Cameroon energy storage economics

Therefore, the objective of this paper is to renew interest in RE and advocate for its development in the country. The originality of this paper lies in assessing main sources of energy as well as highlighting the most recent data on final energy consumption by sector and by source. Furthermore, this paper aims to raise awareness of crucial stakeholders on the present status of energy, RE potential and status of exploitation, RE policy and legal, RE education at school level, and barriers and keys recommendations for the dissemination and development of RE in Cameroon.

The country is bordered by Central African Republic (CAR) to the east (797 km), Chad to the northeast (1094 km), Nigeria to the west and north (1690 km), Congo (523 km), Gabon (298 km) and Equatorial Guinea (189 km) to the south. Its coastline spans from the Bight of Biafra to part of the Atlantic Ocean in the Gulf of Guinea (402 km). Figure 1 illustrates the geographical location of Cameroon, including its borders and neighboring countries.

Cameroon"s energy consumption shows that biomass, electricity and petroleum are three main sources of energy. Biomass consumption accounts for 74.22%, followed by petroleum (18.48%) and electricity (7.30%), as illustrated by Figure 2. In 2018, the total final energy consumption in the country was 7.41 Mtoe and was dominated by traditional forms of biomass.

The residential sector shares 63.68% of the total final energy and depends largely on biomass. The Commercial and public services (14.92%), transport (13.82%), industry (5.15%) and agriculture / forestry sectors (0.07%) rely on petroleum and electricity. Figure 3 illustrates the share of energy consumption by sector.

The national grid is currently composed of three independents networks:The North Interconnected Network (NIN) which has produced in 2018 around 365 GWh of electricity to the northern regions of Cameroon;

The South Interconnected Network (SIN) is the most important of the three networks. With 6023 GWh produced in 2018, representing more than 93% of the national production, the SIN supplies electricity to the southern regions of Cameroon;

In 2018, 6977 GWh of electricity was produced in the country, 78.29% of which from the major electricity operator and the remaining from independent producers [11]. Cameroon"s electricity consumption shows that more than three quarter of its total amount is consumed by industry (57.04%) and residential (20.74%) sectors.

Figure 4a presents the generation capacity by source while Figure 4b shows the share of final energy consumption in the country in 2018.

The country is endowed with substantial RE potential, such as biomass, hydro, solar, and wind. However, only a very limited percentage of this RE potential is exploited so far. Currently, RE (except hydro) contributes less than 1% to the Cameroon"s energy mix and the country aims for a 25% share by 2035 [7]. We present and discuss, at this point, the current status of major renewable energy technologies (RET) for power generation in Cameroon.