

ENERGY
CATALYST

Country Guide: Somalia

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Figure 1 Photo of a river in Somalia (Image by Abdi Majiid Yuusuf from Pixabay)

Somalia is a coastal nation located in Eastern African at the Horn of Africa, which consists of Somalia, Ethiopia and Djibouti. Somalia's northern and mid-west region is bordered by Djibouti and Ethiopia. Kenya is at its southwest border and the Gulf of Eden is located north of Somalia. The Indian Ocean makes up its eastern border. Somalia has an area of 637,657 square kilometers. The coastline is 3,025 km long, which is the longest in Africa. The country is divided into eighteen different regions. The largest city is its capital, Mogadishu. Generally arid and barren, Somalia has two chief rivers, the Shebelle and the Juba.

Following more than two decades of conflict, a new federal government emerged in Mogadishu in 2012 within the framework established by the Provisional Constitution. Soon after, the international community agreed to the Somali New Deal Compact – an organising framework (2014-2016) for assistance delivery to the country—with the Federal Government of Somalia (FGS), in line with national priorities, increasing delivery through Somali institutions.

The compact was succeeded by the New Partnership for Somalia in 2017, following a peaceful transition of power in February 2017. The New Partnership for Somalia, followed by the Somali Partnership Forum in Brussels in July 2018, aligns with the National Development Plan, and outlines collective priority areas critical for development, including humanitarian issues, national security, inclusive politics, and economic recovery.

The biggest challenge now is how to engage with the people of Somalia to chart a path for an all-inclusive social, economic and political development agenda.

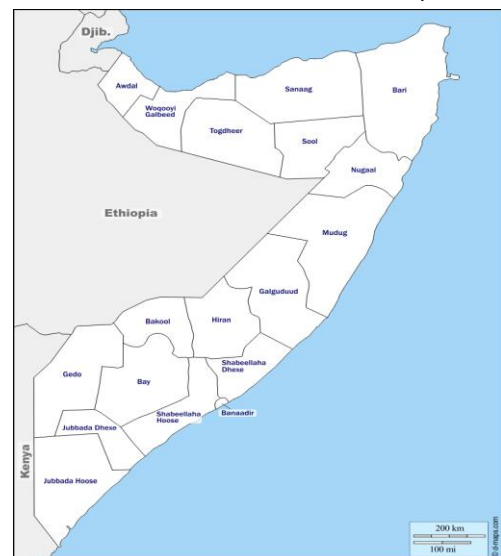


Figure 2 Map of Somalia. Source: d-maps

Economy

Years of conflict and fragility have left Somalia's economy with a range of challenges, including population growth outstripping economic growth, acute poverty and vulnerability, recurrent external trade and climate shocks. Weak fiscal space and institutions, active insurgency and an incomplete political settlement have also affected the country's economic strength.

Table 1: Somalia at a glance

Capital	Mogadishu
Total Area	637,657 km ²
Population	15,008,154 (2018 estimate)
Official languages	Somali (official), Arabic, English, Italian
Rural Population	55.03% (2018)
GDP	US \$ 4,721M (2018)
GDP Per Capita	US \$ 314.5 (2018)
Currency	Somali Shilling (SOS)
Exchange rate 01/03/2020	1 GBP = 752.38 SOS
Exchange rate 01/03/2018	1 GBP = 775.22 SOS
Access to Electricity	32.9% (2017)

Somalia also has some opportunities, as the economy is transitioning from traditional, rural pastoralism to urban, trade and services. Somalia's economy has remained resilient despite recurrent shocks, including drought and sporadic terror attacks. Driven by increased confidence in the economy, implemented reforms and political stability, the economy is forecast to grow at 3.2% in 2020, up from 2.9% in 2019.

Somalia's business community is resilient, globally connected and entrepreneurial, technology offers high rates of mobile money penetration, and new opportunities for the Horn of Africa economic cooperation and integration plays to its advantage.

The government is also committed to institutional reforms and reengagement with the region, including opportunities to rebuild human capital and chart a pathway toward economic resilience and growth.

Somalia is focused on reaching the Heavily-Indebted Poor Countries (HIPC) Decision Point, to unlock financing for development and poverty reduction. In the 2019 financial year, the World Bank supported \$140 million in pre-arrears clearance grants to accelerate progress to the HIPC Decision Point, and secure gains in resilience. Somalia recently cleared its arrears to the International Development Association, paving the way for the country to receive debt relief under the Heavily Indebted Poor Country and Multilateral Debt Relief Initiative.

Somalia is a member of 41 international organisations, including the African Union, the United Nations, Arab League, Intergovernmental Authority on Development (IGAD) and the African, Caribbean, and Pacific Group of States (ACP).

In the 2020 yearly World Bank survey on "Doing Business", a comparison of business regulation in 190 economies, Somalia is ranked 190. The rank of Somalia remained unchanged from 190 in 2019. Somalia has a score of 20.0 out of 100 in the ease of doing business. Other indicators of the survey that Somalia scored poorly include starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting minority investments, paying taxes, trading across borders, enforcing contracts and resolving insolvency. Figure 3 provides a comparison of Somalia to similar economies for the starting a business, where it is ranked 188.

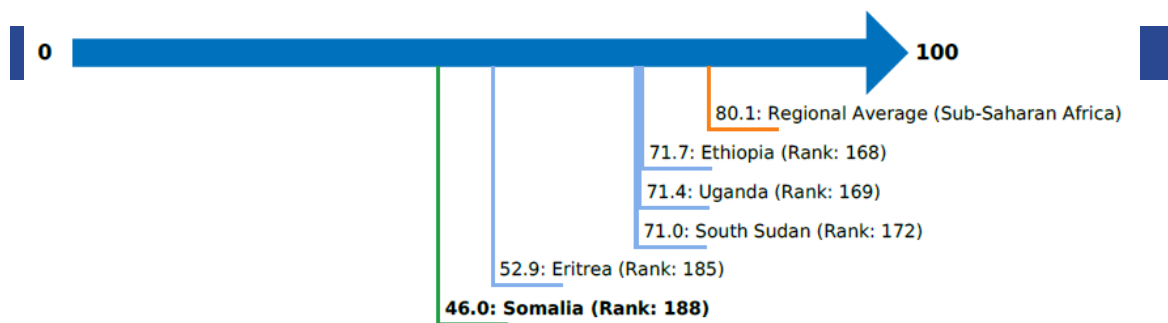


Figure 3 Doing Business 2020 score for starting a business. Data from: World Bank Group, 2020

The energy sector in Somalia

At the end of the 1980s, just before it collapsed, Somalia as a whole had installed power generation capacity of about 175–180 MW, of which nearly 100 MW was in Mogadishu. Many cities had grids, and service varied in quality according to the availability of fuel. Except for the major cities (Mogadishu, Hargeisa and Kismayo), which had conventional grids, other smaller cities and towns that had electricity relied on diesel generators and mini grids much like those used today. No two cities were interconnected. Tariffs were low and level nationwide, so the main cities – which tended to be less costly to serve since all load centres were served by the same utility, the National Electric Energy Entity (ENEE) – subsidised high-cost isolated systems. According to historical estimates, electricity production in Somalia in 2008 was 326 GWh or just 33 kWh/capita/year, compared to the world average of 2,777 kWh and the African average of 579 kWh. Electricity generation is entirely diesel-fuelled, and supply is from many independent, individual, mostly small power producers operating local LV mini grids. Electricity is extremely expensive and inefficiently supplied, with the absence of normal grids causing huge technical, non-technical or financial losses between generation and final use.

There are four main issues facing the energy sector, and all four are exacerbated by the perceived lack of security for people and property. Security is a pervasive crosscutting issue. In effect, there is limited access and low supply because insecurity makes earning income and investing more difficult and riskier. The excessive exploitation of biomass is due to poverty (difficult-to-earn income) and the challenge of importing energy in bulk is because of lack of security (e.g. cargo cannot be insured) and low effective demand. The limited penetration of modern energy is due to poverty and lack of security for traders and for buyers of modern end-use devices, and the shortage of personnel is due to insecurity, as qualified people either leave Somalia or hesitate to come, even when wages may be higher than elsewhere.

The four issues are:

1. Shortage or lack of qualified personnel and the uncertainty regarding future supply of trainable persons, given a 24-year interruption of education processes
2. Excessive exploitation of biomass is a consequence of extremely limited access to modern energy and means that it is essentially the only source of primary energy in Somalia
3. Limited access to and supply of electric power affecting the quality of life and constraining productive activities
4. Low penetration of modern energy, especially in rural areas, forces most Somalis to resort to poor quality lighting (often kerosene), although portable solar lighting products are reportedly rapidly gaining in popularity and seem to have penetrated significantly in some rural areas

Table 2: Overview of the main stakeholders in the energy sector in Somalia

Institution	Role
Ministry of Energy and Water Resources	Defines and implements overall energy sector policies and regulates the sector.
National Electric Energy Entity or Ente Nazionale Energia Elettrica (ENEE, abbreviation in Somali: WXKU)	Former state-owned utility, responsible for generation, transmission and distribution in Somalia. The ENEE currently has a vestigial existence and mostly in name, in Qardho and Bosaso, where the partly publicly owned power plants are still known under the ENEE.
Somaliland Ministry of Energy and Mineral Resources	Responsible for the energy sector policy in Somaliland.
Somaliland Electricity Agency (SEA)	A publicly owned, vertically integrated utility, the SEA owns and operates power plants and grids in both Hargeisa and Berbera. The only public generation and distribution utility, the SEA serves a small share of the electricity market in Hargeisa (perhaps 2–3% of electricity customers) but a much larger share in Berbera.
Puntland State Authority for Water, Energy and Natural Resources (PSAWEN)	An autonomous agency with a mandate to oversee and regulate the electric power industry in Puntland.
Somali Energy Company (SECO)	A private energy firm based in Mogadishu, Somalia. It specialises in the generation, transmission and distribution of electric power to residents and businesses within its service area in the south-central Banaadir region.

Small hydropower

Somalia has no official definition for small hydropower (SHP). Currently there are no operational hydropower plants in the country; however, there is some potential to rehabilitate hydropower systems that were in place prior to the civil war. Though it has fallen into disrepair, the Fanoole Hydro-Electric Dam was completed in 1982 in partnership with China. The dam was designed to generate electricity for local communities in Jilil and Marerey, and to support an agricultural programme focused on sugar cane and rice irrigation. In its 2016 Intended Nationally Determined Contributions (INDC) report, the Government of Somalia announced plans to rehabilitate the dam's hydroelectric infrastructure at an estimated cost of US\$ 28 million. If completed, the refurbished dam would restore 4.6 MW of power and re-establish two standby generators with a capacity of 1,600 kW. This dam has the potential to reinvigorate the agricultural sector in the Middle and Lower Jubba Valley, but the project includes extensive repairs and rechannelling the path of the river that was diverted during the 1998 El Nino rainy season.

The country has an estimated economic potential capacity of 100 MW to 120 MW of total hydropower power, which is concentrated along the Shabelle and Juba rivers in the south. Historically, there were also plans to construct the Bardheere Dam upstream of the Fanoole Dam with a capacity of 493 MW, but the civil war effectively halted the project. This reflects many of the challenges faced by Somalia in initiating SHP projects, namely the lack of financing from the government and international donors, the current drought conditions affecting the Eastern Africa region and the high degree of terrorist activity conducted by Al Shabaab.

The key challenges that Somalia faces in developing SHP are as follows:

1. Security concerns surrounding regional terrorist groups, such as Al Shabaab, and the potential for SHP infrastructure and energy grids to be targeted or attacked
2. Lack of field studies for SHP potential
3. Limited government capacity to administer and regulate the energy sector
4. Lack of a skilled workforce to design, build and maintain SHP and renewable energy infrastructure due to the prolonged conflict
5. Absence of an interconnected grid system with high enough capacity to support transmission and usage of electricity to both urban and rural populations
6. Aging equipment and poor infrastructure in thermal generation, which contributes to up to 50% power loss
7. Scarcity of private sector financing for renewable energy projects and materials
8. Limited interconnection with regional power pools, particularly those in Ethiopia
9. International donor support needed for large-scale government projects, including rehabilitating SHP plants in poor condition and initiating a mini-grid system in key urban areas

Solar energy

The solar energy potential in Somalia ranges from 5–7 kWh/m²/day with more than 310 sunny days in a year (sometimes reported as about 3,000 hours of sunshine per year). These are very high values (Germany has fewer than 100 days/year; Sicily, one of the best solar energy zones in Europe, has only about 150 days of sunshine/year).

In recent years, a number of small projects have been implemented in various parts of Somalia, and some solar generating capacity does exist, but it is in the kilowatt rather than the megawatt range.

However, the use of solar energy has been rather limited in Somalia because of lack of information and access to end-use devices, and also poverty, which prevents the purchase of appropriate generating and end use equipment.

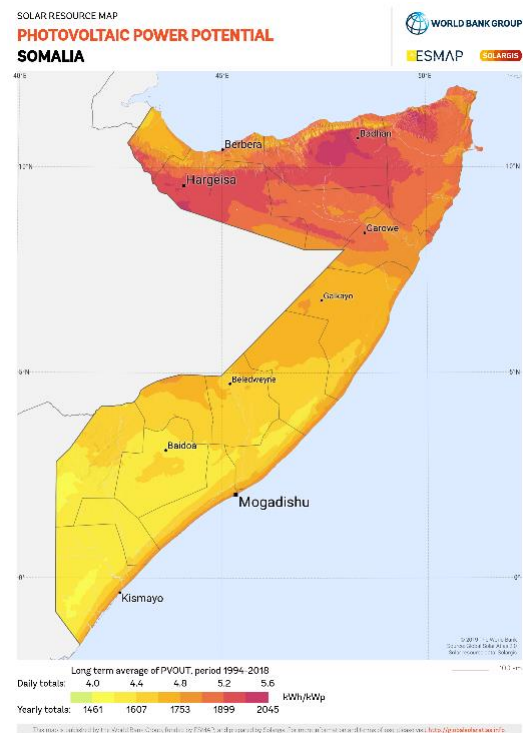


Figure 4 Solar resource Somalia. (2019 The World Bank, Source: Global Solar Atlas 2.0, Solar resource data: Solargis)

Biomass energy

The energy mix in Somalia is completely dominated by locally available charcoal and firewood as the main sources of energy, and the consequent, near-term destruction of the vegetative cover is the most important energy and environmental problem facing the country. In part, the dominance of biomass is due to the impossibility of large-scale imports of energy, partly because of low effective demand due to the drop in incomes after the collapse of the Somali State. As a consequence of the excessive reliance on biomass (in the form of firewood and charcoal) as a source of energy, biomass resources are being exhausted.

The majority of Somalia's population, perhaps 80% to 90%, relies on traditional biomass fuels, wood and charcoal, for cooking. Annual consumption of charcoal is estimated at around 4 million tons per year, a rate that is quickly exhausting Somalia's few remaining forests. The prevalence of charcoal and wood for cooking also has some serious health impacts at the household level. These would be mitigated by the proposed introduction of modern cooking fuels and cleaner, more efficient and cost-effective end-use

devices. The continuing illegal export of charcoal further contributes to the assault on the precarious and fragile vegetation.

Wind energy

There is significant potential in all of Somalia for renewable and alternative sources of energy, such as wind power, but so far, due to both security and funding problems, only very small, timid experiments have been conducted with wind power. Shortages of technical staff, lack of accessible knowledge, the small scale of existing generation, and primitive distribution systems further limit the immediate practical application of renewables for power generation in most of Somalia.

Wind energy has been exploited for over 70 years primarily for water pumping, with installations made by the UN Trusteeship Administration of Somalia from as early as the 1940s. Four 50 kW turbines were installed in Mogadishu in 1988.

Somalia is characterised by strong wind, with annual average speeds of 1.5 to about 11.4 m/s. The country has large areas of shallow sea along its coastline, particularly suitable for off-shore wind power, with the added benefit that this resource is close to a number of major load centres, including Mogadishu and Berbera. Studies estimate that approximately 50% of the land area of the country has suitable wind speeds for power generation and 95% could benefit, and profit, from replacing diesel-powered water pumps with wind systems. Many organisations are starting to monitor wind speeds in hope of developing the renewable energy projects in the future.

Geothermal

Available data indicates that the geothermal energy potential is too low to be commercially exploited for power generation.

Oil and natural gas

Somalia's geology, and proximity to traditional oil producers in the Middle East, indicates the potential existence of oil reserves. So far, however, the situation has not been conducive to exploration activities. There are indications that the Dharoor field in Bari province, Puntland has about 1.2 billion barrels of oil with the potential of almost ten times that in deposits and additional potential for off-shore oil and natural gas production in the Indian Ocean and the Red Sea. Somalia depends on imported petroleum for electricity production and in 2015, 97% of its electricity was produced by oil amounting to 34 ktoe. Net imports of oil in 2015 were 131 ktoe. The one refinery stopped operations in 1991 when the political situation deteriorated.

Mini grid sector development

Today, in urban areas, diesel-powered mini grids owned by private entities or NGOs constitute most of power supply. Though estimates vary, the total operational generating capacity across Somalia is estimated at around 103 MW in 2015 with 270,000 connections. The AfDB estimates installed capacity at 11.4 MW in Puntland and 45.5MW in South-Central and 46.5 MW in Somaliland. The Somaliland Electricity Association (SEA) supplies 95% of mini grid electricity in Somaliland. Composed of 12 members, it also sets tariffs and promotes renewables.

Private sector players supply more than 90% of power in urban and peri-urban areas using local private mini grids. They have invested in diesel-based systems of between 500 kVA to 5000 kVA installed capacity per mini grid. These mini grids are normally zoned, with each operator building, owning and operating the generation, transmission, distribution, maintenance and collecting tariffs. Thus, more than 68% of urban/peri urban areas have access to electricity, though at a high cost that might reach a maximum of \$1/kWh, one of the costliest places in the world to buy power.

If well designed, mini grids may provide a basis through which a country-wide distribution system could be interconnected and linked to the national grid so that power can be wheeled and sold across the network. Nevertheless, there are significant information gaps regarding the status of the mini grids, including profiles of incumbent operators (number of customers, hours of service, tariffs, connection costs, generation technology, quality of service metrics, expansion plans), understanding applicable policy and regulations in the territories, and identifying appropriate greenfield sites for new mini grid installations. Much could also be done to improve the existing services provided by incumbent operators, including helping to bring on additional generation technology, greening existing technology mix through hybridization, modernizing business models, including the use of smart and/or pre-paid metering technology and reducing the losses in the distribution system. Incumbent operators could also be supported to densify their customer base within existing service territories. In short, there is considerable work to be done to make energy services currently delivered via mini grids more modern, affordable, and reliable for Somali consumers. In addition, there is significant scope to support the development of new mini grid sites throughout the country.

Even then, it is unlikely that a large part of the Somali population will be reached by mini grids (or by the grid in the future), as the economics of doing so are unfavourable. Many of these typically remote locations do not have sufficient demand from small industrial off-takers (for other value addition or service-related activities linked to rural livelihoods) to justify the deployment of a mini grid. A combination of high CAPEX costs to develop new mini grids, particularly in lower density localities, coupled with low ability to pay for energy services by households that live below the poverty line further undermine the business case for such an approach. Furthermore, livelihoods in rural areas do not lend themselves to a fixed grid connection; many households are nomadic pastoralists who move from one place to the other in search for pasture and water and food or live in scattered settlements.

Therefore, standalone off-grid solutions can be a viable complement to mini grids. These systems include solar panels, a rechargeable battery, and LED lighting arrays, and many include mobile phone charging capabilities. Larger systems include an interface for connecting appliances such as radios, televisions, fans, and other small appliances. Replacing traditional fuel-based energy sources (kerosene, candles, diesel generators) with quality solar products has major positive impact on the local environment, household health and disposable income. Market analysis shows that in Somalia, these products are typically sourced from the Middle East and manufactured in China. The quality of these products is unclear, given that the vast majority have not been manufactured to internationally recognized norms for this type of technology. Improving the quality of products coming into Somalia, while keeping cost affordable, is therefore a priority action area. The current status of electricity access also demonstrates that there is significant market potential for these technologies.

Table 3: Active off grid programmes

Programme	Main activities
Somali Electricity Access Project	<p>This is a World Bank project with an objective to expand access to electricity in targeted urban, peri-urban, and rural communities in Somalia.</p> <p>The project has three main components:</p> <ul style="list-style-type: none"> • Electrification of households and businesses through standalone solar home systems • Enabling electrification through solar-powered/hybrid mini grids • Technical assistance, capacity building and project management
Africa Clean Energy Programme (ACE)	<p>The programme seeks to catalyse a market-based approach for private sector delivery of solar home system (SHS) products and services. The programme works in 14 priority countries: Mozambique, Malawi, Zambia, Zimbabwe, Tanzania, Rwanda, Uganda, Kenya, Ethiopia, Somalia, Nigeria, Ghana, Sierra Leone and Senegal. The programme will support: 1) Technical assistance to improve the enabling environment for a market based approach for private sector delivery of solar home system (SHS) products and services</p>

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	(policy and regulatory reform, investment readiness, learning and coordination); 2) Finance for businesses wanting to enter new and emerging SHS markets in Sub-Saharan Africa for their start up and early commercialisation of ideas; and 3) Test innovative approaches to stimulating private sector investment and a market development.
AECF/REACT Household Solar programme	Funding support for SHS companies, mini grid companies, clean cookstove companies, innovative distribution models for off-grid energy, and innovative ideas to stimulate “next generation” approaches to renewable energy. Support is in the form of interest free loans, non-repayable grants, and technical assistance. Roll out to Somalia companies for Round 2 started in 2019.
The Green Mini Grid Help Desk	Mini grid developers receive technical assistance, from support on demand assessments to technical sizing, capital raising, procurement and installation support, commissioning, and optimisation of operations.

Industry associations

The **Somaliland Electricity Association (SEA)** is the national body representing electricity service providers throughout Somaliland. The association was established in November 2015 with initial funding from utility companies, to provide a platform for all members to discuss and progress issues of common concern and develop the energy sector in Somaliland. Working with and on behalf of its members, SEA ensures that the interests and needs of its members have a major impact on policy and regulatory development, by sharing expertise, building capacity and providing advice and support, so that the industry can play its part in leading the region’s economic growth.

References and further reading

Somalia Energy Sector Needs Assessment and Investment Programme

https://www.afdb.org/fileadmin/uploads/afdb/Documents/GenericDocuments/Final_Somalia_Energy_Sector_Needs_Assessment_FGS_AfDB_November_2015.pdf

The World Bank Somali Electricity Access Project

<http://documents.worldbank.org/curated/en/575751525514611360/pdf/Concept-Project-Information-Document-Integrated-Safeguards-Data-Sheet-Somali-Electricity-Access-Project-P165497.pdf>

Somalia Energy Sector Overview

<https://www.usaid.gov/powerafrica/wherewework/somalia>

Somalia Energy Consumption and Production

https://wedocs.unep.org/bitstream/handle/20.500.11822/20514/Energy_profile_Somalia.pdf?sequence=1&isAllowed=y

Doing Business

<https://www.doingbusiness.org/content/dam/doingBusiness/country/s/somalia/SOM.pdf>

Official UK Government travel advice for Somalia

<https://www.gov.uk/foreign-travel-advice/somalia>

Useful contacts

British Embassy Somalia

British Embassy Mogadishu
Mogadishu
Somalia.Enquiries@fco.gov.uk

UK Somaliland Mission

102 Cavel Street
London E1 2JA
UK
+44 20 7961 9098
slrmission@hotmail.co.uk

Ministry of Energy and Water Resources

3rd floor GPO Building Corso Somalia
Bondhere
Mogadishu
Info@moewr.gov.so

SECCCO Solar Energy Company

Garowe Puntland, Somalia
info@seccco.net
<http://www.seccco.net/>

Somaliland Electricity Association (SEA)

507 - 5th Floor
Omar Hashi Building
Hargeisa - Somaliland
+252 510000 / 063-3381880
info@seasomaliland.com

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