



INITIATIVES POUR L'AVENIR  
DES GRANDS FLEUVES  
INITIATIVES FOR THE FUTURE  
OF GREAT RIVERS

# Synopsis sheets

Rivers of the World

## THE MARONI

# The Maroni

The largest French overseas department and the only one situated in South America, the geography and the situation of French Guiana's natural and mineral resources are exceptional: wood, gold, fishing resources, water, etc. According to UNESCO, this department ranks third in terms of available fresh water, with a volume of 800,000 m<sup>3</sup>/inhabitant/year (after Greenland and Alaska). But this resource is unequally distributed. Two large rivers, the Maroni and the Oyapok, structure the territory and mirror the many challenges facing it: migration, demography, health and the economy, among others.

## One territory, two large rivers



Hot (average 26°) and humid (rainfall: 2,900 millimetres a year), Guiana is for the most part covered by tropical forest and crossed by myriad rivers (more than 112,000 km). It constitutes an **exceptional reserve of biodiversity -half of that of all French territories-**:

- 2 nature reserves which make up the Natural Regional Park of Guiana (PNRG),
- The Guiana Amazonian Park which covers 40% of the territory (with a surface area of 3.4 million hectares, in the centre and south);
- About 5,500 plant species (including around 1,300 species of tree versus 126 in metropolitan France), 190 mammal species, 720 bird species and 500 fish species. It's also the place most favoured by the leatherback sea turtle for laying its eggs.

**Water is abundant and the rivers Oyapok and Maroni structure the department**, providing administrative borders, the former to the east (with Brazil) and the Maroni to the west (with Suriname). They are above all places of passage. Understanding this territory means taking an interest in its cultural diversity -the result of reciprocal influences between its communities and those of the countries surrounding it- and in its river corridors, vital for both trade and people, so that they can commute to school or find medical care.

One must also be aware of two features:

- **The dramatic break between the coast and the banks of these two border rivers** on the one hand, along which most of the population live, **and** on the other hand, **the territory inland**, in the south, marked by nature and isolation.
- **The current demographic dynamics:** the current population of 280,000 could double in the next twenty years.

# The Maroni

## The Maroni: a natural border between Guiana and Suriname

### *Physical characteristics of the river*

The source of the River Maroni lies in the Tumuc-Humac mountains, at an altitude of 700 m in southwest Suriname. Here, the river is called *Alitany*, the name it keeps up to its confluence with the Inini. It then goes by the name of *Lawa* up to its confluence with the river Tapanahoni, to finally take the name Maroni. It finally flows into the Atlantic Ocean, where its mouth merges with that of the river Mana, in a 5 km wide estuary.

The river is subject to an equatorial climate characterised by heavy rainfall. This can vary by a factor of from 1 to 3 between the months of October – the driest month – and May – the wettest. Therefore the Maroni's discharges are subject to significant variations, with an alternation between period of high water and low water. This annual cycle is, however, marked by a slight fall in discharges during the period known as the "little spring" in March.

The river also has about 200 falls that make navigation dangerous.

### **Technical sheet**

Length: 610 kilometres (Guiana's longest river)

Watershed: 65,000 km<sup>2</sup>

Average discharge: 1,700 cubic metres a second

Countries crossed: Suriname, Guiana

Main towns: Saint-Laurent du Maroni, Grand-Santi (Guiana), Albina, Maripassoula, and Benzdorp (Suriname)

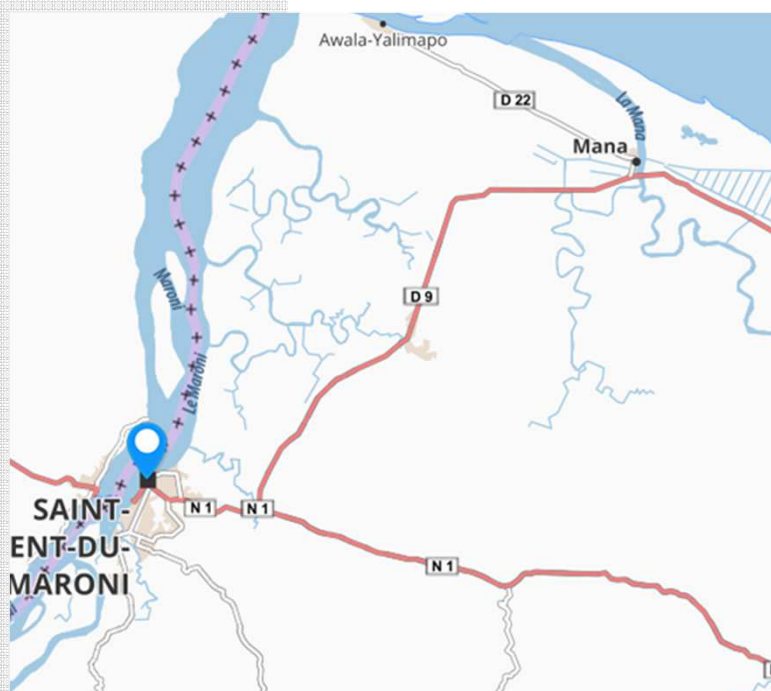
Tributaries of the Maroni: the Tapanahoni, the Sparouine, the Beiman, the Big and Small Abounami, the Inini, the Tampok and the Marouini



# The Maroni

## *A river without legal status but which forges an identity*

The River Maroni became a border in 1713 following the Franco-Dutch treaty of Utrecht. At that time, the region was hardly exploited. It wasn't until a century later (1850) that gold was discovered in the valley of the Lawa (middle reach of the Maroni), rekindling interest in the region.



During the Franco-Dutch conference at Albina in 1860, France demanded that the border be drawn along the Tapanahoni and not the Lawa, as desired by the Dutch. The dispute concerned a territory covering 25,000 km<sup>2</sup>. Czar Alexandre III recognised the Lawa as the middle reach of the Maroni and as the border, putting an end to the French claims. A second dispute flared between the two countries in 1902. France wanted to fix the border of the upper Maroni basin along the Litani, whereas the Dutch opted for the Marouini; 6,000 km<sup>2</sup> were at stake. The border was drawn along the Litani in 1935, although Suriname still contests this delimitation.

On 30 September 1915, the Convention of Paris signed by France and Holland fixed the border in the area between the island of Portal and that of Stoelman. However, this convention was never ratified by Suriname. The absence of a clear border is further complicated by the absence of a legal status for the river. The social reality is a completely different situation, since the river has always provided a place where populations circulate and mix, and a basis of local identity.



## The peoples of the Maroni basin

### *Marked cultural diversity in Guiana*

Guiana's ethnolinguistic composition is very **diversified**. There are more than 25 different ethnic groups with their own languages. These groups include Bushinengues, Amerindians, Europeans, Asian immigrants and other people from more recent immigrations (Lebanese, Brazilians, etc.).

The **Guianans whose mother tongue is creole** make up 30% of the population. It's the largest community living on the coast. **The Antillais** (Martiniquans, Guadeloupeans, Haitians, Saint-Lucians) found refuge on Remire-Montjoly in 1902 following the eruption of Mount Pelée. As for the **Europeans**, they make up about 15% of the Guianan population.

The **Bushinengues** (word derived from *Bos Negers* in Dutch), also called Black Browns, are the descendants of the African slaves taken to Suriname to work on the plantations. After escaping from Suriname in the 18<sup>th</sup> century, some of them settled in Guiana. By living in the Amazonian forest they have built their own culture stemming from their diverse African ethnic roots. They have succeeded in adapting to this Amazonian lifestyle partially thanks to the Amerindians, with whom they are in close contact. In all, 4,000 Bushinengues (6% of the population) live on the banks of the Maroni and in the large towns situated on the coast, such as Kourou, Cayenne, and Saint-Laurent du Maroni.

The **Amerindians** are the descendents of the indigenous peoples, present when the colonists arrived in the 16<sup>th</sup> century. They make up about 12% of the Guianan population.



# The Maroni

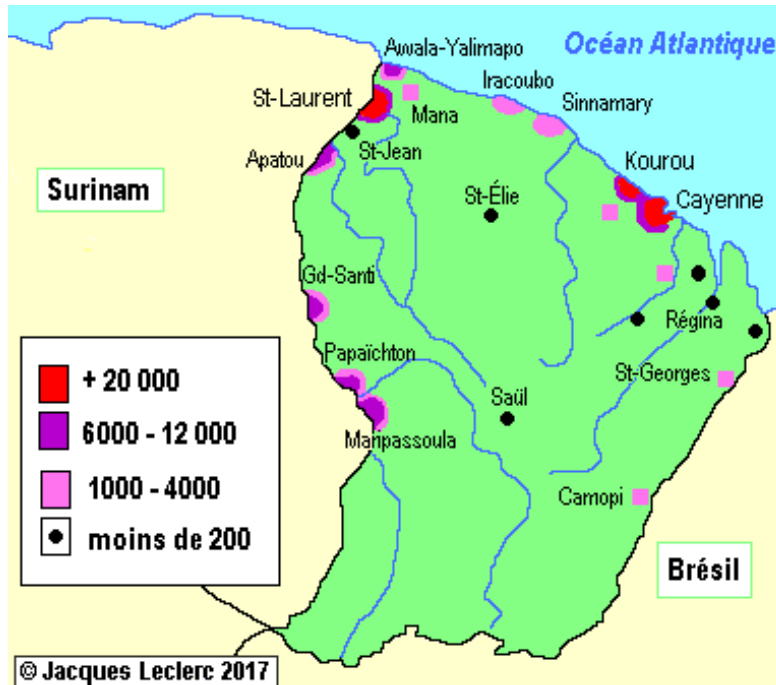
The **Asian communities** arrived at the end of the 19<sup>th</sup> century and the beginning of the 20<sup>th</sup>. They are mainly composed of Chinese originally from Hong Kong, Singapore, Taiwan and mainland China. In 1974, 4,000 **Hmongs** – political refugees from Laos – arrived in Guiana, in the regions of Cacao and Javouhey. They were and are now mostly large fruit and vegetable farmers who contribute 40% of the department's farm production.

## *The demographic dynamics of the Maroni basin*

**The Maroni Basin** has been subject to specific sociospatial evolutions.

During the 17th and 18th centuries, the European colonists and their slaves prospered on the banks of the Maroni. The Upper Maroni was then peopled by the Djukas, Surinamian slaves escaped from Dutch plantations. The populations settled at the ends of the river: those that settled in the upper part of the Maroni turned towards the forest, while those who settled near the mouth turned towards the sea.

Geographic  
concentration of  
the population in  
2017



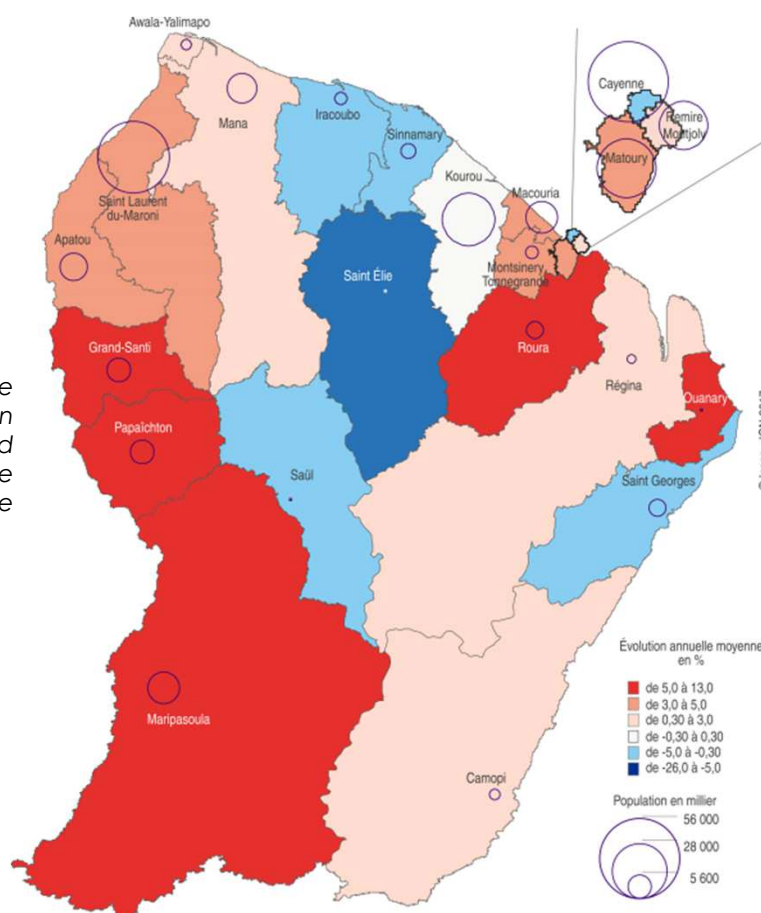
Starting in the 1960s, Guiana underwent a considerable influx of immigration from the countries of the region, especially Suriname, Brazil and Haiti. This immigration from neighbouring countries remains considerable today. Clandestine immigration also developed at the same time, especially gold prospectors from Brazil.

# The Maroni

Today, Guiana is undergoing considerable demographic growth (increasing at an annual rate of 3.7%) with a high birth rate. At this pace, Guiana will have a **population of 316,000 in 2030**. This figure masks considerable disparities. Between 2009 and 2014, the growth of the population was mainly driven by the communes of the Maroni: the population of the intercommunal municipality of Ouest guyanais (CCOG) increased by 17,394 inhabitants. In five years' time, the population of Saint-Laurent-du-Maroni should exceed that of Cayenne, with a fertility rate of 7 children per woman in this region, and about 3,000 births a year at the maternity clinic of Saint-Laurent by foreign and French mothers.

This demographic surge has led to the creation of "mushroom districts" (50% of the habitat of the town of Saint-Laurent du Maroni) which causes problems of access to drinking water and drainage. Also, over the entire region from 13 to 20% of the population live without electricity.

*Evolution of the  
population  
between 2009 and  
2014 in % - Source  
Insee*



# The Maroni

## An underexploited river

### *The “western highway”: a vital but non-developed transport corridor*



Boats use the rivers of French Guiana although they are not listed among France's navigable waterways.

Two type of flows can be observed on the River Maroni :

- cross river flows with Suriname,
- longitudinal flows between neighbouring villages and municipalities, since navigation is the only means of travelling inland from the coast. Canoes transport goods and passengers daily and are also used as shuttles for schoolchildren.

According to the Committee on Water and Biodiversity, more than 20,000 people, 10,000 tonnes of goods and 30,000m<sup>3</sup> of fuel are transported every year on the Maroni alone.

There is only **one river port**: the Port de l'Ouest, which separates French Guiana from Suriname. It has been owned by the Intercommunal Authority of West Guiana (CCOG) since 2009. It is both a commercial port, an international berthing zone between Albina (Suriname) and Saint-Laurent-du Maroni and a canoe port.

Boats have to cross numerous cascades, natural dams that make circulation difficult and dangerous. Transport on the river are even more complicated during the dry season, with the emergence of large rocks. The canoeists are sometimes obliged to unload their cargoes on the banks in order to cross these cascades on foot.

However, navigability on the river is essential to ensure communication with isolated communes and facilitate access to healthcare. This is why, in February 2018, the DEAL launched the Observatory of River Transport on the Maroni River to develop the river and make it safer.

Tourist activities radiating from the river remain marginal: trips downstream to Maripasoula, visits to local villages, stopovers at small islands, passages through the cascades.



## Energy: hydropower potential waiting to be developed

At present, there is a total absence of development on the River Maroni. Nonetheless, several sites on the river that present **potential for small hydropower installations** have been identified.

Nom du site	Statut dans le SAR	Localisation du site	Hauteur de chute sans aménagement (d'après données LIDAR)	Puissance potentielle mobilisable pour couvrir les besoins [kW]	Débit requis [m3/s]	Distance entre gisement et besoin
Providence (APATOU)	Pole de proximité	KOUMAROU	1.7 m en hautes eaux	150	10	2.2 km
Grand Santi Bourg	Pole relais	MANKABA	> 6m	1000	30	14 km
		ABOUNAMI pk15	9.6 m sur 10 km	1000	14 (BV > 3000 km <sup>2</sup> )	15 km
Papaïchton Bourg	Pole relais	APANTA PACHI SOULA	3.8 m sur 2 km en hautes eaux (à renforcer)	500	20	11.5 km de Boniville

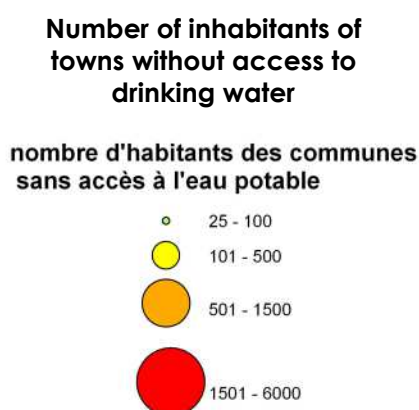
## Drinking water and drainage: a shortage of infrastructures

It is estimated that **more than 46,000 people do not have direct access to drinking water** and in general access is very unequal throughout the territory.

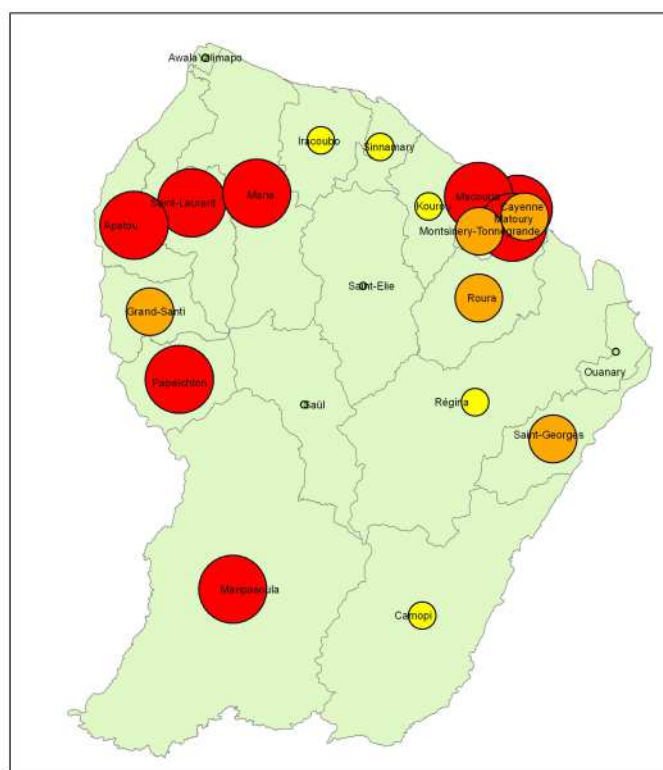
The entire territory currently has 76 facilities giving access to drinking water. They belong to the communes and groups of communes, and are managed by the local authorities or by the Société Guianaise Des Eaux (SGDE), which ensures its abstraction, treatment and distribution.

The situation is particularly problematic in the Maroni basin, with the dispersion of the population over a huge territory and demographic growth. **75% of drinking water is taken from the rivers.** In remote sites, groundwater is used, with the installation of manual pumps, as is the rainwater collected.

It is vital to increase the capacity for producing drinking water and strengthen the network. In 2017, for example, the commune of Grand Santi was affected by severe water shortage. Efforts must also be sustained to improve the quality of the water intended for human consumption; this task of sanitary monitoring is ensured by the ARS (Regional Health Agency). The bacteriological quality of the water is generally good, with little presence of pesticides; however, more than half the population is exposed to rates of aluminium higher than the threshold set by the WHO and water subject to strong turbidity of up to 7% (high proportion of suspended matter), leading to health risks.



Source: "drinking water supply to remote sites" – ARS document, AFD, Water office of Guiana, DAAFG, January 2014.



## Other problems are wastewater drainage and waste management:

Guiana lags behind in the development of wastewater treatment plants and existing structures are old whereas demographic growth entails increasing needs.

➤ In 2015, 72% of sewage plants were lagoons. 43% of sewage plants are more than 15 years old.

Inspections of wastewater treatment plants have revealed a general problem of non-conformity with standards applicable to the reduction of pollutant loads. The private sanitation is also inefficient and non-compliant. Raw effluents are therefore discharged directly, or almost, into the natural environment. **Of the 2,748 installations inspected since 2011, the rate of non-conformity amounts to 87%.** Even if a collective sanitation exists, households are not always connected to it.

The development of the sanitation is a big issue for all the towns in Guiana. There are several projects for building or modernizing waste water treatment plants. One of the goals is to **develop green technologies to treat wastewater** (such as macrophyte ponds or vertical flow constructed wetland) which are easier to install and maintain in remote areas.

## The river and health

### Waterborne diseases

Water is a vector of numerous parasites, bacteria and viruses, responsible for **waterborne diseases such as typhoid, cholera, dysentery and acute gastroenteritis**. The population is directly exposed to the pathogens in the water because they drink it, and indirectly through the contamination of food.

From 1995 to 2007, 13 typhoid fever epidemics have been recorded in French Guiana. Typhoid is now becoming less common, in particular thanks to improvements made to the habitat and access to drinking water. However, influxes of migrants have led to the emergence of new diseases.

On the rivers and elsewhere inland, the people sometimes use surface water (rivers, creeks) in which insects and parasites, vectors of many diseases, proliferate. The water at these different places is used for every domestic need (toilet, washing dishes and clothes, etc.), leading to a very high infant mortality due to diarrhoea (52 per 100,00 in children less than 1 month to 1 year old between 2007 and 2010, versus 1.93 per 100,000 in France).

### Infectious tropical diseases

**Malaria, yellow fever, chikungunya, zika and dengue are just some of the vector diseases transmitted by mosquitoes** that have confronted Guiana for many years. The region of Maroni is that most affected by endemic malaria, where 35% of the inhabitants have contracted the form *Plasmodium falciparum*. Dengue epidemics linked to mosquitoes present in stagnant urban water are also increasingly frequent.



*Research on the mosquito vectors*

*The Vectopole in the Institut Pasteur*

### Access to healthcare

There are **18 healthcare centers (CDPS) on the River Maroni**, all supervised by the Guiana hospital system. **A mobile public health team** also monitors health and carries out disease prevention activities for the population.

## ***Illegal gold prospection***

For almost thirty years, Guiana has been subject to an anarchic gold rush with illegal prospection scattered for the most part in the deepest forest, making this phenomenon difficult to quantify. It is estimated that **10 tonnes of gold are produced illegally by from 6,000 to 10,000 clandestine prospectors**, mostly Brazilian, in an area covering almost 7.5 million hectares. In comparison, the official production gold is about 3 to 4 tonnes per year\*. This activity has major impacts:

- **Deforestation, destruction of rivers and soil leaching,**
- **Increase of water turbidity:** the average concentration of suspended sediments has increased considerably in the river Maroni (+ 230% between 2001 and 2015). This trend is occurring simultaneously with the augmentation of mining areas in the basin. The increase in turbidity causes pollution by the mercury naturally present in the Amazonian soil; it silts up the river and reduces the amount of light reaching aquatic plants.
- **Contamination of water by mercury,** used during the amalgamation of gold by illegal workers: 1.3 gram of mercury is required to extract 1 gram of gold. This contaminates the fish and, obviously, the population that eats them – especially the Amerindians – who live from fishing, in the chemical form of methylmercury. In 2015, 90% of the population of the Upper Maroni had rates of mercury in their blood higher than that normally accepted. The impacts on humans are varied: featal malformations, delayed neurological development and growth, and digestive and immunity system disorders.
- **Insecurity**
- **Precarious health and the absence of medical monitoring adapted to the gold prospectors,** who are potential vectors of diseases in the inland population.

\* DRIRE - 2011



## The main actors of water

### *The Water and Biodiversity Committee*

The Water and Biodiversity Committee of Guiana was founded in 2017, and is supported by the Water Agency to carry out its water management missions. Its administrative secretariat is ensured by the DEAL (Direction of the Environment, Development and Housing). This committee is specific to the French overseas departments. It replaces the former basin committee and provides a body of local government. The CEB is consulted for all subjects linked to terrestrial, coastal and marine biodiversity and other ecological networks. Lastly, the CEB is responsible for driving the SDAGE (Water Development and Management Master Plan), and it is associated with revising the Regional Development Plan, and the regional biodiversity strategy.

### *The Guiana Water Agency*

Created by the Environnement Code, the Guiana Water Agency is a local public administration which was placed under the authority of the Guiana Territorial Authority (CTG). It is entrusted with 3 main missions: **studying and monitoring water resources**, wetlands and the coast and their uses; **providing advice and technical assistance to design and construction engineers**, training and providing information relating to the management of water and wetlands; and, according to proposals made by the Basin Committee, **programming and financing actions and works**.

Since 2008, under proposal of the Bassin Committee, a **Long-term Intervention Programme** has set the priorities of project funding in the territory in view to ensuring the quality and quantity necessary for the water consumed, and the good state of wetlands.

The second PPI (2014-2020) of the Water Agency follows 5 goals: providing access to drinking water, improving drainage, gathering information and monitoring the resource and assisting the management of wetlands, preventing and remedying pollution, and educating, training and spreading awareness.

### *The River Council*

This is a **local consultative body** founded by the declaration of intent **relating to cross-border cooperation between France and Suriname**, on 24 November 2009.

Cross-border cooperation covers several aspects:

- the development of cascades and the ports of Saint-Laurent and Albina;
- the environment and waste;
- flood monitoring,
- monitoring the border and the circulation of people between the two banks of the River Maroni.

Furthermore, agreements on cooperation between the police and health services have been drawn up.

## ***The Great Customary Council***

The Great Customary Council of the Amerindians and Bushinenges was set up in February 2018. The purpose of this body is to represent and defend the interests of the indigeneous populations.

Its foundation constitutes a step forward in the representation of Guiana's Amerindian and Bushinenges communities and for the defence of their legal, economic, social, cultural, educational and environmental interests. It is therefore the body of consultation and direct registration of grievances regarding all the subjects affecting these communities, their environment and living conditions.

