COUNTRY PRACTICE IN ENERGY STATISTICS

Topic/Statistics: ELECTRICITY GENERATION

Institution/Organization: NISR: National institute of Statistics of Rwanda

Country: RWANDA

Date: 29/03/2012

CONTENTS

Abstract

Write a short abstract of the statistics, and try to limit it to one page. The purpose of the abstract is to give the reader a general overview of the statistics/topic. It should therefore include a brief overview of the background and the purpose of the statistics, the population, the sample (if relevant), the main data sources, and the main users of the statistics. The abstract should also mention what is the most important contribution or issue addressed in the country practice (e.g. the practice deals with challenges of using administrative data, using of estimation, quality control, etc.). If there are other elements that are considered important, please feel free to include them in the abstract.

Keep in mind that all relevant aspects of the statistical production will be covered in more detail under the different chapters in the template. Therefore, the abstract should be short and focused on the key elements. What the most important elements are can vary from statistics to statistics, but as a help to write an abstract you can use the table below. The table can either replace a text or can be filled out in addition to writing a short text.

Key elements	
Name of the statistics	Transmission and distribution network, Energy Imports, Energy exports,
Background and purpose of the statistics	
Population, sample and data sources	EWSA (Energy Water and Sanitation Authority), RURA (Rwanda Utilities and Regulatory Agency)
Main users	Researchers, Public Administration, Investors, International and Regional organizations
Important contribution or issue addressed	
Other remarks	

1. General information

1.1. Name of the statistics/topic

The statistics/topic could either be a specific energy statistics (e.g. electricity production) or a topic within energy statistics (e.g. energy balances). For more information, please see Section III of the Instructions.

ELECTRICITY GENERATION

1.2. History and purpose

State when the statistics were first published.

Not relevant.

Describe briefly the main purpose of producing the statistics and why it is relevant.

Electricity Generation Statistics play an important role in business and investment in a country. They help businessman to plan production and where he can install his firm according to the availability of electricity facilities. The energy cost, availability frequency and the quantity of the provided electrical power are important information for an investor. These statistics are also used in the compilation of national accounts. Indeed different energy policies of the government are based on these statistics.

1.3. Reference period

State the time period the data are collected for.

On quarterly basis

1.4. Frequency

Specify how often the statistics are disseminated (e.g. annually, monthly, quarterly, etc.). If the statistics are not produced at regular intervals, state at what times they have been produced in the past and the main reasons behind the irregularities.

The electricity generation statistics are collected on quarterly basis for national accounts purposes and also disseminated on annual basis.

1.5. Dissemination

Describe how the statistics are published (e.g. printed publications, online publications, online databases, etc.). If applicable, include the web address to the main website of the statistics.

Online database, printed publications

1.6. Regional level

State the lowest geographical level (e.g. administrative regions, municipalities, etc.) for which the statistics are made available to the public.

Cell level wherever internet network can be accessed.

1.7. Main users

Identify the key users of the data and the main applications. Include both internal and external users, and if possible try to distinguish between end users and others.

The main users are National accountants, Researchers, Government in making policies on energy, International and regional organizations.

1.8. Responsible authority

Write the name of the institution and department/office with the main responsibility for disseminating the statistics (e.g.: Statistics Norway, Department of Economics, Energy and the Environment).

National Institute of Statistics of Rwanda (NISR), Department of Economic Statistics

1.9. Legal basis and legally binding commitments

State the national legal basis for the data collection. Include a complete reference to the constitutional basis, and web address to an electronic version (e.g.: The Statistics Act of 16 June 1989 No. 54, §§2-2 and 2-3, http://www.ssb.no/english/about_ssb/statlaw/forskrift_en.html).

The National Statistical System of Rwanda as defined by Article 11 of the Organic Law No. 01/2005 dated 14/02/2005 on the Organization of Statistical Activities in Rwanda. The web reference to the constitutional basis is: http://statistics.gov.rw/images/PDF/loi%20insr%282%29.pdf

If the data collection is not based on a legal basis, give a short description of other agreements or volunteer arrangements.

Not applicable

If applicable, give reference to national and international commitments that are legally binding (e.g. EU statistical legal acts).

Not applicable

1.10. Resource requirements

Specify how the production of the statistics is financed (e.g. over the ordinary budget, project based support, financial support from other institutions or organization). If applicable, state the contracting entity (e.g.: Ministry, EU Commission, and OECD). A contracting entity is any entity which is ordering a survey or the compilation of a statistics, and paying for it

The production of the statistics is financed by the ordinary budget, project based support and financial support from other institutions or organizations (UNFPA, UNDP, UNICEF, AfDB, World Bank, DFID ...)

Specify the resource requirements for producing the statistics (e.g. man-labour days, number of workers involved in the statistical production process of the statistics/topic in question).

Not applicable since the electricity generation statistics are administrative statistics.

1.11. International reporting

List any international organizations and names of reporting schemes that the statistics are reported to. If available, also include the website where the reported data are published (e.g. International Energy Agency, Monthly Oil Statistics, UNSD, etc.).

AfDB(African Development Bank), COMESA(Common Market for Eastern and Southern Africa), UNSD, International Energy Agency, EAC(East African Community).
http://www.comesa.int/attachments/article/239/2011%20COMESA%20Infrastructure%20Statistics%20Bulletin.pdf

2. Statistical concepts, methodology, variables and classifications

2.1. Scope

Describe the scope of the statistics (e.g. the statistics cover supply and use of all energy products in Norway, classified according to International Standard Industrial Classification of All Economic Activities – ISIC).

The statistics cover only supply and use of Electricity.

2.2. Definitions of main concepts and variables

Describe the main concepts (e.g.: territory principle, resident principle, net calorific value, gross calorific value).

1. **Capacity:** The gross capacity is the full-load continuous rating of a generator or other electric equipment under specified conditions as designated by the manufacturer and is usually indicated on a nameplate attached to the equipment.
2. **Installed electricity capacity:** The sum of the production capacities of all generating units used in a system - by technology type.
   The gross capacity is the full-load continuous rating of a generator or other electric equipment under specified conditions as designated by the manufacturer and is usually indicated on a nameplate attached to the equipment.
3. **Effective capacity:** The maximum output of the generating plant under normal working condition
4. **Firm capacity:** The amount of energy available for production or transmission which can be guaranteed to be available at a given time.
5. **Generation**: Amount of electricity generated on annual and monthly basis. Total gross electricity generation covers gross electricity generation in all types of power plants. The gross electricity generation at the plant level is defined as the electricity measured at the outlet of the main transformers, i.e. the consumption of electricity in the plant auxiliaries and in transformers is included.
6. **Energy export:** Amount of energy exported
7. **Energy import:** Amount of energy imported

Describe the main variables (e.g. how are the different energy products defined in the statistics? How are production, intermediate consumption, final consumption, transformation, feed stock, the energy sector, etc. defined?).

Not applicable

2.3. Measurement units

Describe in what unit the data is collected (e.g. physical unit (m3, metric tons), monetary unit (basic prices, market prices)). Describe in what unit the data is presented. Describe if the calorific values are collected (e.g. on a net vs. gross basis) and how they are used.

If applicable, describe the density of the energy product(s) and the estimated *thermal efficiency coefficients* of different energy products and consumer groups or by appliance. Thermal efficiency coefficient indicates the share of the energy products which is actually usable for end consumption. Descriptions of density and thermal efficiency coefficient could alternatively be put in an annex.

The data on electricity generation are collected in MW (Megawatts), KWh (Kilowatt hours), GW (Giga Watt), Number, hours/year, km ...depending on the considered indicators.

2.4. Classification scheme

Include references to relevant international and national standard classifications. If national, give a brief description of the standards. If available, include web addresses to the electronic version of the standards).

The international standards are used. The units used in the measurements are at international level.

2.5. Data sources

Give an overview of the different data sources used in the collection and compilation of the statistics/topic (e.g. household survey, enterprise/establishment survey, administrative data/registers, foreign trade statistics, production statistics and other primary/secondary data sources).

Examples of administrative sources/registers are: business register for enterprises and establishments, population register, land register, housing and building registers, tax registers, international trade registers, etc.

The Electricity generation statistics are collected from EWSA (Energy Water and Sanitation Authority: is a company that distributes power and water in Rwanda) or from RURA (Rwanda Utilities Regulatory Agency). Rwanda Utilities Regulatory Agency (RURA) was created by law n° 39*2001 of 13th September 2001 and was published in the Government Gazette n° 20 of 15th October 2001 with the mission to regulate certain public Utilities, namely: 1. Telecommunications network and/or Telecommunications services 2. Electricity; 3. Water; 4. Removal of waste products from residential or business premises; 5. Extraction and distribution of Gas; 6. Transport of goods and persons

2.6. Population

Describe the entire group of units which is the focus of the statistics (the population).

Not applicable

Specify the following statistical units:

- Reporting unit
- Observational unit
- Analytical unit

Examples of different kind of statistical units include: enterprise, enterprise group, kind-of-activity unit (KAU), local unit, establishment, homogeneous unit of production.

In most cases the reporting unit, observational unit and analytical unit are identical, but there are examples where this is not the case. In electricity statistics, you may find that energy companies (the

reporting unit) provide data about different consumers like the individual household or manufacturing company (the observational unit). The analytical unit may be a group of energy consumers, defined by the ISIC.

Not applicable

2.7. Sampling frame and sample characteristics

Describe the type of *sampling frame* used in the collection and compilation of the statistics (e.g. list, area or multiple frames). A sampling frame is the source material or device from which a sample is drawn. Note that the sampling frame might differ from the population.

Not applicable

For each survey(s) used for the compilation of the statistics, specify the *sampling design* (e.g. random, stratified, etc.). Describe the routines employed for updating the sample. Include information about the sample size, and discuss to what extent the sample covers the population (e.g. energy consumption in the sample compared to total energy use by the population).

Note that chapter *2.7: Sample frame and sample characteristics* may overlap with chapter *3.4: Grossing up procedures.*

Not applicable

2.8. Collection method

For each survey used for the compilation of the statistics/topic, describe how the data are collected (e.g. face-to-face, telephone, self-administered, paper and internet-based questionnaires, or administrative data and registers).

Administrative data

2.9. Survey participation/response rate

For each survey used for the compilation of the statistics/topic, specify the average response rate, or refer to response rates for specific surveys conducted.

Not applicable

3. The statistical production process

3.1. Data capture and storage

Describe how the data is captured and stored (e.g. if the respondent replies using Internet-based questionnaire, the received data are electronically transferred to the production database. Paper questionnaire responses are keyed manually to the production database).

The Data are gathered by EWSA and the transferred directly to NISR (National Institute of Statistics of Rwanda) or to RURA.

3.2. Data editing

Describe the regular routines employed for detecting and correcting errors. This may include:

- Manual routines for detecting and correcting errors
- Automatic error-detection (and correction)
- Micro- and macro editing procedures
- Data validation procedures
- Outlier identification
- Processes and sources used for quality controls

The errors are corrected manually and the outliers are identified and corrected in the concert with the data providers.

3.3. Imputation

Describe the principles for imputation and the assumptions that these principles are based on.
Note that this chapter may overlap with chapter *3.2: Data editing* and chapter *5.2: Accuracy*

When it is needed to impute, the missing value can be replaced by the average of the recent observations of the same variable.

3.4. Grossing up procedures

Describe how the population is divided into strata and what statistical models the estimations in the strata are based on. Describe how sub-indices are combined into aggregate indices and how uncertainty is estimated.

Not applicable

3.5. Analytical methods

Give a description of any analytical methods used to adjust the data (e.g.: seasonal adjustment and temperature adjustment). A more detailed description of the analytical method can also be included as an annex.

Not applicable

4. Dissemination

4.1. Publications and additional documentation

Describe the form of dissemination of the statistics/topics in question (e.g. printed publications, website, etc.). Please provide relevant website link(s) if available.

Publications are made through Website.

Give a complete reference to publicly available statistics databases where data from the statistics can be extracted. Include web addresses if available online.

http://www.devinfo.statistics.gov.rw/ or http://www.imis.statistics.gov.rw/

Indicate whether you charge users for access to the statistics at any level of aggregation.

There is no charge to access the statistics.

4.2. Revisions

Describe the current revision policies. E.g.: Is historical data revised when new methodology, new definitions, new classifications etc. are taken into use? Is the data continuously revised, or is the data revised at certain points in times (e.g. every third year, annually, etc.)?

The data are continuously revised.

If applicable, describe any major conceptual or methodological revisions that have been carried out for this statistic/topic in the past.

Not applicable

4.3. Microdata

Describe how microdata are stored.

The microdata are stored in Excel spreadsheets or in DBA format as a database.

Specify if microdata are available for scientific and/or public use. If so, describe under what conditions these are made available.

The microdata can be accessed by public users by demand but the terms of confidentiality are applied.

4.4. Confidentiality

Describe the legal authority that regulates confidentiality, and what restrictions are applied to the publication of the statistics.

Article 21:
Data collected by the services of the national statistical system through surveys or any other method of collection are protected by statistical confidentiality. Statistical confidentiality implies that the dissemination of such data as well as statistical data which can be calculated from them shall be conducted in a way that those who provided it are not identified whether directly or indirectly.

It is prohibited to every employee at the level of statistics to disseminate information related to an enterprise or an establishment and the individual he or she may know during his or her job or in relation to his or her activities.

Statistical confidentiality does not apply to information about an enterprise or establishment that has already been published to the public or to information of the enterprise or establishment which it accepts, in writing, to be published.

Statistical information in monopoly or duopoly may be published except those concerning the cost of production or profits.

Article 22:
Without prejudice to the provisions of article 21 of this organic law, the National Institute of Statistics of Rwanda has powers to make and publish each year or when necessary, a list of enterprises or establishments which indicate the following:
name, address, type of activity, number of employees and its legal status.

Article 23:
The anonymous basic databases on individuals and other institutions shall be accessible to researchers but who shall be committed to:
1° make a written note, that they shall not communicate to any person the contents of such databases

without the written authorization of the National Institute of Statistics of Rwanda;
2° give to the National Institute of Statistics of Rwanda, the findings of their research.

Article 24:
Statistics related to an organ, institution and an individual shall not whatsoever be used for tax control purposes, for economic repression or for legal investigations by judicial organs.

Article 25:
Legal provisions concerning statistical confidentiality equally apply to data obtained from administrative sources.

Article 26:
Before commencing their duties, the members of staff of the services of the national statistical system shall take oath before the Minister having general statistics in his or her attributions or his or her representative, that they shall never reveal the statistical confidentiality related to individuals as it is defined in this organic law, which they may have come across in the course of performance of their duties or of which they are committed to in their activities.

For more details, you can follow the link:
http://www.amategeko.net/display_rubrique.php?ActDo=ShowArt&Information_ID=1024&Parent_ID=30691025&type=public&Langue_ID=An&rubID=30691046#30691046

Describe the criteria used to suppress sensitive data in statistical tables (cell suppression).

Cell suppression or Names Coded

Describe how confidential data are handled.

For more details, follow the link:
http://www.amategeko.net/display_rubrique.php?ActDo=ShowArt&Information_ID=1024&Parent_ID=30691025&type=public&Langue_ID=An&rubID=30691046#30691046

Describe any confidentiality standards that go beyond what is legally required.

Not applicable

5. Quality

5.1. Relevance

State to which degree the statistical information meet the real needs of clients/users.

It requires a study to know the degree of satisfaction.

5.2. Accuracy

State the closeness of computations or estimates to the exact or true values that the statistics were intended to measure.

Hard to measure since this is an administrative data.

Measurement and processing errors
Discuss the measurement and processing errors that are relevant for the statistics. Try as far as possible to give an estimation of the size and scope of the errors.

Not applicable

Non-response errors
State the size of the unit non-response and the item non-response, distributed by important variables in the population (e.g. region, industry). Consider if the non-response errors are systematic, and if so, describe the methods used to correct it. Indicate whether the effects of correcting non-response errors on the results have been analysed, and, if so, describe them.

Not applicable

Sampling errors
Discuss the size of the sampling errors. Compare the population and sample with regards to important properties (e.g. coefficient of variance).

Not applicable

Other sources of error
Discuss other sources of errors that might be relevant for the statistics. E.g.: Model assumption errors, coverage errors

Data capture errors or data entry errors

5.3. Timeliness and punctuality

Specify the time between the end of the reference period and publication.
If the statistics are published both as preliminary and final figures, specify the time between publication of preliminary and final figures. You should also point out whether the publication date is set according to certain rules (e.g. advance release calendar, a specific day or prior to other publications).

Advance release calendar

Point out if there have been any major discrepancies between the planned publication date and the actual publication date in recent years. If so, state the length of this discrepancy and its cause.

One month of delay due to the data providers

5.4. Accessibility

Describe how easily accessible the statistics are. In particular, is there an advance release calendar to inform the users about when and where the data will be available and how to access them?

Are metadata and other user support services easily available? Are there particular groups that don't have access to the published statistics (e.g.: visually disadvantaged)?

The statistics are accessed through internet. An advance calendar is there on the website of NISR: www.statistics.gov.rw

5.5. Comparability

Discuss the comparability of the statistics over time, geographical areas and other domains.

Comparability over time

Discuss comparability over time and include information about whether there have been any breaks in the time series of the statistics and why. Also describe any major changes in the statistical methodology that may have had an impact on comparability over time.

The statistics on Electricity generation are comparable over time and there is no break.

Comparability over region

Discuss comparability over geographical areas, and include information about whether the statistics are comparable to relevant statistics published by other countries and/or international organisations.

There are also comparable over region since the methodology used to collect and to process and units used are international standards.

Comparability over other domains

Discuss comparability over domains, and include information about whether the statistics are comparable between different industries, different types of households etc.

Not applicable

5.6. Coherence and consistency

Discuss the coherence/consistency between preliminary and final figures.

Not applicable

Discuss the coherence/consistency between monthly, quarterly or yearly statistics within the same subject area. Can the results of different frequencies for the same reference period be combined in a reliable manner?

Not applicable

Discuss the coherence/consistency with other related statistics (also those produced by other institutions/organisations on the same subject).

Sometimes the harmonization of energy statistics is required.

6. Future plans

Are there any current or emerging issues that will need to be addressed in the future? These could include gaps in collection, timeliness issues, data quality concerns, funding risks, confidentiality concerns, simplifications to reduce respondents' burden etc.?

We are planning to reduce the timeliness of publication from annual to quarterly.

Annexes

Illustrations and flowcharts

Illustrations and flowcharts are useful to summarize information and to get a better overview of the statistical production process. Illustrations and flowcharts can either be places in annexes or be included under relevant paragraphs in the template.

E.g.:

- A conceptual flowchart which illustrates the flow of data in the production of the statistics.
- A flowchart which illustrates the main tasks in the production process and the dependency between them.

Time schedule

Include a time schedule for the different phases of the statistical production process. The statistical production process *may* be divided into the following phases. Phase 1-3 may only be relevant for when a new statistics/survey is set up.

1. **Clarify needs** (e.g. map users needs, identify data sources)
2. **Plan and design** (e.g. plan and design population, sample size, how to analyze and edit data)
3. **Build** (e.g. build and maintain production system, test production system)
4. **Collect** (e.g. Establish a frame, draw the sample, collect data)
5. **Edit** (e.g. identify and code micro data, edit data, imputation)
6. **Analyse** (e.g. quality evaluation, interpret, analyse)
7. **Disseminate** (e.g. publish data, user contact)

Questionnaires

Include the complete questionnaire(s)/survey form(s) used

Example of publication tables

Include an example of a typical table published for the statistics. Include web addresses if available online.

Detailed description on analytical methods

If relevant, a detailed description of analytical methods used in the statistical production (like seasonal adjustment, temperature adjustment etc.) may be described in an annex. A short description can also be included in chapter 3.5: Analytical methods or under other suitable chapters.