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GENDER AND CLIMATE CHANGE INTEGRATION INTO THE ENERGY POLICY

A GUIDELINE FOR DECISION MAKERS IN FORMULATING ENERGY POLICY

UNDP AZERBAIJAN

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List of acronyms

AERA	Azerbaijan Energy Regulatory Agency
APS	Announced Pledges
BP	British Petroleum
CCUS	Carbon Capture, Utilization and Storage
CHP	Combined Heat and Power
DMF	Design and Monitoring Framework
EU	European Union
GAP	Gender Action Plan
GGGI	Global Gender Gap Index
GDP	Gross Domestic Product
Greenhouse gas	GHG
GDI	Gender Development Index
GII	Gender Inequality Index
HDI	Human Development Index
IEA	International Energy Agency
ICR	Implementation Completion Report
INDC	Intended nationally determined contribution
LULUCF	Land use, land-use change and forestry
MTCO2e	Metric tons of carbon dioxide equivalent
Mtoe	Million tons of oil equivalent
M&E	Monitoring and Evaluation
NAPs	National Adaption Plans
NDCs	Nationally Determined Contributions
UNDP	United Nations Development Program
NECP	National Energy and Climate Plan
UNFPA	United Nations Population Fund
UNECE	United Nations Economic Commission for Europe
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNFCCC	United Nations Framework Convention on Climate Change
USAID	US Agency for International Development
OJSC	Open Joint Stock Company
SOCAR	State Oil Company of the Azerbaijan Republic
SAARES	State Agency on Alternative and Renewable Energy Sources
TC	Tariff Council
TFC	Total Energy Consumption
SCFWCA	State Committee for Family, Women and Children's Affairs
SDGs	Sustainable Development Goals
OECD	Organization for Economic Co-operation and Development

1. Introduction

Undoubtedly climate change and gender inequality are the greatest sustainable development threat facing the planet today. One of the main challenges faced by climate policy makers today is to design and implement policies capable of transferring climate policy goals into sectoral actions (e.g., energy sector development, agriculture sector development etc.) towards transformational pathways. Hence, climate policies need to be of cross-cutting character that should lead to coherence with sectoral development goals and reconcile diverging sectoral interests. On the other hand, it is widely recognised that integrating gender related issues into sectoral actions can be beneficial for all. In particular, empowering woman in sub-sectors of the economy including the energy sector and closing the gap are also the key to achieve Sustainable Development Goals. With this background, today both developing and developed countries are designing domestic policies either at the macro or micro level to address issues that have been identified as priorities for dealing with climate change and gender inequality.

Oil and gas production subsector of the country's overall energy sector, representing a significant percentage of current national GDP and direct investments, i.e. being the most significant economic sector, is actually under the overarching national economic strategy.

Production of oil and gas dominates Azerbaijan's economy and plays an important role in formation of government`s revenue. In particular, crude oil and natural gas bring in about 90% of Azerbaijan's export revenues and around 60% of the government budget is financed by these sectors. They also supply 98% of primary energy and more than 90% of the country's electricity.[1] However, it should be noted that the long-term outlook for fossil fuel resources is becoming uncertain in light of recent commitments by major importing countries to achieve net-zero greenhouse gas (GHG) emissions by 2050. Of course, this issue shall be taken by the government seriously and based on this fact, national energy policy needs to be more climate-friendly in the long-run.

Certainly, developing and implementing climate-friendly and gender-responsive policy initiatives in the field of energy policy in the country could significantly contribute to sustainable economic development and ensure that all human beings enjoys prosperous and fulfilling lives.

The aim of this guide is to emphasize the importance of integrating gender and climate change related issues into the national level energy policy formulation. It also describes roadmap while providing practical steps to design energy policy in a climate and gender responsive way. Moreover, real world examples on integrating gender and climate change related issues into energy policy formulation or project designing has been also discusses along this report. Even though this guide is specifically focused on inclusive energy policy formulation, the overall approach and framework can be applied to the subsectors of the energy sector (e.g., in renewable energy formulation).

Beyond the introduction section, section 2 discusses briefly global trends in energy sector as well pinpoints energy sector development in Azerbaijan. It also, presents the energy policy of the country, including rules, regulation, laws and other policy documents. Following section discusses the

[1] For more information, see: https://www.euneighbours.eu/sites/default/files/publications/2021-07/Azerbaijan2021EnergyPolicyReview.pdf

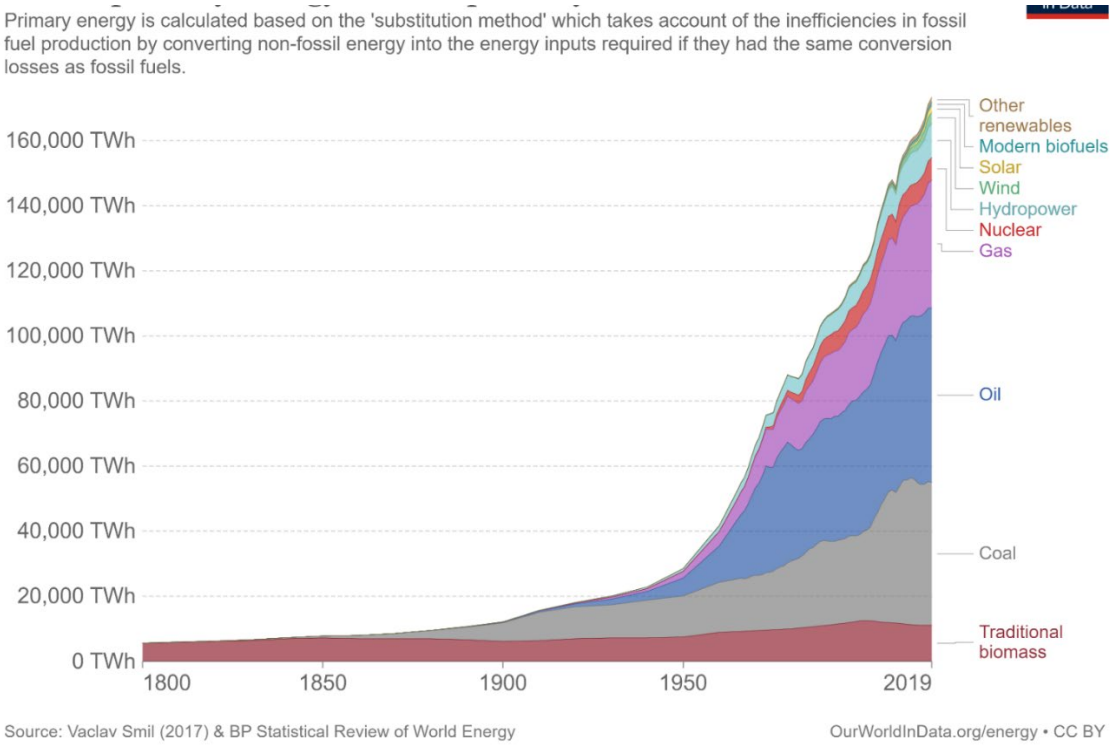
importance of gender related issues in development as well illustrates the links between energy sector and gender. The section also describes the pathway of the integrating mainstreaming gender concept into the national energy policy. Section 4, presents the current situation in the country regarding the climate change, discusses the potential links between climate change and energy sector development in-depth. Also, the pathway of the integrating mainstreaming climate change into the national energy policy has been discussed in section 4. The last section concludes and draws some important recommendations.

2. Energy outlook

2.1. Global energy sector development

COVID-19 pandemic led to significant impacts on global energy demand and hence on energy production over the world. Global energy consumption on the other hand, increased over the last 50 years as can be seen from Figure 1. However, according to BP (British Petroleum) primary energy consumption fell by 4.5% in 2020 – the largest decline since 1945. It is obvious that oil, gas, and coal are still primary energy consumption across the globe. The share of renewable energy increases since the last five decades.

Figure 1. Global primary energy consumption by source



Today, of the world's renewable energy supply, 68% is generated with biofuel and waste, mostly in developing countries, 18% is generated with hydropower and 14% with other renewables.

The World Energy Outlook 2021 prepared by the International Energy Agency[2] contains the following key insights for the period of up to 2050:

- In 2020, even while economies bent under the weight of Covid-19 lockdowns, *renewable sources of energy such as wind and solar PV continued to grow rapidly, and electric vehicles set new sales records* – The new energy economy will be more electrified, efficient, interconnected and clean. Its emergence is the product of a virtuous circle of policy action and technology innovation, and its momentum is now sustained by lower costs. In most markets, solar PV or wind now represents the cheapest available source of new electricity generation. Clean energy technology is becoming a major new area for investment and employment – and a dynamic arena for international collaboration and competition.
- However, every data point showing the speed of change in energy can be countered *by another showing the stubbornness of the status quo* – The rapid but uneven economic recovery from last year's COVID-induced recession is putting major strains on parts of today's energy system, sparking sharp price rises in natural gas, coal and electricity markets. For all the advances being made by renewables and electric mobility, 2021 is seeing a large rebound in coal and oil use. Largely for this reason, it is also seeing the second-largest annual increase in CO2 emissions in history. Public spending on sustainable energy in economic recovery packages has only mobilized around one-third of the investment required to jolt the energy system onto a new set of rails, with the largest shortfall in developing economies that continue to face a pressing public health crisis. Progress towards universal energy access has stalled, especially in sub-Saharan Africa. The direction of travel is a long way from alignment with the IEA's landmark Net Zero Emissions by 2050 Scenario (NZE), which charts a narrow but achievable roadmap to a 1.5 °C stabilization in rising global temperatures and the achievement of other energy-related sustainable development goals.
- *Pressures on the energy system are not going to relent in the coming decades. The energy sector is responsible for almost three-quarters of the emissions that have already pushed global average temperatures 1.1°C higher since the pre-industrial age, with visible impacts on weather and climate extremes. The energy sector has to be at the heart of the solution to climate change.* At the same time, modern energy is inseparable from the livelihoods and aspirations of a global population that is set to grow by some 2 billion people to 2050, with rising incomes pushing up demand for energy services, and many developing economies navigating what has historically been an energy- and emissions-intensive period of urbanization and industrialization. Today's energy system is not capable of meeting these challenges; a low emissions revolution is long overdue.
- The Report highlights four key measures that *can help to close the gap between today's pledges and a 1.5 °C trajectory over the next ten years* – and to underpin further emissions reductions post-2030. More than 40% of the actions required are cost-effective, meaning that they result in overall cost savings to consumers compared with the pathway in the Announced Pledges (APS). All countries need to do more: those with existing net zero pledges account for about half of the additional reductions, notably China. The four measures are the followings:
    - A massive *additional push for clean electrification* that requires a doubling of solar PV and wind deployment relative to the APS; a major expansion of other low-emissions

[2] https://www.iea.org/reports/world-energy-outlook-2021

generation, including the use of nuclear power where acceptable; a huge build-out of electricity infrastructure and all forms of system flexibility, including from hydropower; a rapid phase out of coal; and a drive to expand electricity use for transport and heating. Accelerating the decarburization of the electricity mix is the single most important lever available to policy makers: it closes more than one-third of the emissions gap between the APS and NZE. With improved power market designs and other enabling conditions, the low costs of wind and solar PV mean that more than half of the additional emissions reductions could be gained at no cost to electricity consumers.

- *A relentless focus on energy efficiency, together with measures to temper energy service demand through materials efficiency and behavioral change* –The energy intensity of the global economy decreases by more than 4% per year between 2020 and 2030 in the NZE – more than double the average rate of the previous decade. Without this improvement in energy intensity, total final energy consumption in the NZE would be about one-third higher in 2030, significantly increasing the cost and difficulty of decarbonizing energy supply.
- *A broad drive to cut methane emissions from fossil fuel operations* – Rapid reductions in methane emissions are a key tool to limit near-term global warming, and the most cost-effective abatement opportunities are in the energy sector, particularly in oil and gas operations. Methane abatement is not addressed quickly or effectively enough by simply reducing fossil fuel use; concerted efforts from governments and industry are vital to secure the emissions cuts that close nearly 15% of the gap to the NZE.
- *A big boost to clean energy innovation* – This is another crucial gap to be filled in the 2020s, even though most of the impacts on emissions are not felt until later. All the technologies needed to achieve deep emissions cuts to 2030 are available. But almost half of the emissions reductions achieved in the NZE in 2050 come from technologies that today are at the demonstration or prototype stage. These are particularly important to address emissions from iron and steel, cement and other energy-intensive industrial sectors – and also from long-distance transport. Today's announced pledges fall short of key NZE milestones for the deployment of hydrogen-based and other low-carbon fuels, as well as carbon capture, utilization and storage (CCUS).

2.2. Snapshot of energy sector in Azerbaijan

Macro-level outlook

Azerbaijan's 87.8% of energy products with total production volume of 68.8 million tons of oil equivalent (Mtoe) makes primary energy products. Oil, heat and electricity represent 8.6% and 3.6% of energy products respectively. Within the country, 58.8% of all primary energy products consist of crude oil (including gas condensate) and 40.9% natural gas.[3] However, the country's oil and gas extraction sectors contributes roughly a one third of GDP and makes up over 90% of total exports. Additionally, it should be noted that average payroll of employees in energy sector increased since

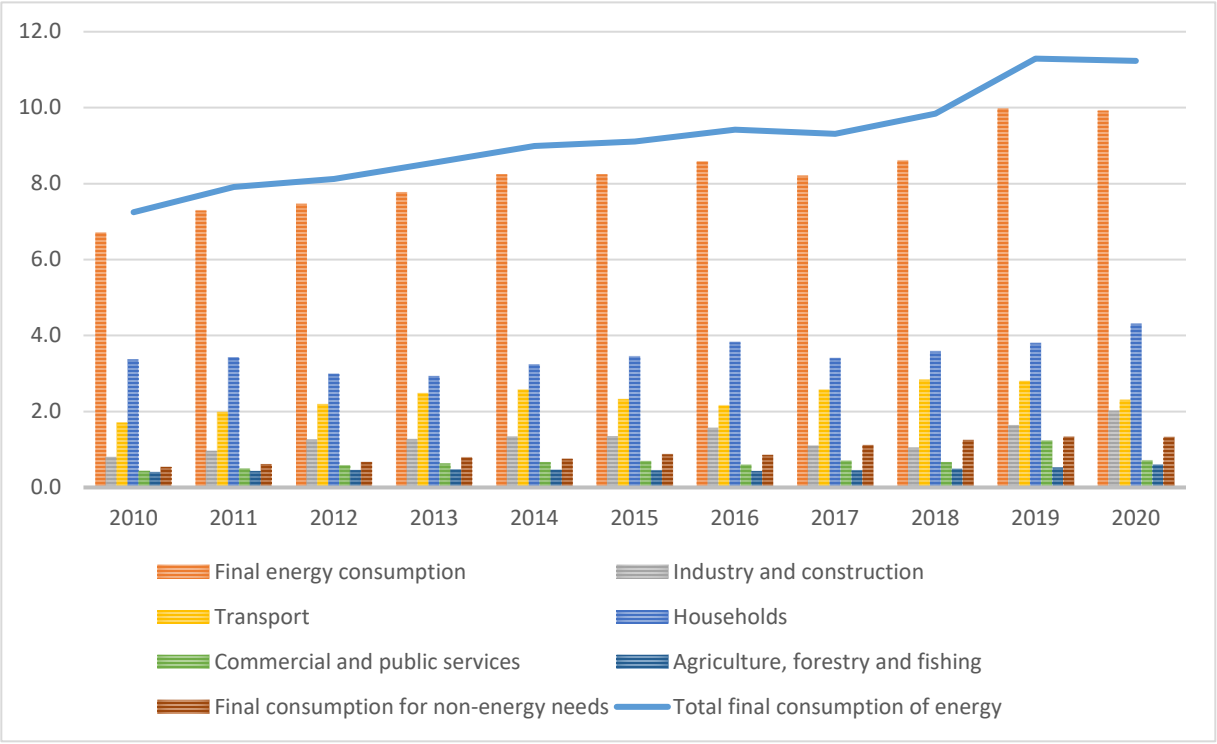
[3] https://www.stat.gov.az/source/balance_fuel/?lang=en

2010 and reached to 63.3 thousand persons. In compare to total employment indicators it accounts for more than 1.3% of total employed population in Azerbaijan.[4]

In compare to 2019, total energy supply in the country decreased by 2.5% and made 16.6 million tons of oil equivalent in 2020. In general, total energy supply in the country experienced a rising tendency over the last years, and the indicator of 2020 is higher than the analogical indicator observed in 2010 by 32.2% or 4.1 Mtoe. Registered expantion can be explained with the development of the country's economy, including industry.

Azerbaijan's total energy consumption (TFC) accounted for 11.2 Mtoe in 2020. When come to the details of sub-sectoral consumption, household is the largest final consumer with 4.3 Mtoe or 38.2% of total energy. Following households, transport is the second-largest final-energy-consuming sector with 2.3 Mtoe or 20.5%.[5]

Figure 2. Final consumption of energy by types of economic activity, in Mtoe



Source: State Statistical Committee of the Republic of Azerbaijan.

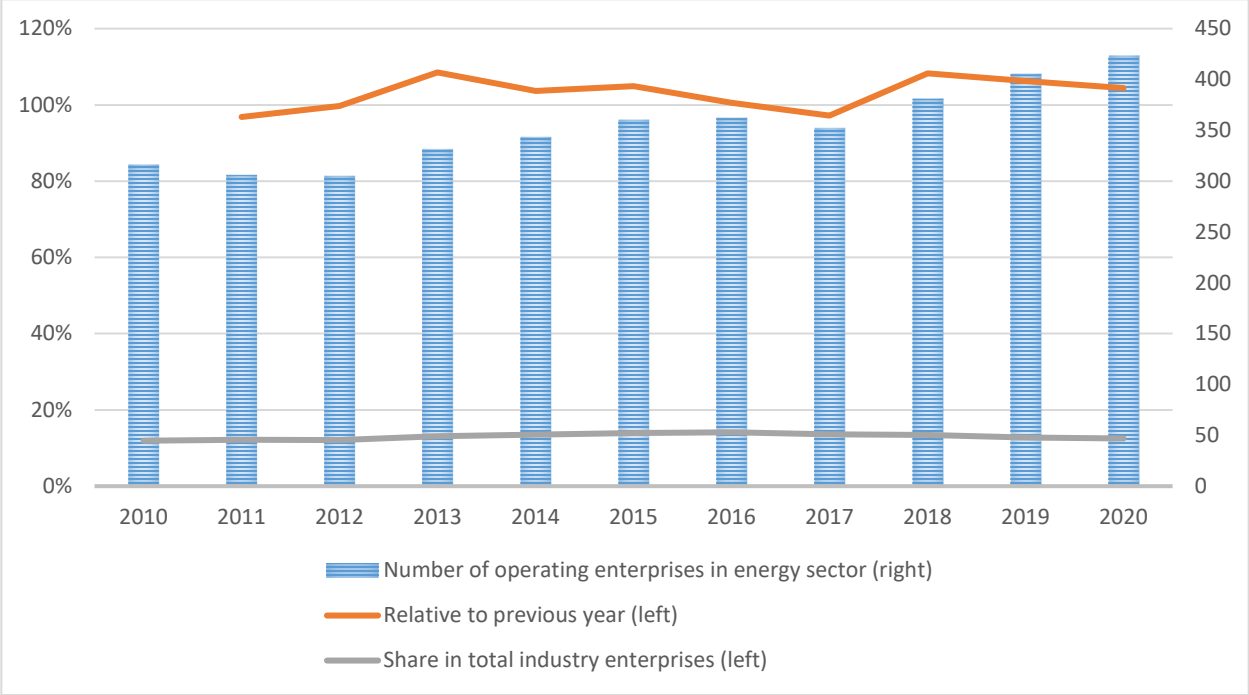
Although households represent the major part of total energy consumption in the country, its share in total energy consumption dropped from 46.4% to 38.2% between 2010-2020.6 Higher share of households' energy consumption in total energy consumption also indicates the enormous potential for reducing energy loss and for using energy far more efficiently within this sector. Energy

[4] https://www.stat.gov.az/source/balance_fuel/
[5] https://www.stat.gov.az/source/balance_fuel/?lang=en
[6] It should be noted that, 35-40% of household consumption in total energy consumption is a global average. For more information see: https://www.az.undp.org/content/azerbaijan/en/home/library/UNDP-AZE-EE-Report-2021.html

consumption per capita increased form 1.4 thousand tons of oil equivalent to 1.7 thousand tons of oil equivalent between 2010-2020.

During the last decade, Azerbaijani government in the face of State Oil Company of the Azerbaijan Republic (SOCAR) and international companies have invested considerably in the energy sector. The construction of several new power plants, pipelines, as well as rehabilitation and modernisation of infrastructure and electricity networks are examples of these mega investments. Notwithstanding of privatisation of the Azerbaijani economy since the gained sovereignty, the energy sector remains predominantly government-owned. At the same time, the development of entrepreneurship in the sector can be obviously seen from the official statistics. The number of enterprises operating in energy sector increased throughout the period of 2010-2020. In compare to 2010 (316 enterprises), the number of enterprises increased by 34% or 107 enterprises and reached to 423 in 2020. The share of enterprises operating in energy sector in total enterprises remained almost stable over the loop years.

Figure 3. Entrepreneurship in energy sector



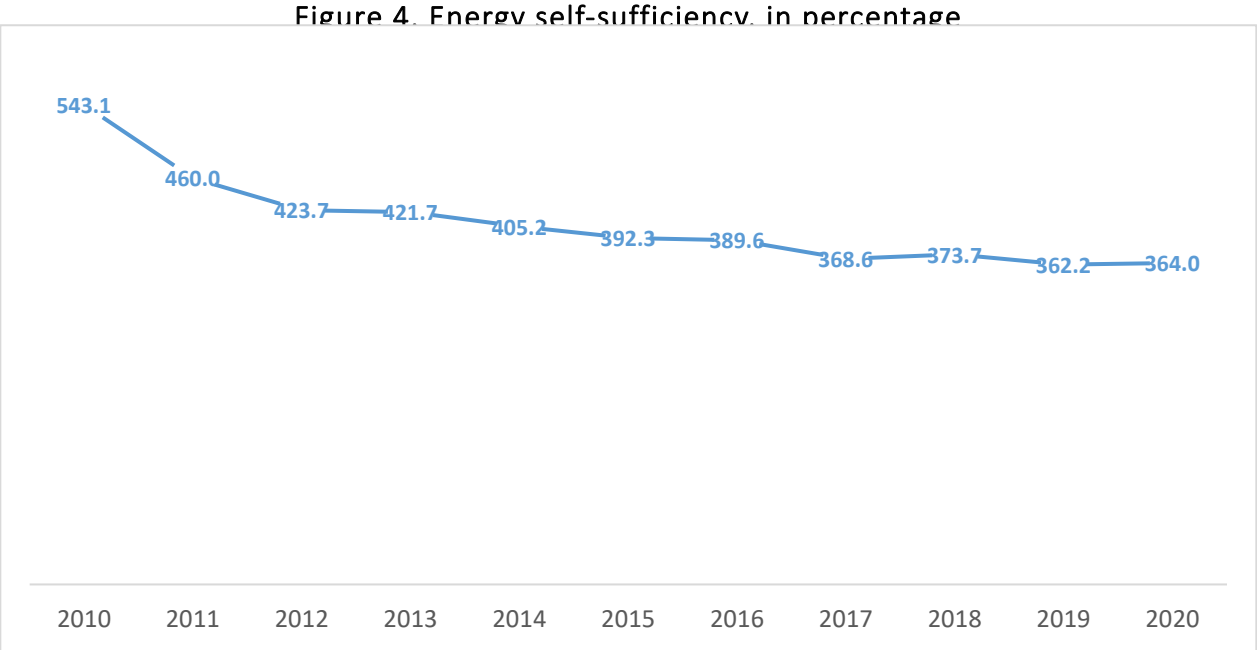
Source: State Statistical Committee of the Republic of Azerbaijan.

Total amount of foreign direct investments was 4.5 billion USD in 2020. In addition, the share of the oil and gas sector in the structure of total foreign direct investments accounted for 86.6% at the same year.

Although, energy self-sufficiency has been decreased between 2010-2020, it remains high at 364%, due to large hydrocarbon production. It should be noted that this indicator is higher than analogical indicators of Russia (191%), Turkey (30%) and some advanced economies of European Union, such as France (55%), Germany (35%) and among others.[7]

[7] http://energyatlas.iea.org/#!/tellmap/-297203538/1

Figure 4. Energy self-sufficiency, in percentage



Source: State Statistical Committee of the Republic of Azerbaijan.

Energy efficiency

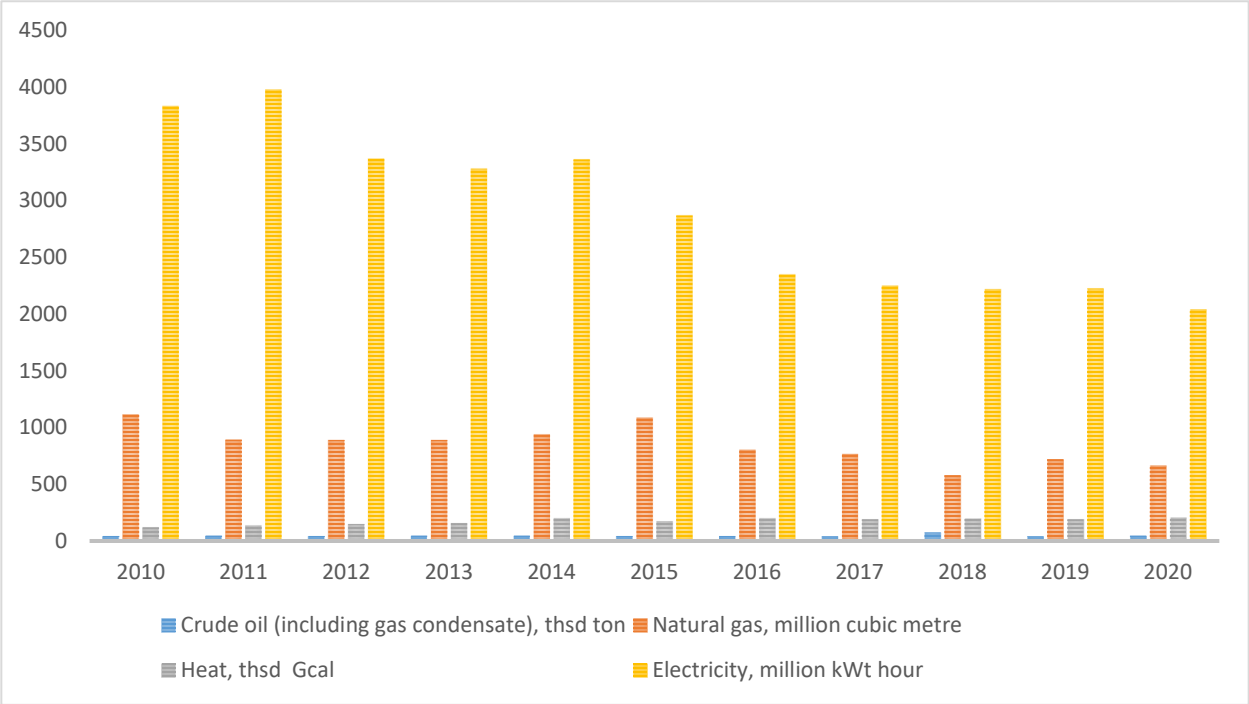
By the virtue of saving energy resources in industry, commercial services and agriculture through the use of various tools is rather significant for the energy policy of Azerbaijan. For instance, over the past 10 years, losses in the production and distribution of electricity have been reduced from 22.6% to 10.5%, and the specific consumption of fuel for the production of 1 kWh of electricity has been reduced from 331.6 grams to 271.1 grams in the country.[8] In comparison with 2010, there were 450 million cubic metre (or 40%) and 1787.9 million kWt hour (or 46%) reduction in natural gas and electricity losses. On the other hand, losses in crude oil (including gas condensate) and heating grew by 4.5 thousand ton (or 10%) and 85.5 thousand Gcal (or 71%) respectively in aforementioned period.[9]

[8] https://minenergy.gov.az/en/meqaleler-ve-musahibeler/18102019-energetika-naziri-perviz-sahbazovun-respublika-qezetinde-20-oktyabr-energetikler-gunune-hesr-edilmis-azerbaycanin-energetika-sektorunda-strateji-inkisaf-dovru-adli-meqalesi-derc-olunub

[9] https://www.stat.gov.az/source/balance_fuel/?lang=en

Some statistical discrepancies from statistics of Ministry of Energy.

Figure 5. Energy losses



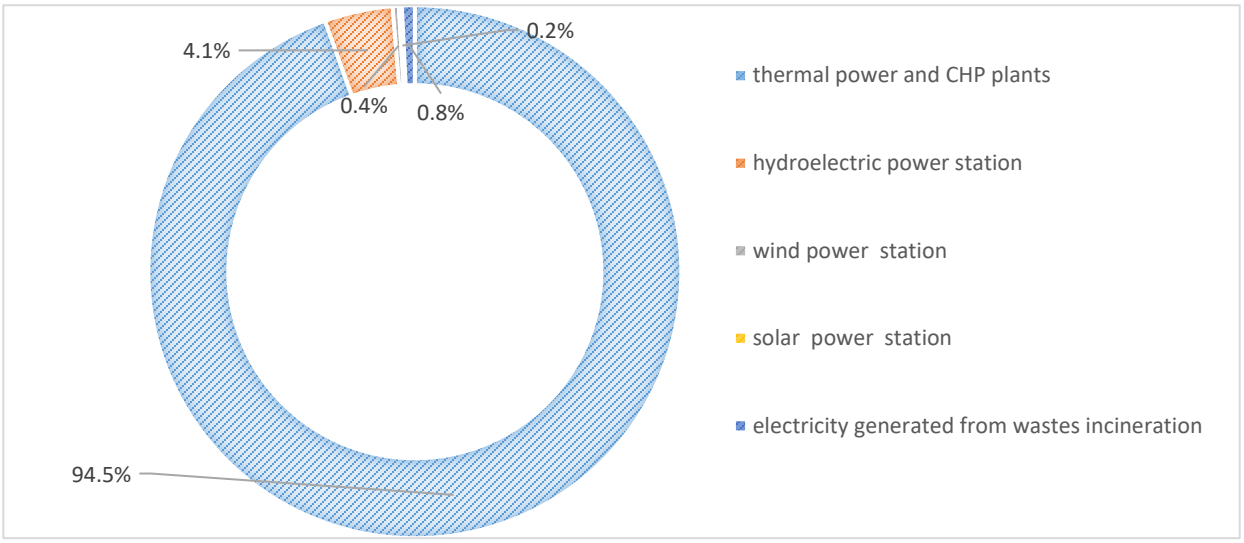
Source: State Statistical Committee of the Republic of Azerbaijan.

Electricity sector

In order to meet the demand of consumers for electricity, a number of energy sources (natural gas, water, solar, wind, biomass, etc.) are currently used in the country. There are not nuclear and coal facilities in Azerbaijan and natural gas is the major source for the electricity generation. In compare to 2019, the total electricity production in the country reduced by 0.9% or 233.8 million kWt hour and stabled at 25839.1 million kWt hour in 2020. However, in comparison with 2010, there were 38% or 7129.9 million kWt hour more electricity production in the country during 2020.

According to State Statistical Committee, roughly 94% of the electricity generated in Azerbaijan is produced by thermal power and Combined Heat and Power (CHP) plants and the remaining parts come from renewable energy power plants (hydroelectric, wind, solar power stations and electricity generated from wastes incineration). Taking into consideration that a majority of electrical energy in Azerbaijan is produced via thermal power plants, the cost-efficient and effective use of natural gas as a primary source of energy is of vital significance. In 2020, 24425.9 million kWt hour electricity has been produced in thermal power and CHP plants (including autoproducers working with fuels and generators). This figure is 9163.2 million kWt hour or 60% more than the analogical figure observed in 2010.

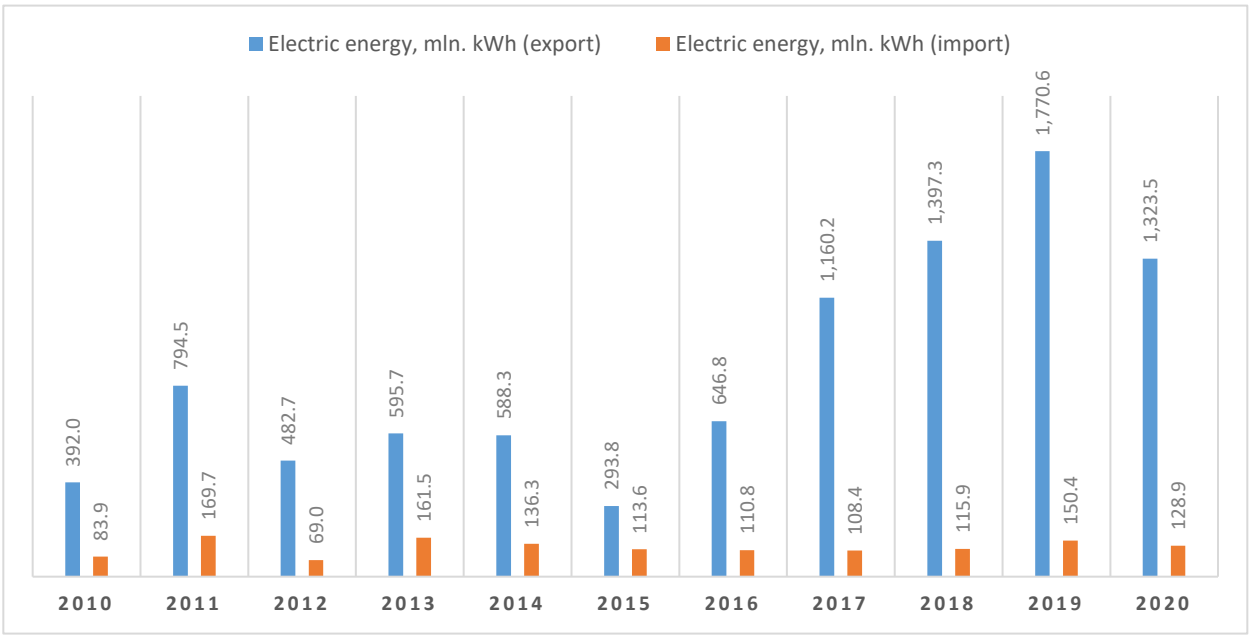
Figure 6. Production of electricity by sources in 2020



Source: State Statistical Committee of the Republic of Azerbaijan

During the last 10 years, Azerbaijan has continually increased its export of electricity. In 2020, electric energy export from Azerbaijan was about 3 times higher than the analogical indicator of 2010. However, it should be also noted that electric energy export in 2020 was 25% or 447.1 million kWt hour less than the same indicator of 2019. Azerbaijan also imports electric energy from the region countries and during last decade total export was reached 128.9 million kWt hour in 2020.

Figure 7. Total electricity export/import, million kWt hour

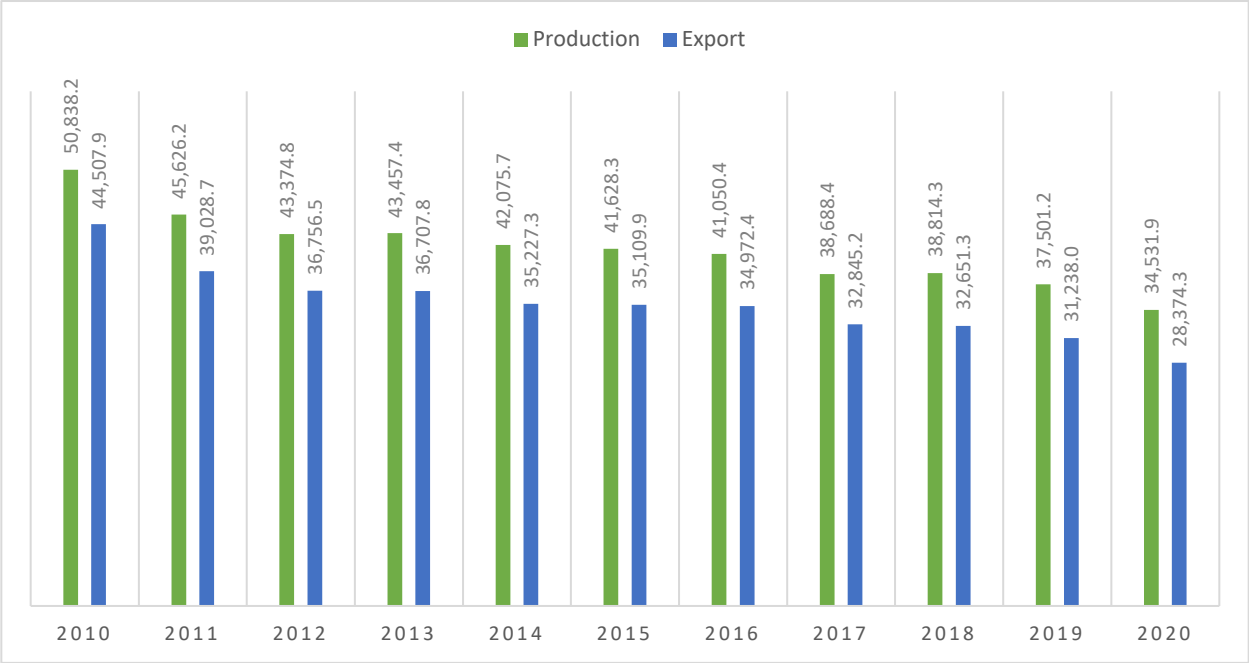


Source: State Statistical Committee of the Republic of Azerbaijan

Oil sector

Azerbaijan ranked at 20th place for its proven oil reserves (7 billion barrel) and this accounted for 0.4% of global reserves, according to the June 2018 BP Statistical Review of World Energy. Crude oil extraction in the country reached the highest level in 2010 and has been reducing gradually since. In 2010 there were 50.8 million tons crude oil production (including gas condensate) in the country and this figure decreased by more than 30% and accounted to 34.5 million tons in 2020.

Figure 8. Crude oil (including gas condensate), thousand ton



Source: State Statistical Committee of the Republic of Azerbaijan.

As it is seen from the figure above, crude oil export in the country decreased by 36% or 16.1 million ton and dropped to 28.4 million tons during the last decade. Total crude oil supply stabled around 6 million tons and have not saw dramatic shifting in aforementioned period.

Gas sector

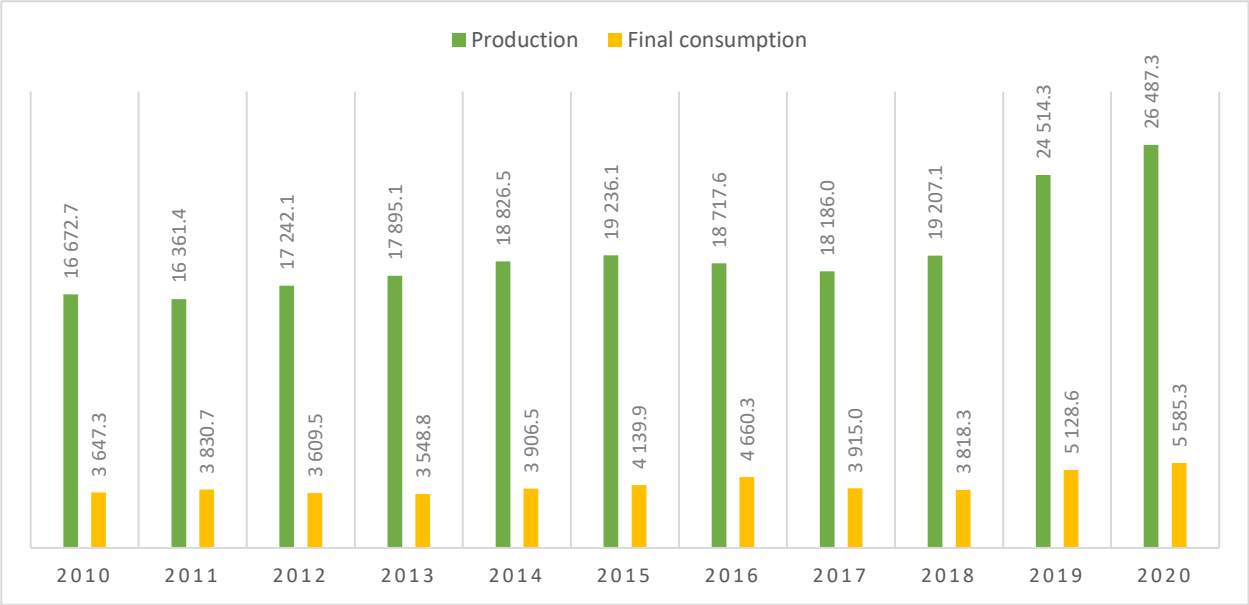
Azerbaijan`s role in the region is growing as a gas producer and exporter. In 2020, Azerbaijan was placed 25th for its natural gas reserves (991.1 billion cubic meters) in the world.[10] In addition, country was in 8th place in the world with respect to natural gas export in gaseous state (HS code 271121, 2.1 billion USD) in 2020.[11]

Total gas production and consumption increased to a large extent in Azerbaijan during the last decade. There were 26487.3 and 5585.3 million cubic metre total gas production and consumption respectively in 2020. Thus, in compare to 2010, rising trends in gas sector in 2020 were as follows:

- total gas production increased by 58.9% or 9814.6 million cubic metre,
- total gas consumption increased by 53.1% or 1938 million cubic metre.

[10] https://www.indexmundi.com/map/?v=98
[11] https://www.trademap.org

Figure 9. Gas production and consumption, million cubic metre



Source: State Statistical Committee of the Republic of Azerbaijan.

In 2020, when come to the details of sectoral distributions, households represent the main part of total sectoral gas consumption (67%). Industry and construction sectors is also one of the main players in gas consumption (24.8% in total). Natural gas export increased since 2016 by 72% and reached to 13,8 million cubic metres in 2020.[12]

One of the mega-projects that has been designed to diversify the energy map of the entire Europe based on Azerbaijani gas resources is Southern Gas Corridor, which brings natural gas from the Caspian Sea to Europe. From the route Azerbaijan-Georgia-Turkey, TANAP connects to Europe - the TAP line, and then extends, covering countries on the line running through Bulgaria, Greece, Macedonia, Albania, Serbia, and Bosnia and Herzegovina.[13] It is planned to enhance the capacity of TANAP, first to 16 billion cubic meters, and then to 31 billion cubic meters in next years.[14] In 2019, opening ceremony of TANAP (1850-kilometer-long gas pipeline from Turkey onward to Europe) were held. Via TANAP gas resources from the "Shah Deniz 2", a gas condensate field in Caspian Sea, is delivering to European markets.

[12] https://www.stat.gov.az/source/balance_fuel/
[13] https://www.tap-ag.com/
[14] https://www.tanap.com/

Figure 10. Sectoral gas consumption in economy, in percentage

Source: State Statistical Committee of the Republic of Azerbaijan.

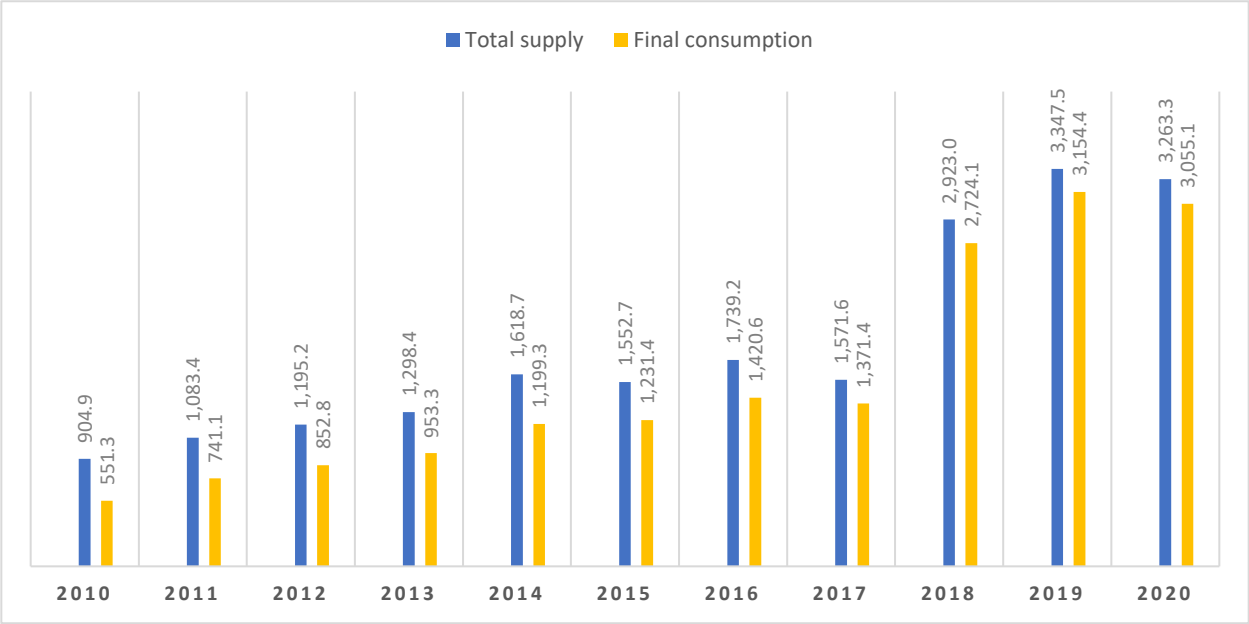
At the same time, Baku-Tbilisi-Erzurum gas pipeline, which was opened in 2007 plays a very important role in connecting the energy channels of region. Additionally, at the end of 2021, Azerbaijan and Turkmenistan, signed an agreement on gas exchange through Iran. By the agreement, 1.5-2 billion cubic metre gas will be transported from Turkmenistan to Azerbaijan via Iran annually, which is important in terms of diversification of energy corridors in region and their transfers to European markets.[15]

Heating sector

Natural gas is the major source for the production of heat energy in the country. As it is seen from the figure below increasing trends observed in heat energy supply and consumption over the last decade in Azerbaijan. In compare to 2010, supply and consumption of heating raised by 3.6 and 5.5 times and reached to 3263.3 and 3055.1 thousand Gcal, respectively in 2020. At the same time, with the growing heat consumption, heat losses were increased by 1.6 times during the same period.

[15] https://apa.az/az/xeber/xarici-siyaset/asqabadda-azerbaycan-iran-ve-turkmenistan-arasinda-qaz-mubadilesine-dair-muqavile-imzalanib-673034

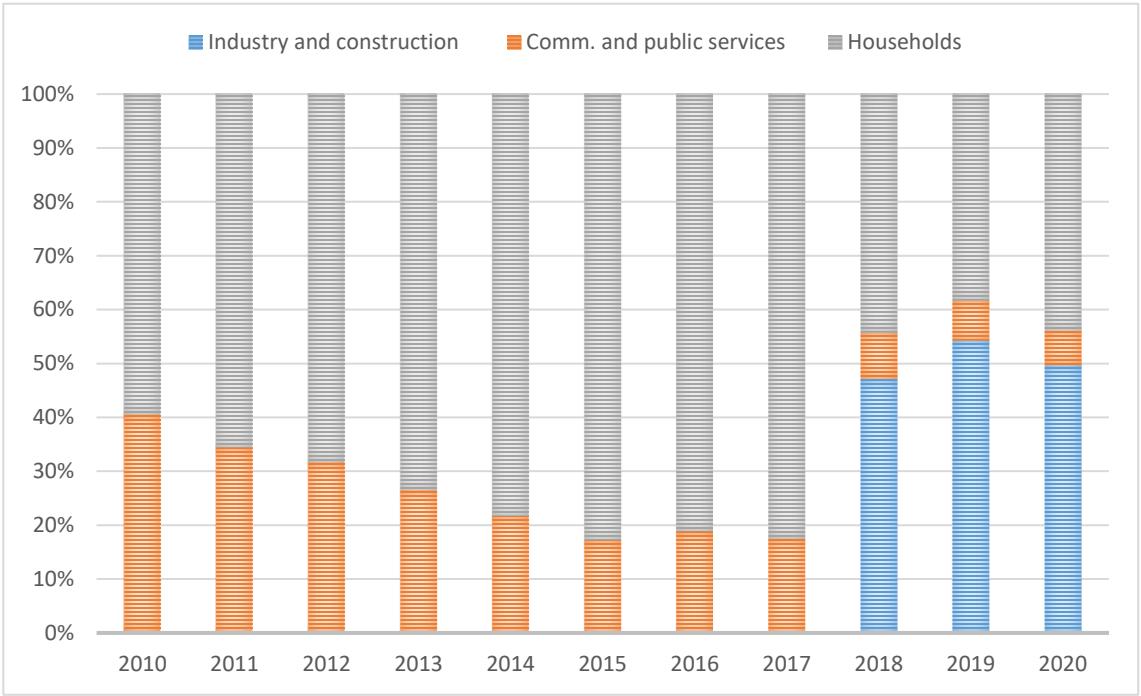
Figure 11. Heating supply and consumption in total, thousand Gcal



Source: State Statistical Committee of the Republic of Azerbaijan.

Importantly, there were important shifting in the consumption patterns in heating. The share of industry and construction sectors in heat consumption increased radically during the last 3 years and reached to 1517.1 thousand Gcal, which is more than 49% of final energy consumption in heating.

Figure 12. Heating consumption in sectors of economy, in percentage



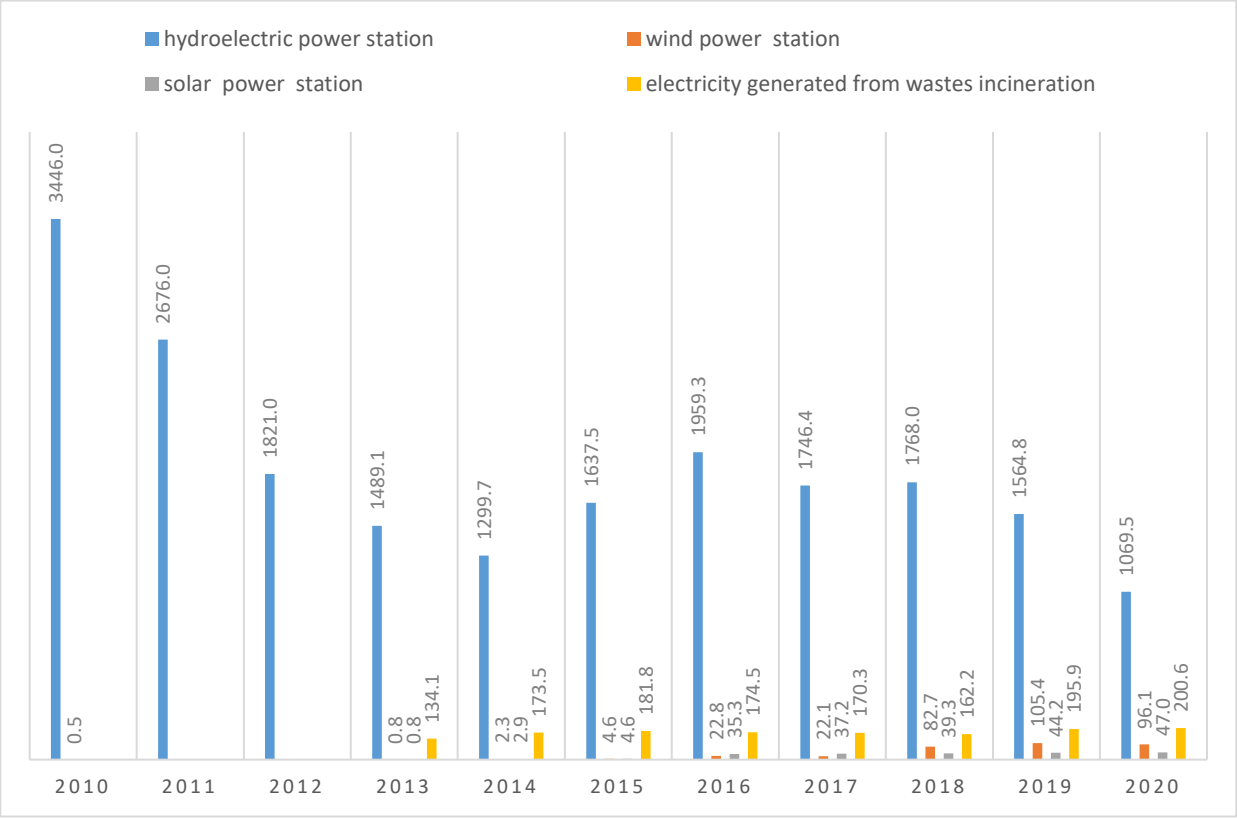
Source: State Statistical Committee of the Republic of Azerbaijan.

Nevertheless, the share of households' consumption in final energy consumption of heating dropped from 59% to 43% in 2020.

Renewable energy sector

Along with modern oil and gas power plants, installation and operation of alternative power stations based on renewable energy sources is increasing in energy production. As a traditional producer of oil and natural gas, Azerbaijan has abundant – albeit gradually decreasing – hydrocarbon reserves to meet its energy supply requirements. Furthermore, thanks to the geographical location, diverse landscape, plains, mountains and the Caspian Sea, Azerbaijan has a great potential for production of renewable energy. Currently, the share of renewable energy sources in overall energy balance is about 17-18%. However, Azerbaijan's Energy Ministry is planning to increase the share of its renewable energy sources to 30% in its overall energy balance by 2030.[16]

Figure 13. Production of energy by renewable sources, million kWt hour



Source: State Statistical Committee of the Republic of Azerbaijan.

Hydropower. Hydropower makes up more than 75% of Azerbaijan's total renewable energy production. However, its use in electricity generation has decreased over the last decade. The country has 12 large and 7 small hyrdopower plants. The estimated hydro technical potential of Azerbaijan is 520 MW, which could generate up to 3.2 TWh annually.[17] Small-scale hydro has significant developmental potential in the country.

On the other hand, Azerenerji OJSC, a state-owned company, is Azerbaijan's main producer of hydroelectric energy. To improve the efficiency of existing small hydro power plants in the regions and

[16] https://gjia.georgetown.edu/2019/12/26/renewable-energy-renews-azerbaijans-energy-strategy/
[17] https://www.iea.org/reports/azerbaijan-energy-profile/sustainable-development

enhance the hydro-energy potential of small mountain rivers, efficient energy policies and infrastructural development could be realized.

Wind energy. By virtue of landscape characteristics and coastal areas along the Caspian Sea, utilisation of wind resources in Azerbaijan is of great potential. According to The Ministry of Energy, the country has around 3000 MW of technical and around 800 MW of economic wind power potential.[18]

Bioenergy. Development of industry and agriculture is creating new chances for electricity generation from combustible industrial waste, forestry and food processing waste, agricultural waste, and other biological substances. According to the calculations of Ministry of Energy, there is a technical potential of 380 MW bioenergy in the country. Currently, bioenergy is mainly consumed for heating and cooking in remote areas in the form of traditional biomass. In addition, there is a significant potential for generating energy from household biodegradable wastes in the country.[19]

2.3. National energy policy

The key focus for the Government of Azerbaijan is to gradually shift from the current dominance of the vertically integrated and government-owned energy companies (State Oil Company of Azerbaijan Republic, Azerenerji OJSC, Azerishiq OJSC, Azeristiliktedzhizat OJSC, State Energy Service of Nakhchivan Autonomous Republic) to a competition-based liberal energy market with extensive private sector participation. Continuous reliance of the energy sector on government support without flexible market operations has resulted in the heavy burden on government's financial commitments, as shown in the Table 3.3.1. Shift to market-based sector activities will certainly lead to significant economic benefits and energy efficiency across all energy subsectors (electricity, natural gas and district heating).

Table 1. Direct and indirect (cross) subsidies in the energy sector of Azerbaijan, (USD million)

Sectors	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Oil	140	477	569	691	181	28	273	741	1131	977
Electricity	264	296	352	427	326	591	699	757	956	483
Gas	468	595	578	594	483	544	550	581	835	448
Total	871	1368	1498	1712	990	1162	1522	2079	2922	1909

Source: International Energy Agency

The key government bodies that are actively involved in energy sector development programs or policies in the country are listed below:

- *Ministry of Energy* has primary authorities related to the preparation of the country's fuel-energy balance; supervision over the efficient utilization of energy resources; preparation and implementation of the state programs on perspective development of energy sector; relevant policy and regulatory functions in energy sector; issuance of various licenses in energy sectors;

[18] https://www.iea.org/reports/azerbaijan-energy-profile/sustainable-development
[19] https://www.iea.org/reports/azerbaijan-energy-profile/sustainable-development

etc. It also reviews the proposals of the energy sector companies on development of energy infrastructure including technical documentation and designs.

- *Azerbaijan Energy Regulatory Agency under the Ministry of Energy (AERA)* was established as per the Presidential Decree on December 22, 2017, as a public legal entity. Under its charter, AERA has the following key areas of activities related to tariff formulation and investment promotion in energy sector: develops proposals on formation of energy price policies, analyzes the proposals on electricity tariffs subject to state regulation[20], promotion of electricity generation diversification, and relevant investment promotion, issues the permits for approving the third-party access of new facilities to the electricity grid, develops proposals on incentives for fostering investments in the energy sector based on best international practice, conducts activities to ensure sound competition in the energy sector and to increase efficiency in energy production.
- Development of renewable energy sources is promoted and regulated by the *State Agency on Alternative and Renewable Energy Sources* (SAARES) under the Ministry of Energy that was established in 2009 by a Presidential decree. The regulation "On the State Agency on Alternative and Renewable Energy Sources" was adopted in 2014 that specified clear aims of implementation of the state program for development of alternative and renewable energy sources in Azerbaijan.[21] The State Company for Alternative and Renewable Energy was established under SAARES as per the decree No.64322 in 2012. According to the decree, the company's key activities were identified as to develop renewable power plants and related complexes, as well as determine the sources of renewable energy resources. In September 2020, the Agency was re-organized as the *State Agency for Renewable Energy Sources* as per the relevant Presidential Decree.
- *Tariff Council* (TC) is the collective executive body carrying out the state regulation over service fares, collections and prices (tariffs) subject to state regulation. It approves or rejects energy tariff proposals submitted by energy sector companies and AERA, i.e. electricity, natural gas, heat energy and oil products in compliance with acting legislation[23]. TC adopts relevant documents on regulation of tariffs service fares and collections subject to state regulation (i.e., identification of regulation method; review and discussion of proposals on tariffs; preparation, approval, application and amendment of tariff designs, etc.). The Tariff Council is chaired by the Minister of Economy, with members comprising from various state agencies.

The current primary legislation of the Republic of Azerbaijan in energy sector includes:

- Law on Energy (November 24, 1998)
- The Law on the Rational Use of Energy Resources and Energy Efficiency (July 9, 2021)

[20] Electricity tariffs subject to state regulation: generation, wholesale, transmission, retail, and import & export.
[21] The program covering the period of 2005-2013 was approved by the Presidential Order No. 462 on 21 October 2004.
[22] According to the Presidential decree 643 dated 01 June 2012.
[23] The Decree No.341 of the President of Azerbaijan Republic on Approval of the Charter of the Tariff (price) Council dated 26 December 2005; the Decision N247 of the Cabinet of Ministers of Azerbaijan Republic on Approval of the Regulations for Ensuring the State Control over Formation and Application of Tariffs (prices) Subject to State Regulation dated December 30, 2005; the Decision N178 of the Cabinet of Ministers on Approval of the List of Products (Goods, Works, Services) Subject to State Regulation (September 28, 2005)

- Law No. 459-IQ on Electric Power Industry (3 April, 1998)
- Law No. 513-IQ of on Gas Supply (30 June 1998)
- The Law on Power and Heat Generation Plants (December 28, 1999,)
- The Law on the Use of Renewable Energy Sources in Electricity Generation (May 31, 2021)

The *Law on Energy* ensures the regulation of the exploration, development, production, processing, storage, transportation, distribution, and use of all "energy materials and products", including gas. In fact, the Law on Energy" is a "framework" law in the sector of energy regulation. Any person planning to carry out energy activities prior to the commencement of such activities must obtain special permission from the Ministry of Energy on the basis of an energy contract or by submitting an application to this ministry.

The *Law on Power and Heat Energy Generation Plants* establishes, in accordance with the legislation of Azerbaijan Republic, the legal fundamentals for design, construction, operation and use of permanent installations (further – power plants) generated electric and heating energy. The law considers the energy production units, located in a single (indivisible) space and technologically connected, as a single power plant.

The *Law of the Republic of Azerbaijan on the Rational Use of Energy Resources and Energy Efficiency*[24] covers the following issues related to energy efficiency: implementation of energy management and energy audit systems, application of energy management standards, development of the market of energy efficiency services in Azerbaijan.

Despite its adoption in July 2021, the Law will become effective only as of 1st of July 2022. This is due to the need for the development and adoption of the secondary legislation documents, such as norms and regulations, that will support the enforcement of this law. The law aims to solve the following issues: (i) implementation of an energy audit, (ii) application of energy management standards and (iii) the development of the market of energy efficiency services in Azerbaijan.

Under the *Law on Electric Power Industry*, physical persons or corporates are required to obtain a special permit to conduct activities in the field of production, transportation and distribution of electricity, unless otherwise specified by law.

The 1998 *Law on Gas Supply* regulates the production, processing, transportation, storage, distribution, sale and use of all types of gas. Oil and gas exploration and production projects involving international partners operate almost exclusively under production sharing agreements (PSAs), each of which has the status of a separate law.

Another important law contributing to the country's ongoing climate change improvement efforts in its energy sector is the *Law on Use of Renewable Energy Sources for Electricity Generation*[25], adopted in May 31, 2021. The government's principles of state regulation in the use of renewable energy sources in electricity generation are the followings:

[24] http://www.e-qanun.az/framework/48129
[25] http://e-qanun.az/framework/47842

- Application of state support mechanisms, and ensure an equal and non-discriminatory use of these mechanisms
- Ensure the equal opportunities in the use of electricity grids for all energy producers
- Application of international standards in the field of electricity generation from renewable energy sources
- Ensure the efficient use of renewable energy sources' potential.

According to the Law, the government's tasks in the field of use of renewable energy sources for electricity generation include the followings:

- Formulate and enforce the state policy in the relevant field
- Adopt national action plans in the field of use of renewable energy sources for electricity generation
- Adopt normative legal acts on this field
- Create convenient environment for the attraction of local and international investments to the use of renewable energy sources for electricity generation
- Determine the suitable areas for renewable energy sources development
- Apply the state support mechanisms in the field of use of renewable energy sources for electricity generation
- Implement activities aimed at development of professional experts, human resources development and education program designs in the relevant field.

An important secondary legislation in the electricity sector is the *Rules on Use of Electricity*, approved by Decision No. 18 dated February 2, 2005 of the Cabinet of Ministers of Azerbaijan Republic. Another important secondary legislation is the *Regulations on Control over Electric and Heat Energy, as well as in the field of Gas Supply* (adopted in July 2018). The regulations identify a set of state control mechanisms over electricity and heat supply sectors.

To continue the government's reform initiatives including further unbundling the electricity sector and introduce a competitive market, new version of the *Law on Power Engineering, draft Law on Regulator in Energy* and *Public Utilities* and *draft Law on Electricity Market* (developed with the support of USAID) were developed with cognizant of best international practice and market principles, and submitted to various stakeholders for consultations. The Draft Law on Electricity Market is still under the review of various government agencies.

3. Gender and energy policy

3.1. Gender equality and gender mainstreaming

3.1.1. What is Gender Equality and Gender Mainstreaming?

As a strategy for achieving gender equality, gender mainstreaming involves a gradual process of change in policies, strategies and activities. *Gender equality* is equal participation of women and men in decision-making, equal ability to exercise their human rights, equal access to and control of resources and the benefits of development, and equal opportunities in employment and in all other aspects of their livelihoods[26]. Gender equality is essential for sustainable development as it allows both genders to have equal opportunities and it stimulates economic growth. *Gender Mainstreaming* is a strategy for making women's and men's concerns and experiences an integral dimension of the project cycle, so that women and men can benefit equally from development interventions and inequalities are not perpetuated (Economic and Social Council, Agreed Conclusions 1997/2). Mainstreaming involves ensuring that gender perspectives and gender equality concerns are central to research, advocacy/ dialogue, legislation, resource allocation, planning, implementation and monitoring of development programs and projects. Mainstreaming a gender perspective into policies, programs and projects requires that both women's and men's needs are taken into consideration at all stages of the policy cycle. [27]

Gender mainstreaming requires both integrating a gender perspective to the content of the different policies, and addressing the issue of representation of women and men in the given policy area. Both dimensions – gender representation and gender responsive content- need to be taken into consideration in all phases of the policy-making process. *Gender representation* in policy areas looks at the representation of women and men as policy beneficiaries, as well as their representation in the labor force and in the decision making processes. *Gender responsive* content of the policies implies how gender relates to the content of policy measures, to gain a better understanding of how women and men would benefit from them. A gender responsive policy ensures that the needs of all citizens, women and men, are equally addressed.[28] Gender responsiveness refers to outcomes that reflect an understanding of gender roles and inequalities and encourage equal participation, including equal and fair distribution of benefits, shared power and resources of any policy or program among women and men. Gender responsiveness is accomplished through gender analysis that informs inclusiveness.[29]

Traditionally, government policy and legislation have been viewed as gender-neutral on the assumption that a public policy benefits all members of the public equally and also to avoid discrimination arising from the impression that there are social roles for which one gender is more suited than another. However, structural gender inequalities are still embedded in our society. Even if the laws treat women and men as equals, women still do not have equal access to and control over resources and assets, underrepresented in various employment domain and entrepreneurship activities, are concentrated mostly in low paid jobs and dedicate most of their time to unpaid jobs that is domestic work and caring for children and other family members. Policies focusing on the general public often impact women and men differently. If these different impacts are not taken into account, the policy will be gender-blind. To avoid this, it is necessary to take into account the different needs and interests of women and

[26] https://www.fao.org/3/i1243e/i1243e00.pdf
[27] https://www.un.org/womenwatch/osagi/pdf/factsheet1.pdf
[28] https://eige.europa.eu/gender-mainstreaming/what-is-gender-mainstreaming
[29] https://www.undp.org/content/dam/LECB/docs/pubs-reports/undp-ndcsp-gender-indicators-2020.pdf

men, to identify gender inequalities in access to and control of resources, to consider the impact of gender-based stereotypes and traditional gender roles, to anticipate different effects on women and men, and to ensure gender equality. Gender Mainstreaming strategy necessitates for making women's as well as men's concerns and experiences an integral dimension in the design, implementation, monitoring and evaluation of policies or programs in all political, economic and social spheres thus ensures that inequality between women and men is not perpetuated.[30]

3.1.2. Gender Equality and Gender Mainstreaming in Azerbaijan

Ain general, Azerbaijan is fully committed to gender equality. It has created a legal framework and policies, joined international conventions and initiatives to promote gender equality and women's empowerment in all social, political and economic spheres. Despite the presence of a legislative base guaranteeing gender equality, high achievements in education and notable progress in protecting reproductive rights, and creating enabling environment for women's economic empowerment, there still persists an interplay of different factors, numerous economic and social barriers, a lack opportunities and skills as well as gender and societal norms and expectations regarding gendered roles and responsibilities that hinder women to fully and equally participate in all employments domains, in decision making positions and public life. Major international gender equality indicators suggest that women benefit less than men from economic and social development, and gender inequalities persist in several areas such as access to health, labor force participation and political decision making.

According to the United Nations Development Program's (UNDP) 2020 Human Development Report, Azerbaijan's overall HDI value has steadily increased from 0.635 in 2000 to 0.756 in 2019 which puts the country in the high human development category by positioning it at 88 out of 189 countries and territories. Azerbaijan's HDI is above the average of 0.753 for countries in the high human development group and below the average of 0.791 for countries in Europe and Central Asia. From Europe and Central Asia, Azerbaijan is compared with Kazakhstan and Uzbekistan, which have HDIs ranked 51 and 106, respectively. However, the trends for gender equality have not progressed at the same rate. Gender Development Index (GDI) value decreased from 0.951 in 2000 to 0.943 in 2019 signifying medium equality in HDI achievements between women and men[31]. The 2019 female HDI value for Azerbaijan is 0.730 in contrast with 0.774 for males, resulting in a GDI value of 0.943, placing it into Group 3[32]. In comparison, GDI values for Kazakhstan and Uzbekistan are 0.980 and 0.939. The Gender Inequality Index (GII) value[33] for Azerbaijan has a minor progress, evolving from 0.319 in 2005 (the first-year data were available) to 0.323 in 2019 ranking it 73 out of 162 countries. In comparison, Kazakhstan and Uzbekistan are ranked at 44 and 62 on this index.

Another international gender equality measurement the Global Gender Gap Index (GGGI) devised by the World Economic Forum (WEF)[34] that rates gender disparities in resources and opportunities, ranks Azerbaijan in 94 place

[30] https://www.unwomen.org/-/media/headquarters/attachments/sections/library/publications/2011/10/women-s-empowerment-principles_en%20pdf.pdf?la=en&vs=1504 P.13

[31] http://hdr.undp.org/en/countries/profiles/AZE

[32] Countries are divided into five groups by absolute deviation from gender parity in HDI values. Group 3 comprises countries with medium equality in HDI achievements between women and men

[33] GII is a measurement of gender disparity introduced by UNDP Human Development Report in 2010. The higher the GII value, the greater the discrimination

[34] The GGGI considers four basic categories: economic participation and opportunity, educational attainment,

out of 153 countries for 2020. According to the Global Gender Gap Report 2020, the women's labor force participation rate is 69.2% compared to 74.2% for men. Their estimated earned income is only half what men earn, and only 2% of all enterprises have female majority ownership. According to the same report, women's share in Parliament is only 17% and no woman has been appointed as a minister. Only 66.1% of all pregnant women benefit from at least four visits as part of antenatal care and 13% of all women have been victims of gender-based violence at least once in their life.[35]

Gendered roles and norms in society have been evolving and gaining momentum over the past several decades due to social, political and economic transformations. A few years ago, men were considered the main source of income in the family, the sole breadwinner but, now, women also strive for equality in the world of work. However, gender disparities still persist in tasks and roles both in family, employment and professions. Gender stereotypes and societal norms continue to confine women to the household where they are predominantly valued for their reproductive work such as childcare and domestic chores.[36] Attitudes and norms about appropriate roles for men and women still shape people's behaviors and practices in all aspects of their lives. According to study findings by UNFPA, almost 70% of men and approximately 40% of women either agreed or strongly agreed that a woman's main role is to cook for the family and care for the home. Additionally, 57.2% of men and 37.2% of women thought women should not work if there are children in the home.[37] On average, women in Azerbaijan spend three times the amount of time as men doing unpaid domestic work. Men, on the other hand, perform paid work for three times longer compared to women. According to Time Use Survey by Azerbaijan State Statistics Committee for 2008 (the last available survey), women spend 6 hours a day to unpaid work such as caregiving and domestic works and this is not changed if women is engaged in paid jobs while men spend only 2 hours. In contrast, men spend 5 hours on income generating work and education, while women spend only 2 hours in this regard. A study conducted by UNESCAP[38] also concludes that their major share of domestic and care responsibilities prevents women from actively participate in the labor market and limit their ability to earn income. Traditions and norms further hamper women's access to education and paid employment. As a result, a large proportion of employed Azerbaijani women are also still engaged in domestic and care or other informal or low-paid jobs.

The labor market in Azerbaijan is also quite gender segregated with a sharp disproportionate representation of women or men in certain areas of employment and economic activity due to gender stereotypes and social norms. Low-paid sectors are traditionally dominated by women, who are considered less competitive workers. The economic activity and employment rate of women is still lower than that of men, 57% of women are still unemployed according to gender data for 2020 obtained from official statistics, which only covers those registered in the state employment agency. In Azerbaijan, women are predominantly represented in public services, health, education, culture and the arts. These positions have been considered "women's" sectors since Soviet times. Share of economically active women compared to men is lower by 5.8%, including urban places 6.6%, rural places 4.8% lower according to official statistics. Out of 48% employed women, 78.1% are engaged into the private sector and 21.9% in the public sector. Women make up 73% in education, 78% in health-care and social sphere and 62% in art

health and survival, and political empowerment

[35] Global Gender Gap Report 2020 http://www3.weforum.org/docs/WEF_GGGR_2020.pdf

[36] Gender Equality and Gender Relations in Azerbaijan: Current Trends and Opportunities https://menengage.unfpa.org/sites/default/files/resource-pdf/gender-equality-en.pdf

[37] Gender Equality and Gender Relations in Azerbaijan https://menengage.unfpa.org/sites/default/files/resource-pdf/gender-equality-en.pdf

[38] Examining Women's Economic Empowerment in SPECA Countries

and recreation economic activities. The consequence of working in the low-paying sector is pay inequality. Traditionally, the wages in these sectors are low, too low for traditional male breadwinners. Their average monthly salary ranges from 450 to 483 AZN in these employment domains where women are highly concentrated according to the data for 2020 obtained from official statistics. Gender pay gap also inherent in energy sector. Women are paid less than men as women earn 584 AZN (average monthly) in state energy enterprise and slightly higher in private energy companies while wages for men in the same field of activity range from 713 AZN in state to 737 (average monthly) AZN in non-state energy companies.[39]

In contrast, men are more represented in managerial and technical areas. The number of self-employed women in other sectors, such as electricity, gas and steam production, distribution and supply, water supply and mining industry is low. At present, women are underrepresented as entrepreneurs, business owners in Azerbaijan with only 25% of registered businesses being owned by women. Women represent only 21% of small enterprise owners.[40] According to the statistics published on the national statistics website, female private entrepreneurs as of January 2021 makes 21% compared to 79% of male entrepreneurs.[41] Women entrepreneurs are mainly concentrated in agriculture and fishing, trade and other service activities economic areas.

The Law on Employment lists the responsibilities of the state in the field of employment (Article 8). However, this document does not set any norms for ensuring and promoting gender equality in employment areas with underrepresented gender in the workplace. This means that the state does not see the promotion of gender equality in employment as its obligation, but rather encourages employers to provide employment to people in need of special protection.[42]

Representation of women in energy-related jobs or sector is low. Women comprise only 11.3% of those employed in electricity, gas, and steam production and only 13.8% of those employed in mining. Education patterns show that this situation is not likely to change soon. Women are only 13% of those studying in the energy field and in energy-machine building in vocational education, and only 10% of those enrolled in the exploration and extraction of minerals. While the energy sector can provide employment opportunities for women and men, the sector is dominated by men. Persistent gender inequality in secondary and higher education, as well as gender stereotypes in the labor market, contribute to restricting women's access to opportunities for technical and skills training. These, coupled with gender discrimination in hiring practices, severely restrict women's participation in the energy sector and are constraints to the development of a skilled and empowered female workforce.[43]

The number of women engaged in three kinds of activity- namely rendering of human health and social work activities, education and art, entertainment and recreation is higher than those of men by 55,2%, 46,6% and 24,0% respectively.

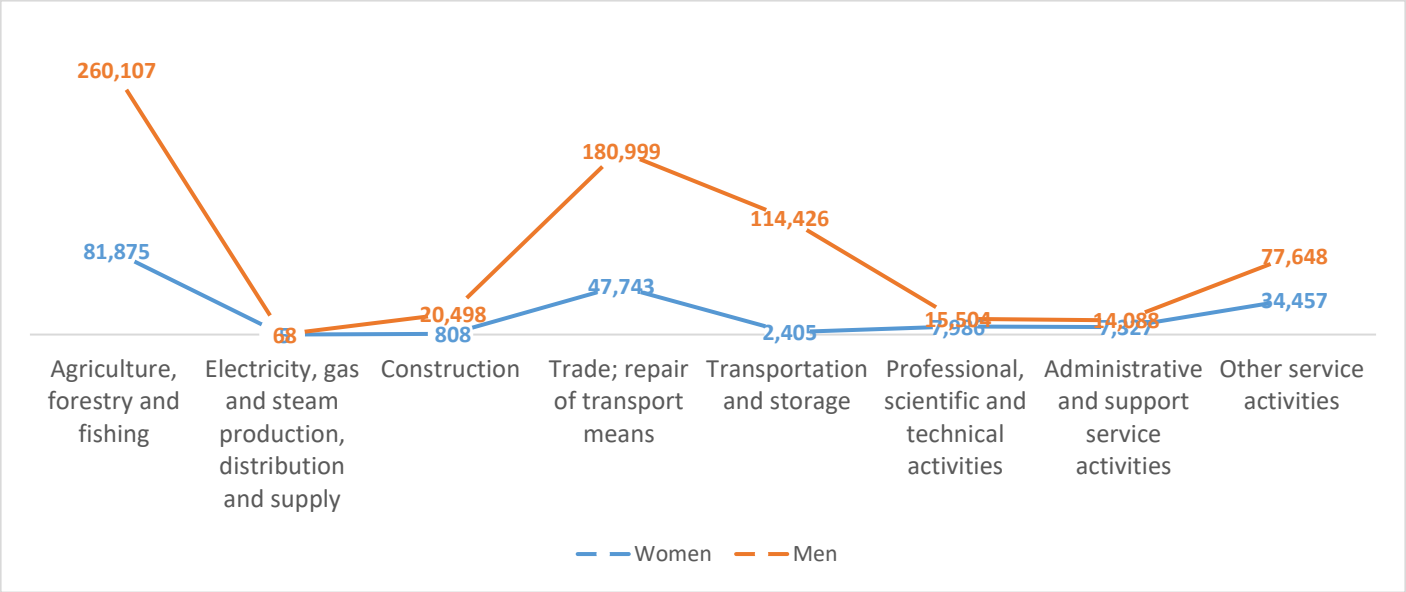
Accordingly, women are also underrepresented in technical and technological specialties in tertiary education compared to men, who make up 33%. As previous year the share of women in state higher educational institutions for the beginning of 2020/2021 academic years made 48 %, share of men-52 %. Female students generally prefer

[39] https://www.stat.gov.az/menu/6/statistical_yearbooks/source/WM_2021.zip
[40] https://www.adb.org/sites/default/files/institutional-document/546166/azerbaijan-country-gender-assessment-2019.pdf
[41] https://www.stat.gov.az/source/gender/en/qk/004_15en.xls
[42] Məşğulluq haqqında Azərbaycan Respublikasının Qanunu. 2018. № 1196-VQ. http://www.e-qanun.az/framework/39846 https://www.sosial.gov.az/uploads/images/image_750x_5d315dea1cc49.pdf
[43] https://www.adb.org/sites/default/files/institutional-document/33650/files/gender-toolkit-energy.pdf

specialties related to education, humanities and social sciences, economics and management, while the majority of male students prefer technical and technological specialties, economics and management.

At the same time, the participation of women in such types of entrepreneurial activities as agriculture, trade and other services is higher than among male entrepreneurs. An important factor to be considered is women's involvement in the informal economy. According to International Labor Organization estimates, 12.8% of women are engaged in the informal sector which has seen growth over the past few years.[44] The involvement of women in the informal sector blurs the distinction between paid and unpaid labor. 1281 people have benefited from the self-employment program implemented since 2016. However, a very small proportion out of overall benefitting 1281 people, only 309 are women which in a way explains disparities in accessing available resources and opportunities.

Figure 14. Number of private entrepreneurs by gender distribution and types of activity, as of 1 January 2021



Source of Analysis: The State Statistics Committee of the Republic of Azerbaijan

Although the laws and provisions of laws that Azerbaijan government has adopted are gender-neutral and nondiscriminatory creating conditions that everyone could benefit but statistics and analysis shared above, show that when inequality prevails in society, the number of women benefiting from the entrepreneurship support program and its benefits is even lower.[45]

The government has adopted a number of policies and laws aimed at promoting gender equality in all areas of society, such as law on "Ensuring Gender Equality", Presidential Decree "About measures for strengthening women's role in Azerbaijan, creation of the State Committee for Family, Women and Children's Affairs (SCFWCA), law on Prevention of Domestic Violence, National Action Plan on Gender Equality for 2020-2024. In addition, Azerbaijan has joined various international conventions and agreements to combat gender-based violence and discrimination such as CEDAW, Beijing Platform of Action, Millennium Development Goals, Sustainable Development Goals on Gender Equality and Women's Empowerment. To promote the equality of men and women,

[44] International Labour Organization, Decent Work Country Profile. Azerbaijan, (2012), p.9
[45] https://azerbaijan.unfpa.org/sites/default/files/pub-pdf/hesabat_publication_end_-_final_for_pinting.pdf?fbclid=IwAR1XrJ6i5jDpEEKNx-b1AFR3eUhB_K1aIhkdCEHQcbq7wAgKiviaFh_Nzm8

more specifically their equal representation in state administration, the President of Azerbaijan Republic signed a decree "On implementing state policy regarding women in the Republic of Azerbaijan." On March 6, 2000[46]. This decree laid the foundations for creating a state strategy with respect to gender equality and the expansion of opportunities for women. To monitor the implementation of state policy on gender equality and women's empowerment, the SCFWCA annually submits a report to the Cabinet of Ministers, based on information received from the relevant ministries and departments regarding the progress achieved in implementing the present decree.[47]

Azerbaijan endorsed the 2030 Agenda for Sustainable Development in 2015 and initiated actions to achieve the Sustainable Development Goals (SDGs), including promoting gender equality. The government took steps to align the goals and targets with the national development agenda, assigned agency responsibilities, built the capacity of state officials to execute related policies, and created working groups for SDG focus areas. All goals related to gender equality, empowerment of women and girls in connection with SDG Goal 5 which aims to achieve gender equality and empower all women and girls have been prioritized in Azerbaijan. Of the 244 SDG indicators, the government has prioritized 119, which include all indicators for SDG 5. Besides SDG 5, other SDGs (e.g. SDG 3 on health, SDG 4 on education) contain gender-specific targets. The government established the National Coordination Council for Sustainable Development of Azerbaijan to coordinate and monitor the implementation of SDG indicators.

3.2. The link between gender and energy policy

According to the Organization for Economic Co-operation and Development (OECD), energy availability trends affect women and men differently[48]. Energy is not gender neutral, the development of energy affects men and women in different ways, and the decisions about energy use are different for men and women. Women and girls are predominantly responsible for the bulk of household work, access to energy makes a significant difference to their health and well-being. This means that women spend more time at home and are therefore more dependent than men on heating and indoor air quality. The same is with women in Azerbaijan. As stated above, compared to men who spend only 2 hours a day on household chores, women spend 6 hours on caring and housework, which does not change even if women are engaged in productive work[49]. Therefore, women are more dependent on energy to use household devices (e.g. ovens, dishwashers, vacuum cleaners, air conditioner, stove, heaters etc.) than men.

Poor housing conditions (such as poorly insulated environments) and pollutant electronic devices and fuels may have a negative impact on women's health especially reproductive health. Women's domestic role makes them the main household energy consumers and have more stake in energy decisions. As countries around the world move towards a renewable, decarbonized, decentralized energy system, the energy needs, priorities and opportunities of women and men must be integrated into national energy policies and strategies to ensure that policies reflect

[46] Law on Gender Equality (No. 150-IIIQ dated 10 October 2006); Presidential Decree on Implementation of the State Women's Policy (dated 6 March 2000). Cabinet of Ministers *Resolution of the on implementation of the Decree of the President On Implementation of the State Women's Policy in Azerbaijan (*No. 176 dated 26 September 2000. In Azerbaijani language).
[47] https://www.un.org/womenwatch/daw/Review/responses/AZERBAIJAN-English.pdf
[48] https://eige.europa.eu/publications/gender-and-energy
[49] https://www.stat.gov.az/source/gender/en/qk/007_13en.xls

the realities on the ground. There is a need to move toward more gender-responsive energy infrastructure and services when designing a new energy policy. Gender-responsive energy sector interventions require additional efforts to go "beyond the meter" by choosing the types of energy infrastructure and services for investment that disproportionately benefit poor women, building capacity of women in utilizing the availed energy services, and/or narrowing the gender gaps that exist in the energy sector.

What is gender mainstreaming in the energy sector?

- Women's and men's perspectives taken into account;
- Equal opportunities for women and men to participate and be represented in energy sector decision-making;
- Knowledge and capacities of women and men validated and strengthened;
- National budgets and accounts build in women and men's needs, concerns and interests;
- Enhanced access to alternative and modern energy services that benefit both women and men equally.

Source: UNECE[50]

Integrating gender perspective into decision-making can contribute to the successful implementation of energy programs and policies, make energy policies more efficient and inclusive, address gender inequalities and support in women's economic empowerment. Freeing women's time from unpaid household chores and care work through basic infrastructure and access to clean energy, allows more time to be spent on productive activities, contributing to the development of the local economy as well as promoting the economic empowerment of women and fight against poverty.

In many developing countries as well in Azerbaijan, women and girls are primarily responsible for most of the household tasks such as cooking which often puts them at greater risk of the negative impacts of cooking in poorly ventilated stoves and kitchens.

Considering that natural gas is the most consumed energy source compared to electricity in Azerbaijan, access to clean energy sources is essential to reduce the health risk of women from indoor air pollution, who spend most of their day in the kitchen cooking for whole family. While the national statistics website has data on energy products consumed by households, there is no data on the proportion of the population or households with access to clean technologies in line with SDG 7.1.2.

Lack of access to energy for lighting, heating, cooking, transport, and economic [51] production hamper productivity of men and women and society at large. But how men and women differently experience such "energy poverty" is influenced by the existing gender relations of the given society. Where energy services are available, however, lack of affordability prevents access to these services by poor households. Households headed by women could be particularly disadvantaged when they are disproportionately represented among the poor households. Considering that female headed households constitute 87% of the total number of households and 13% male headed respectively in Azerbaijan, gender blind approach in energy provision or tariff levels that does not take into account the specific needs and constraints of such group of women will impede their access to affordable and sustainable

[50] https://unece.org/fileadmin/DAM/energy/se/pp/unfc_egrm/egrc9_apr2018/27.04/4a_Kim.Chi.Tran_Gender.pdf
[51] https://www.adb.org/sites/default/files/institutional-document/33650/files/gender-toolkit-energy.pdf

energy. Therefore, gendered dimension needs to be understood in order to develop more inclusive and effective energy policies contributing to gender equality and ensuring sustainability

Yet, women—both as consumers and suppliers—remain invisible in the energy sector. In designing projects or policies to improve energy security, it is crucial to take into account such realities and differences in needs, constraints, and opportunities between men and women in relation to energy infrastructure and services development. In 2019, Azerbaijan government developed the National Action Plan for Gender Equality 2020-2024. In addition to priority measures (improving legislation on gender equality and rights, increasing competitiveness in the labor market, developing small business among women, increasing women's participation in political and public life, decision-making and leadership), the Plan provides for the integration of a gender perspective in all policies and activities.[52] The plan strengthens the mandate of gender focal points in government agencies as an institutional link to integrate gender issues into the policies and programs of the relevant ministries in order to ensure gender equality[53]. All of these government policies and programs emphasize the importance of inclusive development and gender mainstreaming across all sectors.

3.3. Pathway of the integrating mainstreaming gender concept into the national energy policy

This section follows different steps to support decision makers in energy sector development to integrate gender in a practical way as well as provides the entry points, tips on what kinds of questions to ask in the gender analysis and good international practices for gender integration.

The following key guiding elements of gender-responsive energy services, which can be used when conceptualizing a new policy document. These guiding elements are further divided into two distinct roles women and men play: (i) women and men as users or consumers (service demand side), and (ii) women and men as energy producers (service supply side).

Guiding Elements of Gender-Responsive Energy Services

Women and Men as Users and Customers (Service Demand Side)

- ✓ Improve service delivery for poor households and women.
- ✓ Expand energy access and ensure affordability for the poor and low-income groups, including households headed by women.
- ✓ Introduce clean energy sources and/or appropriate technology for cooking and heating that improve women's health and reduce drudgery.
- ✓ Enhance energy-related income-generating activities of men and women, and women's entrepreneurship.
- ✓ Maximize women's employment opportunities in the energy sector.
- ✓ Implement user education programs building upon women's important roles in households and in communities.
- ✓ Apply gender-inclusive participation strategy in all stages of project design, development, and implementation.

[52] Gender Bərabərliyi üzrə Milli Fəaliyyət Planının Layihəsi, 2020-2024, səh. 5. 24 fevral 2020-ci ildə hökumət Azərbaycanda Gender əsaslı cins seçiminin aradan qaldırılması və ləğvi üzrə Milli Fəaliyyət Planını təsdiq etmişdir.

[53] Gender Bərabərliyi üzrə Milli Fəaliyyət Planı, 2020-2024, səh. 1

Women and Men as Energy Suppliers (Service Supply Side)

- ✓ Promote women's involvement as service providers in the energy sector.
- ✓ Promote women's role as partners in public–private partnership initiatives (e.g., as owners of local franchisee partners).
- ✓ Build gender awareness among policy makers, government energy agencies, and energy utilities through targeted capacity development and training programs.
- ✓ Apply a gender-equal human resources management strategy through the effective application of gender equity laws and regulations in government energy agencies and energy utilities.
- ✓ Promote gender-responsive corporate social responsibility

Source: *Gender Tool Kit: Energy Going Beyond the Meter, Asian Development Bank*https://www.adb.org/sites/default/files/institutional-document/33650/files/gender-toolkit-energy.pdf

Gender dimensions (integrating a gender perspective to the content of the policies, and addressing the issue of representation of women and men in the given policy area) can be integrated in all stages of the policy cycle: preparation, design, implementation, monitoring and evaluation of policies, regulatory measures and program, with a view to promoting equality between women and men, and combating discrimination. The steps discussed below focus on understanding and addressing gender aspects of energy sector interventions. The *energy-specific gender assessment* draws on a broader economy-wide national gender assessment.[54]

Step1: Gender Assessment

The aim of a gender assessment is to identify key gender issues, risks, constraints and opportunities associated with a proposed energy sector initiative. In this phase, it is recommended that information is gathered on the situation of women and men in a particular area. This means looking for sex-disaggregated data and gender statistics, and checking for the existence of studies, program or project reports, and/or evaluations from previous periods. A gender assessment is a key input to the development of a gender action plan that will inform the design of activities and monitoring and evaluation framework. Data-gathering and analysis of the following subtopics may be included in a gender assessment:

- The environment in which the proposed energy intervention will take place: energy policies and other policies impacting energy sector activities; energy sector responsibilities and mechanisms for decision-making;
- Stakeholders in the energy-in-gender space, generally, and more specifically for the proposed intervention;

[54] https://openknowledge.worldbank.org/bitstream/handle/10986/17479/765710ESM0P1230to0Energy0Operations.pdf?sequence=1&isAllowed=y

- Institutional capacity of institutions that would be important for gender-related decision-making and implementation associated with the proposed energy intervention;
- Other programs and initiatives already engaged in this area;
- Implications of the above analyses with respect to the proposed energy sector intervention.

Examples of gender and energy statistics

The *European Union labor force survey* provides the main aggregated statistics on labor market outcomes in the European Union. It provides disaggregated statistics on employment by sex, age groups, economic activity, education attainment and field of education, from which it is possible to measure the presence of women working in the energy sector.

The *European Union living conditions survey* is an instrument seeking to collect comparable data on income, poverty, social exclusion and living conditions. It contains, among other data, information on housing deprivation that is relevant for measuring energy poverty by sex.

The *IEA energy outlook* includes comparable world statistics on energy access, efficiency and renewable energy. However, access to the latest data and reports is not free of charge. The 2011 edition includes a section called Energy for all which covers data on access and investments in electricity and clean cooking facilities that are relevant from a gender point of view.

If the assessment identifies significant gender-based risks, constraints, or opportunities, further *gender analysis* may be undertaken, including more detailed discussions with the government and key stakeholders, during preparation phase as the basis for developing gender-related design features.

To enhance the integration of gender into energy policy while understanding and analyzing how women and men use and access energy, services and technologies, the following table provides a sample gender analysis questions that can be applied and adjusted to reflect gender mainstreaming in energy policy formulation.

Table 2. Key Questions and Data for Gender Analysis

Issue	Key Questions	Examples of Baseline Data to be Collected
Demand-side: Women and men as users, customers, beneficiaries, and affected people		
Access	What are the current access to various energy sources and services (e.g., electricity, liquefied petroleum gas, kerosene, fuelwood, community-managed distribution systems) by people in the project area? Any differential access patterns among poor households and those headed by women? How are energy sources for households collected? Can the proposed project include a specific intervention to reduce women's time and drudgery of energy sources?	Electricity (and other energy service) coverage with % of poor households and those headed by women Time spent or travel distance to access to fuelwood, kerosene, etc., by sex

Energy use	How is each type of energy used-by whom (e.g., households, micro- and small enterprises, energy enterprises, basic public services) and for what (e.g., water and sanitation, cooking, heating, lighting, entertainment, communication, incomes, revenues, health services, education)? What is the priority energy use by women and what is the energy source for that?	Use of electricity and other energy sources (hours) for productive vs. reproductive purposes at households
New energy technology	If a new energy technology is to be introduced, what are the preferences, opportunities, and constraints by women and men as users (and, possibly, service providers in the case of community-managed system)? Would the new technology increase or reduce women's workload?	Time spent or travel distance to access to fuelwood, kerosene, etc., by sex, without the new technology
Affordability	Are energy services and sources affordable, particularly to poor households and those headed by women? What are the viable options to improve affordability for the poor households and those headed by women?	Cost of connection and services vs household income Poverty among households headed by women
Environment, health, and safety	Are women and children suffering from energy-related environment and health problems, such as smoke emissions and indoor pollution? Are women's mobility and safety constrained due to poor energy services (e.g., unavailability of streetlights due to unreliable electricity supply)?	Respiratory infectionprevalence rate Data on violence
Customer satisfaction	Are customers pleased with the current services? Are women consumers asked about service satisfaction, given their important role as household energy managers? Does a customer feedback system exist (e.g., customer service desk, citizen's report card)? Can women customers be targeted as providers of regular feedbacks to improve services?	Customer survey results data (disaggregated by sex)
User knowledgeand access to information	Do users know about the need for efficient use of energy, availability ofother affordable options, and how to practice these? Can women in the community be active agents to drive energy-efficient use practicesat the household? Are women aware of the health impact of cook stoves and other unclean energy and solutions to address it?	Level of awareness of energy-efficient use (disaggregated by sex)
Capacity to capture improved energy services and access	Do women have voice in influencing energy services and making decisions on energy use in households and communities? Can the project assist? Do energy-based enterprises exist in the project area? Can women start such enterprises or be employed by them? Do any local service providers (e.g., non-government organizations) exist to provide skills for women to run or be employed by energy-based enterprises? Do women have access to finance to start such enterprises?	Percent of women's representation in local decision-making bodies (as a proxy indicator) Number of energy enterprises (with % owned by women) Percent of women borrowersof microfinance and

		small and medium-sized enterprise finance
Employment opportunities	Are women currently employed in the sector (energy agencies and corporations)? Can the project offer jobs for women (e.g., construction labor, project management staff, meter readers, customer service agents, office clerks, additional employment in energy corporations)? How many person-months are expected?	Percent of women among employees (if possible by level)
Work environment	Do energy corporations apply good labor and safety standards? Do they have a good track record of gender-equal human resources strategy? Can the program improve on the above?	Human resources strategy of energy utilities and agencies promoting gender equality
Representation in management and sector	Are women well represented in the management of companies, high-level committees, or board in the sector?	Percent of women in management positions, committees, boards
Institutional capacity	Do women have equal access to training opportunities in energy agencies and corporations? Can the project offer more training opportunity? Can women's role as partners in public–private partnerships be promoted (e.g., women as local franchisee enterprise owners or shareholders)? What is the level of awareness of gender–energy linkages by energyagencies and utilities?	Percent of women participation in training provided Percent of women-owned local franchisee partners
Enabling policy environment influencing gender-based determinants in demand and supply		
Policy	Do key energy policies and strategies have any reference to genderissues? In what way? Has any "gender audit" and/or "gender-responsive budgeting" in the energy sector been conducted? What are the findings and lessons?	Rating of energy sector in gender-responsive budgeting (if it exists)
Source: *Gender Tool Kit: Energy Going Beyond the Meter, Asian Development Bank* https://www.adb.org/sites/default/files/institutional-document/33650/files/gender-toolkit-energy.pdf		

Step 2: Gender Action Plan

The Gender Action Plan (GAP) pulls together all the gender activities based on the recommendations of the gender assessment. The GAP should articulate what the program wants to achieve from a gender standpoint, what activities it will undertake towards this. Developing the GAP is an iterative process undertaken through planning, feedback and validation workshops. The team responsible for mainstreaming gender will need to convey their findings to the stakeholders. The GAP should be consistent with an overall national gender action plan, if this is in place. The steps included in the GAP must be integrated into program design, appraisal and implementation plans. In many cases the GAP has elements of both institutional capacity building and actions targeted at potentially program affected people and beneficiaries. In this phase, it's appropriate to analyze budgets from a gender perspective. Gender budgeting is used to identify how budget allocations contribute to promoting gender equality. Gender budgeting brings visibility to how much public money is spent for women and men respectively. Thus, gender budgeting ensures that public funds are fairly distributed between women and men. It also contributes to accountability and transparency about how public funds are being spent.

Examples of gender budgeting in energy:

- The Norwegian Agency for Development Cooperation, in cooperation with ENERGIA, has developed a gender budgeting framework in the energy sector. Gender equality in financing energy for all, drafted in 2011, provides insights on gender-responsive budgeting in financing energy.

Formulating gender goals/objectives for the Gender Action Plan

Most energy policy and projects want to *improve welfare* of the target group and contribute to poverty reduction, improve livelihoods of women and men by increasing energy access and meeting the energy needs of users. In order to do so, the policy needs to ensure that the energy product or service is indeed in line with the needs of the users. For example, for cooking technologies, women will be the principal users; for electricity and transport, women will be an important part of the user group.

A gender goal should be:

- ✓ In line with communities' and households' needs, priorities and aspirations
- ✓ Realistic in terms of available resources and the capabilities of stakeholders
- ✓ Achievable within the given social and cultural set-up
- ✓ Yield concrete outcomes (be monitor able/trackable).

Using these starting points, the gender team and/or policy making staff can formulate their own gender goal and outcomes.

Defining gender outcomes and activities for the energy project

A common problem in policy documents in development of energy sector is that there is often no link between what the policy could achieve in terms of gender (its gender goal), the outcomes and activities it plans in gender mainstreaming (its strategy), and the indicators it sets for itself and tracks. If the whole or part of the policy document or project aims to improve energy access for households, but has no specific activities to ensure that female-headed households benefit equally with male-headed

Examples of goals for gender mainstreaming in energy programs/projects:

- Promote gender equality and empower women in community-based renewable energy systems (Community Based Renewable Energy Systems Project, SIBAT, Philippines);
- Integrate awareness of and attention to gender-specific concerns into every aspect and level of the Pakistan Domestic Biogas Program (Rural Support Programs Network, Pakistan);
- Promote gender equality and empowerment of women through improved access to modern energy services and their participation in sustainable energy value chains (PERACOD Promotion of Rural Electrification and Sustainable Household Energy Supply, GIZ/Government of Senegal).

households, it is not likely to track these aspects. Once goals from the gender perspective have been identified, the project strategy needs to identify how to achieve those goals.

Table 3. Examples of targets, activities and indicators measuring gender equality results in renewable energy policies

Targets	Renewable energy technologies are madeavailable and used by communities in X and Y	Increased use of renewable energy intotal power system	Households can access off-grid renewable energy sources to supportsmall business	Increase and direct investment in RE programmin g and implementa tion
Activities	Provide technical assistance on gender equality to ensure that the implementation is genderinclusive	Conduct gender assessment of the RE deployment (share/generation or deployment of heating and cooking technologies) and insectors of transport and	Promote women's active participation (e.g. through tailored activities) in planning and policy development	Promote gender issues in climate financing schemes and facilitate women's access to

		buildings		credit and RE market
	Ensuring equal/appropriate representation of women and men in allactivities	Awareness campaigns to increase RE adoption with targetedmessages to both menand women	Provide capacity building for women to use off grid renewable energy sources to support small business	Provide capacity building and awareness raising to financial institutions and ministry of finance to why investing in women makes business sense
	Develop education programmes or training for women on renewableenergy technologies	Develop a gender action plan for RE implementation together with Ministry	Provide capacity building for policy makers and energy service providers on gender equality issues	Provide technical support to women as energy managers in the household and community
Indicators	# of women, men or female/male-headed households who accessed renewable energy technologies	• # of men and women received therenewable energy products • # of women involved in the RE share in transport and buildings	# of women, men or female/male-headed households with access to off-grid renewable energy sources to support small business	• Funding received by women entrepreneur's / to manage renewable energy enterprises • # of men and women receivedRE subsidy
Source: *Gender integration in renewable energy policy: a guideline for renewable energy policy and decision makers* UNEP https://www2.unwomen.org/-/media/images/unwomen/emp/attachments/2020/11/unep_renewable%20energy%20guideline_v2.pdf?fbclid=IwAR3Swwnhe38sMSRREf2qSn0t5rK5cmSPdtyMnLGEui5Y-MV3dc_t-t9S0jk				

Gender audits are carried out to identify and analyze the factors that hinder efforts to mainstream gender in energy policy. The gender audits provide in-depth analysis of energy planning, budgets, the

organizational capacity of ministries to implement gender mainstreaming strategies, and the links between gender, energy and the national objectives for poverty reduction strategies and meeting the SDG. The audits identify the specific ways in which gender issues are, or are not, addressed and highlight critical gender gaps in the existing national energy policy formulation and implementation.

Step 3: Implementation and Monitoring

As appropriate to the country cultural and social context, strengthening implementation support can be done by developing partnerships with women's groups, building capacity—including through on-the-job learning—for the gender focal points and project staff and, where necessary, identifying additional expertise to support the project implementation team.

Monitoring is an integral part of designing development programs and projects, which begins with setting indicators for project goals, objectives, outcomes and activities. Evaluation, on the other hand, occurs periodically, usually at mid-term and at the end of the project. Monitoring and evaluation (M&E) should both incorporate measurable targets and gender-sensitive indicators, within the project's overall monitoring plan. Measuring progress also requires a gender-sensitive monitoring and evaluation framework and process.

A gender responsive indicator requires that activities are first designed to reflect an understanding of inequalities and gender roles, before it can measure equal and fair distribution of benefits. Indicators can be quantitative or qualitative. With quantitative indicators we are looking at sex-disaggregated data and their change over time.

Some examples of quantitative indicators:

- Changes in the proportion of adult population owning an asset (e.g. technology), by sex.
- New jobs / increase in employment in a sector by sex, compared to an earlier period.
- Number of efficient stoves used (rather than distributed) by sex

Some examples of qualitative indicators:

- Attitudes and behavior towards the uptake of an initiative of change in the sector by sex.
- Growth in knowledge and skills on climate change in the sector by sex.
- Self-reliance and confidence to continue the initiative in the sector by sex.
- Confidence, independence or self-esteem of women and men in the sector to address climate change.

Step 4: Completion and evaluation[55]

The initial gender assessment conducted prior to the gender action plan provides a baseline for the impact evaluation. The Implementation Completion Report (ICR) should include analysis of the gender-related outcomes and impacts. The lessons of gender mainstreaming should be integrated into other energy operations within the country and should feed into ongoing dialogue with the government and utilities.

A project design and monitoring framework (DMF) is the basis for performance monitoring and evaluation during and after project implementation. It is important to reflect the key gender design features and gender equality results articulated in the project GAP in the DMF as much as possible to ensure that gender considerations are addressed and monitored during project implementation. This consists of the inclusion of key gender targets or performance indicators at the impact, outcome, and output levels and in activities and inputs in the project DMF. Some examples are provided for each level.

Examples of gender impacts:

- **Poverty-related impacts**: reduced energy expenditure by households
- **Women's empowerment**: reduced time spent by women on household chores
- **Health:** decrease in the number of workdays lost by women and men due to bad health; improved quality of health services, especially maternal health and children's health services, in dispensaries, clinics, and hospitals
- **Environment:** reduction in indoor air pollution levels; climate change reduction and mitigation measures to reduce women's vulnerability and benefit both women and men

Examples of gender outcomes:

- improved access to electricity by poor rural households
- increased number of women having access to renewable energy supplies and non-polluting technologies
- improved affordability for poor households (including those headed by women).

[55] https://openknowledge.worldbank.org/bitstream/handle/10986/17479/765710ESM0P1230to0Energy0Operations.pdf?sequence=1&isAllowed=y

Examples of gender outputs:

- **Access:** number of poor households connected to energy services (number or percentage of poor households headed by women among them can also be monitored); Access of poor, rural women and men to renewable energy systems and technologies improved
- **Affordability**: number of poor households subsidized (or credit provided) for connection (number or percentage of poor households headed by women among them can also be monitored)
- **Energy and technology use**: number of households adopting clean cook stoves and other workload-saving technologies
- **User knowledge**: number and percentage of households familiar with efficient use of clean energy (with percentage of training participated by women)
- **Consumer/customer satisfaction**: consumer satisfaction with the electricity services pertaining to adequacy of supply, prices charged, and tariff levels (ratings disaggregated by sex)
- **Employment opportunities**: number of women-owned or -managed energy sector enterprises established or trained (and percentage of total); number of women receiving technical and skills development training provided to women (and percentage of total)
- **Decision making**: percentage of women represented in electricity users groups, committees, cooperatives, utility management level, energy board, and other decision making bodies; percentage of women participated in policy formulation public consultation meetings
- **Capacity of service providers**: number of project staff and staff of energy agencies and utilities receiving gender awareness training; gender equality performance of energy sector agencies or utilities improved (e.g., human resources strategy); sector policy or strategy explicitly highlighting gender equality adopted

Examples of gender activities:

- project services targeted at women
- gender training and capacity-building activities
- the collection of sex-disaggregated data to monitor and report gender impacts and other gender-responsive processes

Source: *Gender Tool Kit: Energy Going Beyond the Meter, Asian Development Bank*
https://www.adb.org/sites/default/files/institutional-document/33650/files/gender-toolkit-energy.pdf

Data collection is a vital part of formulating any policy document or project. Following data collection Methods can be listed:[56]

- Census data typically contains information on household electricity connections, and household members' health and education status, based on location, social groups, and gender;
- National sample surveys usually have information on types and quantities of energy consumed, energy use in homes and businesses, and health status, and the data can generally be classified and analyzed by consumption level, income level, location, and sex of a household head;
- Energy end-user data are often collected by service providers and, in some countries, energy utilities conduct in-depth surveys on their household consumers;
- Existing ADB energy projects sometimes conduct detailed social and poverty surveys of project population with baseline data that can be classified and analyzed by consumption and income groups, gender, and location;
- Existing gender and energy literature in the country, such as country gender assessments, and other research and studies.
- Project-specific primary data collection should be designed once the existing data is collected and that the data gaps are identified. The methods of collecting the primary data may vary, but they should follow gender-inclusive and participatory processes: socioeconomic household surveys; focus group discussions targeting women, especially poor women; priority ranking to get women to prioritize their needs and preferences (separately from those for men); community meetings and mapping and planning with women's participation.
- While quantitative data analysis can highlight the existence of gender gaps and constraints, such as the exclusion of poor women or households headed by women in the access and control of energy services, it cannot explain why such exclusions occur or how to deal with them. This requires further qualitative analysis, especially the gathering of women's stories, to provide a more in-depth gender analysis.

Case Studies on Gender Mainstreaming into Energy Policies and Projects Around the World

Japan

Credit to Connect in Sri Lanka Power Fund for the Poor (JFPR, approved in 2004)

The grant Power Fund for the Poor, which complemented the Power Sector Development Program (ADB 2002), ensured that poor and marginalized households—including those headed by women—could access electricity services. The grant piloted a sustainable microfinance revolving fund that allowed poor households to amortize the up-front capital costs required to electrify their homes. The project sought to aid poor households through a microfinancing scheme that provided them with the credit they need to overcome the high initial cost of connection to the local electricity grid. ADB financed the Power Fund for the Poor through a $1.5 million grant from its Japan Fund for Poverty Reduction. The fund targeted poor households that are within the range of the

[56] https://openknowledge.worldbank.org/handle/10986/4391

grid but could not afford the connection costs of $130–$170 to access it. The pilot project was implemented in eight districts in south and central Sri Lanka.

Source: ADB. 2004. Proposed Grant Assistance to Sri Lanka for the Power Fund for the Poor. Manila.

Uzbekistan

Enhancing Women's Capacity as Service Providers Uzbekistan Advanced Electricity Metering Project (ADB, approved in 2011)

This project implements a gender strategy that combines gender-sensitive institutional capacity building with opportunities for women's participation in customer service functions and user-education activities in the energy sector. The project is expected to install advanced electricity meters for about 1 million residential and commercial customers and improve the quality of customer services. The project's gender action plan (GAP) is designed around two main objectives: (i) improve career development for women in the executing agency Uzbekenergo, and (ii) empower women as customers and energy consumers.

Source: ADB. 2011. Report and Recommendation of the President to the Board of Directors: Proposed Loan to the Republic of Uzbekistan for the Advanced Electricity Metering Project. Manila.

Viet Nam

Comprehensive Gender Design Features in Viet Nam Renewable Energy Development and Network Expansion and Rehabilitation for Remote Communes Sector (ADB, approved in 2009)

This project in Viet Nam expands rural electrification to remote mountainous communities. Introduction of small-scale renewable energy systems expands access to electricity by poor, ethnic minority women. The project targets 75% of households headed by women being provided with electricity by end of project (about 105,000 households). Project gender action plan includes the following comprehensive design features: subsidized grid connection to poor and ethnic minority households and those headed by women; representation of women (from the Women's Union, ethnic minority community, and poor households) in the community management board to participate in planning, implementing, and monitoring project activities (productive use of electricity, awareness of safe use of electricity, and conservation); mobilization of women's groups for awareness campaign on safe use of electricity; training of Women's Union members as facilitators for awareness campaign on HIV/AIDS, sexually transmitted diseases, and human trafficking risks, conducted in a culturally responsive manner to ethnic communities; skills training for women's microenterprises and microfinance, based on needs assessments; and implementation of a gender strategy within a resettlement plan gender strategy to ensure that women are consulted separately for loss of inventory, land acquisition, compensation, and logistics.

Source: *Gender Tool Kit: Energy Going Beyond the Meter, Asian Development Bank*
https://www.adb.org/sites/default/files/institutional-document/33650/files/gender-toolkit-energy.pdf

4. Climate change and energy policy

4.1. The state of the climate change

4.1.1. What is climate change?

The term "climate change" has been among the most discussed topics of the humanity globally since 20th century. Despite the definition by various organization, the term "climate", contextually, has similar meanings in all definitions (selected), as described in below table:

Table 4. Definition of climate change

Organization/source	Definition
United Nations	*"Climate change refers to long-term shifts in temperatures and weather patterns. These shifts may be natural, such as through variations in the solar cycle. But since the 1800s, human activities have been the main driver of climate change, primarily due to burning fossil fuels like coal, oil and gas."*
National Georgraphic	*"Climate change is the long-term alteration of temperature and typical weather patterns in a place. Climate change could refer to a particular location or the planet as a whole. Climate change may cause weather patterns to be less predictable. These unexpected weather patterns can make it difficult to maintain and grow crops in regions that rely on farming because expected temperature and rainfall levels can no longer be relied on. Climate change has also been connected with other damaging weather events such as more frequent and more intense hurricanes, floods, downpours, and winter storms."*
NASA	*"Climate change is a change in the usual weather found in a place. This could be a change in how much rain a place usually gets in a year. Or it could be a change in a place's usual temperature for a month or season.* *Climate change is also a change in Earth's climate. This could be a change in Earth's usual temperature. Or it could be a change in where rain and snow usually fall on Earth. Weather can change in just a few hours. Climate takes hundreds or even millions of years to change."*

Source: Own elaboration

While the climate change could happen due to natural reason, it has become a hot agenda due to the massive human impact on the nature during industrial (mid-1700s to mid-1800s) and

post-industrial (after mid-1800s) periods. Extensive use of fossil fuels and deforestation have contributed to heat-trapping of greenhouse gases, causing so-called "global warming".

After more than two decades of international effort, in December 2015, nations convened in Paris (COP 21) under the United Nations Framework Convention on Climate Change and drafted an agreement that for the first time signaled that both developed and developing nations will strive to undertake action on climate change and report on related progress. The Paris Agreement "aims to strengthen the global response to the threat of climate change … by: Holding the increase in the global average temperature to well below $2^{O}C$ above pre-industrial levels...".

The nationally determined contributions (NDCs) provide important signals on government expectations related to the general direction and pace of likely policy initiatives to address climate change risks. In this regard, the following key messages were highlighted in the United Nations Environment Program's (UNEP) Emissions Gap Report 2021 issued in October 2021[57]:

- Following an unprecedented drop of 5.4% in 2020, global carbon dioxide emissions are bouncing back to pre-COVID levels, and concentrations of GHGs in the atmosphere continue to rise.
- New mitigation pledges for 2030 show some progress, but their aggregate effect on global emissions is insufficient. The aggregate impact of the new or updated NDCs formally submitted is limited: new or updated unconditional NDCs are estimated to lead to a total reduction in 2030 global GHG emissions of about 2.9 gigatons of CO2 equivalent (GtCO2e), compared with the previous NDCs. This estimate includes reductions of around 0.3 GtCO2e resulting from other factors, including lower projections of international aviation and shipping emissions, and adjustments of countries that are projected to overachieve their NDC targets.
- *To align with a 1.5°C limit, global CO2 emissions must reach net zero around 2050, with global GHG emissions reaching net zero 15–20 years later. A delay of 15–20 years in either net-zero CO2 or net-zero GHGs implies limiting warming to 2°C rather than 1.5°C.*

4.1.2. Climate change in Azerbaijan

Despite being a traditional fossil fuel (oil and gas) country, Azerbaijan has become more actively focusing on climate change matters of the energy sector during the last decade. After participating in the United Nations Framework Convention on Climate Change and Kyoto protocol, Azerbaijan has implemented a number of measures to mitigate the impact of climate

[57] United Nations Environment Programme (2021*). Emissions Gap Report 2021: The Heat Is On – A World of Climate Promises Not Yet Delivered*. Nairobi

change by supporting international initiatives and efforts for combating climate change. The country periodically submits biennial reports to the UNFCC.

In October 2016, the Government of Azerbaijan established a National Coordination Council for Sustainable Development. The main objective of the Council is to align national programs and priorities with the SDGs. The Secretariat of the Council is hosted by the Ministry of Economy. The Deputy Prime Minister of Azerbaijan is officially appointed as Chair of the Council and the Minister of Economy as Deputy Chair.

On 28 October 2016, the Milli Mejlis (the Parliament of Azerbaijan) ratified the Paris Agreement with the country's commitment to reduce GHG emissions by 35% in 2030. Therefore, the national target of Azerbaijan, set as an intended nationally determined contribution (INDC), is a *35% reduction of GHG emissions by 2030* compared to the base year 1990. In absolute values, the country should achieve total emissions reductions equal to 25.7 Metric tons of carbon dioxide equivalent (MtCO2e) excluding land use, land-use change and forestry (LULUCF) activities.

The State Commission on Climate Change serves as an effective institutional instrument to combat climate change in the country. It was established in 1997. The Commission is chaired by the Deputy Prime Minister and supported by a technical working group. The working group consists of experts from the relevant state bodies to ensure active participation of the relevant stakeholders in this process, strengthening of interagency relations, and to provide support to the role of the State Commission in the implementation of the country's commitments under the UNFCCC.

The Second Biennial Update Report of the Republic of Azerbaijan submitted to the UNFCCC in September 2018 does not stipulate the breakdown of the target per sector. At the same time, the report indicates that the largest share of total emissions in 2013 (the year of the last inventory conducted) were emitted by the energy sector, as shown in table below.

Table 5. Dynamics of GHG emissions and absorptions per sectors in Azerbaijan (MtCO2e)

	1990	2000	2005	2010	2011	2012	2013	2030 (target)	2013-2030
Energy	63.9	33.0	39.2	36.6	46.2	47.8	49.2	-	-
Industry	1.4	0.6	1.8	2.1	2.3	3.4	3.4	-	-
Agriculture and forestry	6.3	5.4	6.5	7.2	8.2	8.5	8.5	-	-
Waste	1.7	1.8	2.0	2.3	0.7	0.7	0.8	-	-
Total emissions	**73.3**	**40.8**	**49.5**	**48.2**	**57.5**	**60.3**	**61.8**	**47.7**	**-14.2**

% of previous period	-	*-44%*	*21%*	*-3%*	*19%*	*5%*	*2%*	*-23%*	-
Removal	-3.7	-4.9	-5.3	-5.4	-7.4	-7.8	-8.0	-2.4	5.6
Net emissions	**69.6**	**35.9**	**44.1**	**42.8**	**50.0**	**52.6**	**53.9**	**45.3**	**-8.6**
% of previous period	-	*-48%*	*23%*	*-3%*	*17%*	*5%*	*2%*	*-16%*	-

Source: Second Biennial Update Report of Azerbaijan submitted to the UNFCC (https://unfccc.int/sites/default/files/resource/Second%20Biennial%20Update%20Report%20-Azerbaijan-version%20for%20submission.pdf), International Energy Charter. 2020. "In-Depth Review of the Energy Efficiency Policy of the Republic of Azerbaijan, Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects."

The table suggests that that Azerbaijan further needs to reduce its total emissions by 23% by 2030 to achieve its INDC target compared to the latest available data of 2013. The country also needs to reduce net emissions by 16% to reach the 2030 targets (including LULUCF). Recently, Azerbaijan has also joined the following initiatives during COP26: Glasgow Leaders Declaration on Forest and Land Use, Green Grids Initiative – One Sun One World One Grid, A Call for Adaptation and Resilience and the Adaptation Action Coalition, Global Ocean Alliance, The Glasgow Breakthrough Statement, Declaration of Zero Emission Vehicles, Global Coal to Clean Power Transition Statement, Powering Past Coal Alliance, No New Coal Power Impact.

4.2. The link between climate change and energy policy

The main source of greenhouse gas emissions globally is energy sector (produced and emitted), accounting for the almost three-quarters of all emissions, as indicated in the *The World Energy Outlook 2021* prepared by the International Energy Agency.[58] This certainly makes the energy sector as the paramount factor for global emissions. In this context, the energy and climate change have been in close ties. Given the expected incline in the use of fossil fuels in the future, as well as very positive impact of green energy sources on the environment, it is important to analyze the future links between the energy and climate change.

Overall, growing energy demand, economies of scale and growing air pollution and health concerns will provide further stimulus for shifting the energy sector to renewable energy at global level. In addition, increasing action on climate change and the environment, including due to countries' commitments under the Paris Agreement, and the growing global trend of

[58] https://www.iea.org/reports/world-energy-outlook-2021

divesting fossil fuel assets are expected to further accelerate the transition to renewables and efficiency across the world. Energy shift and/or transformation is also a path of opportunity. It would enable faster economic growth, create more jobs, and improve overall social welfare. It would bring annual savings by 2050 of between three and seven times the additional annual costs of the transition. By 2050, the energy transformation would provide a 2.5% improvement in GDP and a 0.2% increase in global employment, compared to business as usual scenario. Putting in place policies that ensure a just and fair transition will maximize the benefits for different countries, regions and communities as well as address inequalities. Transforming the global energy system will also enhance affordable and universal energy access and improve energy security[59].

The technological progress and relevant continuously changing lifestyles of population increases the energy demand across the globe with environmental consequences. This requires the governments and organizations to always consider the technological progress and climate change issues in dealing with future energy demand outlooks, coupling energy and climate change in their assessments. On the other hand, the COVID-19 pandemic emerged in early 2020 has almost affected all areas of energy consumption of humanity, contributing positively to climate change in some cases (i.e. stagnation of economies, total collapse in tourism sector, etc.).

4.3. Pathway of the integrating mainstreaming climate change into the national energy policy

Climate change is affecting the environment mainly through greenhouse gas emissions, largely caused by energy-related industries. International organizations and countries have been therefore making efforts to consider this problem in their policies by re-defining their policies and strategies towards 'low-emission' concept, thus, linking climate change with energy-related policies and strategies. This challenge requires cohesive activities incorporating societal, economic and technical aspects. Mainstreaming, or adapting, climate change issues into economic sectors including energy sector have been therefore scholarly well studied and applied. The outlines of these approaches and methodological frameworks applied by international organizations are the follows.

World Bank Group

[59] IRENA (2019), Global energy transformation: A roadmap to 2050 (2019 edition), International Renewable Energy Agency, Abu Dhabi.

The World Bank Group has prepared the Action Plan on Climate Change Adaption and Resilience for its operations[60]. The document specifies three core objectives for the Bank for climate change resilience for the period of up to 2025:

- Boost climate change adaptation financing – increasing the Bank's financing share for direct climate change adaption activities.
- Drive a mainstreamed, whole-of-government programmatic approach – The Bank is assisting countries to systematically manage and incorporate climate risks and opportunities at every phase of policy planning, investment design, implementation and evaluation.
- Develop a new rating system to create incentives for, and improve the tracking of, global progress on adaptation and resilience – A new rating system has been developed to promote public and private sector investments in adaptation. It has been be designed to create incentives for donors and countries to engage in more and better adaptation; more effectively report on what the World Bank Group and clients are doing; and aim to establish a global standard for financial markets and public procurement.

The following typology of interventions is recommended by the Bank for the climate change adaptation:

Table 6. A typology of interventions to overcome barriers to climate change adaptation[61]

Barriers	Interventions
PLANNING FOR IMPROVED ADAPTATION AND RESILIENCE	
Needs-driven Adaptation Planning Are country-level climate adaptation needs well assessed?	➢ Ensure national adaptation planning is evidence-driven and country-owned, whether through the NDCs, NAPs, or Adaptation Communications processes ➢ Adopt multi-stakeholder participatory approaches ➢ Ensure needs of the most vulnerable are defined and met
Climate Data and Information Are decisions guided by relevant climate data and services? Do policy-makers and households have access and sufficient knowledge to use?	➢ Invest in climate monitoring and forecasting systems, and make climate services available to key stakeholders and the general public ➢ Regularly monitor and synthesize shorter- and longer-term, national and sub-national climate risks and impacts ➢ Raise public awareness on climate risks and launch education or communication campaigns

[60] World Bank. 2019. The World Bank Group Action Plan on Climate Change Adaptation and Resilience, Washington, DC: World Bank
[61] Ibid

Policies and Institutions Are government institutions prepared to address climate change risks?	➢ Build institutional capacity for climate risk analysis, planning, and project implementation ➢ Improve cross-ministerial and cross-country coordination ➢ Improve policy effectiveness through transparent monitoring and compliance
Incentives & behaviors Are incentives in place for appropriate climate adaptation actions?	➢ Reduce economic inefficiencies caused by poor policies ➢ Internalize externalities (e.g., carbon pricing, risk-based insurance) ➢ Introduce norms and regulations (e.g., land use plans, zoning regulations) ➢ Align taxation system to climate adaptation objectives
Finance Are resources and access to finance sufficient?	➢ Create an adaptation investment plan ➢ Build enabling environments for private sector investment in resilience-building ➢ Provide public support for low income and vulnerable households that are at risk from natural disasters
IMPLEMENTATION	
Decision-making and actions What actions should be implemented? Is there national / local capacity to implement suggested actions?	➢ Adopt multi-stakeholder iterative decision-making ➢ Choose robust and flexible solutions ➢ Build necessary capacity, particularly at the local level, to implement projects and absorb funds for adaptation ➢ Regularly revise policies through adaptive learning ➢ Ensure ability to continue identifying evolving adaptation priorities with changing risks »Manage negative side-effects through creation of compensation schemes

Note: NDC – Nationally Determined Contributions (NDCs); NAPs – National Adaption Plans

Furthermore, the World Bank has launched an online tool in 2015 to help countries screen their policies for climate and disaster risks[62]. These tools provide a systematic and consistent way of considering short and long-term climate and disaster risks at an early-stage of project and national/sector planning processes. Screening is a first but essential step to make sure that these risks are assessed and managed in development planning.

The screening process provide users with an overview of risks for key aspects of their project/program. These early screening results could inform consultations, dialogue, and form the basis for follow-up work including detailed technical assessments and feasibility studies.

[62] The World Bank Climate & Disaster Risk Screening Tool serves to both Policies and Projects, at the National and/or Sectoral Levels, including Agriculture, Coastal Flood Protection, Energy, Health, Roads and Water. The tool is available at http://climatescreeningtools.worldbank.org

The national/policy level tool is designed to walk users through a series of steps to understand the level of risk posed by climate and other natural hazards at an early stage of planning and design of national or sector-wide strategies, development policy, institutional strengthening and/or reforms. The tool does this by making data on climate change (historic, projected) available in an accessible manner. The tool helps the user connect this information to the broader development context at the sector level. The tool includes an Institutional Readiness Scorecard (IRS), which provides a rapid assessment framework to score current institutional and adaptive capacity at the national/sector level. There are four distinct, but interrelated, stages that users follow.

- First, the user identifies priority sectors required to achieve country goals, which the user will rate for risk in the rest of the tool.
- Second, the user gathers information on climate and other hazards in the country and rates the potential impact of the hazards on each priority sector.
- Third, the user rates the institutional readiness, which is a measure of the country's ability to respond successfully to the hazards.
- Fourth, the user determines overall risk by jointly considering the potential impacts and institutional readiness, along with the larger economic and social context that could influence the level of risk.

Organization for Economic Cooperation and Development

OECD's methodological approach for climate change adaption in various levels is based on its Policy Guidance on Integrating Climate Change Adaptation into Development Cooperation[63]. This guidance is based on a whole-of-government approach to integration, addressing four levels of decision making: national, sectoral, local and project. The core step in OECD's guidance is so-called "climate lens" tool. It is a simple analytical tool to reveal the climate risk and possible countermeasures. It is a set of four questions - vulnerability, current adaptation, maladaptation and climate-proofing. The use of climate lens should enable a policy maker to determine whether a policy, plan or programme is at risk from climate change.

OECD's Policy Guidance breaks down the sectoral level climate change adaptation process into four stages: (i) policy formulation, (ii) planning, (iii) resource allocation and (iv) programming. The core of integrating adaptation at the sectoral level is to conduct climate-lens analysis at all design stages, as each stage has a distinct role to play.

[63] OECD (2009) Integrating Climate Change Adaptation into Development Cooperation: Policy Guidance

The Policy Formulation stage sets out the broad objectives for a given sector. This is the stage where national policy directions are translated into sector-specific policy options, which then provides the basis for designing operational plans and mobilising resources to implement

them. A common approach to integrate adaptation at the sectoral level is to create an “action plan” or a “roadmap”. These serve as strategies to address adaptation in respective sectors.

The Planning stage includes following two key issues:

- Develop public goods with spill-over effects to sub-national levels. Activities with high positive spill-over effects should be planned at the sectoral level.. Such activities can be developed more efficiently at the sectoral level than at the local level.
- Build in cross-sectoral adaptation activities identified at the national level. Responses to the impacts of climate change cut across sectors. Such cross-sectoral climate change responses will then have to be translated into programmes and projects at the sectoral level and built into the sectoral plan.

The Resource Allocation stage consists of the following activities:

- Secure sufficient funding for cross-sectoral activities – Applying the climate lens at the national level may have identified the need for cross-sectoral activities (e.g. disaster risk reduction). At the budget allocation stage, the authority should allocate funding to these activities from the sectoral budget or tap onto a national horizontal fund for adaptation. Funding arrangements needs to be made through a consultative process with respective government bodies.
- Ensure necessary financial and human resources to conduct strengthen monitoring and evaluation systems. Financial and specialised human resources are required to establish any effective system. Therefore, sectoral budget or multi-year budgetary frameworks (such as Medium-Term Expenditure Framework) should explicitly allocate funding for M&E as well as human resource development for M&E.
- Identify indicators to track performance against adaptation. Adaptation concerns complex human and natural systems, so the causal chain between inputs, outputs, outcomes and impacts is by nature complex. Hence, early emphasis can be given to input and process indicators to measure the uptake of policy measures in a comprehensive way. Over time, these indicators can change and more outcome-related measures can be assessed.

The Programming stage includes the following issues:

- Systematically add a climate lens as a criterion to screen projects. In general, project proposals are routinely subjected to a range of screening criteria, such as social impact

analysis, environmental impact assessment and cost-benefit analysis. Climate lens analysis can be added to these existing criteria.

- Incorporate top-down activities identified at the planning stage. The government body responsible for should take into account top-down actions identified during the sectoral planning stage.

European Union (EU)

EU has prioritized the climate resilience at the heart of its climate change adaptation agenda. "Forging A Climate-Resilient Union" is the new statement for the EU's climate change process. The European Green Deal, the EU's growth strategy for a sustainable future, is predicated on the realisation that the green transformation is an opportunity and that failure to act has a huge cost. The long-term vision is that in 2050, the EU will be a climate-resilient society, fully adapted to the unavoidable impacts of climate change

The requirements by EU for its member states in terms of adapting national energy policies to climate change are set in the Regulation (EU) 2018/842 of the European Parliament and of the Council of 30 May 2018 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No 525/2013[64].

United Nations Development Programme

UNDP's overall methodological approach for climate change adaptation is described in its guidebook "Preparing Low-Emission Climate Resilient Development Strategies – UNDP Guidebook".[65] The guidebook distinguishes the five steps for the development of low-emission climate resilient development strategies for countries as described in below figures:

[64] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2018.156.01.0026.01.ENG

[65] UNDP (2011). *Preparing Low-Emission Climate Resilient Development Strategies – Executive Summary*

Figure 15. The steps of preparing a Low-Emission Climate Resilient Development Strategy (LECRDS)[66]

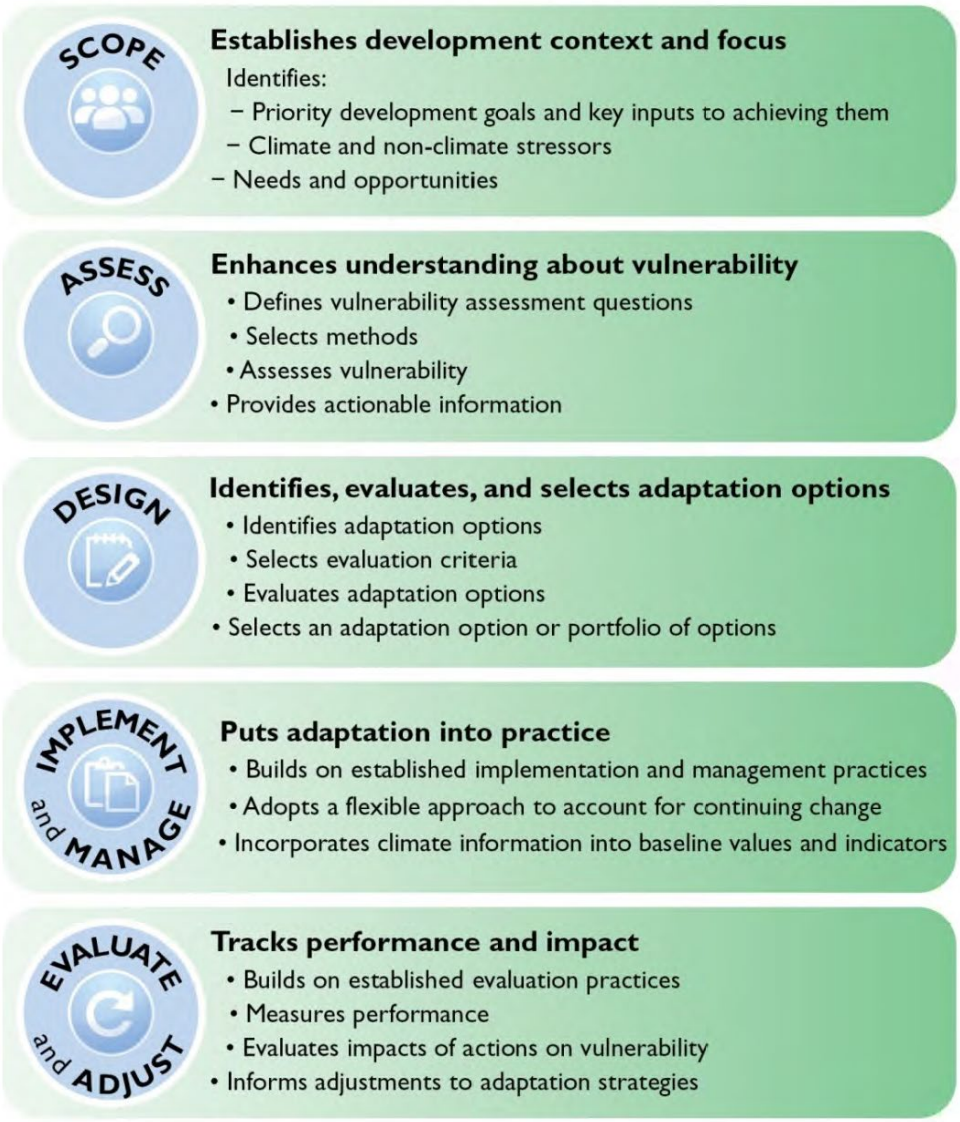
US Agency for International Development (USAID)

USAID has been actively involved in climate change mitigation and adaptation process in national and community level in many countries. Its methodological approach for climate change mainstreaming is described in its framework for understanding and addressing the risks of climate change for development[67]. The key actions envisaged by the framework is illustrated in below figure:

[66] Ibid

[67] USAID (2014). *Climate-resilient development: a framework for understanding and addressing climate change*

Figure 16. USAID's Climate Resilient Development Framework[68]



Countries with good practices in mainstreaming climate change into energy policy

Selected EU member states. As per EU requirements, the member states developed Integrated National Energy and Climate Plans (NECP). These documents showcase the mainstreaming climate issues into energy policies, and set goals on decarbonization (reducing greenhouse gas emissions; renewable energy deployment), energy efficiency measures, energy security,

[68] Ibid

internal energy market, and research, innovation and competitiveness for the countries by 2030 (2021-2030)[69]. The member states' overall objectives, targets and contributions as per their NECPs are summarized in below table:

Table 6. The objectives, targets and contributions set in NECPs of selected EU member states[70]

Member state	Description	National targets and contributions	2018 data	2020 target	2030 target
Germany	Greenhouse Gas Emissions	Binding target for greenhouse gas emissions compared to 2005 under the Effort Sharing Regulation (ESR) (%)	-8	-14	-38
	Renewable Energy	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	16.5	18	30
	Energy Efficiency	National contribution for energy efficiency: Primary energy consumption (Mtoe)	291.7	276.6	216
		Final energy consumption (Mtoe)	215.4	194.3	185
Finland	Greenhouse Gas Emissions	Binding target for greenhouse gas emissions compared to 2005 under the Effort Sharing Regulation (ESR) (%)	-11	-16	-39
	Renewable Energy	National target/contribution	41.2	38	51

[69] Source for NECP documents of the member states – https://ec.europa.eu/info/energy-climate-change-environment/implementation-eu-countries/energy-and-climate-governance-and-reporting/national-energy-and-climate-plans_en

[70] Ibid

		for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)			
	Energy Efficiency	National contribution for energy efficiency: Primary energy consumption (Mtoe)	32.7	35.9	34.8
		Final energy consumption (Mtoe)	25.8	26.7	24.9
Hungary	Greenhouse Gas Emissions	Binding target for greenhouse gas emissions compared to 2005 under the Effort Sharing Regulation (ESR) (%)	-10	+10	-7
	Renewable Energy	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	12.5	13	21
	Energy Efficiency	National contribution for energy efficiency: Primary energy consumption (Mtoe)	24.5	24.1	No target
		Final energy consumption (Mtoe)	18.5	14.4	18.7
Czech Republic	Greenhouse Gas Emissions	Binding target for greenhouse gas emissions compared to 2005 under the Effort	+4	+9	-14

		Sharing Regulation (ESR) (%)			
	Renewable Energy	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	15	13	22
	Energy Efficiency	National contribution for energy efficiency: Primary energy consumption (Mtoe)	40.4	43.3	41.43
		Final energy consumption (Mtoe)	25.3	23.9	23.65

Mtoe – Million tons of oil equivalent

South Korea. South Korea has prioritized climate change agenda in its future outlook. The country's leadership declared a carbon-neutral country by 2050 in October 2050[71]. Following this statement, in December 2020, the Korean Government adopted "2050 Carbon Neutral Strategy of the Republic of Korea" document[72]. The strategy has five primary elements in mainstreaming climate change into national economy:

- *expanding the use of clean power and hydrogen across all sectors;*
- *improving energy efficiency significantly;*
- *commercial deployment of carbon removal and other future technologies;*
- *scaling up the circular economy to improve industrial sustainability;*
- *enhancing carbon sinks.*

To ensure a smooth and timely implementation of the Strategy, the Government has established the 2050 Low Carbon Vision Forum comprising of the representatives from academia, industry and civil society.

In terms of energy sector, to achieve carbon neutrality in the energy sector by 2050, clean and renewable energy, i.e., solar and wind, should become central power sources. However, renewable

[71] https://www.reuters.com/article/southkora-environment-greenewdeal/south-koreas-moon-targets-carbon-neutrality-by-2050-idUKL1N2HJ0O9

[72] 2050 Carbon Neutral Strategy of the Republic of Korea: Towards a Sustainable and Green Society, December 2020 (https://unfccc.int/sites/default/files/resource/LTS1_RKorea.pdf)

energy has volatility and intermittency issues, as it is sourced from the nature, and these issues need to be addressed for its wider deployment. To this end, the Government will develop an accurate power demand and supply forecasting system and provide enhanced support for future innovative technologies, e.g., Energy Storage System for reliable power supply, and hydrogen fuel cells for auxiliary power sources. Korea plans to phase out coal power plants or convert them into LNG power plants. In addition, Carbon Capture, Utilization and Storage technology will be applied to coal-fired power plants to minimize GHG emissions.

Ukraine. Ukraine has been making significant efforts to harmonize its energy and environmental legislation and institution with those of European Union. The country has adopted the "Environmental Security and Climate Change Adaptation Strategy of Ukraine up 2030" in late 2021, and the government is preparing its Operational Plan[73]. The country's overall climate actions structure includes:

- Roadmap of key transformations and measures
- Financial strategy on the implementation of Nationally Determined Contribution
- Coordination and monitoring of climate-specific activities
- Development of necessary regulatory framework to support climate change adaptation

The planned transformation activities for the energy sector will cover:

- RES development in power generation
- RES development in the heat supply system
- Integration of the integrated Power System of Ukraine into the energy system of continental Europe
- Ensuring the proper functioning of the electricity market
- Construction of new balancing facilities in the power industry
- Implementation of the National Emission
- Reduction Plan for large combustion plants
- Introduction of innovation approaches to regulation of the demand in the power industry
- Phasing out coal mining and use, fair transformation of coal-mining areas
- Development of hydrogen energy
- Energy efficiency at the stage of energy generation

[73] *Mainstreaming Climate Policy in Ukraine*, Presentation by the Ukrainian delegation at the UNDP Webinar on Developing Climate Change Mainstreaming Policies in EaP Region, November 2021

- Reduction of energy transportation losses
- Introduction of technologies to prevent and reduce leaks in extraction, processing and transportation of natural gas and oil
- Modernisation of heat supply systems

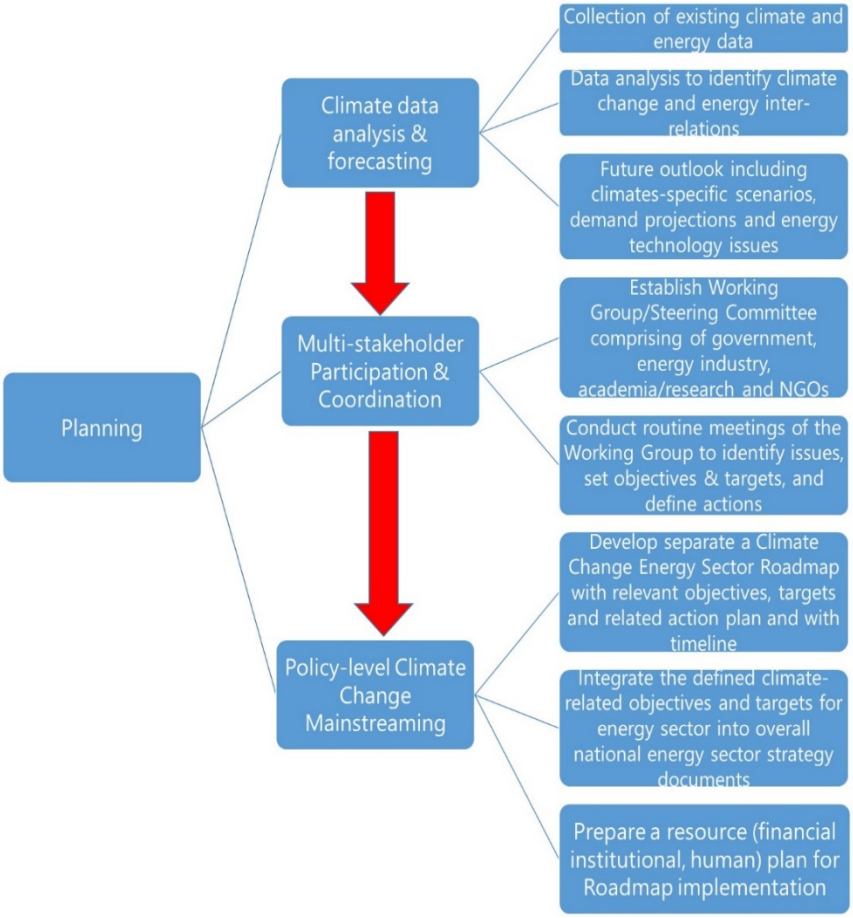
Potential tools for mainstreaming climate change issues into Azerbaijan's energy policy

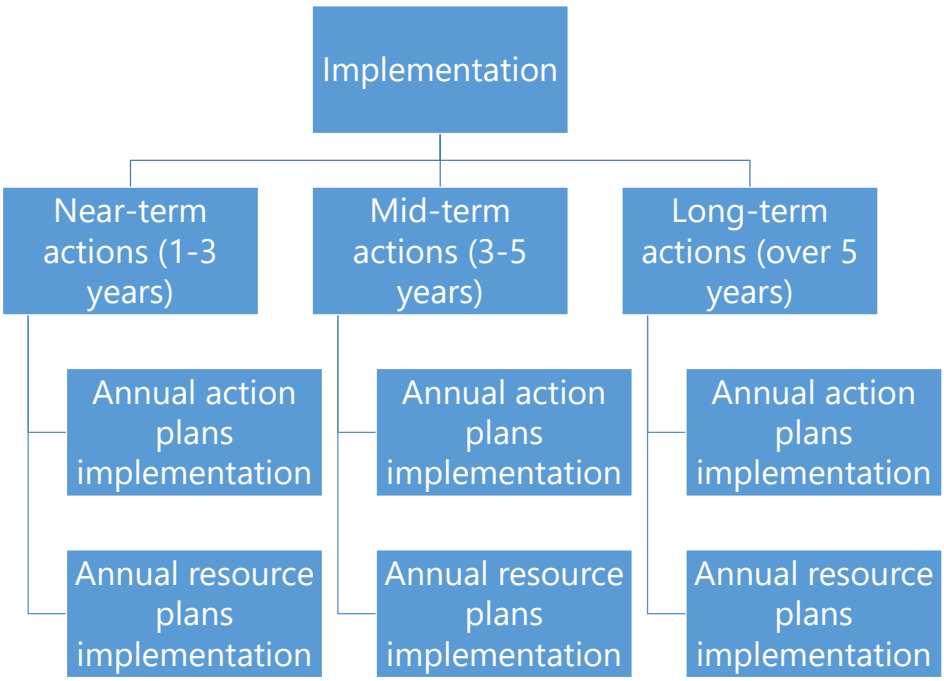
The methodological approaches and tools used by various organizations seem somewhat similar in overarching context and application. Based on the methodological tools analyzed in previous sections, the general aspects of mainstreaming climate change issues into countries' energy policy can be summarized as below:

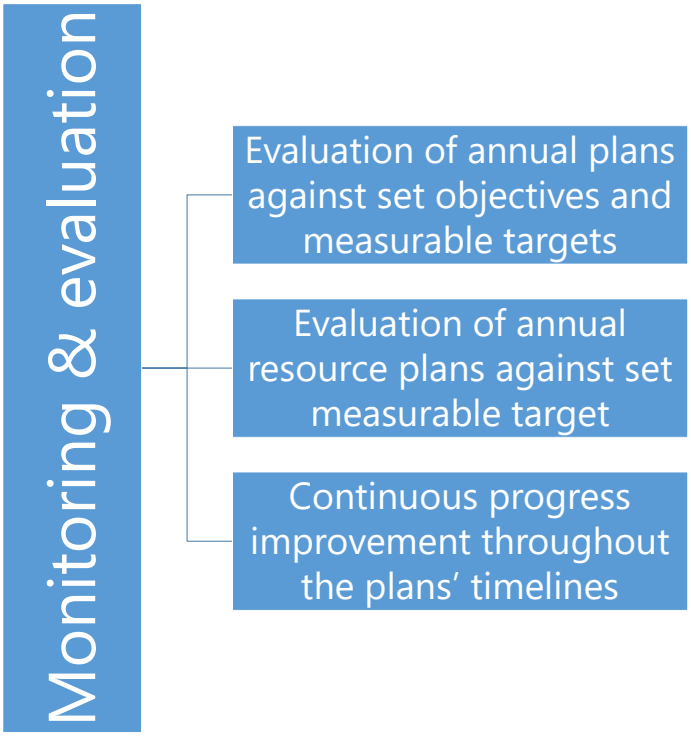
- Information and awareness on potential impacts of climate change. It is important to obtain the most recent, comprehensive and relevant data on potential implications of climate change with regard to energy sector. Climate-specific data shall be periodically and systemically collected for cohesive 'climate-energy nexus' analysis.
- Multilateral stakeholder involvement and coordination. Climate change adaption efforts are not just responsibilities and concerns of governments. As the climate change affects countries in economic, political and societal context, decision-making process on climate change adaption should be implemented with the engagement of all stakeholders, i.e. energy policy-makers, energy companies, energy-related non-governmental organizations, and research/academia circles. Besides the multilateral stakeholder involvement and coordination, the intra-government coordination and involvement with strong government leadership is also pivotal in climate adaptation processes. Governments should engage all its related agencies, both horizontally and vertically integrated organizations.
- Near-term, mid-term and long-term climate change adaptation planning as part of countries' national policies. Since the climate change affects all, the adaptation actions should not be regarded as separate 'environment' activities, but as an integral part of national development policies and strategies. The adaptation planning for all timeframes (i.e. near-term, mid-term and long-term) should have measurable targets, and include the clauses on resource (financial, institutional and human) requirements.
- Monitoring, evaluation and improvement of climate adaption plans for energy sectors. As with any kind of planning, the progress of climate adaptation//mainstreaming plans for energy sector should be periodically monitored, and the implementation results be evaluated against set measurable targets. Based on monitoring and evaluation results, relevant correction actions should be undertaken for improvement.

The following methodological approach and tools for mainstreaming climate change issues into Azerbaijan's energy policy can be applied, based on the reviewed information in previous sections, described in next paragraphs. Three main pillars can be distinguished in mainstreaming process: (i) planning; (ii) implementation; and (iii) monitoring & evaluation.

Figure 17. Methodological approach for mainstreaming climate change issues into energy policy







It should be noted that Azerbaijan has already made efforts on mainstreaming climate change issues into its energy policy. *Azerbaijan 2030: National Priorities on Socio-economic Development* and the draft *Long-term Energy Strategy for Azerbaijan for* 2050 could serve as foundations for more formal policy and strategy-level climate change mainstreaming. While

the National Priorities document emphasizes the need for climate change adaptation (i.e. 'high quality ecological environment', 'green energy zone') in strategic and policy context, the Long-term Energy Strategy tried to formulate climate-oriented roadmap for energy sector evolution with related scenarios. The Consultant therefore believes that the Government of Azerbaijan could further elaborate the Long-term Strategy using the methodological tools discussed above, with due consideration of National Priorities and the outlook documents on climate change prepared by international organizations.

5. Conclusion and main recommendations

As seen from above sections both gender and climate change related issues are important elements of today's global development trends. Both topics are heatedly discussed among international organizations and governments. This increases the importance of integrating gender and climate change related issues into sectoral level policy formations as well as small- and large-scale projects.

Climate friendly energy policy will lead to increase the efficiency of energy use, increase the use of renewable and other clean technologies, promote the use of natural gas instead of coal or oil, and encourage research and development on new energy technology.

On the other hand, gender responsive energy policy could lead to lower poverty, especially at the rural level, increase in usage of energy, empower woman, contribute to clean energy sector development among others.

This report will guide policy makers and/or members of the working group, who are in charge of drafting either sectoral level strategic document (such as long-term energy sector development strategy) or national level development strategies while accounting for gender and climate change related issues.