Electricity sector overview

Senegal recorded an electrification rate of 56.5 per cent in 2012, with 87.8 per cent of the urban population and 26.6 per cent of the rural population having access to electricity. The total electricity installed capacity as of 2010 is around 690 MW, of which only 520 is actually available due to aging equipment. Additionally, around 60 MW of electricity in Senegal is generated from the 200 MW (104 MW available) Manantali Hydroelectric Power Plant, found at the border of Mali. The Felou hydroelectric plant, shared with Mali and Mauritania, also generates electricity in Senegal (approximately 15 MW). However, according to the German Federal Ministry of Economic Cooperation and Development, the electricity capacity in Senegal is composed of around 620 MW from thermal power and around 66 MW from hydropower.

In 2012, peak demand reached approximately 466 MW and the generated electricity was approximately 2,800 GWh. In 2013, available data stated that the total electricity production went up to 3,037 GWh, of which 2,186 GWh was from the interconnected grid operated by the Société National d’Électricité du Senegal (SENELEC) and 308 GWh from the Organization pour la Mise en Valeur du Fleuve Senegal (OMVS) hydropower plants Felou and Manantali.

Senegal has a Ministry of Energy and Ministry of Renewable Energy. The Commission de Regulation de l’Electricité is an additional regulatory body set up to approve concessions and investment plants for the power sector. It was set up under the energy liberalization legislation issued in 1998.
As mentioned above, SENELEC is the public company operating the power sector. The company is vertically integrated and generates, transmits, distributes and sells electricity energy to the consumer. Additionally, the company identifies and finances new projects and has to maintain an autonomous self-financing system.

The Agence Senegalaise d’Éléttrification Rurale (ASER) is in charge of the rural electrification. In 2009, the agency reported the rural electrification rate to be approximately 19 per cent.² By 2012, the electrification of the rural population went up to 26.6 per cent.³ The government has stated that electrifying the rural areas of the country is on the energy agenda.⁴

Small hydropower sector overview and potential

Senegal does not have any small hydropower (SHP) plants on its territory, nor does it have a definition for SHP. For the purposes of this paper, SHP will be defined as any hydro plant with a capacity below 10 MW. Due to the lack of SHP plants in the country, the potential of SHP has not yet been assessed.

The main hydropower plant, the Manantali Plant, is on the Senegal River near the border with Mali. This plant was developed in cooperating with Mali and the Mauritania within the OMVS framework. The hydropower plant has a capacity of 200 MW and projects to have a 42 per cent of capacity, thus, generating approximately 740 GWh per year.²

The Gambia River Basin Development Organization has developed the 128 MW Sambalaogulou project, which is to generate 400 GWh per year. In 2014, project consultants were invited to express interest in the Sambalaogulou project, which is to be built with an EPC contract.¹ Furthermore, the OMVG has completed the Kaleta Hydropower Plant, located in Guinea. The plant is in the process of completing the interconnection T-line which will allow supply to all 4 OMVG member countries (Guinea, Gambia, Guinea Bissau, and Senegal).¹,¹⁰

Renewable energy policy

Senegal has attempted to reform its energy agenda to better promote renewable and sustainable energies. On order to achieve this, the Government passed the Renewable Energy Law, Phase 1 of the Senegalese National Biogas Programme, the 2007-2012 Special Programme for Biofuels, and the Program for the Promotion of Renewable Energies, Rural Electrification and Sustainable Supply in Domestic Fuel (PERACOD).⁵

The Renewable Energy Law provides a legal framework for tax exemptions for the purchase of equipment or materials necessary to develop renewable energy (RE) productions for domestic use. The law created the foundation needed for a feed-in-tariff (FIT) scheme.⁵

Phase 1 of the Senegalese National Biogas Programme has initiated the call for a diversification of the energy mix in Senegal, since its energy demands are on the rise and the country is heavily dependent on oil imports. The first phase seeks to install 8,000 biodigestors in three regions of the Peanut basin, (Fatick, Kaolack and Kaffrine), as sources for sustainable energy needed for cooking and lighting. The biogas waste is also intended to be used as manure for the agricultural productivity in the region, thus improving the efficiency of agriculture in the Peanut Basin.⁵

The 2007-2012 Special Programme for Biofuels is intended to improve energy independence, and achieve biodiesel self-sufficiency.⁵

PERACOD aims at increasing rural energy access through the deployment of domestic fuels and RE. It is a program that is being assisted by the German Development Agency.⁴,⁵

The commitments of the government, as demonstrated with the legislature above, are currently being tested by a process of agreeing and finalising the implementing decrees for these framework laws. However, it is clear that RE is viewed as both important in its own right and also as an enabler in the broader development of the energy sector, rural development and poverty reduction.

There are a number of institutions and frameworks dedicated to the further development of RE, notably the Centre for Studies and Research into Renewable Energy (CIER) and the National Committee for Renewable Energy (CIER) and the National Committee of Biofuels. Maintaining and extending this cooperation will enable ongoing success in the implementation of Senegal’s vision for RE. In particular, efforts could be usefully directed at ensuring the participation of civil society. The domestic commitment to RE is reflected in the role that Senegal has assumed in regional and international forums. At the project level, there are any examples of cross-Sahelian initiatives in design and implementation. At the strategic level, Senegal has taken a central role in IRENA and ECREEE (ECOWAS Regional Centre for Renewable Energy and Energy Efficiency).

Barriers for small hydropower development

The International Renewable Energy Agency (IRENA) issued a report in 2012 pointing out the barriers and
the recommended actions to develop hydropower and other RE sources. According to IRENA, the main barriers are:

- Limited comprehensive mapping of RE sources in key areas;
- Need for Senegal to adapt the rules of intervention for the regulator in the specific case of small electricity producers;
- Need for Senegal to facilitate grid integration of electricity generated from renewable resources;
- Need to identify the conditions for increasing private sector involvement in RE related manufacturing.

References