# INTERGRATED WATER RESOURCE MANAGEMENT

## SEYCHELLES

# COUNTRY PROFILE

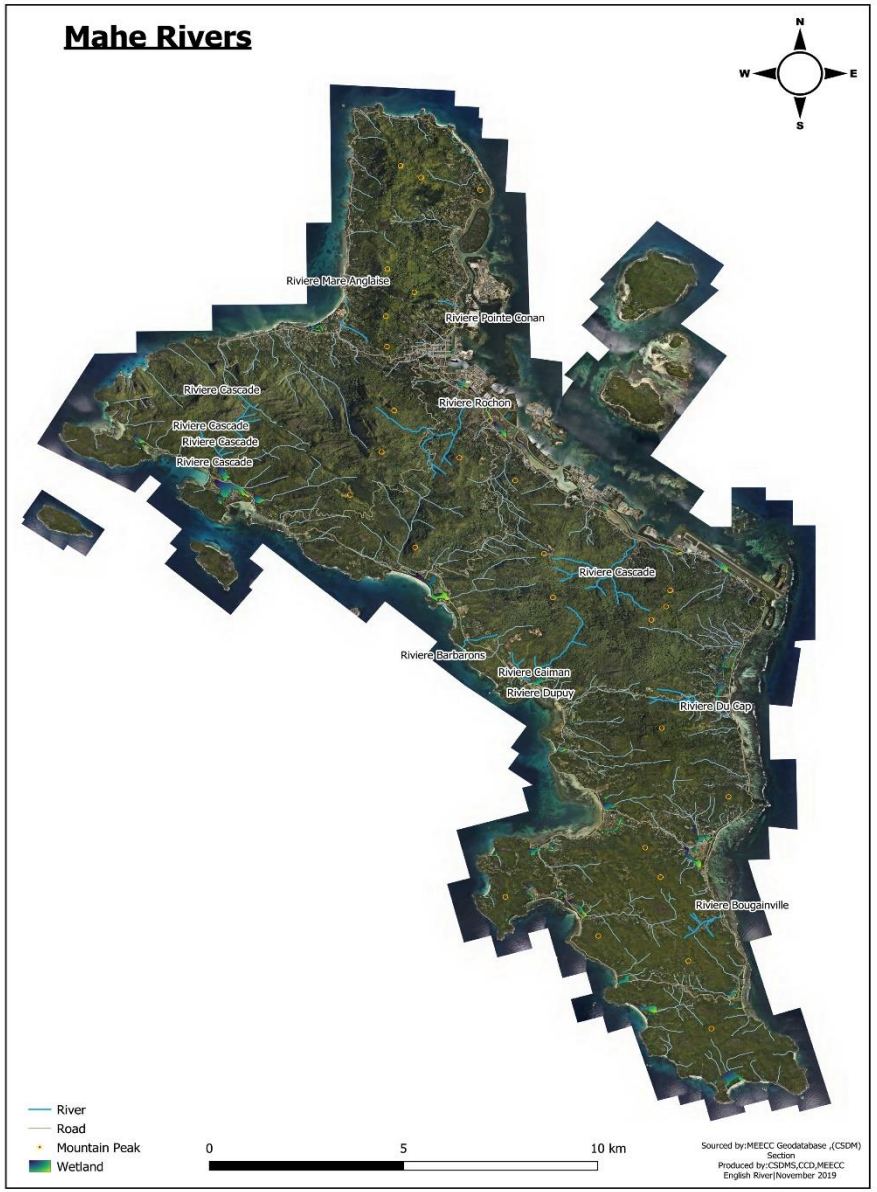
- The Seychelles is an archipelago of 115 islands scattered over 1.3 million square kilometers of sea in the middle of the western Indian ocean.
- Mahe is the most populated island. The extent of Mahe is 154.7 sq. km., there are 169 catchments feeding the rivers on Mahe. However due to mountainous nature for the terrain and low retention capacity of the soil the flow in these streams are erratic and falls to extremely low values during times of drought, normally June to October.
- Praslin is the second largest island in the archipelago. The topography of Praslin consists of a mountainous ridge extending across the entire island rising to an attitude of around 367m and a flat coastal strip. There are 85 river catchment on Praslin island.
- La Digue is the fourth largest island, it is also granitic in nature and it consist of 16 river catchments

Water supply is primarily from rivers and to some degree from groundwater. owing to steep topography and low retention of the soil and rock, the volume of in ltration is generally low and falls to very low levels during prolonged periods of drought.

- As a response, desalination plants have been installed to meet shortfalls in supply during the dry season. while mahé currently has, overall, a positive water balance, the situation is less favourable for praslin and la digue, with both islands currently having no major storage capacity other than groundwater.
- For both islands long-term (2030) water de cites have been calculated by recent studies. Even on Mahé, the current rainwater storage capacity will only be in the region of 60 days, even after the wall of the la gogue dam is raised. This is insuficient to provide uninterrupted rainwater-based supply during the dry season.

# MAJOR RIVER BASIN IN THE COUNTRY

- Pointe Conan River
- Rochon River
- Cascade River
- Du Cap River
- Bougainville River
- Caiman River
- Dupuy River
- Barbarons River


Mahe Rivers
N
W
E
S
Riviere Mare Anglaise
Riviere Pointe Conan
Riviere Cascade
Riviere Rochon
Riviere Cascade
Riviere Cascade
Riviere Cascade
Riviere Cascade
Riviere Barbarons
Riviere Caiman
Riviere Dupuy
Riviere Du Cap
Riviere Bougainville
River
Road
Mountain Peak
Wetland
0
5
10 km
Sourced by:MEECC Geodatabase ,(CSDM) Section
Produced by:CSDMS,CCD,MEECC
English River|November 2019

# POLICY AND INSTITUTIONAL FRAMEWORK

**The Seychelles Wetland policy and action plan was developed with the intention to regulate the developments in and around the wetland areas and support EIA process through its classification system.**

- **Policy**
- **The responsible water management authorities should, in their mechanisms for allocating water resources among many users, allocate sufficient water to maintain ecosystem integrity and biodiversity including marine and estuarine life.**
- **The responsible authorities will take appropriate measures to rehabilitate, sustainably manage and protect catchment forests.**
- **The responsible authorities continue to adopt necessary measures to prevent and control pollution (point and non-point sources) of ground and surface waters resulting from inland, coastal or offshore activities.**
- **The responsible authorities follow a source-to sea approach to the management of water resources and takes the necessary measures to prevent negative impacts on the coastal and marine environment.**
- **The management of wetlands and rivers are overseen by the Climate Adaptation and Management section**

# THE OBJECTIVES OF THE NATIONAL WATER POLICY

**The national water policy provides a general framework for the water sector to achieve the following objectives:**

1. **to develop, protect and manage the country's water resources for the economic, social and environmental benefit of all, on an equitable and sustainable basis;**
2. **to ensure the availability of good quality water to all sectors of the economy;**
3. **To promote and facilitate wise, more efficient consumption of water;**
4. **To maintain high levels of financial and technical performance of water supply services by applying modern management practices;**
5. **to develop an appropriate legal, regulatory and institutional framework for the optimal, integrated management of the country's water resources.**

# IMPORTANCE OF THE KEY RIVER BASIN IN THE COUNTRY

- At present, the main water use sectors are the domestic sector that consumes 50% of municipal water, and the commercial sector that accounts for the balance of the daily demand of 43 000 cubic meters (mahé, praslin and la digue).
- The agricultural sector consumes close to 3 million cubic meters per year. until now, the environment has not been recognised as a water user, but the national water policy acknowledges the water needs of the environment and measures are proposed in an IWRM Plan – that was developed in support of the Policy – to ensure that environmental water needs are met.
- An aggregate annual increase of 5% in water demand in the coming years is forecast for all the sectors mentioned above, demand is expected to be particularly high in the tourism industry which is expected to maintain a growth pro le slightly above 10%.
- the market for bottled water is estimated to be growing in double digits. in 2016 there were 12 licensed bottlers and the change in consumer behaviour towards the consumption of bottled water is expected to maintain this strong growth in demand.

# CHALLENGES FACING THE MANAGEMENT OF RIVER BASIN

- **WATER FOR ECONOMiC AND DEVELOPMENT, WATER USE EFFICIENCY AND WATER DEMAND MANAGEMENT**

**-- Driven by population and economic growth – the latter predominantly in the tourism, manufacturing and agricultural sector – demand for water in Seychelles is increasing continuously. To ensure the availability of a sufficient volume of good quality water for the human population and various economic uses, it is important that available water resources are utilised in the most efficient manner possible, and additional water resources are developed**

- **WATER RESOURCES MANAGEMENT AND DEVELOPMENT**

**-- meeting the growing demand for water in Seychelles will require a combination of improved management of existing water resources and the development of additional water sources. with traditional water resources development options (i.e. storage reservoirs) being increasingly limited, the focus is shifting to the development of alternative sources of water, and water demand management. Also, management measures need to be implemented that improve knowledge, management, and control of the resources.**

- **WATER QUALITY AND ENVIRONMENTAL SUSTAINABILITY**

--The water resources of Seychelles are at risk from pollution and other environmentally harmful activities. pollution is a threat to the environment because many rivers and streams are polluted by discharges from septic tanks (domestic and agricultural), civil works and the dumping of waste.

The development of housing within the catchment areas has also increased the risk of pollution of the natural environment and the water supply. it also negatively impacts on the marine environment, which is a vitally important source of socio-economic benefits in Seychelles.

- **SECURITY FROM WATER-RELATED DISASTERS**

Potential water-related disasters in the Seychelles are primarily the effects of floods and droughts. with long-term climate change forecasts predicting an increase in the duration of dry spells and in the intensity of precipitation, it is important that Seychelles has sufficient disaster prevention and mitigation capacity to deal with these challenges.

# FINANCING WATER RESOURCES DEVELOPMENT AND MANAGEMENT

--Over the past few decades, Seychelles received major support for economic, financial and institutional reforms, as well as for infrastructure investments, from a range of international partners.

Numerous donors have contributed to the development of the Seychelles and some are still contributing. The financing of the water sector in Seychelles is still dependent on external funds.

For the period 2013 to 2015, the average external funding committed to the sector was scr329.7 million (usd24.07 million) per year. While complete independence from international finance (be it grants or loans) is not likely to be achieved in the near future, efforts need to be made to diversify the sources of funding and to raise a higher portion of the funds needed for water resources development and management domestically.

# WATER RESOURCES INFORMATION MANAGEMENT

--Fundamental to water management is the need for reliable, accurate and accessible information. Seychelles lacks a cohesive water sector database that is geo-referenced and has access protocols appropriate to each user.

water resources monitoring capacity is limited and current measuring and data management equipment is outdated, leading to a limited degree of knowledge of the water resources and their current use. Moreover, unlicensed abstractions are widespread, adding to uncertainty about available water yield and actual uses.

Much sectoral data and information that would allow for proper water demand management are missing. Sector analysis data is available but is not part of the standard reporting procedures.

Significant improvements in water information management are needed, including the technical infrastructure for data management, data management procedures, and human resources capacity, both in data management and the application of data for decision-making

# STAKEHOLDER PARTICIPATION AND CAPACITY BUILDING

**The involvement of stakeholders in water management is a central pillar of IWRM. it is practiced in Seychelles to some degree, but is not sufficiently legislated and stakeholder consultation and decision-making structures are limited.**

**the most relevant of the existing structures is the river committee, which hears arguments for and decides on applications for licenses. the functions currently carried out by the river committee would likely move to an independent regulator, once established.**

**Nevertheless, a national inter-sectoral coordination body, ideally complemented by local level stakeholder committees, is needed. At local watershed level, efforts are already underway to establish watershed committees, but their exact role and mandate require further definition. Once established, these local committees need to be effectively linked with management structures at national level**

# WATER RESOURCES GOVERNANCE

The water resources management laws for the Seychelles originate from the pre-IWRM era and are both fragmented and outdated in the sense that they do not provide a basis for IWRM-based water management. the legal framework centers around the PUC Act and grants substantial powers to the PUC, establishing the PUC as de-facto resources manager, service provider and regulator.

the legal framework also lacks clarity on aspects of catchment protection and management and makes little provision for stakeholder engagement in water resources management. stakeholders therefore identify the revision of water management legislation as a priority. legislation needs to be brought in line with IWRM principles and consolidated into one central national water Act

# CURRENT AND PLANNED INTERVENTIONS TO IMPROVE THE STATUS OF THE KEY RIVER BASIN.

- Given that the maintenance works in wetlands and rivers may be very labour intensive, Climate Adaptation Management Section (CAMS) award contracts to small contractors to undertake the cleaning and maintenance of wetlands and rivers using the procurement systems defined by the Procurement Act 2008. The monitoring and evaluation is done by the staffs of CAMS and the District Administrations to ensure that the works are completed as per the specification of the Ministry.
- Climate Adaptation Management Section (CAMS) also handles the ecological restoration and management of wetlands ,rivers and coastal through its annual capital projects. Such projects are implemented in various wetlands and coastal zone on Mahé, Praslin and La Digue.
- UNDP funds most of our ecosystem-based adaptation projects which is aim to reduce Seychelles' vulnerability to climate change, focusing on two key issues – water scarcity and flooding. It includes the following components:

• Watershed rehabilitation;

• Coastal rehabilitation, including coral reef rehabilitation;

# RECOMMENDATIONS

- It is therefore critical that this policies are reviewed at regular intervals and when necessary revised, to ensure it represents national policy priorities for water resources management at all times and keep track with national and international management concepts, trends and approaches.
- In this context, a 10-year review cycle is envisaged, so as to strike a balance between the need for reflecting the current thinking for the sector at all times, but also allowing sufficient time for the implementation of the interventions guided by this policies.

# THANK YOU!!