants will not be paid, but the following costs are covered: travel (within reasonable limits), accommodation, food, visits and working materials. The selection of the 15 participants is made by the workshop's pilot committee on the basis of each candidate's professional skills, experience with similar topics, approach to the subject, communication skills (languages, graphic expressions) and motivation!

To apply, please email applications by **18 July 2021** to candidatures@ateliers.org with the following elements in a single PDF entitled: Last name_first name_Islands.pdf

- Completed application form (available below)
- 1-page CV
- One- or two-page statement explaining the nature of your interest in participating, and the skills/experience you can bring to the table

The results of the selection process will be announced in late July.

Application form for workshop

Island Territories / Réunion island workshop

Family name : _____

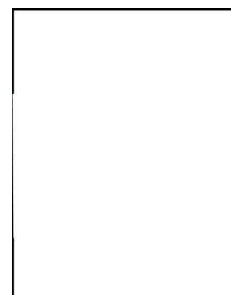
First name: _____

Date of birth : _____ Nationality : _____

Postal address : _____

E-mail : _____

Mobile phone: _____



Somebody to contact in case of problem: _____ Tél.: _____

Degrees: _____

Current situation: _____

Participation to other collective works: _____

How did you hear about Les Ateliers?

Former participation	
Friend/colleague	
University/professors	
Internet	
Other (please specify)	

Skills (from 0: nul to 4 : mastery)

LANGUAGES	0	1	2	3	4
English					
Reunionese creole					
French					
Other (please specify)					

EXPRESSION	0	1	2	3	4
Hand drawing					
Computer drawing					
Indesign software					

Oral / written presentations					
Team work					

SPECIFIC SKILLS	0	1	2	3	4
Urban Planning					
Design					
Economy					
Rural development					
Engineering					
Landscape design					
Sociology					
Other (please specify) :					

Describe yourself in 80 words (in English)

les ateliers

maîtrise d'œuvre urbaine

Island Territoires - Réunion Island workshop

Projects director :
Véronique Valenzuela : +33760092449
Veronique.valenzuela@ateliers.org

Coordinator :
Simon Brochard : +33762434536
simon.brochard@ateliers.org

Contact :
islands@ateliers.org