



## Scaling-up renewable energy

The Bank is scaling-up its support for Africa's just energy transition through renewable energy. Egypt's Benban Solar Park, among the largest in the world, supplies electricity to more than one million homes.

# Chapter 1

## Light up and power Africa

**A**ccess to energy is a key pillar of the sustainable development agenda in Africa. Affordable, reliable, modern, and renewable energy is essential for improving the quality of life for Africans, providing access to improved health and education, and creating jobs, businesses, and trade. In addition, the use of renewable energy sources can help reduce the effects of climate change, making it an important factor in the fight against global warming.

### Progress in access to electricity and clean cooking

Africa has achieved impressive progress in ensuring access to energy, with population coverage increasing from 42% to 56% in seven years. However, 600 million Africans still lack access to electricity, representing three-quarters of the world's unserved population. Most reside in rural areas of African countries such as the Democratic Republic of Congo (DRC), Madagascar, Ethiopia, Nigeria, Tanzania, and Uganda. Efforts to expand access to energy stalled in 2022, due to economic fallout from Russia's invasion of Ukraine,<sup>2</sup> slow recovery from the COVID-19 pandemic, and their combined impact on energy and commodity markets and supply chains. The Sustainable Development Goal 7 Progress Report noted increasing difficulties in reaching remote and poor, unserved populations.



*Recent efforts to introduce clean cooking programmes in Ethiopia, Kenya, Nigeria and Uganda could serve as good models for the adoption of clean-cooking methods*

Africa's power sector indeed faces major constraints, including insufficient capacity, unreliable supply, poor services, high costs, and unsustainable subsidies. In 2022, the continent's total installed electricity capacity was 245 GW, representing an increase of approximately 50% since 2015. However, faster growth is needed to meet the continent's energy needs. To reduce frequent network losses and power outages, the transmission and distribution systems must be further strengthened. Electricity losses currently stand at 17.1%, up from 15% in 2015.

Energy is also needed for clean cooking. Over 900 million Africans lack access to clean cooking, with the majority living in rural areas. Cooking with traditional polluting fuels harms the environment, depletes forests, and negatively impacts human health, leading to an estimated 3.2 million premature deaths

each year due to indoor pollution. Unfortunately, the share of Africa's population with access to clean cooking technology is only 30%, a figure which has fallen since 2015, as clean cooking related programmes and investment have not kept pace with population growth. However, recent efforts in countries such as Ethiopia, Kenya, Nigeria, and Uganda to introduce clean cooking programmes and structure electricity tariffs to promote the use of electric cookers, could provide vital support to the adoption of clean-cooking methods.

In Kenya, for example, the power utility Kenya Power and Lighting Company is keen to increase domestic demand to exploit excess renewable power production capacity. Its 'Pika na Power' (Cook with Electricity) campaign aims to educate customers about the range of modern energy-efficient electric cooking appliances now available (in contrast to the traditional hotplates) and tackle common misconceptions, such as the belief that electricity is unsafe or too expensive for cooking. This aligns with Kenya's ongoing efforts to develop a National eCooking Strategy — the first of its kind in Africa.

### Unlocking Africa's vast renewable energy potential and clean energy value chains

Africa accounts for only 3% of historical greenhouse gas emissions, yet it suffers most from climate change. Notably, 88% of Africans believe climate change is already impacting their lives, according to the European Investment Bank's 2022 Climate Survey. Most emissions are generated from agriculture, forestry, and land use. Africa's population growth and development have led to a corresponding increase in energy demand, making the continent a potential major contributor of emissions. The Bank is actively engaged with its partners, including in the context of global forums such as the Conference of the Parties (COP), to rapidly unlock Africa's vast potential in renewable energy to bring cheaper, reliable, and low-emission electricity to end users.

Currently, more than 75% of electricity in Africa is generated by fossil fuels mostly from diesel backup or gasoline generators. In 2022, countries such as Nigeria, saw a drastic increase in the prices

Table 1 Light up and Power Africa (progress in Africa)

INDICATOR	ALL AFRICAN COUNTRIES		ADF COUNTRIES		TRANSITION STATES	
	Baseline 2015	Latest 2022	Baseline 2015	Latest 2022	Baseline 2015	Latest 2022
➤ Share of population with access to electricity (% population)	42	56	24	44	22	32
➤ Total installed electricity capacity (GW)	168	245	31	45	13	17
➤ Installed renewable capacity (GW)	33	56	20	27	8	10
➤ Share of population with access to clean cooking solutions (% population)	32	30	10	11	9	11
➤ Electricity losses through transmission, distribution, and collection (%)	15.0	17.1	16.8	15.6	15.4	14.7

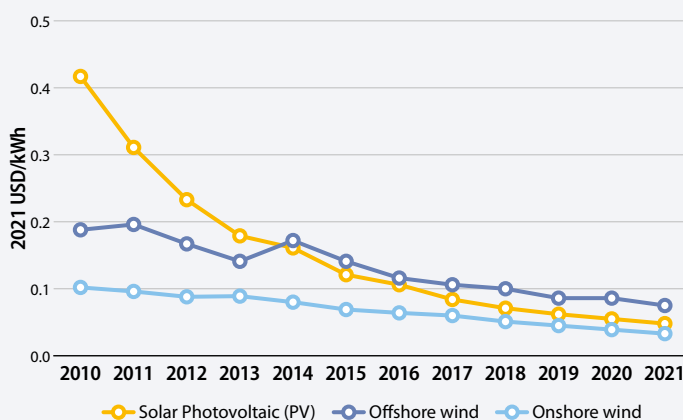
➤ Improvement over baseline    ➤ ➤ Deterioration

of diesel and liquefied petroleum gas of 50% and more than 60%, respectively. This has added to the already high operating costs of these generators, resulting in high costs for vulnerable households.

However, accelerating Africa's energy transition to net zero is an achievable goal. Africa has enormous potential for renewable energy

sources, such as solar, hydropower, wind, and geothermal sources. Encouragingly, the solar energy market is rapidly developing as the cost of solar photovoltaic falls (see Figure 1), with 14 African countries having installed more than 50 megawatts of solar capacity. Notably, Kenya and Morocco generate more than 10% of their energy through solar and wind sources, a higher proportion than China, India, and the United States.

Figure 1 Competitive costs of renewables will accelerate Africa's energy transition to net zero



Source: International Renewable Energy Agency (IRENA)

With over 40% of the world's reserves of cobalt and manganese, as well as platinum, Africa is well positioned to play an important role in clean energy value-chains such as Electric Vehicles (EV), utility-scale battery storage, and green hydrogen. South Africa, the DRC and Mozambique are the main suppliers, but other African countries may hold untapped deposits. The key challenge is to ensure responsible and sustainable extraction without damaging the environment. The Bank is supporting African countries in this area. It has facilitated the development of the Economic Community of West African States (ECOWAS) Strategic Mineral Feedstocks and Inputs Development Strategy that will guide the region's sustainable extraction of mineral resources and the development of mineral value chains to bolster the region's economic growth. The Bank is also supporting Zambia and the DRC with the development of integrated batteries and EV value chains (see Box 1).

### Box 1 Leveraging Africa's battery and EV potential

A joint study produced by the Bank and its partners, analysed battery precursor production in Africa, focusing on DRC. It found that the DRC can leverage international partnerships to exploit its abundant cobalt resources and hydroelectric power to become a low-cost and low-emissions producer of lithium-ion battery cathode precursor materials. The study showed that production in the DRC is three times less expensive than in the USA, Poland, or China. This led to a Cooperation Agreement between the DRC and Zambia and a memorandum between the US and the two countries to facilitate the development of an integrated battery and EV value chain. This value chain ranges from raw material extraction to processing, manufacturing and assembly.

### The Bank's support for a sustainable and clean energy sector in Africa

The Bank's vision for Africa's energy sector is focused on fostering the development of a sustainable and cleaner energy sector that is able to provide universal access to modern, affordable, and reliable energy services, by 2030. To achieve this goal, the Bank is scaling-up its support for renewable energy generation and power transmission at national and regional levels, power distribution and off-grid systems. This is guided by its partnership-driven Strategy for the New Deal on Energy for Africa, launched in 2016.

The Bank is at the forefront of Africa's just energy transition. An example of the Bank's regional approach to addressing clean energy transition is the flagship Desert to Power G5 Sahel Financing Facility (see Box 2). Through support from the

Table 2 Light up and Power Africa (the Bank's contribution to development)

INDICATOR	ALL AFRICAN COUNTRIES			ADF COUNTRIES		TRANSITION STATES	
	Baseline 2015	Latest 2022	Target 2022	Baseline 2015	Latest 2022	Baseline 2015	Latest 2022
🔄 Emissions reduction in energy (Thousand tons CO <sub>2</sub> )	17	2626	1800	10	2572	1	-
➔ New total power capacity installed (MW)	490	612	880	80	78	4	16
➔ New renewable power capacity installed (MW)	24	113	560	20	78	4	16
➔ People with new electricity connections (Thousands)	73	1300	2400	73	1098	36	6
➔ of whom women	36	613	1200	36	518	16	3
➔ New or improved power transmission lines (km)	69	366	576	69	170	18	4
📉 New or improved power distribution lines (km)	875	408	3520	875	408	381	12

🔄 Achieved less than 95% of 2022 target ➔ Achieved less than 95% of 2022 target 📉 Achieved less than the baseline

### Box 2 Desert to Power G5 Sahel Financing Facility

The \$1 billion Facility is an umbrella programme that aims to develop a climate-resilient, low-emission power generation pathway in the G5 Sahel countries by increasing solar power generation and electricity access.



#### Approved financing:

\$150 M (Green Climate Fund); \$380 M (ADF/AfDB)



#### Countries:

G5 Sahel (Burkina Faso, Chad, Mali, Mauritania and Niger)



#### Implementation timeline:

2022–2029



#### Expected co-financing:

\$162M (private sector); \$275 M (DFIs)



#### Instruments:

Investments (Sovereign and Non-Sovereign) and technical assistance



#### Expected results:

500 MW solar capacity, 239 MWh of storage, 14.5 M tCO<sub>2</sub> avoided and 3.5 M people with electricity access

Sustainable Energy Fund for Africa<sup>4</sup>, which has been recognised as one of the 'big seven' energy transition financing facilities globally, the Bank has created specialised programmes to reduce risk and improve the economics of renewable energy projects and programmes in Africa, such as the COP 26 Energy Transition Rapid Response Facility and the Africa Hydropower Modernisation Programme (see Box 3, page 12).

Guided by the Strategy for the New Deal on Energy for Africa, the Bank supports vital increases in electricity generation, transmission capacity, and connections. In 2022, the Bank's investments supported an increase of 612 MW<sup>5</sup> in Africa's **installed energy capacity**, although this was still below its targeted 880 MW rate of increase. This includes landmark renewable energy generation projects, such as the 100 MW Xina Concentrated Solar Power plant in South Africa, which is the first of its kind and provides sufficient electricity to power over 200 000 households, reducing reliance on

coal-fired power plants. It also has a storage component to meet peak demand. In addition, the 310 MW Lake Turkana Wind project in Kenya, Africa's largest windfarm, is supplying electricity to 300 000 households.



*The Bank supported on-grid access by facilitating 1.3 million peoples' access to electricity, 408 km of distribution lines and 366 km of transmission lines*

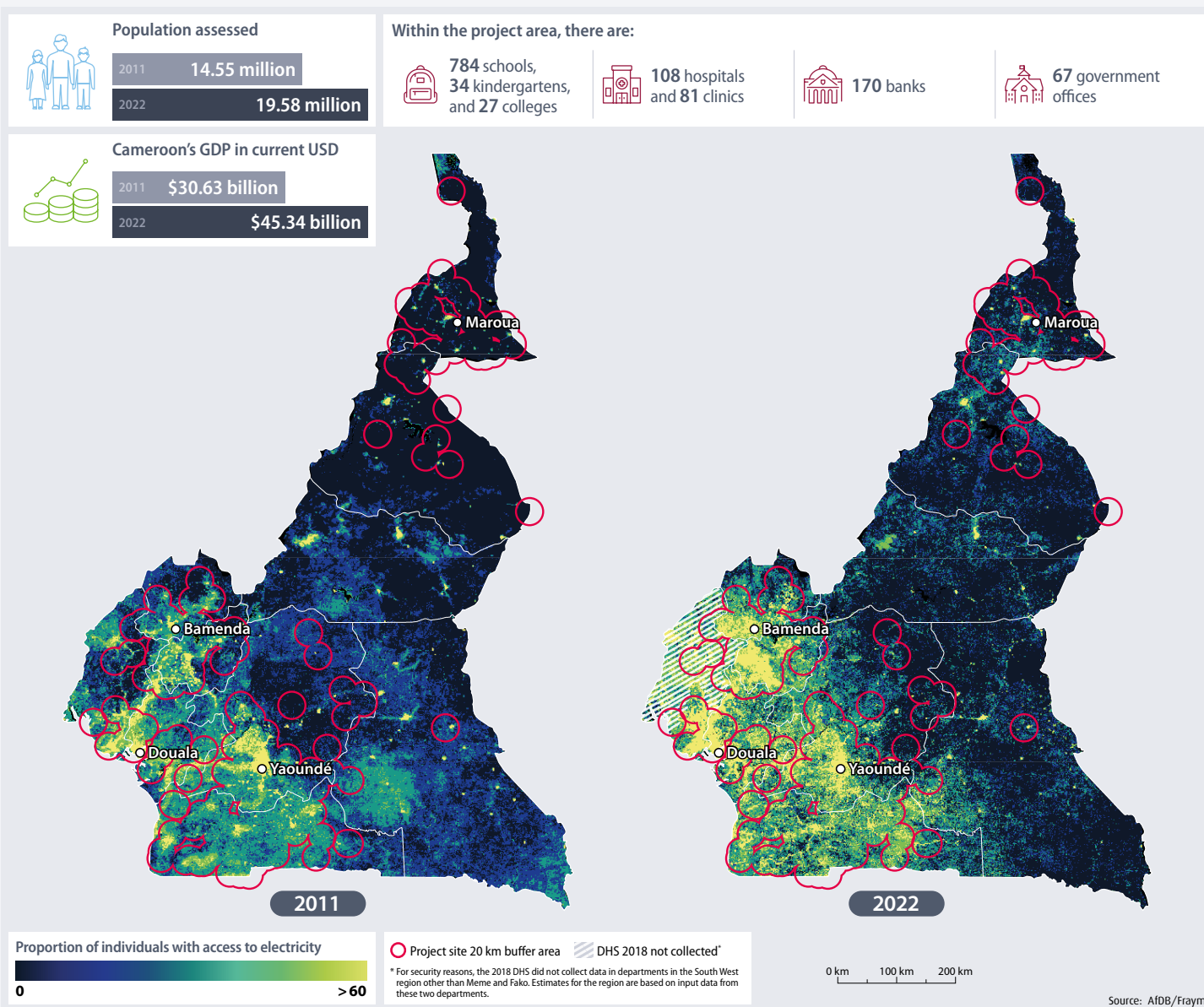
In 2022, the Bank also supported on-grid access by facilitating an additional 1.3 million **peoples' access to electricity**, 408 km of **distribution lines** and 366 km of **transmission lines**. For example, the 667 km Iringa-Shinyanga Transmission Line Project in Tanzania

<sup>4</sup> The Sustainable Energy Fund for Africa (SEFA) is the Bank's leading blended finance facility to catalyse private investments in clean energy across the African continent.

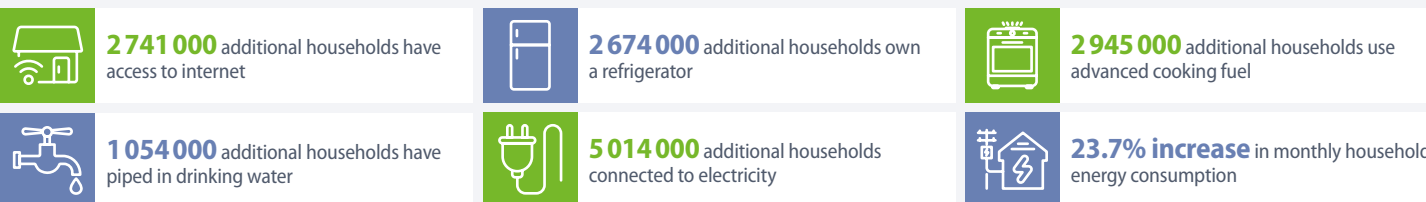
<sup>5</sup> To assess the Bank's development impact in 2022 while minimising the volatility of the data, the ADER averages data over the last three years (2020–2022). See also the Annex for more details on the methodology.

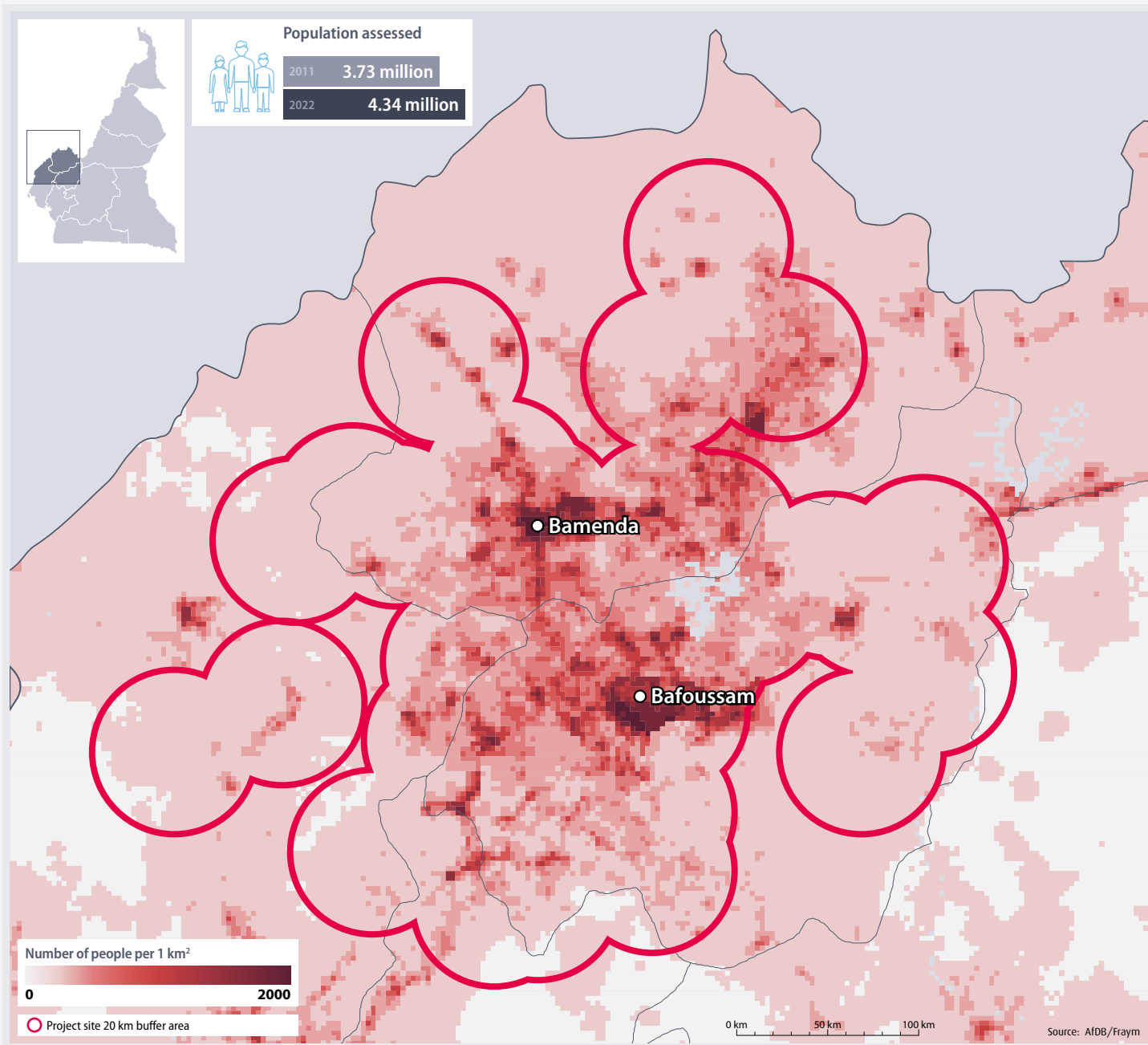
**Figure 2 High-resolution impact mapping: Assessing impact of energy access on living conditions**

Thanks to support from the ADF, Japan International Cooperation Agency (JICA), and the government, this project contributed to improved access to reliable electricity for domestic, industrial, and commercial use in Cameroon. Approved in September 2010, the project covered eight of the country's ten regions, and at completion in December 2022, the rural electrification rate increased to 24% from 3.5% in 2007. The map illustrates the inclusive impact of energy access on local communities, and particularly vulnerable groups such as women and youth. By comparing data from 2011 and 2022 household surveys, geo-tagged datasets, and satellite imagery, the methodology was able to assess changes in people's living conditions within 20 km of the project sites, such as additional people employed in professional and sales occupations, or with access to the Internet. For instance, an additional 193 000 women completed at least primary education and 76 000 additional women were employed. These changes were not solely attributable to the project, but rather reflected broader improvements in living conditions over time, collectively contributed by development partners.



**Changes within 20 km of the grid from 2011 to 2022**





### Changes in the assessed population 2011 to 2022 in Bamenda

<b>167 000</b> additional households own a computer	<b>235 000</b> additional households have access to internet	<b>725 000</b> additional households own a television
<b>1 131 000</b> additional households connected to electricity	<b>46.1% increase</b> in monthly household energy consumption	<b>133 000</b> additional adults are employed in professional and sales occupations
<b>11% decrease</b> in adults self-employed in agriculture	<b>76 000</b> additional women are employed	<b>193 000</b> women completed at least primary education
<b>43.1% increase</b> in youth employment rates in professional and sales occupation	<b>11.8% decrease</b> in child stunting rates in the region	

### Box 3 De-risking and improving the economics of renewable energy projects

**COP26 Energy Transition Rapid Response Facility:** The Bank, as a member of the COP26 Energy Transition Council (ETC), established the SEFA-funded COP26 ETC Rapid Response Facility to provide short-term, demand-driven advisory support to an initial set of five countries (Egypt, Kenya, Morocco, Nigeria and South Africa) on options for issues related to grid integration of variable renewable energy generation and storage (including electric mobility); gaps in policy and regulatory frameworks; and potential business models and financing mechanisms.

**Africa Hydropower Modernisation Programme (AHMP):** The Bank is supporting this continent-wide technical assistance programme to modernise existing hydropower plants and expand clean power generation capacity. Currently, 62% of Africa’s installed hydropower capacity is over 20 years old, with many facilities underperforming or no longer operational. This presents an opportunity to restore operational performance and modernise existing facilities, allowing for greater flexibility to integrate more variable generation from wind and solar energy sources. Hydropower modernisation circumvents greenfield project disadvantages that include long development timeframes, negative environmental impacts, and high costs. The programme has identified 15 priority projects, which are envisaged for support during a second phase of AHMP.

improved the quality and reliability of electricity supply, increased access in urban and peri-urban regions of Dodoma and Singida,<sup>6</sup> and enabled the transfer of adequate power to load centres in the north and northwest of Tanzania. It will also facilitate regional integration and power trade with the Eastern Africa Power Pool and Southern Africa Power Pool upon completion of the Kenya-Tanzania and Tanzania-Zambia transmission lines.

To demonstrate its impact, the Bank partnered with Fraym, a high-tech start up, to map the difference the Bank made to the lives of thousands of people in Cameroon. By using high-resolution impact, we can show how the Bank’s Electricity Transmission and Distribution Networks project in Cameroon contributed to the country’s overall energy access, economic and social development over time (see Figure 2, pages 10–11). ■

<sup>6</sup> In tandem with the construction of the Iringa-Shinyanga Backbone Transmission Line, TANESCO implemented a Rural Electrification Project that connected 35 000 customers in the regions of Iringa, Dodoma, Singida, Tabora and Shinyanga.