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## SDG 7.1.1: Access to electricity

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This chapter examines challenges and opportunities relating to alignment, measurement and use of Sustainable Development Goal (SDG) Indicator 7.1.1 (Access to electricity) in development co-operation, from a global perspective and from the perspective of two case study countries: Ethiopia and Kenya. The chapter shows that the definition of SDG 7.1.1 in line with well-established measurements of sector performance facilitates adoption at country level. Still, development co-operation providers are using a variety of indicators that are not adequately aligned to the SDG indicator definition. Emphasis on output measures, reliance on survey data-collection methods, a fragmented electricity market, and the use of slightly different definitions make alignment and harmonised measurement of electricity access in Ethiopia and Kenya all the more difficult. The case studies also identify best practice examples of active donor co-ordination groups in the electricity sector that are led by the government and rely on joint monitoring approaches. These are recommended as a way to enable the use of SDG 7.1.1 as a tool to harmonise collective efforts to expand electricity access for both country governments and providers of development co-operation.

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## Introduction

**This chapter examines challenges and opportunities relating to alignment, measurement and use of SDG 7.1.1 on access to electricity in development co-operation**, from a global perspective and from the perspective of two case study countries: Ethiopia and Kenya. The chapter starts with a presentation of the global profile of Indicator 7.1.1, setting out the current global context for measurement of SDG 7.1.1, then providing a detailed analysis of the extent to which development co-operation providers have aligned to this indicator in their corporate results frameworks. Section 4.3 provides an analysis of challenges and opportunities related to alignment, measurement and data use in relation to SDG 7.1.1 in Ethiopia and Kenya. The chapter ends with recommendations for development co-operation providers to support enhanced alignment, measurement and use of SDG 7.1.1. The annexes present the country contexts and an assessment of results indicators.

The chapter includes an annex outlining overall (i.e. non sector-specific) challenges and opportunities for SDG alignment, measurement and use in each country. It also reflects the transition situation in both countries, which are currently adapting their country results frameworks to the SDGs – a reality that poses some limitations to this study.

The research work supporting the findings was conducted by the OECD-DAC Results team with the support of Finland and the European Union as donor focal points in Ethiopia and Kenya, respectively. A steering group and technical experts helped to design the concept and methodological approach and reviewed documents.

## Recommendations

Overall, it is important to note that both countries are on a trajectory towards more integrated approaches to planning, monitoring and evaluation of electricity access, and the gaps and challenges should be addressed with time – ensuring a focus on SDG alignment may help provide impetus for these efforts. Development co-operation providers investing in electricity access can support enhanced alignment, measurement and use of SDG 7.1.1 in several ways:

- Advocating for better alignment to SDG 7.1.1 in both national and sectoral results frameworks, to strengthen alignment and co-ordination of development co-operation supporting the energy sector.
- Investing in and using sector-wide monitoring systems and government statistics, which enable measurement of the number and proportion of people with access to energy (refraining from project-driven approaches when possible).
- Making indicators for electricity access separate from those that measure source of energy, or whether energy is renewable.
- Disaggregating by rural/urban and other locally relevant dimensions of inequality.
- Engaging with private sector providers (particularly with those benefiting from funding to promote access, and with sectoral associations) to ensure consistent and sustainable results tracking systems in the electricity sector that respond to national and sector SDG priorities.
- Supporting efforts to collect and use data that are disaggregated by *woreda*/county, and by male- and female-headed households.

## SDG Indicator 7.1.1 – Global profile

### Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all.

- Target 7.1: By 2030, ensure universal access to affordable, reliable and modern energy services.
- **Indicator 7.1.1: Proportion of population with access to electricity, by urban/rural (%).**

### Global SDG measurement and reporting

SDG Target 7.1 sets out the global goal for universal access to energy services by 2030. The corresponding Indicator 7.1.1 is a simple, binary indicator measuring the extent of the population with access to electricity, which is by definition slightly narrower than “energy services”.<sup>1</sup> The World Bank is currently the data custodian for SDG Indicator 7.1.1, although there are plans for the International Energy Agency (IEA) to join the World Bank as a joint data custodian. Both organisations track national and global electrification rates, disaggregating data by urban/rural, although they rely on different methodologies. The World Bank uses household survey data while the IEA relies on administrative data provided by government contacts. Table 3.1 sets out the latest global data against SDG 7.1.1.

**Table 3.1. Global data SDG 7.1.1, 2016**

Indicator	Total	Urban	Rural
Proportion of population with access to electricity	87.35%	96.95%	76.03%

Source: <https://unstats.un.org/sdgs/indicators/database>.

The Energy Sector Management Assistance Program (ESMAP, 2018<sup>[1]</sup>), a collaboration of the World Bank, IEA and 17 other partners, publishes a *Tracking SDG7 Report* (IEA et al., 2018<sup>[2]</sup>), which monitors the four sub-goals of SDG 7 and presents data on electrification rates (urban/rural) and the number of people without electricity access (urban/rural). The database includes time series data (1990-2016) for more than 180 countries. Urban/rural disaggregation is possible for all countries (UN DESA, 2016<sup>[3]</sup>).

However, a binary indicator measuring whether or not a household has access to electricity has been criticised as insufficient to provide a clear picture of energy access, and thus track progress towards SDG Target 7.1. In many parts of the world, the presence of an electricity connection does not guarantee that the energy supplied is reliable, affordable or of adequate quality.

In light of this, the Multi-Tier Framework for Energy Access (ESMAP, 2018<sup>[4]</sup>) proposes replacing the binary measurement with a five-tier framework<sup>2</sup> of energy access to measure “the ability to avail energy that is adequate, available when needed, reliable, of good quality, convenient, affordable, legal, healthy and safe for all required energy services.” However, administering the survey required for the Multi-Tier Framework is intensive, costly and time consuming. The survey was launched in 15 countries in April 2016. As of September 2018, reports were available for Cambodia, Ethiopia and Rwanda, and another ten were expected to be published by the end of 2018, at the time of writing (including for Kenya).

Discussions are underway to mainstream the Multi-Tier Framework methodology into the standardised household questionnaire that will be administered by the World Bank every three years in all low-income countries between 2015 and 2030 for SDG monitoring (UN DESA, 2016<sup>[3]</sup>). The adoption of the Multi-Tier Framework will, over time, allow for reporting more disaggregated data, including: type of electricity (on-grid vs. off-grid), electricity supply capacity, hours of electricity service, reliability of service, affordability

and legality (UN DESA, 2016<sup>[3]</sup>). However, as discussed below, ensuring that measures of electricity access (albeit binary) are mainstreamed into national, sectoral and provider results frameworks should also be considered a priority.

### **Alignment of the corporate results frameworks of development co-operation providers to SDG 7.1.1**

In terms of development co-operation, most providers include access to electricity measures in their corporate, or global, results frameworks. Out of the 15 providers considered in this analysis,<sup>3</sup> about half of them use indicators of electrification rates at Tier I (outcome and impact indicators).<sup>4</sup> In contrast, there is much greater variety in the output (Tier II) indicators linked to 7.1.1.<sup>5</sup> Many providers measure the number of people with energy access, but the type of energy access that they measure varies greatly (e.g. electricity, sustainable energy, energy/electricity from renewable sources, climate-resilient energy or improved electricity/energy). Some are seemingly a “blend” of Indicators 7.1.1, 7.1.2 (which measures use of clean energy) and 7.2.1 (which measures renewable energy sources). The indicators chosen are likely to reflect strategic priorities in the energy sector of specific providers. Table 3.2 summarises the extent of direct alignment of provider corporate indicators (both outcome and output) to SDG 7.1.1.

**Table 3.2. Summary of indicator analysis: Extent of alignment of 14 development co-operation provider indicators to SDG Indicator 7.1.1**

<b>Providers' corporate results frameworks</b>	<b>Number of indicators</b>
Total no. of provider indicators at corporate level linked or aligned to SDG 7.1.1	40
<b>No. of corporate outcome indicators</b>	<b>12</b>
No. of corporate outcome indicators that are a direct match with SDG Indicator 7.1.1	3 (25%)
No. of corporate outcome indicators that apply urban/rural disaggregation	0 (0%)
<b>No. of corporate output indicators</b>	<b>28</b>
No. of corporate output indicators that are a direct match with SDG Indicator 7.1.1 (measuring numbers rather than proportion)	0 (0%)
No. of corporate output indicators that match SDG Indicator 7.1.1 (measuring numbers rather than proportion) but refer to new/improved electricity connections	5 (18%)
No. of corporate output indicators that refer to households rather than people/population	3 (11%)
No. of corporate output indicators that apply urban/rural disaggregation	1 (4%)
No. of corporate output indicators that apply disaggregation by sex	6 (21%)
<b>No. of assessed providers</b>	<b>14**</b>

\* See Annex 3.B for source data and detailed information per provider.

\*\* Including Australia, though no indicators are reported.

Three standard indicators at corporate level are fully aligned to 7.1.1, measuring the percentage of the population with access to electricity (Tier I). These are used by multilateral development banks. Eight corporate indicators measure the number of people or households provided with new or improved electricity services at output level (Tier II). The European Commission, Finland, the Netherlands and the United States measure access to sustainable/climate-resistant/renewable/improved energy instead of electricity. The Netherlands is the only provider to disaggregate energy access according to the Multi-Tier Framework. The European Commission, the Netherlands, New Zealand, the African Development Bank and the World Bank disaggregate the number of people provided with electricity by gender. The Asian Development Bank disaggregates output results by urban/rural.

In terms of reporting, the African Development Bank, the Asian Development Bank, the European Commission, France, Germany, the Netherlands, New Zealand, the United States and the World Bank publish aggregate global results for electricity or energy access (percentage or number of people) at the corporate level in annual reports or online results databases.

## Country-level analysis: Alignment, measurement and use by partners and providers

This section analyses challenges and opportunities related to alignment, measurement and data use in relation to SDG 7.1.1 in Ethiopia and Kenya. Analysis is based on fieldwork and desk-based research and looks at the partner country government and development co-operation contexts. For background on the overall situation with regards to SDG implementation within the country context and the institutional set-up in the sector, refer to Annex 3.A.

### **Alignment to SDG 7.1.1 in Ethiopia and Kenya**

*At country level, alignment to SDG 7.1.1 through national and sector plans varies*

Both Ethiopia and Kenya are targeting, and have made significant progress towards achieving, universal access to electricity (SDG 7.1.1) in recent years. However, fully integrating the SDG indicator and related measurement into either government's planning and monitoring frameworks is a work in progress. While information from both surveys and administrative data is used in different contexts for different purposes in both countries, a more co-ordinated approach to measurement could strengthen alignment and enhance sector-wide co-ordination, management and results reporting.

In **Kenya**, the Ministry of Energy has responsibility for policy and planning in the energy sector, as well as SDG 7 reporting. Kenya's electricity sector (generation, transmission and distribution) is deregulated. Kenya Power and Lighting Company (KPLC), which is responsible for distribution, is 50% government owned and has about 6 million customers – or about three-quarters of Kenya's households.

Driven by high-profile targets, electrification has happened very quickly in Kenya. Kenya joined the Sustainable Energy for All initiative in 2016,<sup>6</sup> and here articulated targets for universal access to electricity by 2022. At national level, electrification will be covered under the infrastructure pillar of Kenya's yet-to-be published Third Medium-Term Plan (MTP III). According to the draft infrastructure section of the new national plan, during the MTP III period (2018-22), Kenya will reach universal access, and 5 million new households are being targeted (2 million through mini-grids) for electrification (Republic of Kenya, 2018<sup>[6]</sup>). However, so far neither Indicator 7.1.1 nor any similar measure of electricity access are mentioned in the draft plan. It is important to note that the final indicator framework for MTP III had yet to be released at the time of the country study.

In addition, a sector-level strategy, the Kenya National Electrification Strategy (KNES) (Kenyan Ministry of Energy, 2018<sup>[6]</sup>) was released in December 2018. The strategy includes costing and numeric connections targets to enable universal access by 2022, but does not make specific reference to SDG 7. The strategy does not include a monitoring and evaluation framework nor specific indicators with baselines and targets, but does suggest that this will be developed by the Ministry of Energy. A sector-wide monitoring and evaluation framework that is aligned to the new strategy and national plan might enable a more harmonised approach to monitoring and measurement among development partners (see below) as Kenya embarks on its ambitious final push for universal electrification. Annex 3.B presents an overview of electrification indicators currently in use by the Government of Kenya.

In **Ethiopia**, the current national plan, the second Growth and Transformation Plan (Federal Democratic Republic of Ethiopia, 2016<sup>[7]</sup>), focuses not just on energy, but also on increased connectivity, and includes an indicator for electricity **coverage** (i.e. the percentage of the country that is covered by an electricity connection). It is therefore not strictly aligned to SDG 7.1.1, and does not specify disaggregation by urban/rural.

The Ministry for Water, Irrigation and Electricity (MoWIE) has responsibility and oversight for electrification policy, planning and SDG reporting. The sector was unbundled in 2013, and responsibility for distribution

and sales sits with the Ethiopia Electric Utility. It is the ministry's responsibility to collect the data on connections from across the different agents and report them to central agencies.

To support a sector-wide approach to electrification in Ethiopia, the MoWIE issued the National Electrification Strategy in June 2016. The National Electrification Program (NEP) and Implementation Roadmap (IRM) were launched in November 2017 as the implementation mechanism for the strategy (Federal Democratic Republic of Ethiopia, 2017<sup>[8]</sup>). The NEP includes specific reference to achieving SDG 7, with targets and indicators for universal electricity access by 2025 (65% on-grid, 35% off-grid). In addition, the NEP states that in 2018, the newly created Department of Electrification will establish a “comprehensive monitoring and tracking system for the NEP. Key performance indicators for efficiency, effectiveness and progress against grid and off-grid targets and for course adjustments will be established”. However, during fieldwork in November 2018, the research team was told that an M&E framework was not yet in place.<sup>7</sup> We also learnt that a second iteration of the NEP was being prepared (to be completed by March 2019), which would include a geospatial platform, which would be used as a basis for planning.

Overall, despite a significant focus on achieving the SDG-aligned target of universal access to electricity, Ethiopia and Kenya currently have yet to include Indicator 7.1.1 explicitly in their national plan results frameworks. In addition, neither country has a sector-level monitoring and evaluation framework in place to enable a results-based approach to tracking and monitoring progress towards the target. However, and importantly, in both cases, addressing these gaps and working towards greater alignment to SDG 7.1.1 is a “work in progress”, which might benefit from increased support by development partners as investment levels increase.

Table 3.3 summarises the extent of alignment (as of late 2018), and data availability at country level to SDG 7.1.1 for both Ethiopia and Kenya.

**Table 3.3. Partner country alignment to SDG 7.1.1**

	<b>Ethiopia</b>	<b>Kenya</b>
<b>National plan aligned to SDG 7.1.1?</b>	<b>No.</b> National Plan (GTP II) includes electricity coverage indicator/target.	<b>Partially.</b> Updated National Plan (MTP III) yet to be released but government has high-profile targets for universal access by 2022.
<b>Electrification sector plan aligned to SDG 7.1.1?</b>	<b>Yes.</b> National Electrification Program (NEP) targets 100% access by 2025 (65% on-grid, 35% off-grid).	<b>Yes.</b> Kenya National Electrification Strategy (KNES) released in December 2018 targets 100% access by 2022 <i>no specific mention of SDG 7.1.</i>
<b>Existence of sector-level results/M&amp;E framework?</b>	<b>No.</b> Identified as a task under the NEP.	<b>No.</b> Identified as a task under the KNES.
<b>SDG 7.1.1 data availability</b>	<b>Yes.</b> However, administrative data and household survey data differ. World Bank Multi-Tier Framework Survey data available.	<b>Yes.</b> However, administrative data and household survey data differ. World Bank Multi-Tier Framework Survey data used as baseline for the KNES.

Notes: For GTP II see Federal Democratic Republic of Ethiopia (2016<sup>[7]</sup>). For MTP III see Kenyan Ministry of Devolution and Planning (2018<sup>[9]</sup>). Source: Author's analysis. See Annex 3.B for source indicator data.

### *Development co-operation providers engaged in electricity access utilise a range of indicators*

In Ethiopia and Kenya, development co-operation investments which aim to increase access to electricity are broadly aligned to government targets. In **Kenya**, electrification projects such as the Last Mile connectivity project (Kenya Power and Lighting Company, 2018<sup>[10]</sup>) are supported by numerous donors, and a World Bank-led investment which targets electrification in isolated rural areas will soon be implemented.<sup>8</sup> In **Ethiopia**, a significant electrification project (World Bank, 2018<sup>[11]</sup>) (USD 677 million) led by the World Bank focuses on densification of the existing grid and supplying new off-grid connections, but

also includes an institutional strengthening element to support the roll-out of the National Electrification Program (Federal Democratic Republic of Ethiopia, 2017<sup>[8]</sup>).

However, in terms of results measurement, there is limited alignment to either SDG Indicator 7.1.1 or indicators used in the national results frameworks of both countries. Results frameworks for electrification projects tend to be development partner-specific, with a range of different indicators and measurement methods in use. Annex 3.B outlines indicators used by development partners in Kenya and Ethiopia, respectively, which are linked or aligned to SDG 7.1.1. Table 3.4 summarises development partners' alignment in country assistance strategies to either SDG 7.1.1 or indicators used in the results frameworks of the partner country.

Looking at results frameworks for country-level assistance strategies in **Kenya**, only the African Development Bank has an indicator for the electricity access rate; however, it is not disaggregated by urban/rural. Other providers focus on electricity access rate for specific energy sources (e.g. off-grid solar provision). UNDAF measures the renewable energy access rate, and the EU measures the number of people with access to "modern energy". Other SDG-similar indicators used at output level by more than one provider in Kenya include kilometres of distribution/transmission lines and energy generation capacity. Output indicators for individual providers differ between corporate and country levels. Country-level assistance strategies tend not to include counts of people provided with electricity access (the EU is an exception), despite the fact this is aggregated at corporate level.

**Table 3.4. Summary of indicator analysis: Extent of country assistance strategy alignment to government and SDG indicators for electricity access\***

Providers' country assistance strategies	Ethiopia	Kenya
Total no. of provider indicators at country level linked or aligned to SDG 7.1.1	25	26
<b>No. of country-level outcome indicators</b>	11	11
No. of country-level outcome indicators that are a direct match with SDG Indicator 7.1.1	4 (36%)	0 (0%)
No. of country-level outcome indicators that are a direct match with national or sector plan strategy indicators	GTP II: 3 NEP: 2 (45%)	MTP II: 2 (18%)
<b>No. of country-level output indicators</b>	14	15
No. of corporate output indicators that are a direct match with SDG Indicator 7.1.1 (measuring numbers rather than proportion)	1 (9%)	0 (0%)
No. of country-level output indicators that are a direct match with national or sector plan strategy indicators	GTP II: 3 NEP: 2 (45%)	N/A
<b>No. of providers working in the sector</b>	5**	6***

\* See Annex 3.B for source data.

\*\* Two other countries are involved, but reporting indicators are not available (France and Korea).

\*\*\* Belgium is also involved, but no reporting indicator is available.

In **Ethiopia**, four outcome indicators included in the results frameworks of providers' country-level assistance strategies measure the percentage of the population with access to electricity or to electricity services. UNDAF instead measures affordable, clean and efficient renewable energy. Only the United States and UNDAF disaggregate by urban/rural. Output-level SDG-similar indicators used by more than one provider in Ethiopia include kilometres of distribution/transmission lines, new electricity connections and energy generation capacity.

The elements above show that neither government nor development partners use a consistent measure for electrification. The variety of indicators used by providers reflects a range of priorities in the energy

sector (as seen at corporate level), with some providers only tracking electricity access from sustainable sources, for example. This variety of indicators results in parallel, disconnected monitoring systems.

Overall, as Kenya and Ethiopia work with development partners to achieve universal electricity access, partners could better align their monitoring focus toward supporting the government to ensure that data on the percentage of the population with electricity access is consistently aligned to SDG 7.1.1 through national and sectoral plans. In both countries, ensuring strong institutional links between sector co-ordination groups and the institutional set-up for national plan/SDG implementation and monitoring led by the central agencies would be of benefit (see Table 3.1 and Annex 3.A for more details).

### Box 3.1. Co-ordination mechanisms in the energy sector in Ethiopia and Kenya

In Kenya, an energy-sector technical working group meets quarterly and includes provider and government of Kenya representation. Efforts have been made in the past to convene an electricity access sub-group. Some stakeholders commented that they would like to see this revived and that it could serve as a platform for discussion on a more co-ordinated approach to results measurement, with Indicator 7.1.1, its definitions and methodologies, as well as Kenya's new electrification strategy as a starting point.

Ethiopia's co-ordination structure also includes an energy sector co-ordination group which is chaired by the World Bank and the EU, but relative to other groups has not been in place for long (two years). However, the World Bank appears to dominate the electricity access sub-sector, with other actors more involved in generation and transmission. Stakeholders commented that this group could benefit from enhanced knowledge and information sharing with a focus on data.

### **Measurement and use of electricity access data in Ethiopia and Kenya**

*In both countries, measurement of access to electricity is fragmented with use of both survey and administrative data*

Global SDG reporting states that in 2016, 56% of the population of **Kenya** had access to electricity: 77% of the urban population, 39% of the rural population (ESMAP and World Bank, 2018<sup>[12]</sup>). These data are reported to be sourced from household surveys and collated by the World Bank under the Energy Sector Management Assistance Program.

The Kenyan Ministry of Energy is responsible for reporting results against SDG 7.1.1 to the central agencies. In Kenya's 2017 Voluntary National Review, 2016 data for Kenya's two MTP II energy indicators – additional power generating capacity and number of households with new electricity connections – were used to report against SDG 7.1.1 (Kenyan Ministry of Devolution and Planning, 2017<sup>[13]</sup>). The new electrification strategy puts the “access rate” at 75% in early 2018, based on the Multi-Tier Framework Survey (see below) (Kenyan Ministry of Energy, 2018<sup>[6]</sup>).

The KPLC monitors in real-time the number of households which have been connected to the national grid and (some) mini-grids. According to official administrative data, 71.2% of households were connected by 2017 (6 million), up from 2 million in 2013 (Taneja, 2018<sup>[14]</sup>). The proportion of the population with electricity access is then calculated by multiplying the number of households connected by the average number of persons in a household (the KPLC currently uses 5.1 as the average number per household).<sup>9</sup> The KPLC therefore provides a single source of real-time geographically disaggregated data on electricity access. In addition, the new strategy describes development of geo-spatial platform for evidence-based planning (Kenyan Ministry of Energy, 2018<sup>[6]</sup>) – frameworks should also be put in place to ensure the platform can also be used for ongoing monitoring.



In **Ethiopia**, different measures and different figures are used in different contexts, reflecting the multilevel governance of the energy sector and a relatively young sector co-ordination mechanism. As part of the 2017 Voluntary National Review (Federal Democratic Republic of Ethiopia, 2017<sup>[15]</sup>), some data on electricity coverage rates were reported for Ethiopia (56% in 2015/16), in line with GTP II indicators (Federal Democratic Republic of Ethiopia, 2016<sup>[7]</sup>). The GTP mid-term review upgrades coverage for 2017 to 57% (Federal Democratic Republic of Ethiopia, 2018<sup>[16]</sup>). The World Bank database (used for SDG global reporting) puts the percentage of the population with access to electricity in 2016 at 43% (27% rural, 85% urban) (ESMAP & World Bank, 2018<sup>[17]</sup>), whereas Ethiopia's 2016 Welfare Monitoring Survey reports 27% of households have access to shared or private electricity for lighting (CSA, 2018<sup>[18]</sup>). The NEP-IRM reports the total 2016 access rate (on-grid and off-grid) at 31%, although the source for these data is not clear (Federal Democratic Republic of Ethiopia, 2017<sup>[8]</sup>).

The Ethiopia Electric Utility (EEU) is responsible for monitoring the number of connections, then reporting these up to the MoWIE. However, unlike for Kenya, there is no centralised data system for monitoring connections in Ethiopia. Moreover, the government noted that EEU field officers keep paper records of the number of connections made, which are then reported up to the central level using spreadsheet files. The MoWIE has made attempts to develop databases, portals and dashboards in the past, but these proved difficult to maintain due to broader technology (e.g. connectivity) issues or lack of capacity. Furthermore, in Ethiopia, the number of connections is not always representative of the number of households connected, as two households will often share the same connection.

A national census (the first in ten years) was planned for Ethiopia in early 2019, at the time of writing. The questionnaire included a question on electricity access and can enable a robust and disaggregated baseline on electricity access for the whole population (National Population Census Commission of Ethiopia, 2018<sup>[19]</sup>). However, administrative data systems should also be strengthened to enable ongoing results-based monitoring of progress towards targets as set out in the NEP-IRM.

As electrification efforts are stepped up in Ethiopia, information needs on the demand side for planning purposes may outweigh the need for robust monitoring systems. For example, affordability research is needed to plan and set targets and to define tariff subsidies, which is a priority. However, it will also be important to ensure that resources and attention are given to ensuring a country-led and consistent system to monitor the number of households and people that have access (both on-grid and off-grid) to electricity. This will be important for ongoing national monitoring and evaluation of the NEP, SDG 7 and ideally the next iteration of the results framework for the national plan (GTP III), which is said will more directly align to SDG indicators. Overall, stakeholders commented that capacity for use of electricity access data – i.e. for analysis, learning and decision making from *woreda*<sup>10</sup> – to central agency level could be strengthened.

### *Monitoring off-grid connections poses specific challenges*

Both countries aim to increase off-grid connections in order to enable electricity access for those hardest to reach. In this context, it will be important to ensure robust monitoring of off-grid connections. However, monitoring is less straightforward in this context, and data quality can be compromised. In Kenya, the Rural Electrification Authority is responsible for installing mini-grids and stand-alone systems in isolated rural areas. We were told their connection data are not linked to the main KPLC database. However, plans for more integrated planning between the Rural Electrification Authority and the KPLC under the new strategy should also address the need for more integrated data collection and use (Kenyan Ministry of Energy, 2018<sup>[6]</sup>). In addition, stakeholders commented that the number of connections through stand-alone systems overall are not routinely measured (many are sold by private sector operators and a number enter the country illegally), and where they are measured, there is a risk of double counting (e.g. where households are already connected to the grid, but also purchase one [or several] stand-alone solar systems).

In Ethiopia, private sector providers are also increasingly moving into off-grid connections, posing similar challenges. Smaller donor-led projects are not always included in monitoring.<sup>11</sup> The ministry was optimistic

that new technologies, such as pay-as-you-go systems, would, with time, enable electronic tracking of off-grid connections.

### Box 3.2. Private sector engagement becomes critical to support complete, sustainable measurement of the SDGs whenever service provision depends on private firms

Over 100 public and private actors in the power sector in Kenya define its performance. This complex network includes government bodies (e.g. the Ministry of Energy and Petroleum, the Energy Regulatory Commission), national utilities (i.e. KenGen, Kenya Power and KeTRACO), off-grid players, independent power producers, banks, end users and development co-operation providers – all producing and storing results data in a fragmented manner.

In the process of establishing a common tracking framework in SDG areas where private sector operators play a substantial role in service delivery, such as in the energy access markets of Ethiopia and Kenya, active engagement with these private actors serves to ensure complete and sustainable measurement of results, benefiting both partner governments and providers.

Although the role of private operators in generating the most up-to-date data on electricity access will continue to grow in importance in the coming years, integrating these actors in common tracking frameworks presents challenges. Many of those operators do not prioritise the collection and management of relevant customer data linked to SDG indicators due to a lack of business incentives and resources, and data are usually treated under tight confidential policies due to their commercial nature.

Development co-operation financing of energy access programmes with on-field actors can generate incentives for establishing tracking systems that are aligned with common results frameworks (and the SDGs) across the sector. Equally important, working with emerging or mature private sector associations in the electricity sector, and with impact investment funds currently tracking the impact of their investments, can help establish business measurement standards to facilitate adoption of common tracking systems. As an example of progress in a difficult-to-measure subsector, the global association for the off-grid solar energy industry (GOGLA) has emerged as an anchor to develop a common framework and metrics that can help address the pervasive lack of data regarding off-grid solar energy access.

*The Multi-Tier Framework Survey, which provides more nuanced data on electricity access, has been administered in both Ethiopia and Kenya*

The World Bank's Multi-Tier Framework (MTF) energy access survey was administered in Ethiopia and Kenya in 2017. The MTF energy access survey was conducted in Ethiopia with a sample of 4 317 by the World Bank and the resulting Energy Access Diagnostic Report was published in 2018 (World Bank, ESMAP and SEforALL, 2018<sup>[20]</sup>). The government of Ethiopia used the results of the survey to develop the NEP and set annual NEP on-grid and off-grid connection targets.

In Kenya, the sample size for the MTF was more than 7 000 respondents including households, schools, health centres and public offices in both urban slums and isolated rural counties.<sup>12</sup> As noted above, results from the survey in Kenya have been used to set the baseline for the new national electrification strategy, and also to determine the required service levels for planning purposes (Kenyan Ministry of Energy, 2018<sup>[6]</sup>).

In both countries, the MTF survey was commissioned by the World Bank and has provided important and detailed baseline data for policy and planning, including gendered analysis of electricity access. However, as noted above, the survey is costly and time consuming to administer. In terms of follow-up monitoring,

the intention is that a shortened MTF module can be included in national surveys to enable ongoing monitoring against the baseline that is country led. However, during fieldwork, stakeholders did not mention of any concrete plans for the survey to be readministered by the government of either country.

*Measurement by providers tends to be project driven*

During the fieldwork in **Kenya**, providers acknowledged that their results data collection is largely project driven and they tend to focus on output data (number of connections or people connected) sourced directly from implementing partners. Where multiple donors invest in a single project, it was not clear how numbers of connections are “attributed” to different providers in a way which avoids double counting. It will be important to ensure that the new Kenya National Electrification Strategy, which is focused on attracting increased investment, also sets out a framework for joint monitoring.

The situation is similar in **Ethiopia**. For example, the results framework for the large new World Bank electrification project in Ethiopia (see above) includes indicators which will monitor the number of people provided with on- and off-grid access. Then at output level, disbursement-linked indicators will be used to monitor the number of households connected under the programme (on- and off-grid) (World Bank, 2018<sup>[11]</sup>). However, as noted above, there is not yet a sector-level results framework in place, nor a joint approach to monitoring. As such, there is a risk that data collection by the EEU becomes largely donor driven, where there is potential to build a country-owned, sector-wide, SDG-linked system for monitoring the proportion of the population with access to electricity.

*Data disaggregation needs further support*

Disaggregated data are needed to report against Indicator 7.1.1, in particular as regards urban/rural areas. Systems which enable subnational disaggregation, and disaggregation by urban/rural should therefore be supported.

Similarly, connection data are not disaggregated by sex in either country, though there are nascent efforts by the KPLC to monitor connections by female-headed households in Kenya. Electricity access and energy issues can affect men and women differently, and it is important to have data to monitor the extent to which female-headed households can access electricity. As noted above, several providers include sex disaggregation in their output indicators, which is essential, but this should also be accompanied by efforts to ensure government data systems are also collecting sex-disaggregated data.

*Visualising the results chain for energy access in Ethiopia and Kenya: Data against most of the indicators are missing*

Development co-operation providers need results information at different levels: for communication and accountability at the corporate level, and for guiding programming and to inform the dialogue with the partner government at the country level. They may use different data for different purposes.

Still, to be able to assess and communicate their contributions to the SDGs, providers will first require strengthened alignment of their own results frameworks to the SDGs that have been prioritised by the countries they work in. The infographics for Kenya and Ethiopia (Figure 3.1 and Figure 3.2) assess publicly available results data against the different levels of the results chain for development co-operation in support of electricity access (SDG 7.1.1) in both countries. The figures show that alignment is still limited and that data against many of the indicators collected by development co-operation providers are missing. The figures also show potential for developing a more co-ordinated approach at country level.

Figure 3.1. Kenya: Development co-operation in energy

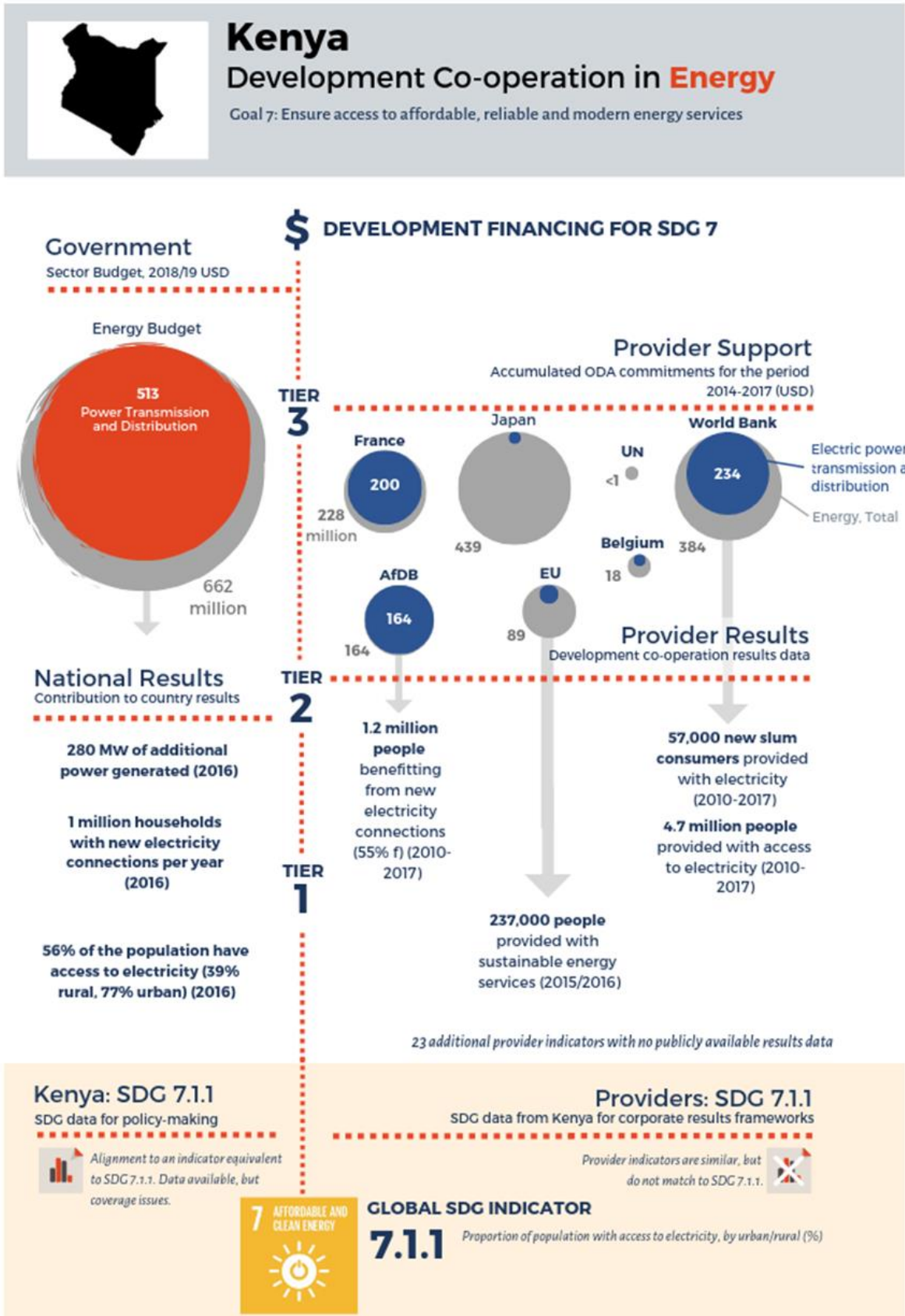
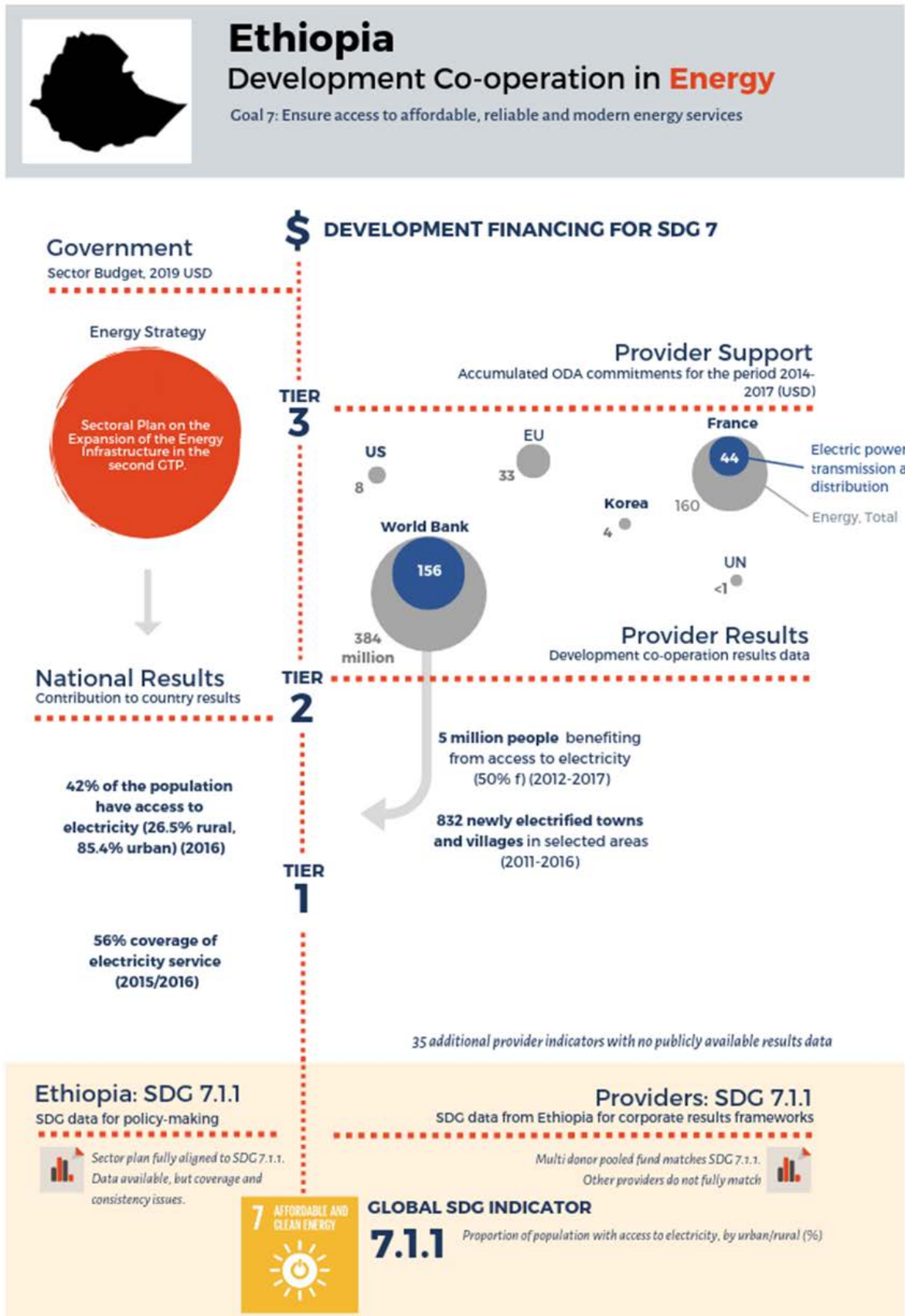


Figure 3.2. Ethiopia: Development co-operation in energy



## Conclusions

While global monitoring for SDG 7.1.1 is well established, when we zoom down to country level, many challenges, but also opportunities, can be identified at national level as well as in the context of development co-operation, which represents a substantial investment in both Ethiopia and Kenya.

This chapter showed that development co-operation providers are using a variety of indicators that are not adequately aligned to 7.1.1 nor to a national results framework, in particular at output level. The chapter also showed that no data are available to report progress against many of these indicators. Yet both partner country governments and providers need data to report to their constituencies. This makes alignment all the more important. On measurement, while survey data are an important source of information on access to electricity, a range of different measures are being used, and surveys alone will not enable results-based monitoring of progress towards the ambitious targets both countries have set for universal access.

In light of this, development partners could invest in supporting centralised data systems that are robust, SDG aligned and cover the different types of available connections – with a clear and agreed definition for electricity access. In addition, providers could make efforts to align to and use these data in their own results frameworks. Both countries have active sector co-ordination groups with government participation. These groups could focus more proactively on supporting a more joint approach to collection and analysis of data on electricity access, and advocating for national and sectoral results frameworks which are both aligned to Target SDG 7.1 and incorporate Indicator SDG 7.1.1.

As investment in electrification increases, and multiple actors including the private sector crowd into the off-grid market in both countries, it will be important to ensure that connection data are accurately measured and submitted to a central data collection point. The MTF for energy access is an important piece of the puzzle, providing more nuanced data on electricity access for use in policy and planning. However, it will have the greatest value if it is adopted by the governments of Ethiopia and Kenya and incorporated as an official data source, and monitored via periodic surveys. However, this has significant implications in terms of cost and effort.

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