

**Pan African university of water and energy sciences
including climate change**

African Water Scenarios:

The Republic of Congo case scenarios

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Msc Water Policy

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Republic of the Congo water scenario:

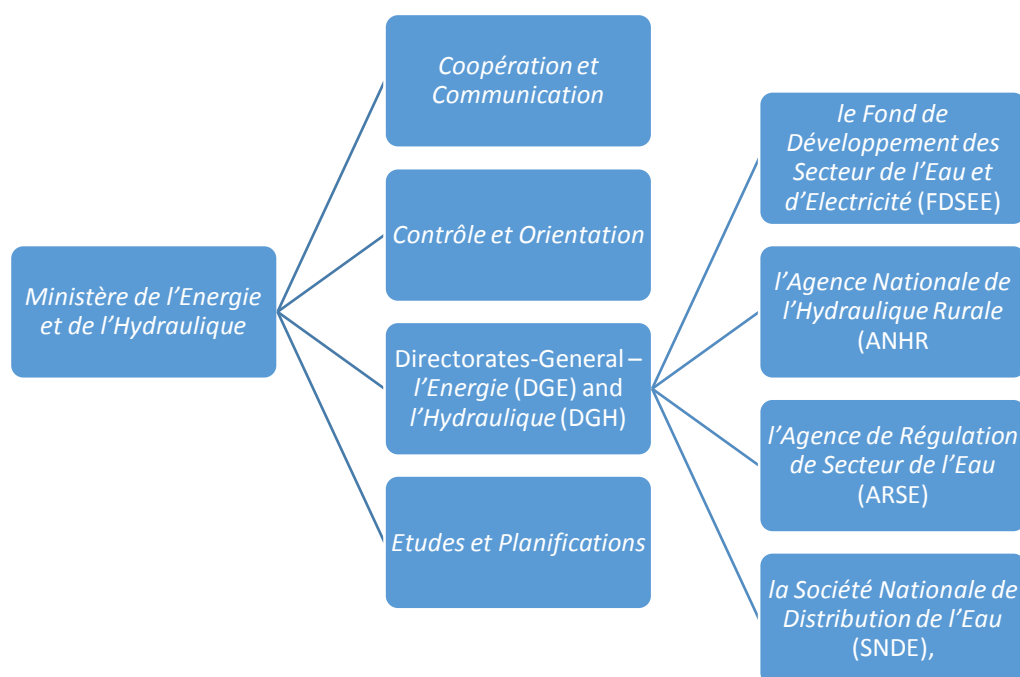
Overview:



Estimated Population in 2013*	4,447,632
Rural Population (% of total) (2013)*	35.5%
Total Surface Area*	341,500 sq km
Agricultural Land (% of total area) (2012)*	31.0%
Capital City	Brazzaville
Region	Central Africa
Border Countries	Gabon, Cameroon, Central African Republic, Democratic Republic of the Congo
Annual Freshwater Withdrawal (2013)*	46 Million cubic metres
Annual Freshwater Withdrawal for Agriculture (2013)*	8.7%
Annual Freshwater Withdrawal for Domestic Use (2013)*	69.6%
Annual Freshwater Withdrawal for Industry (2013)*	21.7%
Rural Population with Access to Improved Water Source (2012)*	38.8%
Urban Population with Access to Improved Water Source (2012)*	95.7%
Access to water (urban and peri-urban) (2010)*	62.1%
Average precipitation (2014)*	1646 mm/yr
Access to water (rural) (2010)*	11%
Access to sanitation (urban and rural) (2010)*	51.8%

* Source: World Bank

Organisational structure of the water sector



Urban and rural sanitation: The primary institutions responsible for urban sanitation in large cities are the municipal governments themselves, such as La Mairie de Brazzaville.

Water resources:

Conventional water resources

River basins

The Republic of Congo has many rivers which are contained in two river basins namely:

- The Congo River basin, which occupies about 72 percent of the total area of the country.
 - The Kouilou, Niari, covering about 16 percent.
- There are however smaller coastal basins: the basins of the Loémé, high Nyanga, Ogooué top, and Chilango.

Groundwater

This resource is also abundant. There are four sets aquifers:

1. Aquifer coastal sedimentary basin (6 000 km²)
2. Aquifer sedimentary basin of the Congo (224 000 km²)
3. aquifer of the ancient sedimentary series (68 000 km²)
4. crystalline rock aquifer and crystallophyllian (44 000 km²)

The first two hydrogeological units contain sedimentary rocks more or less porous and permeable, very little consolidated. These lands cover 67 percent of the national territory and are generalized aquifers. The other two hydro units occupy 33 percent of the national territory. They represent the discontinuous aquifers of the base, dominated by fracture flow.

Dams

The Republic of Congo has two major dams: The Djoué and Moukouloulou with a total capacity of 9 million m³.

Name of dam	River	Major basin	Completed /operational since	Reservoir capacity (million m ³)
Djoue	Djoue	Congo River Basin	1956	8.5
Moukouloulou	Bouenza	Central West Coast	1974	0.5
Sounda			Incomplete	
Maukaukoule			Incomplete	
Djouel			Incomplete	
Chollet			Incomplete?	
Gamomba			Incomplete?	
Mpe			Incomplete?	
Kouembali			Incomplete?	
Dijoue Ext.			Incomplete?	
Imboulou			2012	

(FAO, <http://www.fao.org/nr/aquastat> , 2014)

According to (UN, 2012) figures for dam storage capacities are as follows:

Total dam storage capacity	FAO – AQUASTAT	0.01 (10 ⁹ m ³)	2010
Population	UNPD (United Nations Population Division)	4042.9 (1000 inhab)	2010

This is based on the latest values available for variables required in calculation of dam storage capacity.

Population

FAO – AQUASTAT	3941 (1000 inhab)	2009
FAO – AQUASTAT	4337 (1000 inhab)	2012

Wetlands

From (FAO, 2005), Congo is comprised of 20 percent roughly of wetlands including forest and flooded savannas, wetlands and coastal areas occupied by mangroves. These areas are essential for the conservation of biodiversity and play a major role in regulating the flow of the Congo River and coastal river basins.

Renewable water resources are very abundant. These Internal renewable water are estimated at 222 km³ / year. Considering the waters that come from neighboring countries and border waters between the two countries, they would amount to 832 km³ / year

Non-conventional water sources

Non-conventional water sources are not available in the country. The reason could be because they have not fully exploited the ground and surface water resources fully and thus the government has not invested in that line. Water treatment infrastructure is poor and its reach limited to high end urban centers thus no black water is returned to the supply systems.

Key Water Issues and Challenges

1. Seasonal flooding due to heavy precipitation

A case of HPP at Djoué River which is a tributary to the Congo river. Since its construction in the 1950's, there have been many incidents. The most important one occurred in April 2007, when the power plant was flooded up to the control room. (Stämpfli, 2016)

In 2013, severe cholera outbreak was recorded due to increased precipitation in the areas of Pointe-noire leading to drinking water contamination and eventually to cholera affecting 389 people and 10 died according to the Congo health ministry and local authorities. (Palus, 2013)

According to (Koua Stephen Faller, 2015) heavy precipitation has also lead to torrential erosion which is a major challenge as lives of residents is put to risk due to mud slides.



Erosion in Brazaville (Koua Stephen Faller, 2015)

2. Water pollution

Oil exploration at the coast in pointe-Noire have led to increased pollution of water resources. In a village called Tchinkanou (south of Pointe-Noire) in 2004 , an accident causing the large spill of crude in the river Samba, the main water source populations, left the whole community with no water. (Séverin, 2016). Farmers in Loango a village 20km away have their produce drying off due to oil pollution, the village is even threatened to extinction according to (Mbaki, 2016)

3. The location of the boundary in the broad Congo River with the Democratic Republic of the Congo is undefined except in the Pool Malebo/Stanley Pool area. This at times leads to conflicts due to the resource.

4. Poor access to water and sanitation services

“In Congo, water is everywhere, except in the taps” (Mbondzi, 2014) was a title of an article that detailed the problem of access to portable drinking water in Brazzaville due to poor supply networks despite the availability of the resource. The photo below depicts the situation in Brazzaville Pointe-noire, Mpissa and Bacongo. The photo below displays the situation best; Residents of Mpissa in Brazzaville wait near a water point.



(Mbondzi, 2014)

The table below shows access to water varied in Congo as at 2011

Water	
Access to drinking water (% of population)	41.2
Access to safe water in rural areas (% of rural population)	34

(AFDB, 2011)

There supply coverage infrastructure-wise is poor and there seems to lack government goodwill as informed by (Koua Stephen Faller, 2015)

5. Sewer infrastructure and water supply Network (infrastructure decay).

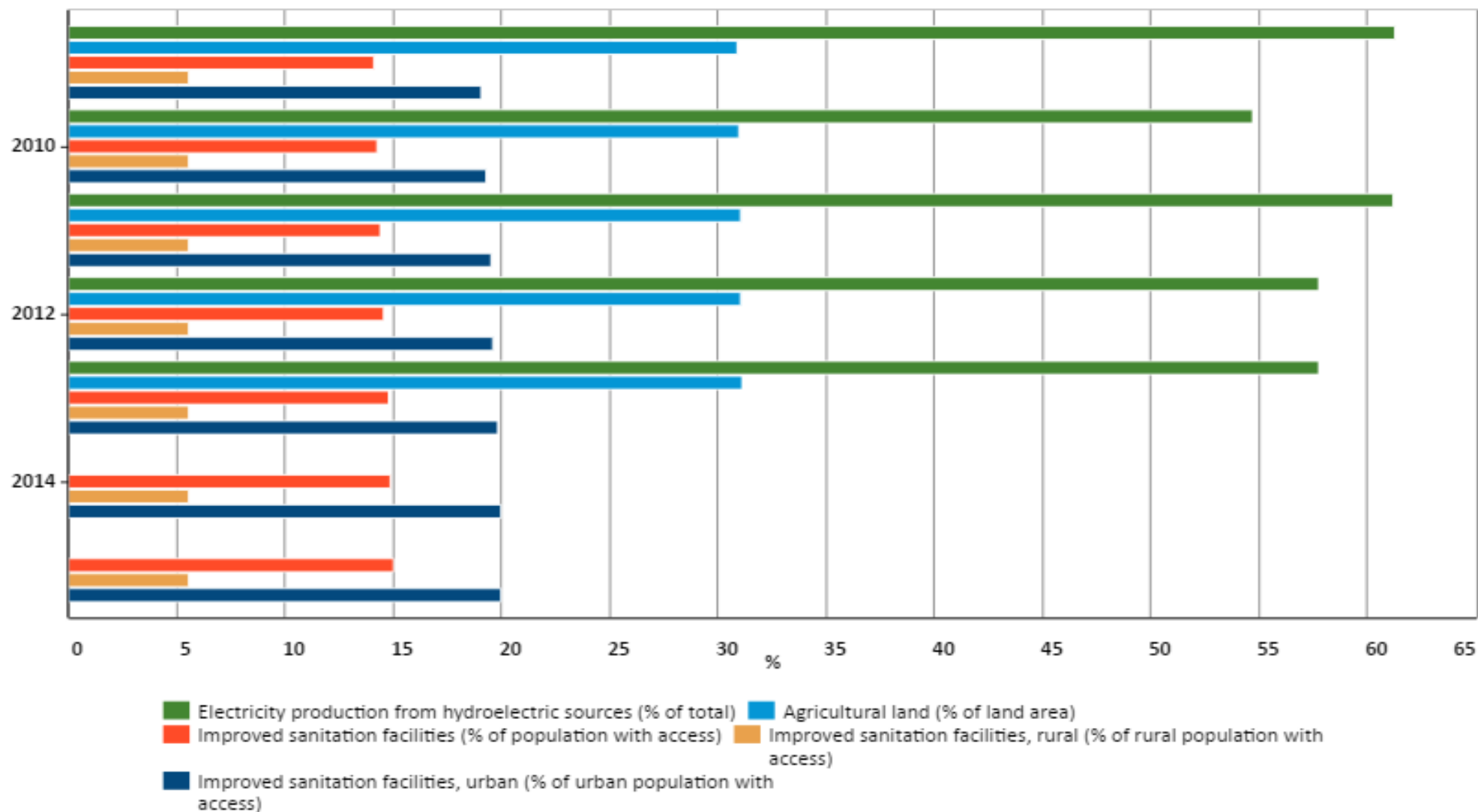
Despite the heavy precipitation and the abundance of water resources, infrastructure for water and sewerage conveyance is still missing or in poor condition. According to (Mbondzi, 2014) the residents do not have clean water because of power outages, the National Water Distribution Company [known as SNDE, it is in charge of the production, distribution, storage, and marketing of drinking water in Congo] is an old company that has barely modernized its equipment since it was created. Most of its equipment dates back to pre-independence days in 1954. The coverage is also very poorly maintained thus re-contaminating treated water during distribution.

6. Negative attitude by the residents towards water and poor management:

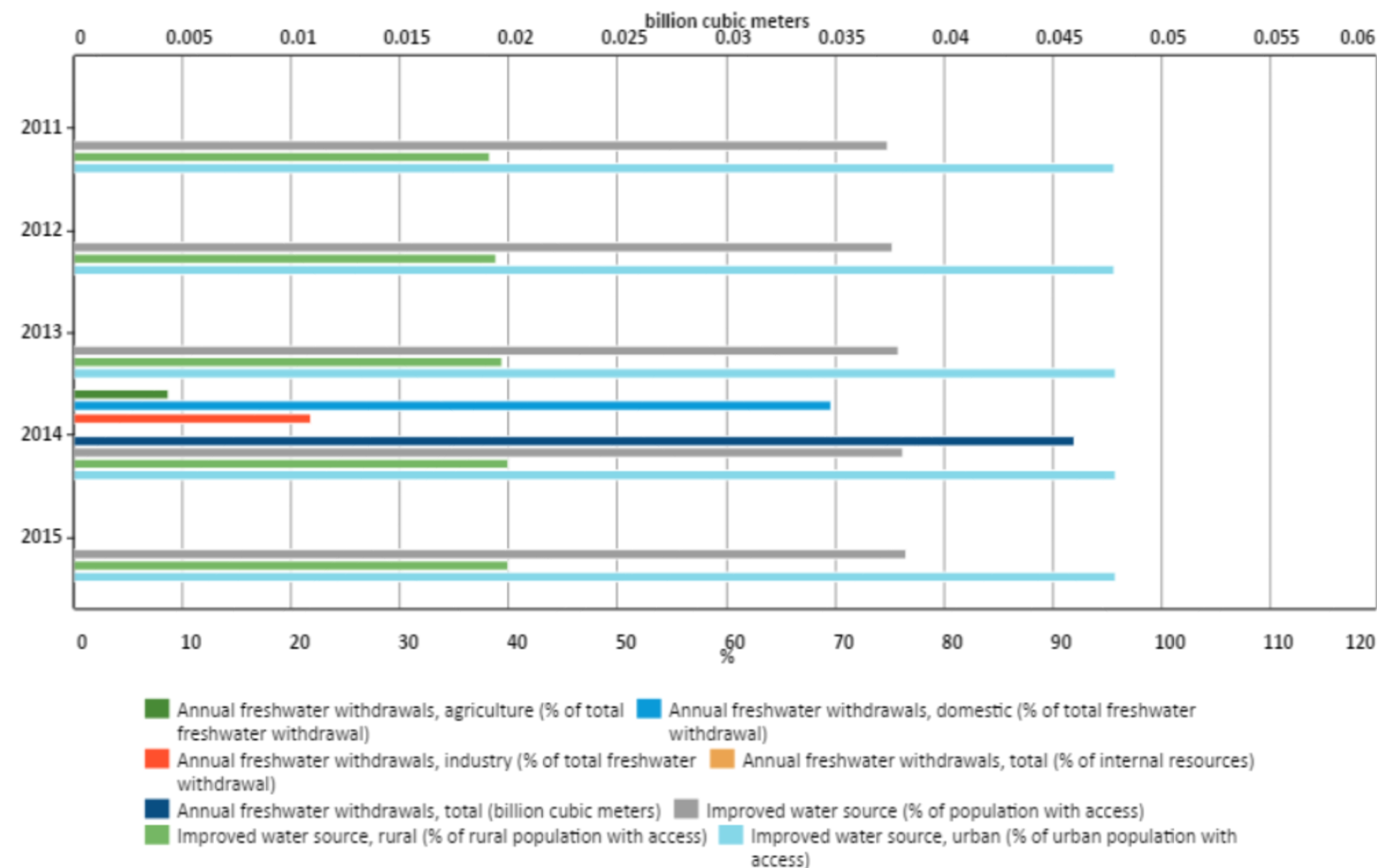
As seen in the report (AFDB, 2011), 53% of water bills go unpaid annually in Congo. This is because the states poor infrastructure and thus the people feel that they should not pay for a resource that they receive sparingly

Water trends in the Congo

Congo



Congo



Government interventions

Conservation in water catchment areas and wetlands is currently the subject of much attention from the political authorities, both at the sub regional and national levels. Extensive conservation programs and management of protected areas are implemented with the assistance of the European Union, the Global Environment Fund and the Government of the United States of America. This is being done all over the country with much concentration on the tributaries of the Congo River and at the coastal region of Pointe-Noire.

Climate change

Deforestation due to use of wood and charcoal as energy, common in the Brazzaville region causes the destruction of peri-urban forest ecosystems that provide climate control and may lead to flooding and desertification.

Population growth and government urbanization policy called "accelerated Municipalisation" cause several devastating effects on the environment by the phenomenon of environmental pollution hence causing climate change.

Statistics show that the distribution of emissions of CO₂ in 2000 was: energy Industries: 65.93%; transport: 29.78%; residential: 0.51%. Ultimately, the effects of climate change in the Republic of Congo are mainly reflected by:

- (1) a general decrease in annual rainfall throughout the country,
- (2) a general increase of maximum temperatures of about 0, 76°C and 0, 69C for minimum temperatures
- (3) a general decrease in flow streams, rivers and their tributaries. (Koua Stephen Faller, 2015)



George Kiambuthi <gkiambuthi@gmail.com>
to stephen_faller ▾

29 Oct (6 days ago) ☆ ↶ ▾

Dear Mr. Stephen Faller,

I went through your insightful article titled "The Major Environmental Problems in Congo Brazzaville: Case of Brazzaville". My name is George Wainaina and I am a Msc water policy student in Pan Africa University.

I wish to request for any information that you may have concerning the following in Congo Brazaville: water resources available in the country, main water infrastructures and national challenges, and climate change perspective.

Any assistance will be highly appreciated.

Kind regards,
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koua stephen
to me ▾

29 Oct (6 days ago) ☆ ↶ ▾

Dear George,

Happy to read you, I really don't know how to help you concerning this topic. I'm out of Congo Brazzaville, as you know its not easy to get informations in our countries. Most of time I get informations through internet. Congo is a blessed country, it has all kind of resources especially water resources (Atlantic Ocean, Congo River...) but population doesn't have drinking water, lack of infrastructures and leader's will to resolve this problem...

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