AFRICAN UNION
AFREC ENERGY
African Energy Commission
Commission Africaine de l'Energie

ELECTRICITY GENERATION IN AFRICA FROM FOSSIL FUELS

2023 JULY
A SPECIAL REPORT
FROM AFREC

AFREC POLICY BRIEF 7

AFREC is a specialised energy agency of the African Union mandated to develop the African energy sector by coordinating, harmonising, protecting, conserving, developing, and promoting rational exploitation, commercialising, and integrating energy resources in Africa. It works with the AU Member States with a broad network of experts, Pan African Energy Stakeholders and partners in 55 African Union member states. It ensures all energy initiatives respond to the future development of the African energy sector in the pursuit to build "The Africa We Want".

Comments on the report are welcome and can be sent to:

African Energy Commission (AFREC)

02 Street Chenoua, PO791, Hydra, 16035, Algiers Algeria

Tel: +213 23 45 91 98
Fax: +213 23 45 92 00
Email: afrec@africa-union.org
web: www.au-afrec.org
Follow us on Social media

@ African Energy Commission of the African Union
@ AU_AFREC
@ African Energy Commission of the African Union
@ AU_AFREC

CONTENTS

EXECUTIVE SUMMARY

More than 600 million people are still without access to electricity in sub-Saharan Africa (World Bank), whilst the growing population is leading to an ever-increasing demand. As such, it is vital that countries especially in the developing world, act to expand and diversify their electricity generation mix.

To support this need, AFREC has prepared this special paper to highlight the role of fossil fuels in the current and future electricity generation mix in Africa , and to help policy makers in finding the optimum path in Africa's energy sector development, taking into consideration all the dimensions linked to energy production and consumption on the continent.

Based on a review from AFREC's available data , the importance of fossil fuels in African electricity generation is clear. In the regions with the highest access to electricity, the share of fossil fuels in the electricity generation mix is above 80%, and in the regions least access to electricity, the share of fossil fuels is rising significantly.

But the review of AFREC electricity data also highlights another challenge, which is the inability toaccurately monitor the electricity generation mix in the countries across Africa. Basically, relevant issues can be identified, encompassing data quality, data coverage and data dissemination. Some of these issues are related to specific difficulties when working with electricity data, and others are more general and relate to the state of energy statistics in Africa. Either way, data collection is of primary importance in enabling national administrations to improve their statistics on energy planning scenarios, as it is the only way to promote data-driven policy making, due to various reporting obligations which are already in place.

Countries therefore need to support their energy statisticians and engage with the work performed by AFREC and other regional and international organizations to continuously increase their capacity and provide timely, more complete and more accurate energy statistics.

M. Rashid Ali Abdallah
Executive Director
African Energy Commission (AFREC)

INTRODUCTION

The most robust energy policies are based on a comprehensive understanding of the current situation upon which an assessment of possible actions and of their impact can be made and evaluated. It is a fact that the best assessment needs comprehensive energy data, indeed timely, detailed. It obvious thatreliable energy data constitutes the foundation for any sound energy policy.

This report is the seventh in a series of reports that were produced in 2021 and 2022 to shed light on the energy situation in Africa, using data collected by AFREC and AU member states.The reports aim to enhance understanding on specific fuels, their production processes, trade and use, while also serving as a framework instrument for policy makers across all African countries. This report focuses on the available data for electricity generation from fossil fuel.

Section 1 of the report explores the current state of electricity generation from fossil fuels. It presents the trends that can be identified from the AFREC data provided by countries, and discusses various challenges encountered when working with the data.

Section 2 of the report explores how data on electricity production can be improved. It covers myriad reasons why accurate electricity statistics are vital, and the inherent difficulties associated with gathering the data. Finally, it provides some references for useful methodological guidelines aimed at improving the future data collection for electricity generation. The report is largely based on AFREC's data provided by AU member countries and is made available to all for free in the Africa Energy Information System (AEIS), which currently covers the period from 2000 to 2018.

Though there are some inconsistencies and gaps in the data, Africa's energy data is still developing, and with the support of AFREC, there has been a material improvement in the quality and reliability of the data. Therefore, it is only through positive, productive use of data and support provided to statisticians, that energy statistics can help improve to create effective policies.

AFREC's Energy Statistics

In line with its mandate, AFREC has established and maintained the African Energy Information System (AEIS) since 2012, which allows collection and validation of African country e nergy statistics through the use of questionnaires. AFREC disseminates these statistics data through publications and datasets, which are available on AFREC website & visualization Dashboard at www.au-afrec.org .

In 2019, AFREC assessed the current AEIS and came up with a holistic improvement plan which attempted to address all the identified challenges.

These include: the information technology infrastructure requirements, procedural mechanisms, information flow processing, human capacity, technology architecture, programming and equipment,required funding, enhancement and expansionof the energy data collection into more sectors and indicators, thus making the AEIS a more integrated and comprehensive system.

In 2020 with support from the African Development Bank (AfDB), the AEIS was revamped to be fully aligned with international standards and best practices in order to guide the African energy sector transformation, investment and decision making. The work included:

1. Improving existing questionnaires and developing new ones with a focus on energy efficiency for all sectors, energy prices and taxes, CO2 emissions, SDG7 tracking, installed capacity of power plants, amongst others.
2. Improving data collection submission mechanisms by adopting an online data collection system.
3. Developing a data visualization tool for data dissemination and reporting.
4. Capacity building for Member States through regional and national workshops, including training of 40 selected National Focal Points (NFPs) as trainers of other NFP's in the countries and the region.

In 2021, the new AEIS came into operation, enabling data submission through an online data collection system and the implementation and deployment of the data visualization tool.

The new AEIS will enhance the quality of the energy data collected by AFREC and increase the coverage scope of AEIS, to include more energy indicators (CO2 emission, SDG tracking, data visualization tools etc.) thus ensuring AFREC becomes the main source and central hub for quality, credible and reliable energy statistics for Africa.

These developments will however take time to result in comprehensive data being available within all African countries. As such and also as a result of challenges presented by the impact of COVID-19, to process data collection, validation and dissemination at national level, in 2021 AFREC validated the energy balance from only 13 African countries. The data used in this report therefore, whilst providing a very comprehensive overview of electricity generation from fossil fuels in Africa, often only goes up to 2017 or 2018. When all countries are able to provide complete and timely data, the information available to inform policy and understand energy use in Africa, will increase significantly.

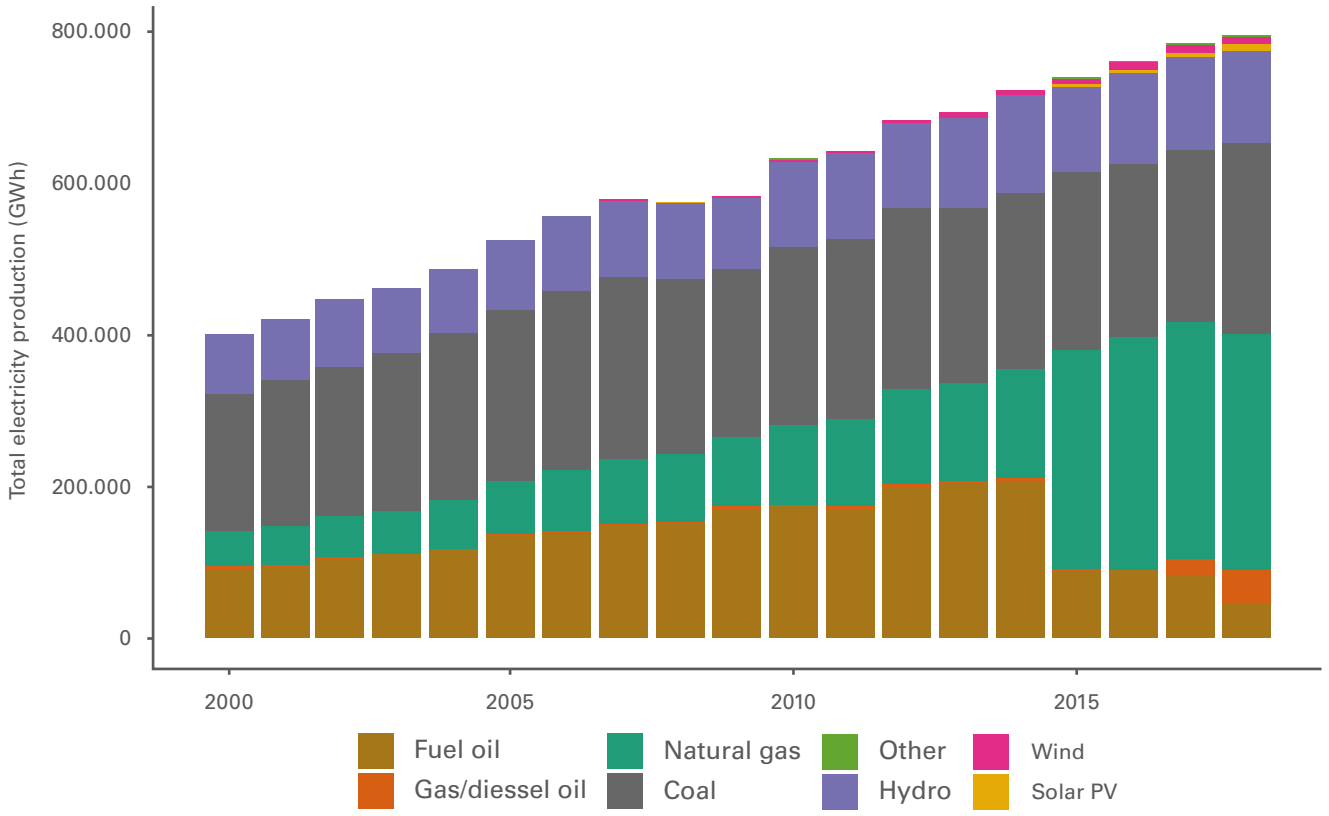
SECTION 1. ELECTRICITY GENERATION DATA IN AFRICA

1.1 TRENDS IN ELECTRICITY GENERATION

Overall situation

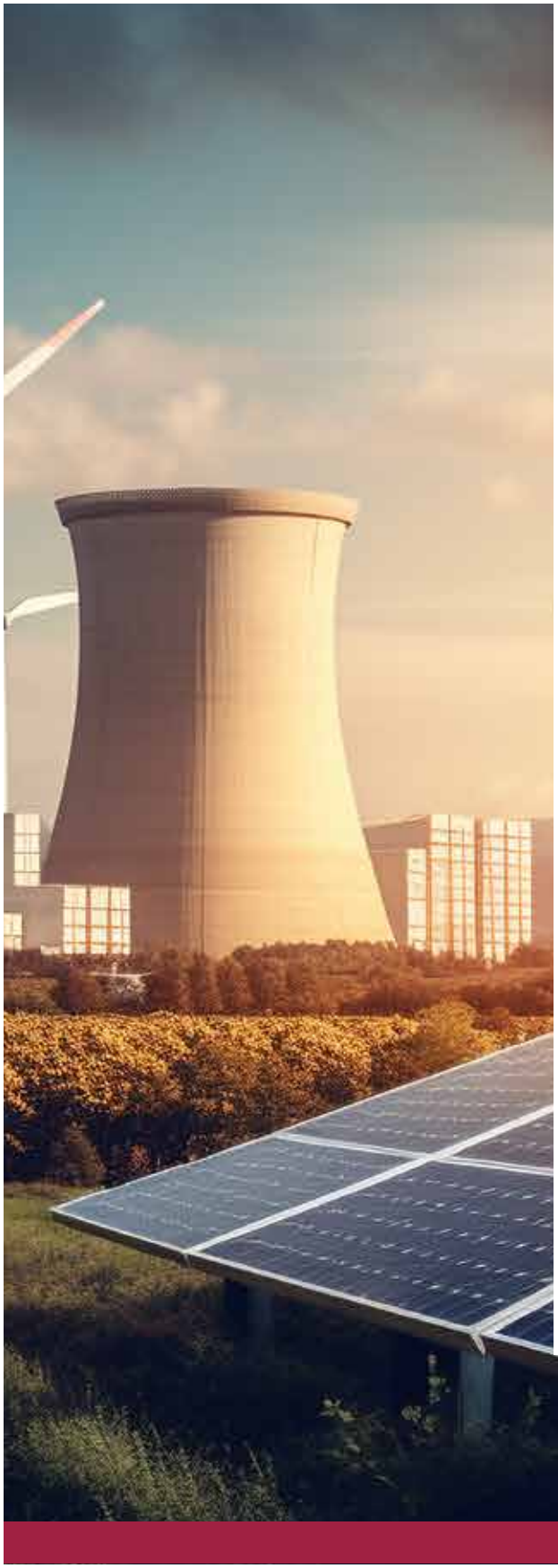
According to the latest AFREC energy statistics, total electricity generation in Africa reached around 866 terawatt hours in 2018, up from 671 terawatt hours in 2010 (Figure 1), out of which natural gas represented 310 TWh, followed by coal at 251 TWh, then hydroelectricity at 122 TWh and oil products 92 TWh. Wind electricity and solar PV represented 11 and 8 TWh respectively. Overall, fossil fuels have accounted for around 80% of the electricity mix in Africa since 2000, despite the notable growth in generation from renewable sources.

FIGURE 1 : TOTAL ELECTRICITY GENERATION BY SOURCE IN AFRICA[1]



Data source: AFREC

[1] Please refer to the Methodology section for information on the coverage of different sources of electricity



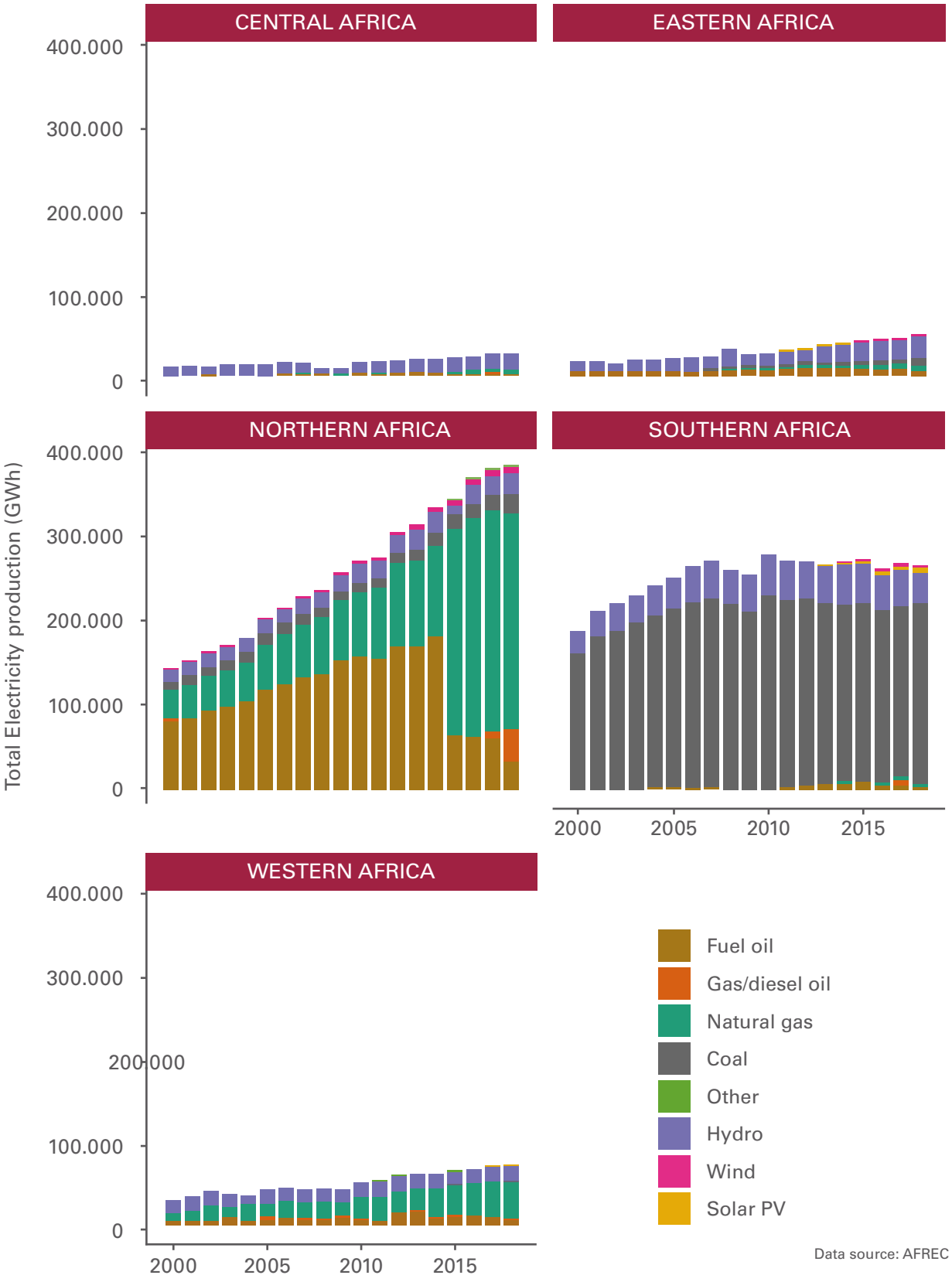
REGIONAL DIFFERENCES

It is important to note that the figures above mask the very different realities across the continent, as can be seen in Figure 2. Firstly, more than 80% of electricity production occurs in Northern and Southern Africa. In Southern Africa, the electricity mix is dominated by coal, while coal-based electricity is very limited in other regions. In Northern Africa, most of t he electricity is produced from fuel oil and natural gas, however, this data contains a significant break in the series between 2014 and 2015, which makes analysis difficult. In Central and Eastern Africa, the relatively small electricity production is dominated by hydroelectricity, which is present in all regions. In Western Africa, the electricity production is dominated by natural gas.

Figure 3 highlights the relative importance of fossil fuels in the mix of each region. Northern Africa has the most fossil-based electricity mix, followed closely by Southern and Western Africa. In the latter, as in Central and Eastern Africa, it is important to recognize that whilst the share of fossil fuel is not yet as high, it is in an upward trajectory, which if continued (significantly so if additional fuels and infrastructure can be developed) could see these countries one day reaching a similar mix to Northern and Southern Africa.

One factor that could explain the current difference is the higher share of hydro, but this share may reduce if the overall electricity production increases to meet the demand - especially given limitations on the expansion of hydropower. Increasingly it will be the growth in other renewables such as wind and solar PV that will potentially reduce the overall growth in fossil fuel generation. The share of fossil fuels in electricity generation in 2017 (last year for which data is available for every single country) is shown in Figure 4. Again, a clear distinction can be made between Northern and Southern Africa, and the other regions. The only countries showing a very low share of fossil fuels are located in Central and Eastern Africa, where access to fossil fuels is far more limited.

FIGURE 2 : ELECTRICITY PRODUCTION BY SOURCE IN AFRICAN REGIONS



Data source: AFREC

FIGURE 3 : FOSSIL FUELS AND HYDRO SHARES IN AFRICAN REGIONS

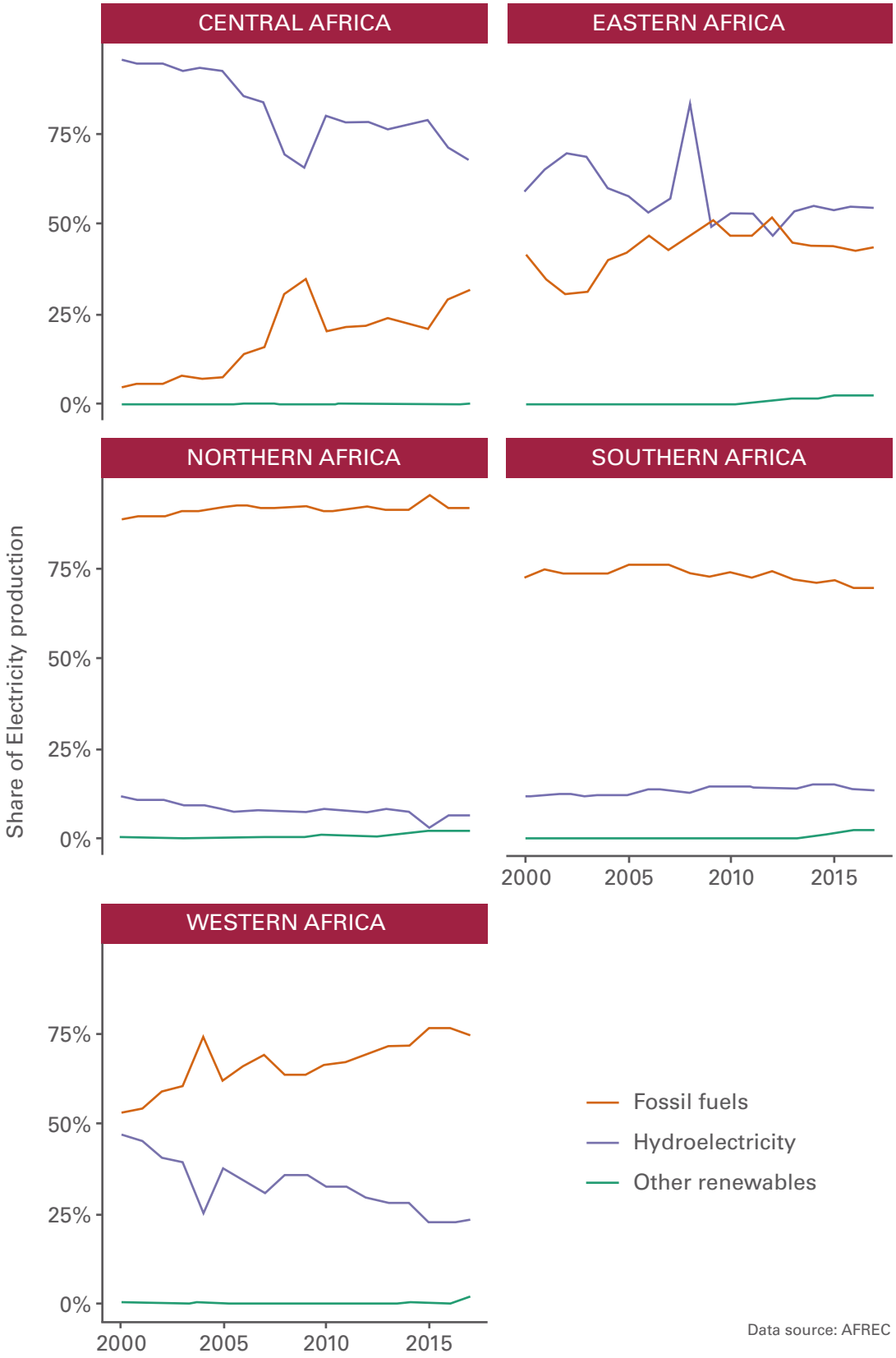
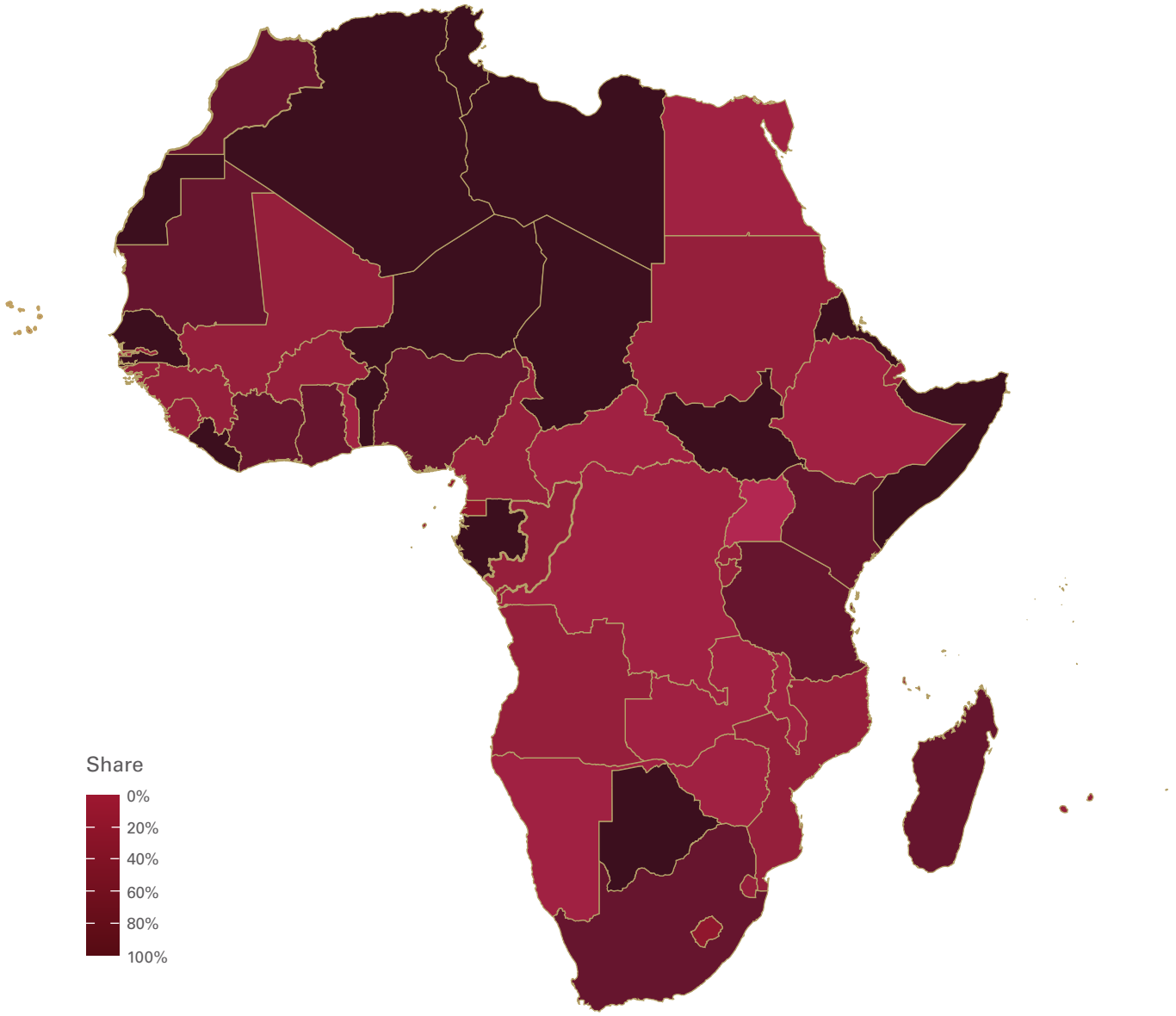


FIGURE 4 : SHARE OF FOSSIL FUELS IN ELECTRICITY GENERATION, 2017

TRENDS OVER TIME

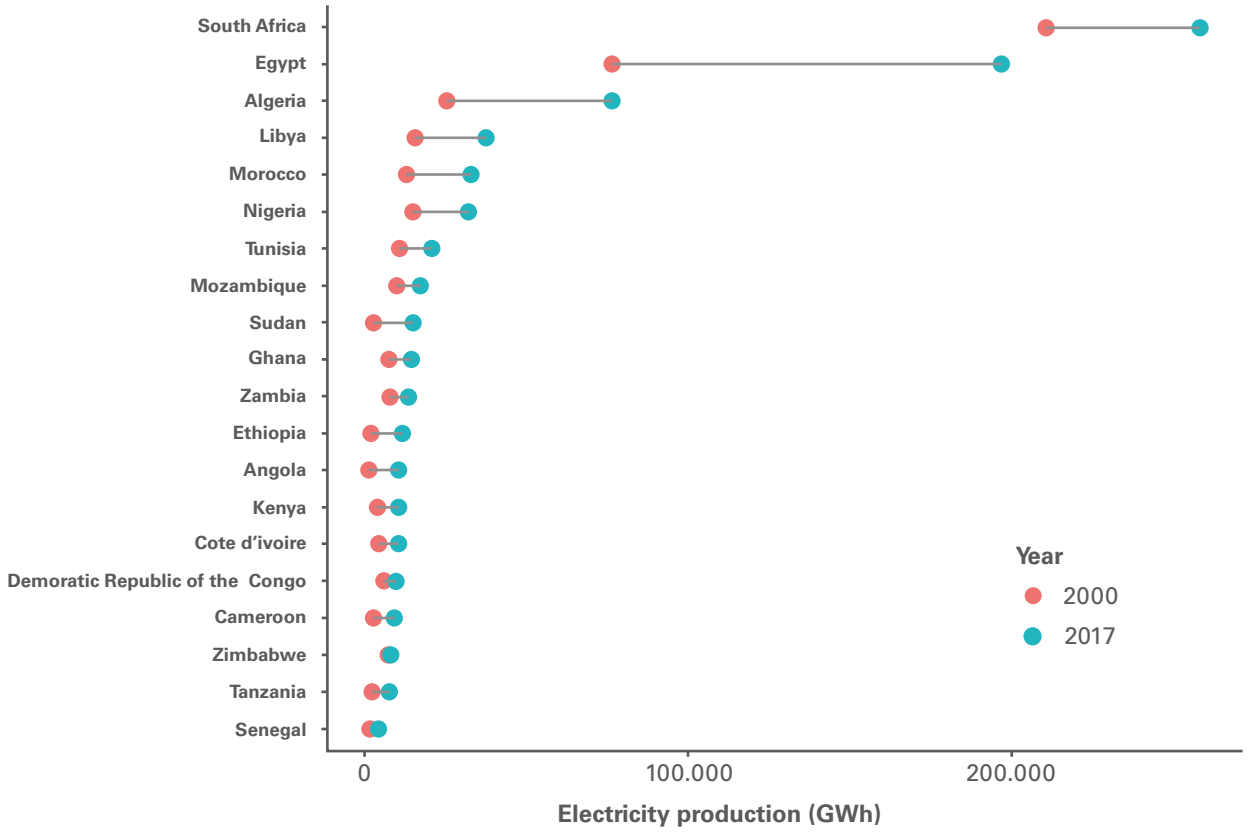
Differences between regions can also be observed across time as shown in Figure 5. The countries that had the highest electricity production in 2017 were already the largest producers in 2000, but the spread has increased considerably. The biggest electricity producer in 2017 remains South Africa, followed by North African countries Egypt, Algeria, Libya, Morocco and Tunisia, along with Nigeria.

Figure 6 shows the top 10 countries by share of fuel for electricity generation for the four main fossil fuels. South Africa remains the most coal-based electricity mix in 2017, as was already the case in 2000. Eswatini and Kenya showed big increases of their coal share over the period, while Morocco, Niger and Mauritius showed significant drops.



Data source: AFREC

FIGURE 5 : COUNTRIES WITH THE HIGHEST ELECTRICITY PRODUCTION IN 2017, VS 2000



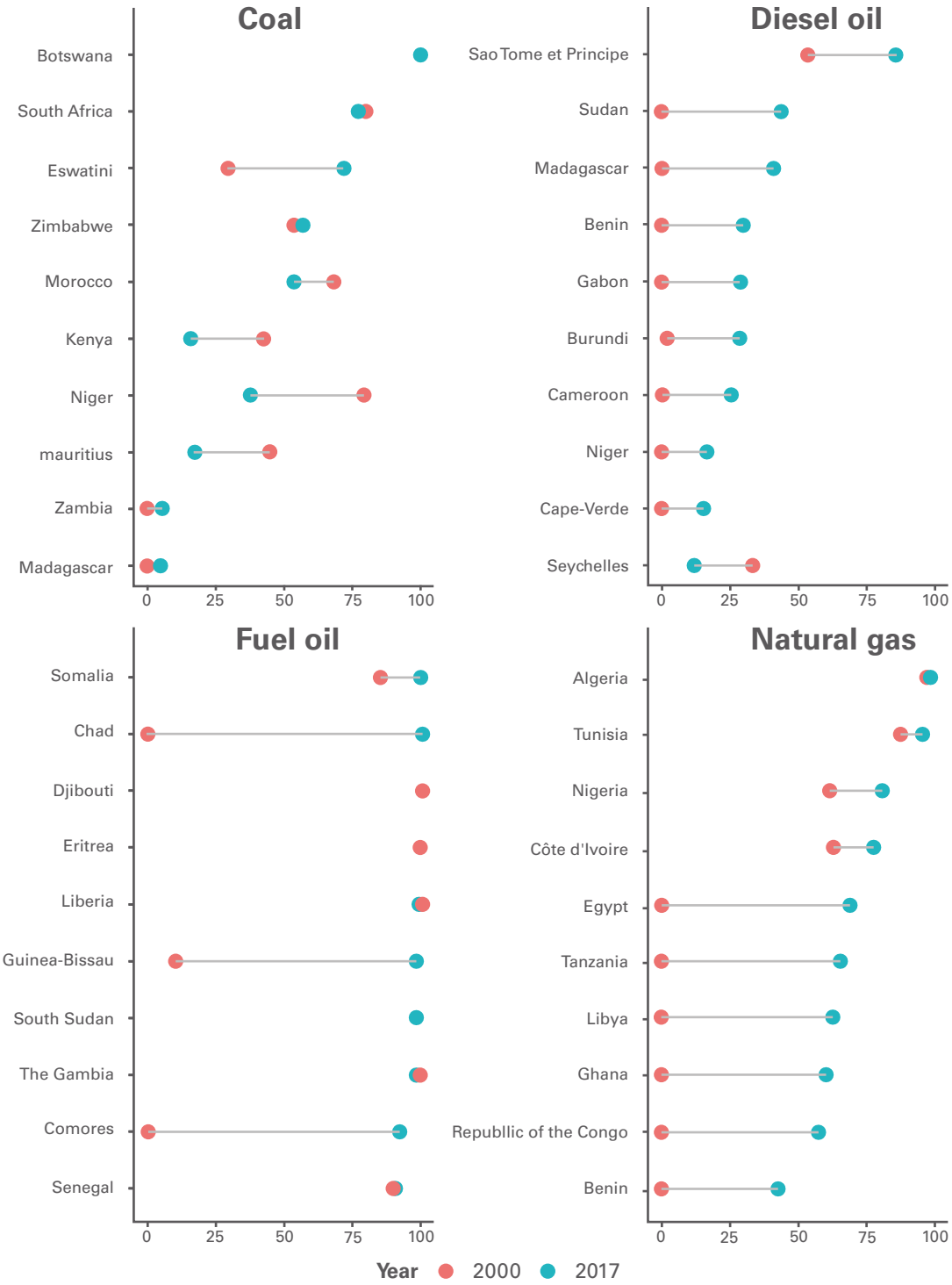
Data source: AFREC

Many countries show dramatic increases in their natural gas shares between 2000 and 2017, for instance Egypt, Tanzania, Libya, Ghana, Republic of the Congo and Benin, where it now amounts to more than 50% of the total electricity, while they did not report any consumption in 2000. Algeria, Tunisia, Nigeria and Côte d'Ivoire however, showed the same high reliance on natural gas for the entire period.

The reported diesel shares in electricity lso started from 0 and increased dramatically for many countries such as Botswana, Zimbabwe, Sudan and Madagascar. Sao Tome and Principe were already reporting an electricity mix based on more than 50% diesel in 2000, and this increased to 75%.

Electricity was almost totally sourced from fuel oil since 2000 for Somalia, Djibouti, Eritrea, Liberia and many others, but for the other countries the trends are more erratic, with a strong increase seen in Chad, Guinea Bissau and Comoros.

FIGURE 6 : COUNTRIES WITH THE HIGHEST SHARE OF SPECIFIC FOSSIL FUELS[2] IN POWER GENERATION IN 2017 VS 2000



Data source: AFREC

[2] Please refer to the Methodology section

1.2. METHODOLOGY

All the data used in the charts above was based on AFREC energy statistics and was retrieved from theenergy browser[3] and the energy balance[4] . To prepare these charts, the following operations had to be performed.

Time coverage

At the time of writing the report, the 2019 data was still very incomplete and therefore all figures showdata up to 2018 only.

Electricity by fuel

The output of electricity by source is available only in the energy browser, however the breakdown onlycovers:

1. Electricity production from fuel oil.
2. Electricity production from gas/diesel oil.
3. Electricity production from hydro.
4. Electricity production from natural gas.
5. Electricity production from solar PV.
6. Electricity production from wind.

Total electricity output is not reported in the electricity browser, therefore it had to be retrieved from the energy balance.The total electricity output by country and by year was converted to the GWh, thus allowing the electricity production from coal to be calculated as the difference between the total and the sum of the available breakdown. In doing so, it was assumed that the electricity production form other fossil fuels were negligible, and the remaining production from combustibles, was allocated to coal.

The main issue with this calculation is that some countries are reporting crude oil inputs to electricity production (Ghana in particular). back calculation of electricity production from coal is therefore imperfect and it would be better to have the figure included in the energy browser.

Additionally, the category 'electricity production from other sources' is not clearly defined, and it was assumed that it includes all of the production from biofuels (where inputs are reported in the energy balance), but it may also include geothermal electricity production in countries that exploit this resource, such as Kenya. Recommendations related to data dissemination and transparency are provided in the next section.

Corrections applied

Some issues in the reported data were identified in the preparation of the above analysis. To limit the impact of data issues on the analysis, some corrections were applied on the data retrieved. Potential solutions to support countries in their reporting are discussed in the next section.

In a few instances, figures had to be manually corrected. This was the case for:

1. Morocco in 2014, where the electricity generation from all sources was 10 times greater than for the rest of the series.

2. Mali in 2015, where electricity generation was about 100 times greater than the rest of theseries.

[3] https://au-afrec.org/en/energy-browser

[4] https://au-afrec.org/en/energy-balances

3. South Africa's electricity generation rom fuel oil in 2000, which had to be corrected.
4. Zimbabwe's electricity generation from gas diesel in 2017, which was 100 times more than therest of the series.
5. Botswana for the entire time series, where the electricity generation from coal was reported under fuel oil.
6. Uganda reflected the missing electricity generation from biomass which was allocated to other sources.

Quality insurance

To provide a deeper analysis of the electricity production from fossil fuels, an attempt was made to calculate conversion efficiencies. The efficiency of conversion is defined as:

$$\text{electrical efficiency}_{\text{fuel}} = \frac{\text{input}_{\text{fuel}}}{\text{electricity output}_{\text{fuel}}}$$

It is a commonly used measure that relates the inputs and outputs of electricity generation. It should not exceed 100% (because it would mean that energy was gained in the process) and more precisely, for common combustible fuels, it should range between 15% and 55%, depending mainly on fuel type and plant technologies.

Figure 7 shows the results by country and fuel, and given the ranges, it highlights that there are data issues for some countries, with efficiencies sometimes way below or above expected range, and in some instances, even above the physical maximum of 100%.

The difficulty is to assess whether the issue relates to the fuel input or to the electricity output. In the first case, the fuel input might be under-reported which would for instance mean that greenhouse gas (GHG) emissions may be under-reported as well. In the latter case, the electricity output might be over reported, which also has consequences when assessing the total electricity supply to the grid. It can be observed that the spread of the data is more important for fuel oil and gas/diesel, which could be explained by the fact that these fuels are often used in smaller, remote units, where data collection might be more complicated.

FIGURE 7 : CALCULATED EFFICIENCIES IN ELECTRICITY PRODUCTION FROM FOSSIL FUELS[5] BY COUNTRY IN 2017

Data source: AFREC

[5] Please refer to the Methodology section

SECTION 2. HOW TO IMPROVE ELECTRICITY GENERATION DATA IN AFRICA

This section first reviews the importance of electricity statistics and the way in which the specificities of this data may prove challenging. It then goes on to provide possible solutions to improving the accuracyand completeness of the data collected.

2.1. Importance of collecting and disseminating electricity statistics

There are multiple reasons why there is a critical need for countries and regional organisations to provide better electricity generation statistics, both in terms of coverage and data quality. These are outlined below.

Data driven policies

As discussed above, electricity production is growing at a rapid pace in many African countries with theaim to keep up with the growing electricity demand. This is coupled with an upward trend in the share of fossil fuels that can be observed in many of the countries which are not yet completely electrified. As a consequence, monitoring the electricity generation mix has never been more important, in order to make the decisions that will ensure sustainable access to electricity for all Africans. In thiscontext, the other additional information should also be collected, such as the quantity and prices of the fuels used for electricity generation, as recent events have shown that energy crises are still very possible.

International reporting obligations

Electricity generation statistics are a key element of energy data reporting frameworks, such the energy questionnaire from AFREC, but also from the UN, IEA, and IRENA.

important part of the UN SDGs, in particular the 7th goal is about universal clean energy access, which also includes electricity access. Fuel inputs data is also of great importance, as it is used in the National Inventory Report (NIR) and Biennale Update Report (BUR) to the United Nations Framework Convention for Climate Change (UNFCCC) to calculate the GHG emissions from fossil fuel combustion.

2.2. Difficulties specific to the data collection of electricity generation statistics

Although a large part of electricity production takes place within large utilities which should keep proper records of their production and sales of electricity compared to for instance solid biofuels production, a minor portion of the production takes place on a smaller scale and due to its potentially diverse and disconnected nature, electricity statistics can present various challenges, some of which are briefly described below with possible solutions presented in the subsequent section.

Power plant data

A large share of electricity production occurs in large scale power plants which are connected to the grid. National administrations may encounter the following difficulties when trying to receive information from such plants:

1. **Confidentiality** : Plant owners may be reluctant to share information if they worry that the data may be used by competitors or it might be shared with other ministries, for example finance ministries.

2. **Timing** : the data collection period may be misaligned with the period used in the plant accounting (e.g. fiscal or calendar year).

Small generators and off-grid generation

In Africa, many self-standing (Standalone) power units operate and provide electricity to single users or to mini grids, rather than the national grid. This can make the work of data collection difficult for the following reasons:

1. **Coverage** : the number of single units can be significant and a full register of all operating plants may not be known. Where all plants are known, full coverage may not be possible, and a stratified sampling may be required. Due to the multiple types of small generation units, thecollection will typically take place through different surveys, for instance:

- Autoproducers in the industry will be covered via industrial surveys.
- Residential units and mini grids will be covered via household surveys.

2. **Data quality** :it is likely to be more difficult to gather properly data from small units, because the system, although small, can still be complex (e.g. multi-fuel units) and the users may not be qualified to fill the survey correctly.

Electricity Trade

Many countries across Africa and in fact globally, trade electricity with neighboring countries and it is essential that power produced and exported is known, as it is not consumed in the country. Having ooddata on imports is also essential as it is power that is consumed. This data might not always be available

2.3. Recommendations to improve electricity generation data collection

Cooperation

In many countries a number of organisations may need to be involved in the compilation of electricity data - not just the ministry responsible for energy data. Energy regulators may hold data on capacity, the NSI (National Statistics Institute) may have trade data and a petroleum regulator or ministry may hold information on fuel used (collected to understand import needs). Additionally, some business will hold comprehensive data, such as the transmission network operator, which will know the amounts of electricity fed into the network. In many countries, production is in the hands of large utilities which are publicly held, therefore policy makers should have the means to impose transparency in electricity production - losses as well as sales. As such, and also due to the already noted need for high quality electricity data, it is vital that cooperation is fostered amongst all entities with a key role in electricity in order to produce the best overall electricity statistics.

Use of alternative data sources

Before surveys are considered, administrative sources should be used to collect information on electricity generation in order to avoid some of the costs associated with running surveys.

Administrative sources include:

1. Publicly controlled sources which cover data collected by government agencies to monitor activities, enable regulatory activities and assess outcomes of policies and initiatives.
2. Privately controlled sources such as trade associations.

In the case of electricity generation, some examples of such sources include:

1. Power sector regulators.
2. Planning authorities (electrical capacities).
3. Government agencies issuing construction permits.
4. Tax records (sales taxes and duties).

Survey preparation

As explained above, multiple surveys are often required to get the full picture of electricity generation. Itis therefore important that these surveys are harmonized to get all of the required information in aconsistent manner. Among the most crucial aspects that need to be collected for each generating unit are:

1. The annual production (in kWh).
2. The nameplate capacity (in kW).
3. The operational status (e.g. operating, under maintenance, mothballed, offline).

4. The fuel input over the year (in either energy units e.g. TJ or most likely in physical units e.g.tonnes of fuel oil for each product burnt and the respective conversion factors i.e. calorific values.

Data auditing / quality insurance

Ensuring data quality is of primary importance and should be implemented at every step of the process.The main categories of data validation are:

1. year-by-year checking where each data-point is evaluated in relation to others of the same year and

2. time series checking where data-points are observed across the entire time span required, and potentially in comparison with the same data points from previous data collection exercises.

In terms of year by year checking, two main aspects are to be evaluated:

3. The arithmetic consistency e.g:

- The data is in the correct units for example MWh or GWh.
- The total items e.g. total hydro must be equal to the sum of the breakdown items e.g. type of hydro plants, with the same true for total supply, industry totals, etc.

4. **The physical consistency** : for instance, in the case of electricity generation:

- **Electricity transformation efficiency** : the ratio between the total electricity output and the fuels used for this production must firstly be below 100% and secondly within a reasonable threshold determined by the fuel type and the type of plant (electricity only, CHP etc.).
- **Load factor** : The ratio between the reported electricity production and the theoretical maximal production if the reported capacity was operated fully for the entire year must again be firstly below 100% and secondly within reasonable range accounting for plant type etc.
- Efficiencies and load factors are also unlikely to change year-on-year unless there have been significant issues at the generation plant, so comparing the current estimates with data for prior years, can also help highlight data issues which can be discussed with data providers.

In terms of time series checking, aspects that should be considered include:

- **Trends** : Each time series should be verified in its entirety. The most efficient way to do so is to combine a visualisation to appreciate the general trends and calculations of the year-on year variation. Any break in the series such as new data, data series ending, strong increases or falls, which might indicate a data issue, should be questioned.
- **Revisions** : are a common and necessary feature of energy statistics and as they will, in most cases, improve the data, they should be used. For example, an initial estimate might be provided by a business, but it could be that later data from smaller plants it runs are available, so a revised and more accurate data set can be provided. When revision to the final data is provided, it should be compared to the previously reported data. Again, this is best done by checking it both visually, to measure the effect of the revision on the general trend, and by calculation, to assess the magnitude of the revision relative to the previous figure. Any re-submission of the data should be compared to the previous submission as well as to the final data submitted in the last cycle. It is also important to look at the direction of revisions. If data is always revised up, it indicates some plants are missing in the initial data, which can perhaps be initially estimated for, to improve the quality of the early data.
- **Context** : This part cannot be automated and requires experienced energy statisticians. It is vital to review the identified trend in light of the general energy context, such as policy effect e.g. subsidies for solar PV, efficiency of appliances etc., economical effect (GDP growth), and weather effect e.g. Hydro plant availability, energy demand for heating and cooling.

- Electricity in the overall energy balance. If an overall energy balance is produced, it is very useful to look at the shares of electricity, in energy use and how they compare with prior years. Additionally, the ratio of the statistical difference to the total consumption and total supply, must be within an acceptable range. Deviations should be justified.

Data dissemination

As discussed above, collecting good quality data is crucial, but disseminating it is just as important. Datathat is not available has no chance of being used for data-driven policy making. Moreover, good data dissemination highlights the work done in statistical offices and can be used to justify budget needs for example on the needs for expanding data collection. Two main aspects should be considered with regards to data dissemination:

1. **Coverage** : As much of the data as possible should be made available, whilst respecting the confidentiality of company data. If data is incomplete, it can still be published, but qualifiers and annotations should be used to explain the gaps.

2. **Format** : If data is presented in a tabular format, it should be clear and easy to read and understand. Additionally, different users may have specific needs:

- Non-technical users may be better informed with prepared charts that can easily be accessed and copied.

- Analysts may need direct access to the source data - preferably provided via flat data file or an application programming interface (API). These applications are now standard and if they are properly prepared, can greatly facilitate analytical work.

- All published data should be accompanied by sufficient meta data to properly understand and use the data provided.

International support

1. **Methodology** : International organisations have been providing support to enhance data collection for a long time. International guidance, such as the International Recommendations for energy statistics[6] as well as other international material and platforms, can be of use in simplifying the work of national administrations.

2. **Training and capacity building :** AFREC is developing the ability of providing training across Africa,through its 'Train the Trainers' programme and continues to support national and regional training workshops. Additionally, the United Nations Statistics Division (UNSD), the International Energy Agency (IEA), the International Renewable Energy Agency (IRENA) and regional and international organizations, run regular and ad-hoc capacity-building events, some in countries, some at their headquarters and more and more, remotely. These are ideal occasions for national administrations to bring their new staff up-to-speed on the different aspects of energy statistics, as well as follow up with new international reporting obligations.

3. **Country practices and associated databases** : To enhance the exchange of best practices among countries, the UN[7] maintains a country practices database ,which includes information provided by the national administrations of countries including from some African countries, namely Mauritius, Rwanda, and South Sudan.These examples can provide useful information on real world data collection. Some national administrations are also publishing their experiences as part of their statistical dissemination plan.

[6] https://unstats.un.org/unsd/energystats/methodology/ires/

[7] https://unstats.un.org/unsd/energystats/country-practice/

ACKNOWLEDGEMENTS

The type of analysis presented in this report is only possible through the work of energy statisticians in various countries and the support given to them to produce comprehensive energy statistics. Robust and comprehensive data is essential to understand the situation and help develop the best polices. Whilst supply data is generally widely available, all countries need to develop more comprehensive data on energy demand

This report has been produced to help African countries understand the situation, which may assist them in taking appropriate action. It is a summary report and more detailed analysis will be needed at individual country level. The report utilized freely available data and sources to assist country level analysis.

The report uses AFREC's Africa Energy Database as the main source of information for Africa. This reflects the work underway across African countries to enhance their energy data. This work needs to continue under AFREC's African Energy Information System (AEIS) programme and be supported by overnments to ensure that all African countries have the data they need to plan and respond to national and international events.

Comments on the report are welcome and can be sent to : afrec@africa-union.org

This report has been produced for AFREC by My Loïc Coënt as part of a series of reports coordinated by Mr. Duncan Millard (duncan.millard68@gmail.com), International energy adviser, and Mr. Yagouba Traore, Head of Policy Strategy and Support at AFREC. Contributions were made from, Mr Abdoulaye Oueddo, Senior Policy Officer at AFREC.

Sincere thanks go to the statisticians in AU member states working to produce the energy data that this report is based on, as well as colleagues across African institutions, for their comments and inputs.

African Energy Commission (AFREC)

02 Street Chenoua, PO791, Hydra, 16035, Algiers Algeria

Tel: +213 23 45 91 98

Fax: +213 23 45 92 00

Email: afrec@africa-union.org

web: www.au-afrec.org

Follow us on Social media

@ African Energy Commission of the African Union
@ AU_AFREC
@ African Energy Commission of the African Union
@ AU_AFREC

REFERENCES

AFREC. (2022). Energy Balance. Retrieved from African Energy Commission: https://au-afrec.org/en/energy-browser

AFREC. (2022). Energy Statistics. Retrieved from African Energy Commission: https://au-afrec.org/en/energy-balances

AFRICAN UNION

AFREC ENERGY

African Energy Commission

Commission Africaine de l'Energie