

Baseline Review of Sustainable Energy Data in Azerbaijan

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Executive summary

Getting comprehensive statistics of high quality is one of the key objectives for economic development. Statistics provide a more accurate picture of the national socio-economic development, which contributes to the establishment of goals for further development. To this end, it is necessary to develop a national statistical system which includes development of new indicators, improvement of indicators calculation methodology, timely data collection, companies' activities monitoring in timely performances publication.

This report analyzes the development of sustainable energy statistics. The main state bodies and companies involved in the energy sector are: The Ministry of Energy of the Republic of Azerbaijan, The Tariff Council of Azerbaijan, The State Oil Company of Azerbaijan Republic (SOCAR). These bodies and companies are responsible for the sustainable development of the main areas of the energy sector, through the development of policies and programs. Priority directions of the programs are identification of priority fuel and energy development directions, implementation of energy scientific research, introduction of innovative technologies, attraction of industrial investments and environmental protection.

The main body for collecting statistics is the State Statistical Committee of the Republic of Azerbaijan. The Committee's objectives are to collect, process and disseminate economic and social statistical information. The Committee's activities are based on the following legal acts: The Constitution of the Republic of Azerbaijan, Law on "Official Statistics", The Regulation on the State Statistical Committee, The Main Statutory Legal Acts in the field of Official Statistics, extracts from different Laws and Decrees, Law "on access to information". The collected energy statistical information is published on the official website of the State Statistical Committee of the Republic of Azerbaijan and the periodical "Energy of Azerbaijan". The energy statistics consist of: performance indicators of energy enterprises, energy balance compiled in accordance with international recommendations on energy statistics, commodity balances of energy products, energy consumption, production of crude oil, gas, capacity of power plants, etc.

The Department of Energy and Environment Statistics collect and process energy sector statistics, develops indicators, develops a methodology for energy indicators, and compares it with world statistics.

The activities of the State Statistical Committee of the Republic of Azerbaijan and other statistical bodies are funded from the state budget. The report analyzes the completeness and quality of current energy statistics. Statistics on basic energy indicators are presented in sufficient number, but there are some gaps. The SSC of Azerbaijan presents energy balance, energy export and import, total volume of primary energy and final domestic consumption by energy sources and final consumers. Statistics on access to modern energy are represented by a single indicator and a list of the indicators under study, namely, the share of electricity costs. The share of electricity costs is presented together with the costs of water, gas and other resources. Statistics on this indicator are in process, but it is necessary to divide the presented indicators for a more complete understanding of the households' expenditures on these resources.

Energy efficiency statistics are not comprehensive enough. There is only one indicator among the investigated indicators, it is losses. Since the issue of improving energy efficiency is especially relevant, it is necessary to work on increasing the number of indicators in this area of the energy sector.

Renewable energy sources statistics are presented in sufficient volume. The SSC of Azerbaijan has data on solar energy, wind energy, hydropower, etc. There is data on the capacity of major renewable power plants.

The final part provides recommendations for improving sustainable energy statistics. The main shortcomings are gaps in the available data, absence of a significant share of indicators, lack of metadata and calculation methodology. Information on government websites is not available in English. The programs presented on the site are irrelevant.

To improve energy statistics, special attention should be given to the development strategies of energy statistics. Energy sector development depends, first of all, on the quality of the information available. A full understanding of energy sector development will help achieve the sustainable development goals.

Introduction

Currently, the problem of collecting and processing statistics is the most relevant because the provision of stable economic growth, improving the efficiency of production and distribution of resources is impossible without reliable and timely official statistics. With this purpose the state creates accounting and statistical center, which collects, processes and analyses statistical data characterizing social and economic development of the country. The main tasks of the center is to develop a methodology of statistical work in accordance with international standards, improving the system of benchmarking to more accurately reflect the social and economic processes, and the improvement of personnel policy. Main statistical office of the Republic of Azerbaijan is the State statistical Committee of the Republic of Azerbaijan.

The basic data on the energy of the Republic of Azerbaijan are contained in the statistical compilation "Energy of Azerbaijan". The collection contains information on the national energy balance, commodity balance of energy products and other information on energy statistics for 2011-2015. The current energy balance is compiled in accordance with the requirements of the "International Recommendations on Energy Statistics" prepared by the International Energy Agency, Eurostat and other international organizations.

The main purpose of the report is to analyze the system of energy statistics and propose measures to improve the system for collecting, processing and disseminating information on energy sector statistics.

For the analysis it is necessary to decide to consider several points.

- To consider the main state bodies and energy companies.
- To consider the regulatory framework for providing complete and qualitative information on statistics.
- To identify the main state body for the collection, processing and dissemination of statistics.
- To consider the main programs for improving the energy statistics system.
- To conduct an analysis of available energy statistics
- To propose measures to improve the system of statistics in the field of energy.

1. Energy Statistics System in Azerbaijan

a. Ministries/agencies/companies involved in the system and their roles

It is necessary to consider the main state bodies and the large energy companies that regulate the activities of others in order to identify suppliers of statistical information in the energy sector. The activities of these bodies and companies to regulate the reporting affect the quality of the information received, which in turn determines the main directions of the industry development.

The Ministry of energy of the Republic of Azerbaijan. The Central Executive body responsible for state policy and regulation of the energy sector is the Ministry of energy of the Republic of Azerbaijan. The functions of the Ministry are: development and implementation of state and regional programs of energy development, forecasting of different energy sources production, participation in international agreements on cooperation in the energy sector, ensuring a favorable investment climate in the energy industry, etc.

The section "Monthly Reports" contains reports on the fuel and energy complex from 2012 to 2015 in Azerbaijani.

The annual reports on the fuel and energy complex activity have been published on the website of The Ministry of Energy of the Republic of Azerbaijan. The industry report is presented in 2011 in Azerbaijani. The report on the investment climate and market structure is presented in 2010 in English.

The Agency for alternative and renewable energy of the Republic of Azerbaijan. A presidential decree of 1 February 2013 the Agency for alternative and renewable energy of the Republic of Azerbaijan is aimed at improving the system of management in the field of alternative and renewable energy in Azerbaijan. The Agency is the Central Executive authority that implements state policy and normative-technical regulation of alternative and renewable energy sources and the effective management, and ensures efficient organization of activities in the field of alternative and renewable energy sources, as well as coordination and state control in this area.

The official website presents annual reports on the work done in the field of effectiveness of alternative and renewable energy sources from 2014 to 2015 in Azerbaijani.

The Tariff Council of Azerbaijan. It was determined that the collegial executive body implementing the state regulation of the prices (tariffs), service fees, collections where the state regulation is applied. The website of Tariff (price) Council of Azerbaijan Republic presents retail and wholesale tariffs for oil products sold in the country.

The State Oil Company of Azerbaijan Republic (SOCAR). The company's activities are the exploration, production, transportation and refining of oil, gas and products of their processing. The company develops and prepares long-term strategies for the industry development, targeted at integrated scientific, technical, economic and social programs. The company's tasks also include responsibilities for approving the annual work programs of oil and gas enterprises, determining their annual budget funds, according to these programs. The company organizes the sale of crude oil, natural gas and petroleum products and payment of supply costs in a certain order. Currently, the company is one of the most looking-forward oil companies in the world. Moreover, company's prospects and government socio-economic development are linked. Three production divisions, one oil refineries and one gas processing plant, a deep water platform fabrication yard, two trusts, one institution, and 23 subdivisions are operating as corporate entities under SOCAR. Joint ventures

(including ventures in Georgia and Turkey), consortia, and operating companies established with SOCAR's participation, are doing business in different parts of the petroleum industry. SOCAR has representation in Georgia, Turkey, Romania, Switzerland, Iran, Germany and Ukraine and trading companies in Switzerland, Singapore, Nigeria, and other countries.

The website presents Financial reports from 2009 to 2015, Sustainable development report from 2011 to 2015 and Annual reports from 2005 to 2015 in English.

b. Legal basis

The State Statistical Committee of the Republic of Azerbaijan realizes activities based on the following normative legal acts:

- The Constitution of the Republic of Azerbaijan
- Law on "Official Statistics"
- The Regulation of the State Statistical Committee
- The Regulation on Urban and Rural Statistical Offices (Departments) of the State Statistical Committee
- Main normative Legal Acts in the field of Official Statistics, extracts from different Laws and Decrees
- Law "on access to information"

The Law "on Official Statistics of the Republic of Azerbaijan" was adopted on February 18, 1994. Section 1 includes general provision. Article 2 establishes the aim of official statistics of the Republic of Azerbaijan. The aim of Official Statistics is to increase the role of statistical data, to serve the interests of legal entities and natural persons by respecting their rights and keeping the confidentiality primary data. The key aim of Official Statistics is to provide primary data confidentiality depicting the socio-economic situation in the country, scientific and technological progress, economic links at national, regional and sector levels, structural changes and efficiency of production, as well as to provide statistical information capable of satisfying the needs of government bodies, economic agents and scientists. The system of Official Statistics is a single, centralized, country-wide system. The organization of the official statistics system and providing its activities in the Republic of Azerbaijan shall be the task of the State Statistical Committee of the Republic of Azerbaijan and the local statistical bodies within its hierarchy such as the State Statistical Committee of the Nakhchivan Autonomous Republic, and the district and municipal statistical administrations. Local statistical bodies are obedient only to the SSC of Azerbaijan. The SSC of Azerbaijan functions in the central executive bodies system of the Republic of Azerbaijan and organizes Official Statistics within the "Programme of statistical works" adopted by the Cabinet of Ministers. The Programme should be published in defined rule in order to inform government bodies, enterprises, organizations, institutions and the public. The Programme covers the information obtained in the statistical observations result to be organized studying the economic, demographic, social and environmental situation in the Republic of Azerbaijan, by taking into account existing resources, the burdens on respondents and the cost-effectiveness. The Programme also specifies the coverage, type, frequency and topic features for each of the elements to obtain data. Unless otherwise provided in the Programme, the surveys and censuses are to be implemented by the SSC of Azerbaijan based on the Programme and the units are obliged to provide the information that can be necessary for the respective statistics production. The SSC of Azerbaijan and its local bodies are legal persons with their own budgets; they have accounts with banking institutions of the Republic of Azerbaijan and use the seal of the Republic of Azerbaijan.

Article 3 establishes the system of the Official Statistics. The system of Official Statistics is a single, centralized, country-wide system. The State Statistics Committee of the Republic of Azerbaijan establishes the organization of the national statistics system and ensures the accomplishment. The SSC of Azerbaijan functions inside the system of the central executive body of the Republic of Azerbaijan and organizes Official Statistics within the "Programme of statistical works", which adopted by the Cabinet of Ministers in the republic.

Article 4 establishes the legislation on Official Statistics. The legislation on Official Statistics consists of the Constitution of the Republic of Azerbaijan, the present Law, other legislative acts of the Republic of Azerbaijan and international treaties, which the Republic of Azerbaijan participates in.

Section 2 includes duties and rights of the state statistical bodies. Article 6 indicates that state statistical agencies are responsible for:

Preparing a draft of the Programme in accordance with Article 3 of the Law, organizing and implementing the statistical activities determined by the Programme;

Working out the methodology, classifications and standards being more comparable with international standards and methodical assistance for the production of official statistical materials, and carrying out observations that are entrusted to other authorities by this Programme;

Presenting an annual report on the implementation of the Programme to the Cabinet of Ministers and making this report available to the public.

Article 7 includes rights and powers of the state statistical bodies. The state statistical bodies have the following rights and powers to perform their duties:

- 1) To receive substantial and reliable statistical data in a determined way, volume and period, that is free of charge from executive bodies, legal entities (their representative and branch offices), regardless the type of property and organizational-legal form of the Republic of Azerbaijan, that is acquired from legal entities of Republic located outside of borders of the Republic of Azerbaijan and from the representatives of foreign legal entities, branches acting in the territory of Republic, as well as from the citizens and individuals of the Republic of Azerbaijan, according to legislative acts, determined by the SSC of Azerbaijan.
- 2) In the event of data distortion, to make all necessary corrections in the report and issue the statistical unit with the instructions for making the required corrections;
- 3) To institute administrative procedures and apply administrative penalty measures to officials and individuals failing to present data to Official Statistics or present the wrong information, or those, who submit them late;
- 4) To ensure a single methodology for the statistic compilation in the country, draft questionnaires for the reporting in Official Statistics, set deadlines and procedures for collection and submission of these reports;
- 5) To approve and cancel questionnaires of statistical reporting and coordinate work on the improvement;
- 6) To render statistical services, not covered by the Programme, for legal and natural persons based on contracts according to the legislation by paying the fee to state budget;
- 7) To organize the sale of prepared statistical materials (yearbooks), and data not considered in the program and being additionally prepared for users as defined, legislative and court authorities and mass-media;
- 8) To adopt laws and regulations on filling report forms of official statistical materials as defined by this Programme and other regulations;
- 9) To receive necessary data from the corresponding executive authorities (tax bodies-red) conducting the State Register to the legal persons and individual entrepreneurs for establishing the State Register of statistical units.

Section 3 includes information about the Statistical Council. Council created the state statistics Committee. The purpose of this Council is to prepare and implement Programmes in the field of statistics and organize the development of statistics and consult about the related activities of statistical bodies.

The Council has the following powers:

- 1) To make suggestions to the State statistics Committee board on the facilitation and compliance of statistical reports with international standards;
- 2) To prepare recommendations for the systematic development of official statistics of the Republic of Azerbaijan;
- 3) To prepare proposals and recommendations on the preparation of relevant Programms in the statistical reforms direction and to inform the Government of the Republic of Azerbaijan about them;
- 4) To monitor the implementations of the relevant Programmes and provide advices;
- 5) To make recommendations to the State Committee board on statistics, having studied the proposals and recommendations according to statistics, users of statistics;
- 6) To perform other duties in accordance with the law.

Section 4 includes information about principles and autonomy of official statistics. The Official Statistics are based on the principles of reliability, objectivity, relevance in the current situation, confidentiality and transparency of statistical data. The state and non-government organizations are not to interfere into the implementation of powers of the state statistical bodies and not to influence the staff of the statistical authorities in the performance of their tasks.

Section 5 includes information about official statistics to administrative statistics. Data for Official Statistics are collected by sample observations. Such observation shall consist of systematic and periodic reporting, various census and inquiries, and surveys. In order to ensure international comparability of statistical information in the Republic of Azerbaijan, statistical classifications of technical, economic and commercial data (SCTECD) harmonized with international classifications and corresponded with local conditions is set up and operated.

Section 6 includes information about primary statistical data and its confidentiality. Primary statistical data should be based on reliable primary records and used only for aggregated statistical work, compiling collections and socio-economic analysis.

Section 7 includes information about dissemination of information. The SSC of Azerbaijan ensures that statistics are disseminated in such a way, that all users have simultaneous access to the disseminated information in the framework of unified rules, legal regulation and time notably to the results that are specified in the Programme of statistics.

Section 8 includes information about restrictions and staff social protection of state statistical bodies. A fund to support the state statistical bodies is allocated in the state budget. The financing and material support to the state statistical bodies, the production of Official Statistics, the supply of statistical questionnaires and other documentation for this purpose to units reporting to the SSC of Azerbaijan and its local statistical bodies and their maintenance are paid for from appropriations of the state budget of the Republic of Azerbaijan. Value of work, that is performed additionally and not included in the Programme of statistical works is paid for by the user organizations and is transferred to the state budget. Matters, concerning the supply of materials to the state statistical bodies, are decided by the Cabinet of Ministers of the Republic of Azerbaijan.

Section 9 includes information about responsibility for violating the legislation on statistics. Any violation of the legislation on statistics is necessary entail disciplinary, administrative or criminal responsibility in accordance with the legislation.

c. Relevant national energy policies/programs

The Ministry of Energy coordinates:

The fuel and energy complex development program of the Republic of Azerbaijan (2005-2015)

The specific objectives of the state program are as follows:

- to determine the priority development targets for Azerbaijan's fuel and energy sector in compliance with the best practices and standards of the modern world;
- to implement appropriate scientific and institutional measures aimed at enhancing the operating effectiveness of the various industries within the fuel and energy sector;
- to ensure the implementation of appropriate technology measures for the improved production, processing, transportation, storage, accounting and consumption of energy resources;
- to establish favorable environment for sound competition in the fuel and energy sector;
- to increase investments in the fuel and energy sector;
- to ensure environmental safety in the fuel and energy sector;
- to improve fuel and energy (electricity and natural gas) bills collection.

The state program of development of alternative and renewable energy sources in Azerbaijan

The Ministry of Energy participates in the following programs:

- State program on Social and Economic Development of the Regions of the Republic of Azerbaijan in 2009-2013
- State Program on Poverty Reduction and Sustainable Development of the Republic of Azerbaijan in 2008-2015
- State program on Reliable Provision of Food Products to the Population of the Azerbaijan Republic in 2008-2015
- State program for 2011-2015 on the implementation of the Employment Strategy of the Republic of Azerbaijan

These programs are available on the website of the Ministry of Energy of the Republic of Azerbaijan in Azerbaijani.

The information about relevant national programs in the alternative and renewable energy sources is presented on the website of The Agency for alternative and renewable energy of the Republic of Azerbaijan:

- State Program on the socio-economic development of Baku and its settlements in 2011-2013
- State Program on the socio-economic development of Baku and its settlements in 2014-2016
- State program on social and economic development of the regions of the Republic of Azerbaijan in 2014-2018
- State Program on the Use of Alternative and Renewable Energy Sources in the Republic of Azerbaijan

These programs are available in Azerbaijani.

Use of Alternative and Renewable Energy Sources State Program for 2005-2013 which led to the establishment of the State Agency for Alternative and Renewable Energy (ABEMDA) in 2009;

- Renewable Energy Strategy under preparation for 2012-2020, targeting 20% of RE in electricity and 9.7% in total energy consumption;

- Experimental Polygon and Training Centre launched in Gobustan in 2011 including a 5.5 MW hybrid station, a dispatcher center (local grids integration into global electricity networks), a RE producers' database, a RE promotion center, a training center for RE specialists, etc.;
- Priority sector for Azerbaijan Investment Company which invests in greenfield and brownfield projects along with local and foreign co-investors;
- Preferential tariffs for wind power and small HPPs (feed-in tariffs under consideration);
- Active participation in the EU-funded Inogate project supporting the development of energy efficiency, RE and demand side management in Eastern Europe, South Caucasus and Central Asia.

d. Major national energy statistics databases/publications

According to the regulation on The State Statistical Committee of the Republic of Azerbaijan, this body is the Central Executive body of the state policy in the field of statistics forming official statistics on the social, economic, demographic and environmental situation in the country based on common methodology. The Agency participates in the development of a unified state policy in the respective field and ensures the implementation of the policy. It also monitors the development of ternative and renewable energy, developing the necessary infrastructure and the provision of alternative and renewable energy sources in economic and social fields. The Agency is also responsible for the implementation of measures associated with energy production, energy consumption and energy efficiency, use of alternative and renewable energy sources, as well as state registration and cadastre in this area.

Statistical collection "Energy of Azerbaijan" contains national energy balance, commodity balance of energy products and other necessary information on energy statistics for 2011-2015 years. Collection consists of 5 sections: 1st section covers main indicators of energy enterprises' activities, energy consumption and share of electricity in energy consumption, energy capacity and etc., 2nd section – energy balance and distribution of balance by sectors, 3rd section - commodity balances of energy products, 4th section - consumption of energy products by types of economic activity, 5th section - output of crude oil and natural gas, power energy from electric stations, tables on air pollution by enterprises operated in different branches of economy and etc.

The current energy balance is based on requirements of "International Recommendations on Energy Statistics" that was prepared by International Energy Agency, Eurostat and other international organizations and 21 countries, including Oslo Group, where Azerbaijan is one of the members. The recommendations were adopted on February 2011 at the 42nd session of the UN Statistical Commission. Brief methodological instructions on compilation of energy balance are included.

You can also buy a print collection of "Energy of Azerbaijan" on the website of SSC of Azerbaijan.

Users can retrieve statistical data or the data unavailable on the website by inquiry on the website of the SSC of Azerbaijan.

e. Financial and human resources devoted to the collection of sustainable energy statistics

Energy and Environment Statistics Department is a structural unit of the State Statistics Committee.

Activity Direction of the Department:

- Provision of official statistics conduction in the energy and environmental statistical field;
- Provision of the statistical information timely collection and its adjustment to the national social-economic processes;
- Development and delivery of the socio-economic development indicators of the regions;
- Provision of the energy and environment statistics methodologies development and international benchmarking of the statistical information

To ensure effective activities of the State Statistics Committee, the Personnel Policy Concept of the State Statistics Committee of the Republic of Azerbaijan was developed. The objectives of this concept are to optimize the organizational structure of the system of state statistics; to carry out employees trainings and staff trainings for management positions.

All the expenditures born by the SSC of Azerbaijan and other sources considered in the legislative are funded by the State Budget of the Republic of Azerbaijan.

f. Major statistical improvement programs underway or planned

As a part of the "Azerbaijan 2020: look into the future" development concept, the state programs "Official Statistics Improvement 2013-2017", "Strategic plan of the State statistics Committee of the Republic of Azerbaijan 2014-2017" were developed. One of the provisions of this program implies conducting a sample survey on energy consumption by private entrepreneurs and households.

The Committee, within its competencies, builds relations with statistical agencies of foreign countries and international organizations in accordance with international legal rules, concludes cooperation treaties and represents the Republic of Azerbaijan in this area, arranges conferences, symposiums and seminars at international level, as well as participates in events organized by interstate and international nongovernmental organizations. In accordance with international treaties corresponding statistical information is received from statistical agencies of foreign countries in order to compare national economic, demographic, social and ecological indicators with the situation in other countries.

2. Sustainable energy statistics in Azerbaijan

a. Summary of completeness/quality of basic energy statistics

The statistics on the energy sector is presented on the website of the State Statistics Committee of Azerbaijan and in the "Energy of Azerbaijan 2016" journal published in July. The basic statistics on energy are represented by the following indicators: total primary energy supply, national energy balance, import and export by energy type, final domestic consumption by energy type and end user. Each type of indicators is presented in three units: in natural terms, thousand tons of oil equivalent and terajoules. The data is presented annually from 2007 to 2015. Metadata and compilation methodology are available only for energy balance. There is no statistics for several resources presented in the tables. According to the indicators, there are time gaps, some resources statistics are not available for several years.

Energy balance conducts record indicators' system for collection and coordination of data on all energy products imported to the country, exported and consumed during a definite period. Energy plays an important role in sustainable society. There is a need for quality and operative information for the energy sector monitoring both at national and international levels. Information on energy carrier resources, supply, trade, conversion and consumption is used in strategic decision-making. Heating and electric energy gained as a result of energy use highly impacts economic activity development. Energy is widely used in the national industry, service, transport and household activities.

All energy products are divided into primary and secondary products. Energy commodities extracted or captured directly from natural resources (crude oil, natural gas, electric power produced in hydroelectric power station and etc.) are referred to as primary products and all energy commodities which are not primary but produced from primary commodities (oil products, electric power produced in thermoelectric power station and etc.) are referred to as secondary commodities. Primary fossil fuel production is usually measured close to the point of extraction from reserves. The production is measured by market commercialization opportunities. Fuel not appropriate for sale and use is not considered in the production volumes. For example, certain volumes of the gas extracted from gas or oil field may be returned to the field to maintain pressure flared or released into the atmosphere. The residual volume, apart from heavy gases (gas condensate) left for the separation purposes, can be further processed. Thus, the gas injected into the layers, **thrown to the air** and burned as well as gas condensates is not taken into account in determining the volume of gas available for sale. This rule relates to secondary commodities, as well.

Exports and imports imply the products imported to the country and exported from the country as the result of Azerbaijan-based entities and enterprises' activities. Import-export operations are carried out within national borders, regardless of whether the cargo was officially registered by custom agencies or not. The energy products transited from the country (excluding electric power) are not considered in the import-export indicators.

Final energy consumption is formed from final energy consumption data divided into 3 groups: industry, transport, and other branches of economy. Energy industries are not registered in this data as they are considered in **transformation** sector. Industrial enterprises use energy commodities for heat-production (both for own use and for sale), for non-energy purposes, transport and electricity generation. Fuel used for transport by enterprises, as well as for production of electricity and thermal energy for sale is not considered as final energy consumption.

A detailed description of basic energy statistics is contained in appendix a.

b. Summary of completeness/quality of statistics on access to modern energy

The draft outcome document of the Seventh International Forum on Energy for Sustainable Development sets out the objectives of the Republic of Azerbaijan in the field of access to modern energy services.

The main objectives are:

- to accelerate universal access to modern energy sources;
- to mobilize necessary resources to ensure universal access to modern energy sources;
- to develop regional and international energy standards.

Based on this document, it can be concluded that ensuring universal access to modern energy services is still in process, thus, statistics in this sector is also not developed enough.

The data on modern energy access are presented on the website of the State Statistics Committee of Azerbaijan and in the "Energy of Azerbaijan 2016" journal as consumption expenditures indicators for economic regions in 2015 per capita per month in manats or percentage. Data are available annually from 2001 to 2015. All indicators' statistics is maintained continuously. Electricity costs are presented together with water, gas and other costs. Metadata and calculation methodology are not available.

c. Summary of completeness/quality of energy efficiency statistics

Energy efficiency data are presented on the website of the State Statistics Committee of Azerbaijan and in the "Energy of Azerbaijan 2016" journal as transportation loss indicator. Data are presented in natural terms, thousand tons of oil equivalent and terajoules. Losses are represented by three types of energy resources: liquid fuel, natural gas, heat and electricity annually from 2007 to 2015. Metadata and methodology for calculating indicators are not available.

Losses: this line reflects the losses of energy commodities during their distribution to the locations of use. Losses occurred at transformer is also included in this line. The transmission and distribution losses associated with the electricity and gas networks provide simple examples but there are cases related to the distribution of blast furnace and coke-oven gases and oil products by pipeline. Losses during oil processing occurs in the result of a mostly natural decrease in oil products with consisting of difference between production of general final product by whole volume of product which has entered the oil refinery plant.

d. Summary of completeness/quality of statistics on renewable energy

Azerbaijan has good renewable energy resources. The wind blowing more than 250 days per year and may generate 2.4 billion kWh of electricity annually is the country's most favorable option because of its lower cost, environmental reliability and unlimited availability. Offering 2,400-3,200 hours of sunshine per year, Azerbaijan has also good potential for solar electricity and heat generation. While its technically feasible potential (16 billion kWh) remains underexploited, hydro power is currently the most developed renewable energy source. In 2011, it accounted for 9.8% of electricity production, against only 0.2% for other renewables. With 2 million tons of solid domestic and production waste annually sent to treatment sites, the country has also good potential for biomassenergy. Finally, the exploitation of thermal waters could partially cover heat energy needs.

Data on renewable sources of energy efficiency are presented on the website of the State Statistics Committee of Azerbaijan and in the "Energy of Azerbaijan 2016" journal with such indicators as: total renewable energy production; share of renewable sources in total primary energy; renewable energy production

by type; share of renewable sources in electricity generation; installed capacity for renewable energy sources. The data are available in thousand tons of oil equivalent annually from 2007 to 2015, according to the installed capacity of renewable energy sources, energy production data are available since 1913 until 1990. The data were recorded every 10 years. Since 2000 the data are available annually. Also there are significant data gaps for this indicator. Metadata and methodology for calculating indicators are not available.

Solar energy: Solar radiation exploited for hot water production and electricity generation, by:

- Flat plate collectors, mainly of the thermosyphon type, for domestic hot water or for the seasonal heating of swimming pools;
- Photovoltaic cells;
- Solar thermal electric plants.

Geothermal energy: Energy available as heat emitted from within the earth's crust, usually in the form of hot water or steam.

Hydropower: Potential and kinetic energy of water converted into electricity in hydroelectric plants. Pumped storage should be included. Detailed plant sizes should be reported to the network of pumped storage.

Wind energy: Kinetic wind energy exploited for electricity generation in wind turbines.

3. Recommendations for the sustainable energy statistics improvement in Azerbaijan

a. Prioritized list of gaps in sustainable energy statistics

On the website of The Ministry of Energy of the Republic of Azerbaijan and The Agency for Alternative and Renewable Energy of the Republic of Azerbaijan there is only information available in Azerbaijani.

The website of the State Statistics Committee of Azerbaijan does not contain information on the date of energy data publication. The publication dates for the following industries are presented: Industry and construction statistics, Price Statistics, Service Statistics, Transport, information and communication statistics, Trade Statistics, foreign trade, Labor Statistics, Agriculture and Environment Statistics, National Accounts and Macro-economic Indicators Statistics.

Among all the listed indicators, the metadata and calculation methodology is available only for the national energy balance. It is necessary to add metadata and a calculation methodology for renewable energy sources.

A large share of indicators on access to modern energy services is lacking. There is no information on what types of fuel urban and rural households are heated. There is no information on the average price of energy for urban and rural households.

There are significant gaps in energy efficiency indicators. It is necessary to keep statistics on the final domestic consumption, on energy consumption of transport, as well as on investments in energy efficiency.

According to available data in the energy sector there are gaps in the annual fixation of indicators. According to some indicators presented in the tables statistics is not maintained.

b. Means to overcome the main obstacles for sustainable energy statistics improvement

In "The Strategic Plan of the State Statistics Committee of the Republic of Azerbaijan for 2014-2017", there are no objectives for energy sector improvement. In the future, it is necessary to pay more attention to

statistics in the energy sector in the strategic development program, namely, to expand the number of statistical indicators, to develop metadata for the main groups of indicators, for instance, renewable energy sources.

It is necessary to pay attention to statistics on access to modern energy services. Since the availability of these indicators will contribute to a better understanding, in which areas the population faces the electricity access problems. The provision of affordable, reliable and stable access to the energy resources is one of the most important energy development goals of the Republic of Azerbaijan.

Insufficient attention is paid to energy efficiency statistics, which also hampers a more accurate goal setting in strategic planning of energy efficiency indicators.

Annex

Annex 1 – Detailed review of completeness/quality of basic energy statistics

| Statistics ¹ | Availability | Source | Quality assessment | Comment |
|--|---------------|---|---|---------|
| Total primary energy supply | available | The State Statistics Committee of Azerbaijan Republic http://www.stat.gov.az/ English | Timeliness: Frequency: 1 year Time series: 2007-2015 Coverage: Some gaps, refinery feed-stocks, refinery gas, heat data are not available. Wind-energy data are not recorded in 2011-2012. On solar-energy data are not recorded in 2007-2012. On fuel oil – high Sulphur in 2011-2015 data are not recorded. Accessibility: High Interpretability: No Transparency: Yes Accuracy: Yes Consistency: Low | |
| National energy balance | available | The State Statistics Committee of Azerbaijan Republic http://www.stat.gov.az/ English | Timeliness: Frequency: 1 year Time series: 2007-2015 Coverage: Some gaps, on Transfers, in unit Transport the data on Non-specified, in unit Other fields of economy the data on Not elsewhere-specified are not available. In unit Transformation processes the data on Blast furnaces in 2012-2015 and on Other transformation processes are not recorded in 2011-2012. Accessibility: High Interpretability: No Transparency: Yes Accuracy: Yes Consistency: Low | |
| Production by energy source ² | not available | | | |

¹ Where the exact statistics name is not available but a very similar one the national consultant should note the statistics that is available and include an assessment of it.

² Energy **source**: Coal, peat, crude oil (including oil shale/sands), natural gas (including liquids), primary (nuclear, hydro, solar, wind and other renewables) electricity, biofuels, heat and refined petroleum products.

| Statistics ¹ | Availability | Source | Quality assessment | Comment |
|--|--------------|---|---|---------|
| Imports by energy source | available | The State Statistics Committee of Azerbaijan Republic http://www.stat.gov.az/ English | Timeliness: Frequency: 1 year Time series: 2007-2015 Coverage: Some gaps, fuel oil – high sulphur, heat data are not available. Crude oil and LPG data are available only for one year. The data on Fuel oil - low Sulphur are not recorded in 2007-2012. The data on Petroleum coke are not recorded in 2007, 2009, 2012, 2013. The data on Bitumen are not recorded in 2011, 2012, 2015. The data on Other petroleum products are not recorded in 2007-2012. On wood the data is only recorded in 2009. Accessibility: High Interpretability: No Transparency: Yes Accuracy: Yes Consistency: Low | |
| Exports by energy source | available | The State Statistics Committee of Azerbaijan Republic http://www.stat.gov.az/ English | Timeliness: Frequency: 1 year Time series: 2007-2015 Coverage: Some gaps, on Naphtha data in 2010 is recorder. The data on Other petroleum products are not recorded in 2009-2012. The data on Bitumen in 2013, 215 are not recorded. Accessibility: High Interpretability: No Transparency: Yes Accuracy: Yes Consistency: Low | |
| Final domestic consumption by energy source and end user | available | The State Statistics Committee of Azerbaijan Republic http://www.stat.gov.az/ | Timeliness: Frequency: 1 year Time series: 2007-2015 Coverage: Some gaps, the data on bitumen are recorded in 2007, 2009, 2010. Transport: on roads, domestic aviation, domestic navigation and non-specified data are not available. In unit Other fields of economy the data on Not elsewhere-specified are not available. | |

| Statistics ¹ | Availability | Source | Quality assessment | Comment |
|--|---------------|---------|---|---------|
| | | English | Accessibility: High Interpretability: No Transparency: Yes Accuracy: Yes Consistency: Low | |
| Transportation energy use by energy source and transportation mode | not available | | | |
| Household energy use by energy source and household type (urban/rural) | not available | | | |

Annex 2 – Detailed review of completeness/quality of statistics on access to modern energy services

| Statistics ³ | Availability* | Source* | Quality assessment* | Comment* |
|---|---------------|---------|---------------------|----------|
| Share of households connected to the national electric power grid or another reliable source of electricity by household type (urban/rural) | not available | | | |

³ Where the exact statistics name is not available but a very similar one the national consultant should note the statistics that is available and include an assessment of it.

| Statistics ³ | Availability [*] | Source [*] | Quality assessment [*] | Comment [*] |
|--|---------------------------|---------------------|---------------------------------|----------------------|
| Share of households connected to the national natural gas distribution network or another reliable source of natural gas supply by household type (urban/rural) | not available | | | |
| Share of households with ready and reliable access to home heating fuel and/or coal by household type (urban/rural) | not available | | | |
| Share of households (or population) without access to electricity or other commercial energy source, or heavily dependent on non-commercial energy by household type (urban/rural) | not available | | | |
| Average household electricity prices by household type (urban/rural) | not available | | | |
| Average prices for home heating fuel by household type (urban/rural) | not available | | | |

| Statistics ³ | Availability* | Source* | Quality assessment* | Comment* |
|---|---------------|---|---|--|
| Average household prices for coal by household type (urban/rural) | not available | | | |
| Average retail price of petrol (gasoline) and diesel fuel by region (urban/rural) | not available | | | |
| Average share of household disposable income spent on energy purchases by household type (urban/rural) | available | The State Statistics Committee of Azerbaijan Republic http://www.stat.gov.az/ English | Timeliness: Frequency: 1 year Time series: 2015 Coverage: Complete (no gaps) Accessibility: High Interpretability: No Transparency: Yes Accuracy: Yes Consistency: High | There are data on the share of household income only per capita. |
| Average annual number of days of household electrical outages by household type (urban/rural) | not available | | | |
| Average annual number of days of shortages of home heating oil, coal, petrol and diesel by area (urban/rural) | not available | | | |
| Annual gross fixed capital formation in energy production and distribution systems by energy type | not available | | | |

| Statistics ³ | Availability [*] | Source [*] | Quality assessment [*] | Comment [*] |
|---|---------------------------|---------------------|---------------------------------|----------------------|
| (electricity/fossil fuel) as a share of total national gross fixed capital formation as measured by the System of National Accounts | | | | |

Annex 3 – Detailed review of completeness/quality of statistics on energy efficiency

| Statistics ⁴ | Availability [*] | Source [*] | Quality assessment [*] | Comment [*] |
|--|---------------------------|--|--|---|
| Total primary energy supply per capita | not available | | | |
| Final domestic energy consumption per unit of gross domestic product | not available | | | |
| Final domestic energy consumption per unit of value added by industrial branch | not available | | | |
| Transmission and distribution losses as a share of electric power production | available | The State Statistics Committee of Azerbaijan Republic http://www.stat.gov.az/ | Timeliness: Frequency: 1 year Time series: 2015 Coverage: Complete (no gaps) Accessibility: High Interpretability: No Transparency: Yes Accuracy: Yes | Losses are not presented as a share of electric power production, they are presented in volume terms, thousand tons of oil equivalent |

⁴ Where the exact statistics name is not available but a very similar one the national consultant should note the statistics that is available and include an assessment of it.

| Statistics ⁴ | Availability* | Source* | Quality assessment* | Comment* |
|--|---------------|---------|---------------------|-----------------|
| | | English | Consistency: High | and terajoules. |
| Average efficiency of thermal power generating stations | not available | | | |
| Freight transport energy consumption per tons-kilometer | not available | | | |
| Passenger transport energy consumption per passenger-kilometer | not available | | | |
| Business-sector Investment in energy efficiency technologies, total and as a share of total investments | not available | | | |
| Public-sector investment in energy efficiency technologies (including subsidies), total and as a share of total spending | not available | | | |

Annex 4 – Detailed review of completeness/quality of statistics on renewable energy

| Statistics ⁵ | Availability* | Source* | Quality assessment* | Comment* |
|-------------------------------|---------------|----------------------|---------------------|----------|
| Total production of renewable | available | The State Statistics | Timeliness: | |

⁵ Where the exact statistics name is not available but a very similar one the national consultant should note the statistics that is available and include an assessment of it.

| Statistics ⁵ | Availability* | Source* | Quality assessment* | Comment* |
|---|---------------|---|---|----------|
| energy ⁶ | | Committee of Azerbaijan Republic http://www.stat.gov.az/ English | Frequency: 1 year Time series: 2007-2015 Coverage: Complete (no gaps) Accessibility: High Interpretability: No Transparency: Yes Accuracy: Yes Consistency: High | |
| Share of renewable sources in total primary energy supply | available | The State Statistics Committee of Azerbaijan Republic http://www.stat.gov.az/ English | Timeliness: Frequency: 1 year Time series: 2007-2015 Coverage: Complete (no gaps) Accessibility: High Interpretability: No Transparency: Yes Accuracy: Yes Consistency: High | |
| Production of renewable energy by type (see footnote 3) | available | The State Statistics Committee of Azerbaijan Republic http://www.stat.gov.az/ English | Timeliness: Frequency: 1 year Time series: 2007-2015 Coverage: Some gaps, the data on wind energy, solar energy and electricity generated from waste incineration are not recorded in 2011-2012. Accessibility: High Interpretability: No Transparency: Yes Accuracy: Yes Consistency: Medium | |
| Share of renewable sources in electricity | available | The State Statistics Committee of | Timeliness: Frequency: 1 year | |

⁶ Renewable energy includes hydroelectricity; wind electricity; solar electricity and heat; geothermal electricity and heat; biofuel/biowaste electricity and heat; electricity and heat from municipal wastes; and other renewable electricity and heat.

| Statistics ⁵ | Availability* | Source* | Quality assessment* | Comment* |
|---|---------------|---|--|----------|
| production | | Azerbaijan Republic http://www.stat.gov.az/ English | Time series: 2007-2015 Coverage: Complete (no gaps) Accessibility: High Interpretability: No Transparency: Yes Accuracy: Yes Consistency: High | |
| Installed renewable energy capacity | available | The State Statistics Committee of Azerbaijan Republic http://www.stat.gov.az/ English | Timeliness: Frequency: 1 year Time series: 1913-2015 Coverage: Some gaps, hydro energy data in 1913, 1920, 1930, 1940, 1950 are not recorded. Accessibility: High Interpretability: No Transparency: Yes Accuracy: Yes Consistency: Medium | |
| Business-sector investment in renewable energy capacity, total and as a share of total investment | not available | | | |
| Public-sector investment in renewable energy capacity (including subsidies), total and as a share of total spending | not available | | | |
| Unit cost of renewable generation by type (cost per megajoule) | not available | | | |