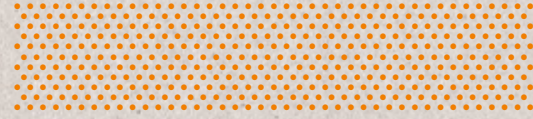




STEP Statistics
Through
Eastern
Partnership



ENERGY PRODUCTION AND CONSUMPTION IN EASTERN PARTNERSHIP COUNTRIES



Funded by



European Union

Implemented by





STEP

Statistics
Through
Eastern
Partnership



ACKNOWLEDGEMENTS

The editors of this publication would like to thank colleagues in Eurostat, Unit B3 (Enlargement, Neighbourhood and Development Cooperation), Unit E5 (Energy Statistics) and expert advisors from the national statistical institutes of Armenia, Azerbaijan, Georgia, Moldova and Ukraine who were closely involved in its preparation.



Statistics Through Eastern Partnership (STEP)

PROJECT DURATION: 2019-2022

BUDGET: €4.7 million

BRIEF DESCRIPTION AND COUNTRIES COVERED

Statistics Through Eastern Partnership (STEP) is the first regional statistics programme in the Eastern Partnership region. The [Eastern Partnership](#) (EaP) is a policy initiative between the European Union, its Member States and the six Eastern neighbour countries Armenia, Azerbaijan, Belarus¹, Georgia, Moldova and Ukraine. The EaP aims to deepen and strengthen the relations between the EU, its Member States and their EaP partner countries. The STEP programme is financed by the European Union. STEP is managed by [Eurostat](#), the statistical office of the European Union, with a mission to provide high quality statistics and data on Europe. It is implemented by a project consortium led by Expertise France. The programme addresses both subject matter statistics such as labour market, time-use, national accounts, business registers, energy and transport as well as cross-cutting issues like inclusion of user needs, increased use of administrative data, quality in statistics, gender issues and sustainable development goals.

OBJECTIVES

The overall objective of STEP is to produce more and better statistics for evidence-based decision-making. The primary partners are the national statistical institutes of the EaP countries but other institutions in their national statistical systems are also included in the activities if deemed beneficial. The availability of reliable and comparable statistics is essential for informed policymaking at European, regional and country level. For this, statistics need to be produced in line with European and international norms and standards, including the [European Statistics Code of Practice](#).

ACTIONS IN BRIEF

This will be achieved through four complementary actions:

1. improve the production and dissemination of good quality statistics in the partner countries;
2. increase the level of harmonisation of methodologies both between the countries and with the EU;
3. strengthen the institutional capacity of the NSIs of the region along the principles set out in the European Statistics Code of Practice;
4. support evidence-based policymaking, ensuring that statistical evidence substantiates policy choices, through improved cooperation and coordination between the national statistical institutes, policymakers and line institutions.

MORE INFORMATION AT:

www.eu-step.eu

<https://ec.europa.eu/eurostat/web/european-neighbourhood-policy/enp-east/step>

<https://ec.europa.eu/eurostat>

Twitter: @EU_STEP

(1) Belarus suspended its participation in STEP programme from 10 January 2022.

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List of acronyms



EaP	Eastern Partnership
ECS	Energy Community Secretariat
EDCS	Energy Data Collection System
EU	European Union
FEC	Final Energy Consumption
GAE	Gross Available Energy
GDP	Gross Domestic Product
IEA	International Energy Agency
IRES	International Recommendations for Energy Statistics
kgoe	Kilogramme of oil equivalent
ktoe	kilotonne of oil equivalent
Mtoe	Million tonne of oil equivalent
OECD	Organisation for Economic Co-operation and Development
pp	percentage point
PV	Photovoltaic
RES	Renewable Energy Sources
SDG	Sustainable Development Goal
STEP	Statistics Through Eastern Partnership
TES	Total Energy Supply
TFEC	Total Final Energy Consumption
TJ	Terajoule
toe	tonne of oil equivalent
TFEC	Total Final Energy Consumption
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UNSD	United Nations Statistics Division

Introduction

This publication on “Energy Production and Consumption in Eastern Partnership Countries” showcases harmonised energy statistics across the Eastern Partnership region. All partner countries are now preparing energy balances that follow international standards, meaning that both energy flows and energy products are defined in the same way in all five countries following international standards. Therefore, energy balances and related indicators are comparable within the EaP region and internationally (EU and beyond).

The STEP programme

Statistics Through Eastern Partnership (STEP) is the first regional statistics programme dedicated to the Eastern Partnership (EaP) countries. Partner countries include Armenia, Azerbaijan, Belarus,² Georgia, Moldova and Ukraine. The programme is financed by the European Commission, managed by Eurostat and implemented by a consortium led by Expertise France. The STEP programme runs from 2019 to 2022.

The overall objective of STEP is to assist partner countries in producing more and higher quality statistics to improve decision making in both the public and private sectors. The availability and the quality of statistics are essential for improved policymaking at the regional and country level. To improve comparability within the region and towards the EU, STEP seeks to improve the alignment of partner countries' statistics with EU standards and the European Statistics Code of Practice. The programme covers statistical areas such as labour market, time-use, national accounts, business register, energy and transport, as well as cross-cutting issues like coordination of the national statistical system, the better inclusion of user needs, increased use of administrative data, quality in statistics, gender issues and sustainable development goals.

Energy statistics within the STEP programme

Energy statistics are the subject of regular and intensive work at EU and international level. Several frameworks (e.g. International Recommendations on Energy Statistics (IRES),³ IEA/UNECE/Eurostat questionnaires) have been developed over the past years to ensure progress in the availability and comparability of energy statistics such as energy balances, commodity balances and indicators.

Since partner countries all have energy balances compatible with international formats, STEP focused on developing and improving final energy consumption statistics and energy efficiency indicators. The expected results are for all partner countries (i) to have final energy consumption statistics produced for at least one sector and (ii) to have improved capacity to produce energy efficiency indicators.

Contents of the STEP publication on energy statistics

This publication builds on the work carried out by EaP countries on energy statistics in general and energy balances in particular. The publication starts with an overview of the work conducted in partner countries during the last decade with the assistance of the EU and other international organisations. Then, in five chapters dedicated to each partner country, the key statistics and indicators on energy supply and energy use are analysed and commented on. A regional synthesis offers a comparison between countries on selected indicators.

Annexes contain methodological notes including a metadata section prepared for each country. Annexes also include a wealth of detailed data in a comparable format for each partner country including the 2020 energy balance, time series for the main energy balance flows and products and a selection of indicators calculated from energy balance and macroeconomic data:

- Energy independence and security
- Share of Renewable Energy Sources (RES) in Total Energy Supply and Total Final Energy Consumption
- Electricity mix
- Energy intensity and efficiency indicators

The definitions of concepts and indicators can be found in Annex 2 of this publication.

(2) Belarus's participation in STEP was suspended as of January 2022.

(3) <https://unstats.un.org/unsd/energystats/methodology/ires/>

02

*Development of
energy statistics
in partner
countries
since 1990*

2.1 Overview of the major developments in the area of energy statistics in partner countries

Significant progress was achieved during the last decade in the field of energy statistics in each of the five EaP countries. This result was made possible not only by the hard work and dedication of energy statisticians in each country, but also by the constant support from international donors and, more particularly, the European Union and its partners.

Assistance and support at the regional level in the EaP started with the creation in 2012 of a new component on «energy statistics» within the long-standing EU-funded INOGATE⁴ programme.⁵ When the INOGATE programme initiated its work on energy statistics, partner countries were at very different stages of progress, as shown on the map below. While some were already progressing towards international standards, some were still using methodologies and tools inherited from the Soviet era, and others had no energy data collection systems (EDCS) at all.

From 2012 to 2016, INOGATE supported harmonising energy statistics across the partner countries and provided the know-how for developing solid statistical systems and institutions. INOGATE was accompanied by the International Energy Agency (IEA), which participated in most regional training events and conferences. This collaboration resulted in all five EaP countries submitting the joint questionnaires on Coal, Oil, Natural Gas, Electricity & Heat, and Renewables & Wastes annually. These questionnaires form the basis of the work on the compilation of energy balances carried out by both the IEA and Eurostat.

Building on INOGATE's success, the «data» component of the EU4Energy Programme⁶ is funded by the EU and implemented by the IEA. It aims to strengthen further data collection, data management and the design of evidence-based energy policies in EaP countries. The EU4Energy runs from 2016 to 2022 (Phase I) and from 2021 to 2025 (Phase II). The programme also includes collaboration with the Energy Community Secretariat (ECS) and the Energy Charter Secretariat.

The work of INOGATE, EU4Energy Data, the Energy Community Secretariat⁷ and STEP⁸ shows what can be achieved when countries make a determined effort to improve energy statistics and work towards international standards.

(4) <http://www.inogate.org>

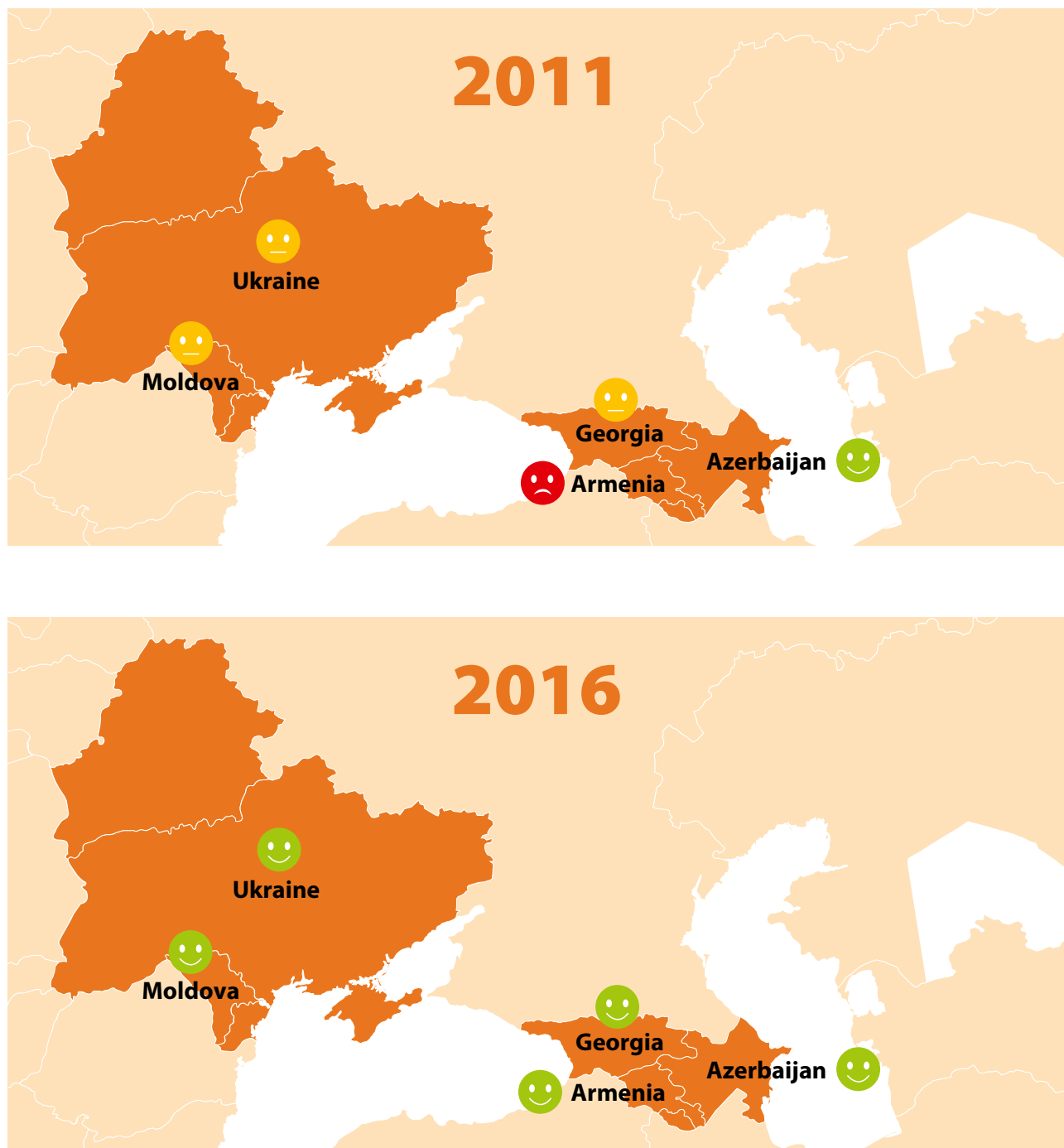
(5) In addition to the EaP countries, INOGATE also covered countries of Central Asia.

(6) <http://eu4energy.iea.org/Pages/Home.aspx>

(7) <https://www.energy-community.org/>

(8) <https://eu-step.eu/>

FIGURE 1: OVERALL ASSESSMENT OF THE COMPLETENESS OF THE JOINT ENERGY QUESTIONNAIRES SUBMITTED BY EAP COUNTRIES IN 2011 AND 2016



Source: Expertise France based on a presentation given by Céline Rouquette on 17 March 2016 in Brussels («Better Data for Better Policy and Investment», high-level conference on EU Energy Cooperation in the Eastern Neighbourhood and Central Asia).

2.2 Key methodological principles used in this publication

The indicators presented in this publication are calculated using the statistical concepts (flows and products) closest to Eurostat's. Currently, three partner countries (Georgia, Moldova and Ukraine) prepare an Energy Balance in the Eurostat format. The two other partner countries (Armenia, Azerbaijan) prepare an IEA format energy balance.

Because the Eurostat and IEA energy balances are built using the same joint IEA/Eurostat/UNECE questionnaires, the preparation of energy balances for Armenia and Azerbaijan in a Eurostat format was straightforward.

Data sets, infographics and comments have been prepared by Expertise France and reviewed and validated by partner countries. Each country drafted the national methodological sections.

Eurostat's definitions and methodology for energy statistics, energy balances and related derived indicators can be found at the following links:

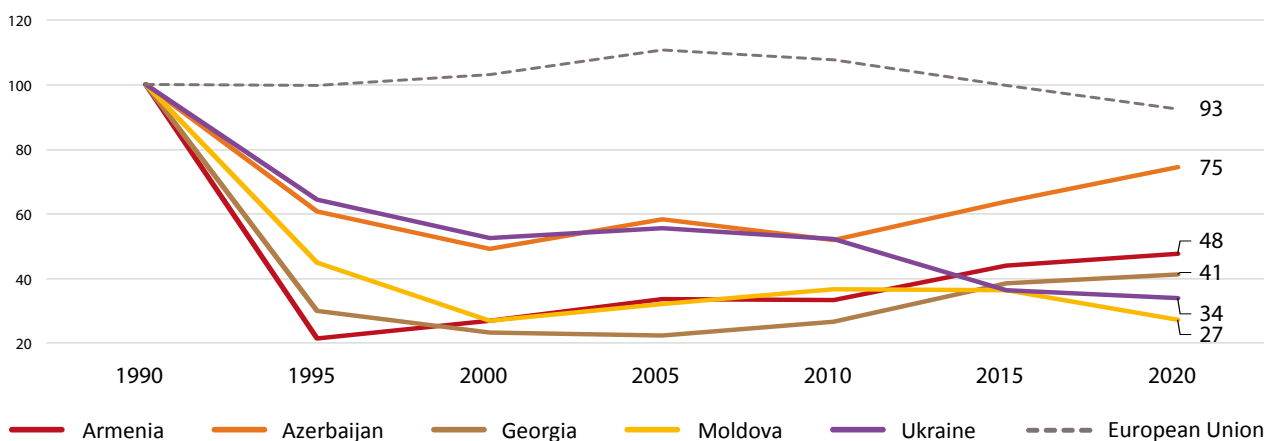
- Eurostat methodology and definitions for energy balances: [Link](#)
- Annual energy questionnaires and reporting instructions: [Link](#)
- Eurostat's metadata for energy statistics: [Link](#)

The definitions of the statistical concepts used in this publication are presented in **Annex 2**.

2.3 Key trends in total energy supply in EaP region since 1990

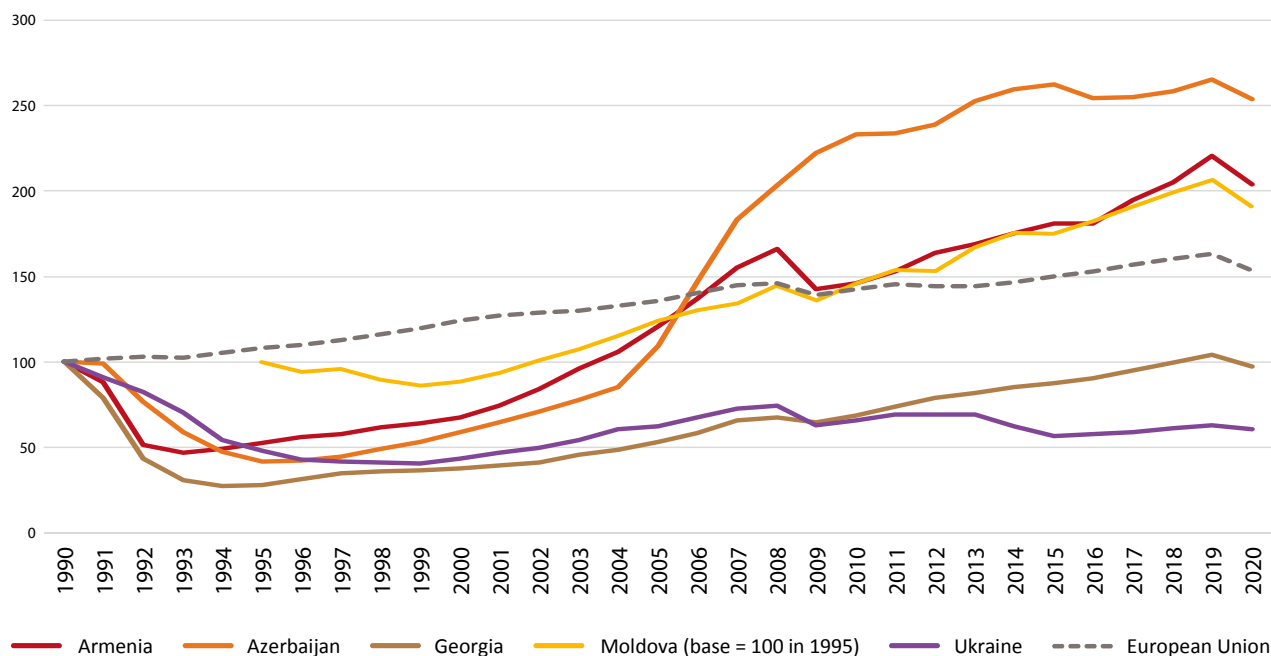
Before energy statistics for each EaP country are presented, it is essential to bear in mind the magnitude of the impact the dissolution of the Soviet Union in late 1991 had on energy use. Between 1990 and 1995, economic disintegration and the transition from a planned to a market-based economy led to the total supply of energy in EaP countries dropping between 30% and 65%, depending on the country.

FIGURE 2: TOTAL ENERGY SUPPLY OF EAP COUNTRIES AND THE EU (1990-2020, BASE = 100 IN 1990)



Source: Based on EaP, Eurostat and IEA data. IEA data (2021) are from World Energy Balances, www.iea.org/statistics, All rights reserved; as modified by Expertise France.

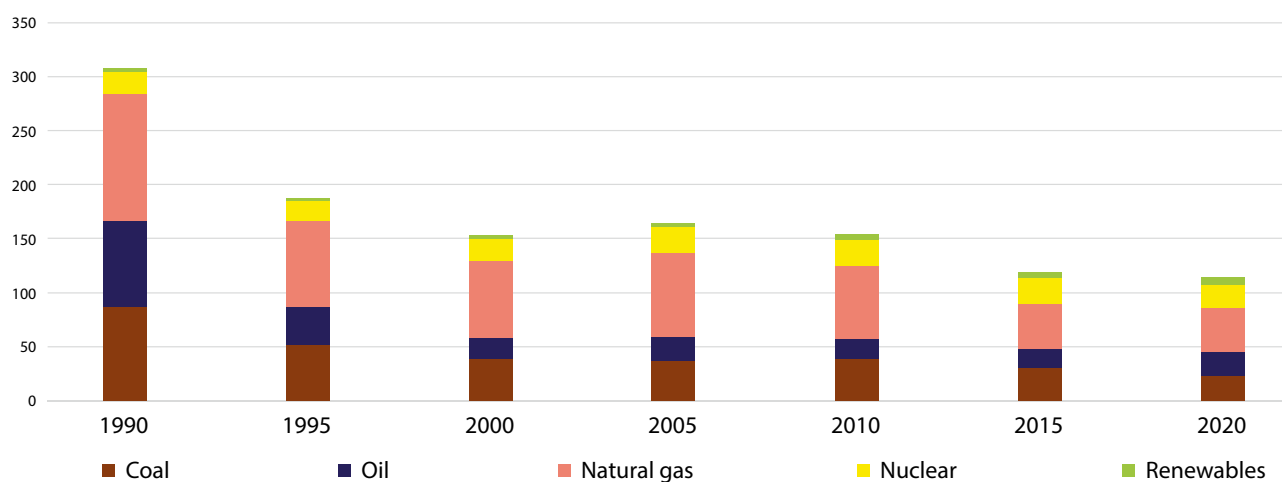
FIGURE 3: GDP OF EAP COUNTRIES AND THE EU (1990-2020, IN CONSTANT 2015 US\$, BASE = 100 IN 1990)



Source: Expertise France from World Bank, <https://data.worldbank.org> (indicator NY.GDP.MKTP.KD).

As shown in the chart below, total primary energy supply in all five EaP countries considered as a region is still significantly lower than in 1990 (almost 60%). It may well never go back to 1990 levels.

FIGURE 4: TOTAL PRIMARY ENERGY SUPPLY OF THE EAP REGION FROM 1990 TO 2020 (IN MTOE)

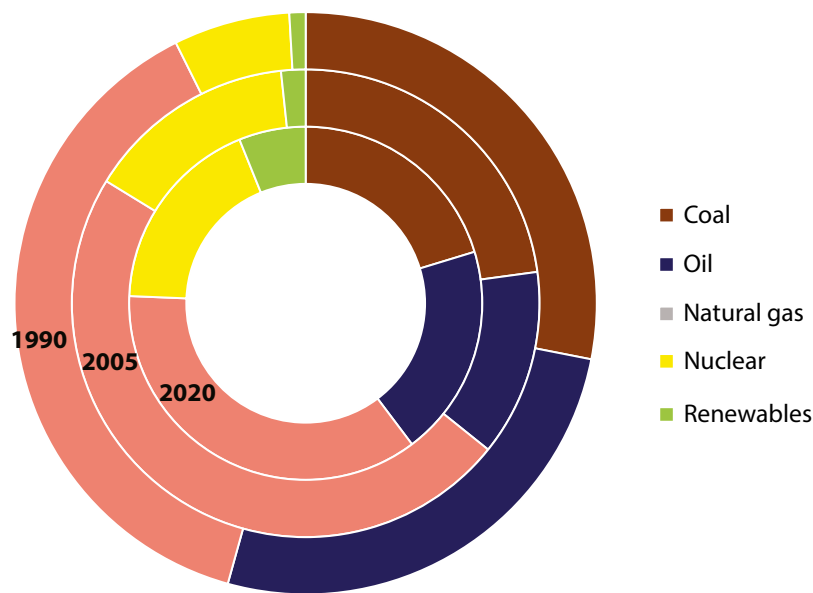


Source: Based on EaP, Eurostat and IEA data. IEA data (2021) are from World Energy Balances, www.iea.org/statistics, All rights reserved; as modified by Expertise France.



Over the 1990-2020 period, the primary energy mix of the EaP region has evolved but has not changed its composition drastically. The share of nuclear increased from 6.5% in 1990 to 18.2% in 2020, but this is the result of the collapse of the energy supply of fossil fuels (coal, oil and natural gas) in absolute terms and not an increase in the use of nuclear which remained remarkably stable in volume during the period. The main changes happened in the mix of fossil fuels with natural gas roughly maintaining its share to the detriment of oil and coal.

FIGURE 5: TOTAL PRIMARY ENERGY SUPPLY OF EAP COUNTRIES FROM 1990 TO 2020 (IN %)



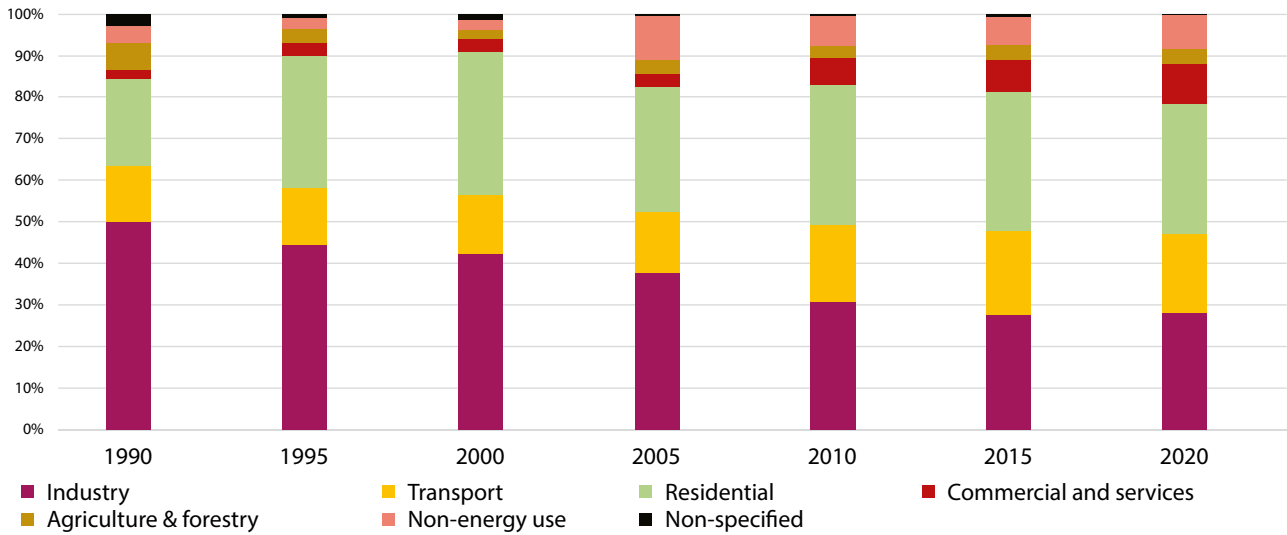
Source: Based on EaP, Eurostat and IEA data. IEA data (2021) are from World Energy Balances, www.iea.org/statistics, All rights reserved; as modified by Expertise France.

The share of renewables increased from 1 to 6 % over the same period. The level of production from hydroelectricity remained stable. The only primary energy sources that have increased their volumes between 1990 and 2020 are biofuels, waste, and intermittent renewable electricity sources (wind, solar PV). However, their combined share in the primary energy mix remains modest at around 4 % in 2020.

Compared to 1990, only the commercial and services sector has increased its final energy consumption in absolute terms. All other sectors have a final energy consumption in 2020 lower than in 1990.

Looking at the structure of Total Final Energy Consumption in the EaP region, the sectors which shares have grown since 1990 are residential and transport (+10 and +6 percentage points respectively) and commercial and services (+8 pp). The share of agriculture diminished by 3 pp, and the share of industry shrank considerably (-22 pp), which partly explains the large drop in the use of fossil fuels in the region over the last 30 years.

FIGURE 6: STRUCTURE OF FINAL ENERGY CONSUMPTION IN EAP COUNTRIES (1990-2020) IN %



Source: Based on EaP, Eurostat and IEA data. IEA data (2021) are from World Energy Balances, www.iea.org/statistics, All rights reserved; as modified by Expertise France.

03

*Evolution
of key energy
indicators
in partner
countries*

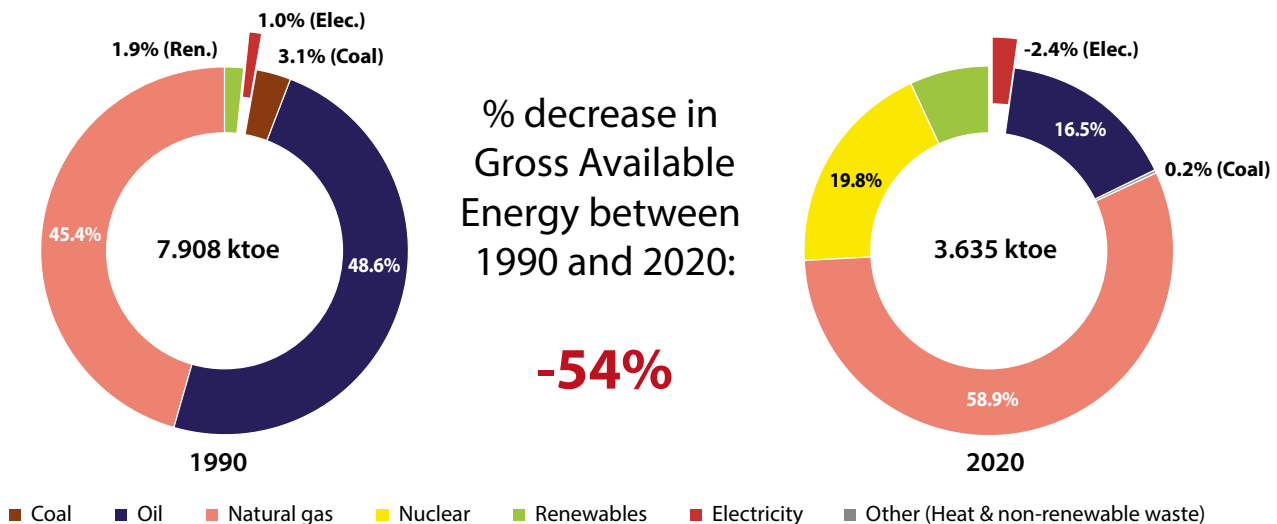
3.1 Armenia

3.1.1 Major developments relating to energy production and consumption since 1990

In 2020, Armenia's Gross Available Energy was still 54% lower than in 1990.

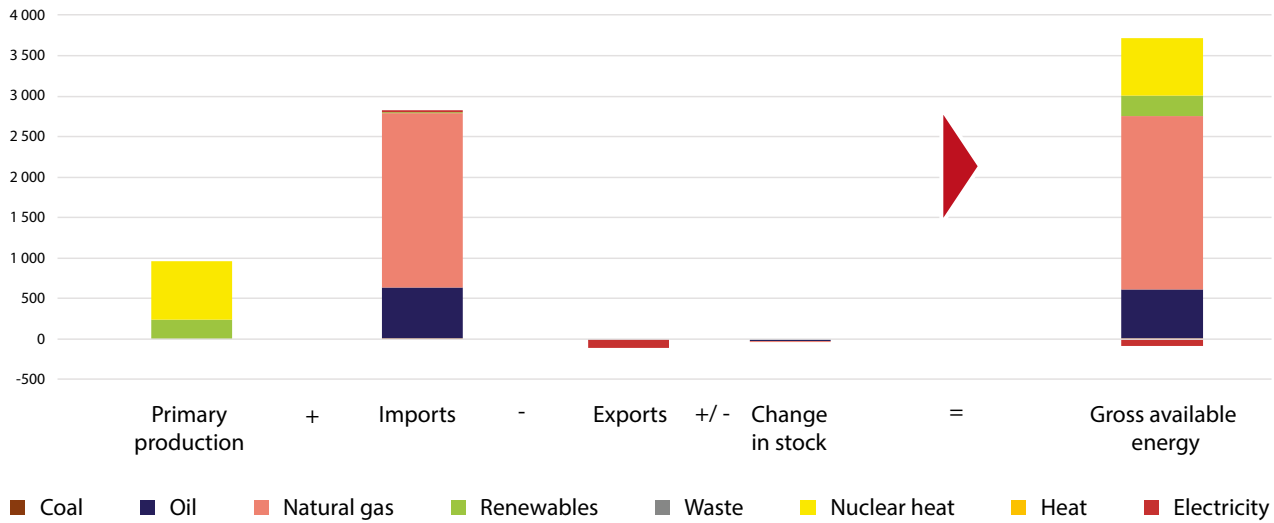
Over the last 30 years, Armenia's primary energy mix changed drastically with a sharp reduction in the share of oil and petroleum products from 48.6% of total Gross Available Energy in 1990 to 16.5% in 2020. The lesser use of oil was compensated by an increased share of natural gas and renewable energy sources (hydro and biofuels) and by the reintroduction of nuclear energy in 1995 after a lapse of almost seven years. Despite the rising share of natural gas in Armenia's Gross Available Energy, the total volumes of natural gas consumed remain lower in 2020 than they were in 1990.

FIGURE 7: GROSS AVAILABLE ENERGY IN ARMENIA IN 1990 AND 2020: COMPOSITION AND TRENDS



Source: Expertise France from the Statistical Committee of the Republic of Armenia and the IEA for 1990 data.

FIGURE 8: FORMATION OF ARMENIA'S GROSS AVAILABLE ENERGY IN 2020 (KTOE)



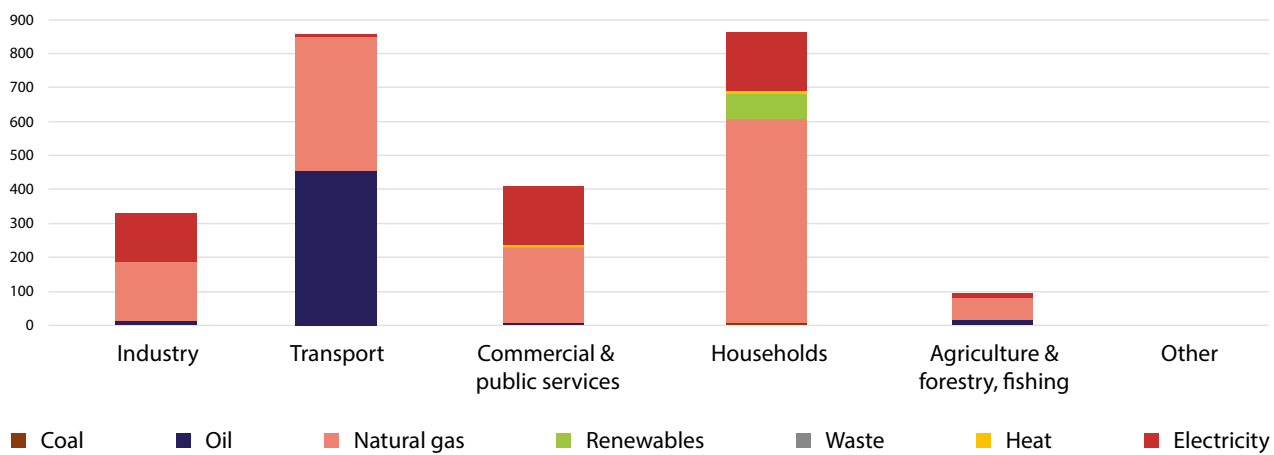
Source: Expertise France from the Statistical Committee of the Republic of Armenia.

Armenia does not produce any coal, oil or natural gas. Its Gross Available Energy is dominated by imports of petroleum products and natural gas (59% of GAE in 2020). Primary Production represents 26% of Gross Available Energy and is composed of renewables (mostly hydroelectricity) and nuclear heat with respectively 25% and 75% of primary production.

The only energy transformation activity in Armenia is the production of electricity.

The leading final energy-consuming sectors are households and transport with 34% of Total Final Energy Consumption each, followed by services (16%) and industry (13%). Unlike other EaP countries, Armenia's final consumption in the transport sector has a substantial share of natural gas (46%). This is because Armenia is one of the world's countries with the highest penetration of natural-gas vehicles.⁹

FIGURE 9: FINAL ENERGY CONSUMPTION BY SECTOR AND ENERGY IN ARMENIA IN 2020 (KTOE)



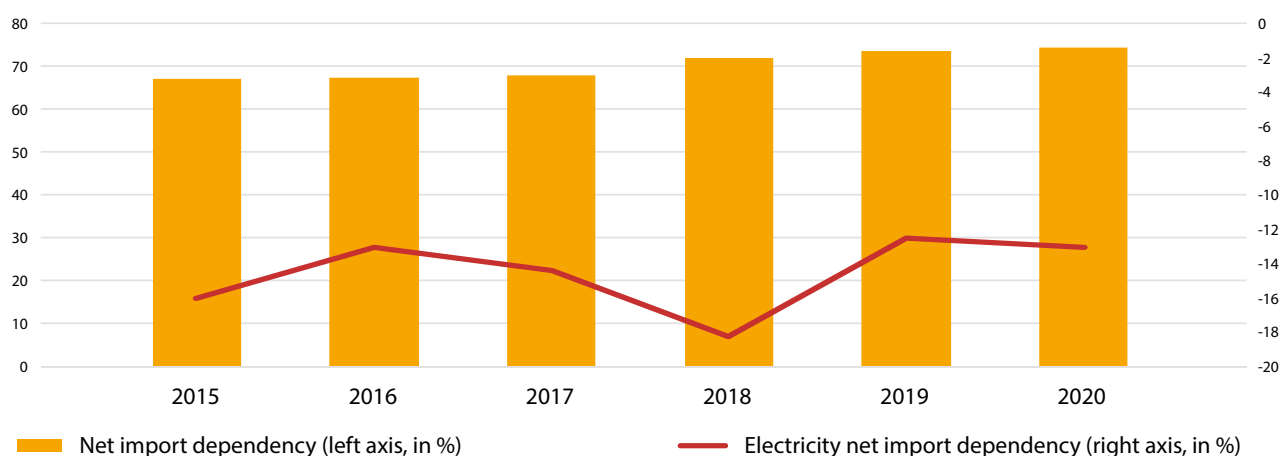
Source: Expertise France from the Statistical Committee of the Republic of Armenia.

(9) "Improving capacities of the UNECE member States to decarbonize the transport sector by increasing the use of natural gas as a motor fuel". UNECE, 2021. https://unece.org/sites/default/files/2021-04/NGV_report.pdf.

3.1.2 Energy dependence and security

Armenia is a net importer of energy overall, with 75% of its Gross Available Energy covered by imports which consist primarily of natural gas (76%) and petroleum products (22%). Armenia's dependency has been slightly increasing since 2015. The country is a net exporter of electricity, as shown by its negative electricity dependency.

FIGURE 10: NET IMPORT DEPENDENCY OF ARMENIA (GROSS AVAILABLE ENERGY AND ELECTRICITY)

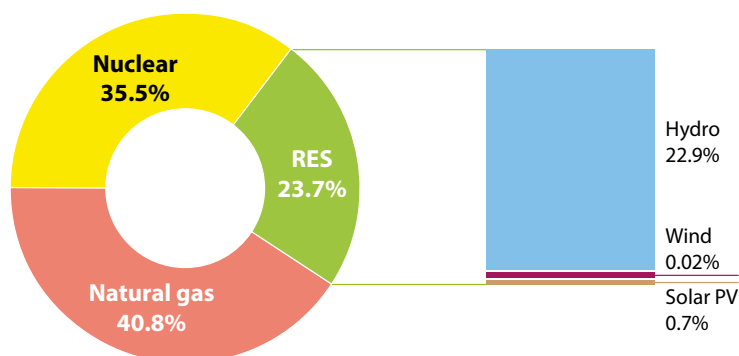


Source: Expertise France from the Statistical Committee of the Republic of Armenia.

3.1.3 Renewable energy in total energy supply and the electricity and heat mix

Armenia's total production of electricity amounted to 7,759 GWh in 2020. Its power mix is well-diversified, with nuclear, natural gas and Renewable Energy Sources (RES) having similar weights in total electricity production. The production of electricity from RES is dominated by hydroelectricity. Wind and solar PV remain marginal electricity technologies in Armenia.

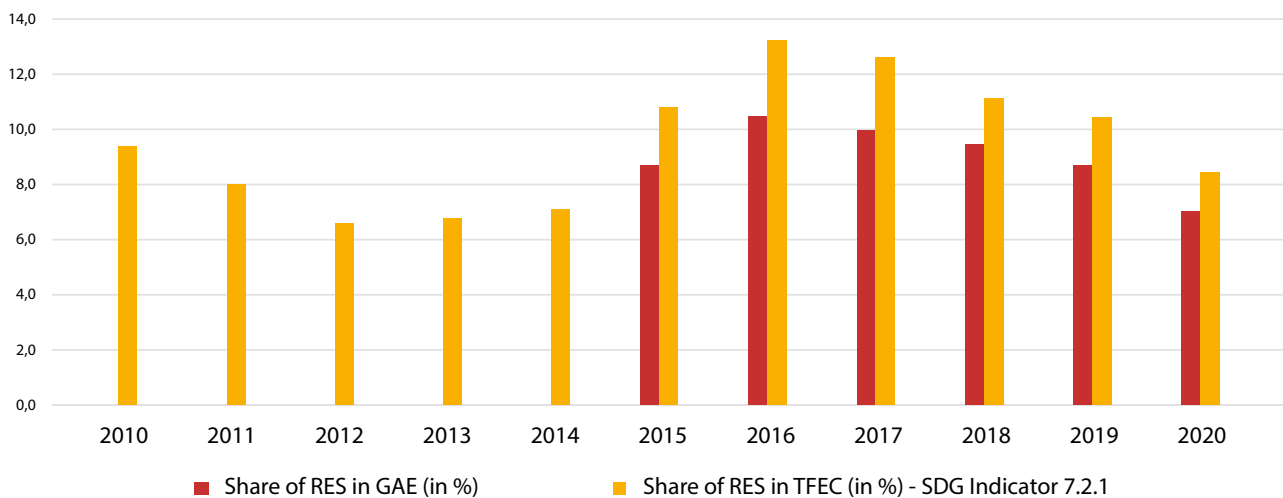
FIGURE 11: ELECTRICITY MIX OF ARMENIA IN 2020 (IN % OF TOTAL GROSS ELECTRICITY PRODUCTION)



Source: Expertise France from the Statistical Committee of the Republic of Armenia.

The main source of renewable energy in Armenia is hydroelectricity with a 22.9% of the total production and 97% of electricity production from RES. Solid fuels (firewood) are used in the residential sector, and solar thermal energy in both the services and residential sectors. The share of renewables in Gross Available Energy and Total Final Energy Consumption varies with hydroelectricity production. These two indicators have trended downwards in recent years due to the increase in energy demand (primary and final) and a relatively stable RES production.

FIGURE 12: SHARE OF RENEWABLE ENERGY SOURCES (RES) IN GROSS AVAILABLE ENERGY (GAE) AND TOTAL FINAL ENERGY CONSUMPTION (TFEC) IN ARMENIA (IN %)



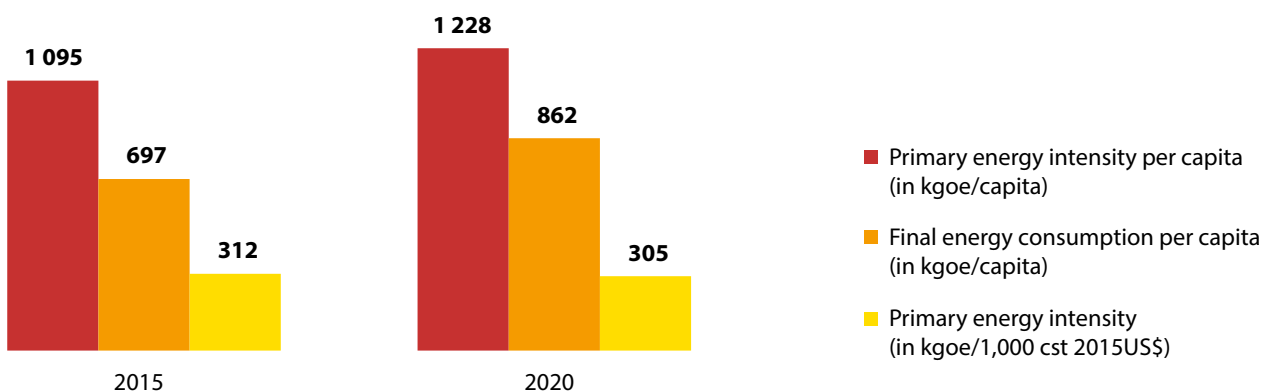
Source: Expertise France from the Statistical Committee of the Republic of Armenia and Esmap (trackingsdg7.esmap.org).

3.1.4 Key energy intensity indicators

Overall, the Armenian economy has reduced the amount of energy required to produce a unit of GDP and has become less energy intensive.

Between 2015 and 2020, energy intensity indicators per capita and energy intensity per unit of GDP have evolved in opposite directions. This can be explained by the fact that Armenia has enjoyed rapid economic growth and experienced negative population growth during the period.

FIGURE 13: KEY ENERGY INTENSITY INDICATORS FOR ARMENIA



Source: Expertise France from the Statistical Committee of the Republic of Armenia and the World Bank.

3.2 Azerbaijan

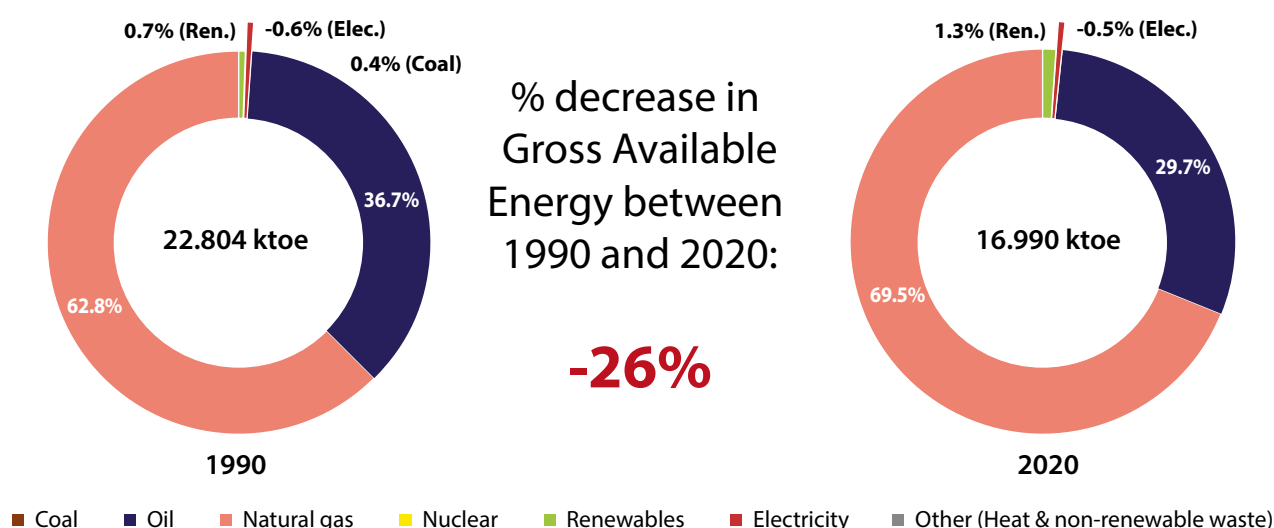
3.2.1 Major developments relating to energy production and consumption since 1990

In 2020, Azerbaijan's Gross Available Energy was still 26% lower than in 1990.

Over the last 30 years, Azerbaijan's primary energy mix hardly changed. In 2020, natural gas and oil and petroleum products represented approximately two-thirds and one-third of Azerbaijan's total Gross Available Energy, respectively. The figures for 1990 were slightly lower for natural gas (63%) and a little bit higher for oil and petroleum products (37%).

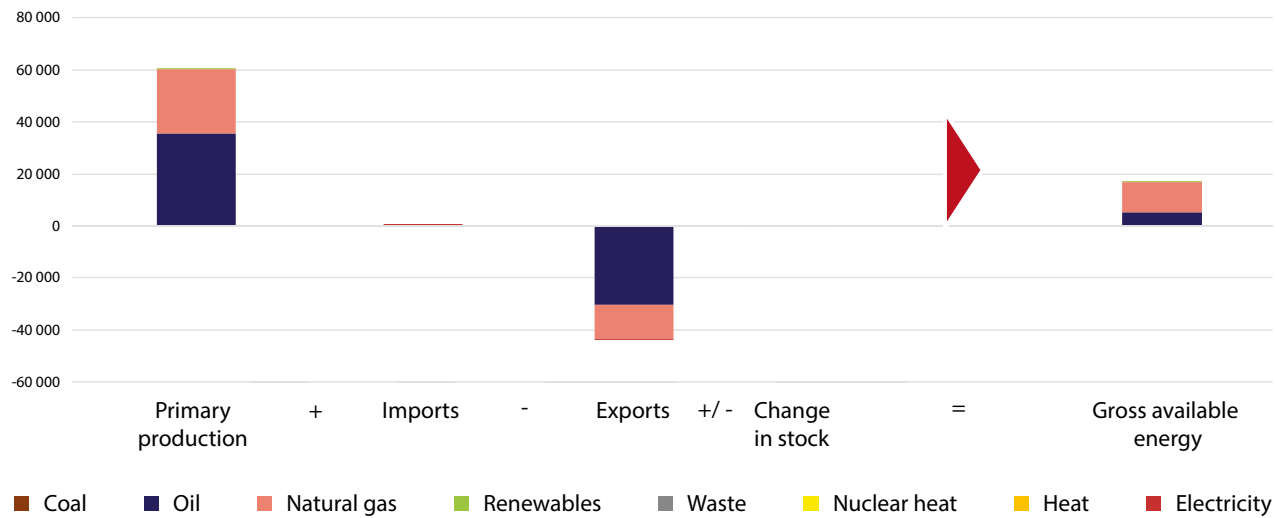
The main differences between 1990 and 2020 in Azerbaijan's Gross Available Energy are the disappearance of coal (0.4% in 1990, 0% in 2020) and the growth of renewable energy sources, even if their share remained low at 1.3% in 2020 (from 0.7% in 1990).

FIGURE 14: GROSS AVAILABLE ENERGY IN AZERBAIJAN IN 1990 AND 2020: COMPOSITION AND TRENDS



Source: Expertise France from the State Statistical Committee of the Republic of Azerbaijan the IEA for 1990 data.

FIGURE 15: FORMATION OF AZERBAIJAN'S GROSS AVAILABLE ENERGY IN 2020 (KTOE)

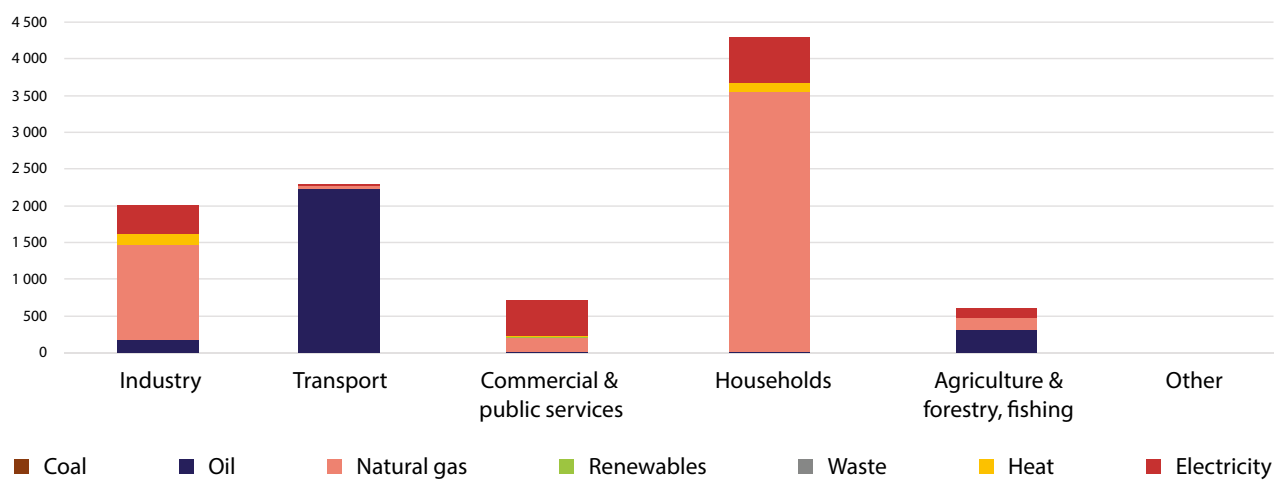


Source: Expertise France from the State Statistical Committee of the Republic of Azerbaijan.

Azerbaijan is the only significant producer of crude oil among the EaP countries and the largest producer of natural gas, with a production 56% larger than Ukraine’s in 2020. Azerbaijan’s vast crude oil and natural gas resources allow the country to export 86% of its crude oil and petroleum products and 48% of its natural gas production. Azerbaijan’s Gross Available Energy still represents only a fraction of its total primary production (28%). However, this share has been growing since 2011, when it stood at 19%.

The main energy transformation activities in Azerbaijan are the production of electricity and the refining of crude oil. Azerbaijan refines 17% of its total crude oil production which stands at 35.5 Mtoe in 2020 and exports the rest (83%). Eighty per cent of the output of refineries is consumed in Azerbaijan, and the remainder is exported.

FIGURE 16: FINAL ENERGY CONSUMPTION BY SECTOR AND ENERGY IN AZERBAIJAN IN 2020 (KTOE)



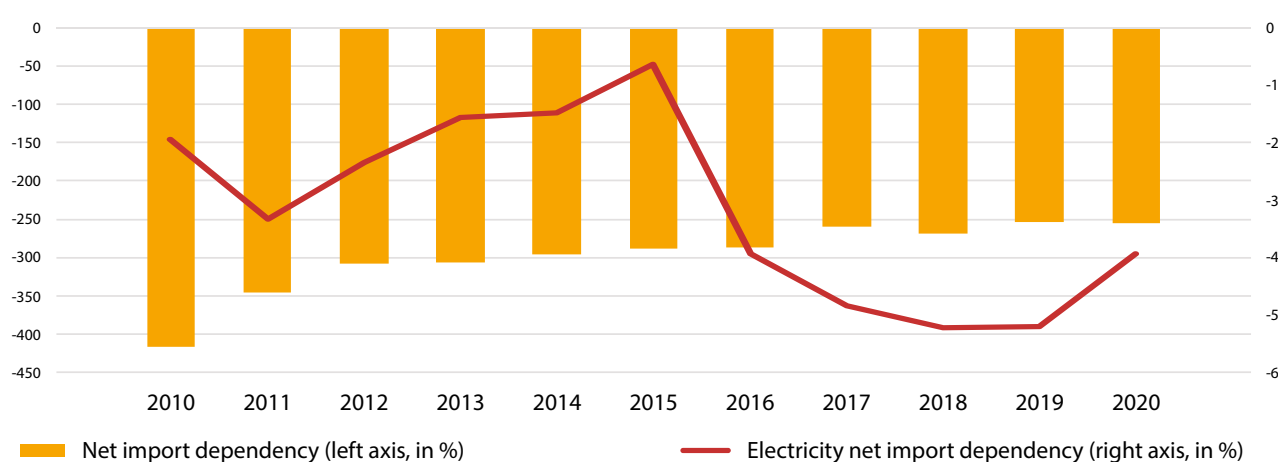
Source: Expertise France from the State Statistical Committee of the Republic of Azerbaijan.

The leading final energy-consuming sectors in Azerbaijan are households and transport with 43% and 23% of Total Final Energy Consumption respectively, with industry at 20% and services at 7%. Petroleum products dominate Azerbaijan’s final consumption in the transport and agriculture sectors. In other consuming sectors, natural gas is the leading energy followed by electricity and heat.

3.2.2 Energy dependence and security

Azerbaijan is a net exporter of energy, as shown by a sizeable negative import dependency rate of -254% in 2020. It means that overall, Azerbaijan’s energy exports are 2.5 times larger than its Gross Available Energy. Azerbaijan’s net exporter position deteriorated since 2010 when its energy exports were four times larger than its Gross Available Energy. This is the result of a declining production of hydrocarbons¹⁰ and a steady increase in domestic final energy demand. Over the last decade, Azerbaijan has also constantly been a net exporter of electricity.

FIGURE 17: NET IMPORT DEPENDENCY OF AZERBAIJAN (GROSS AVAILABLE ENERGY AND ELECTRICITY)



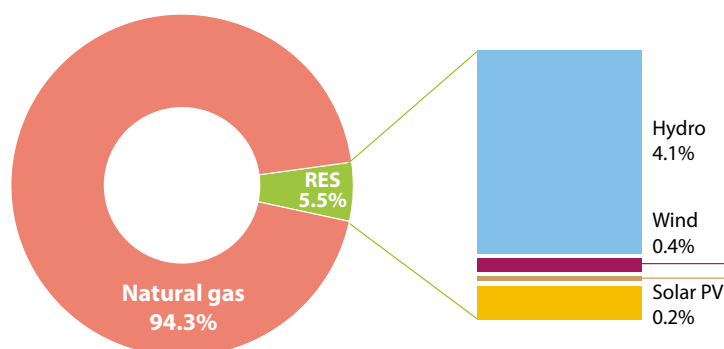
Source: Expertise France from the State Statistical Committee of the Republic of Azerbaijan.

3.2.3 Renewable energy in total energy supply and the electricity and heat mix

Natural gas dominates Azerbaijan’s electricity mix at 94.3% as shown in the chart below. RES represented 5.5% of gross electricity production in 2020, of which hydro and municipal waste were the main contributors. Azerbaijan also produces limited quantities of electricity from wind and solar PV.

Solid fuels (e.g. firewood) are used mainly for final uses in industry, residential and services.

FIGURE 18: ELECTRICITY MIX OF AZERBAIJAN IN 2020 (IN % OF TOTAL GROSS ELECTRICITY PRODUCTION)

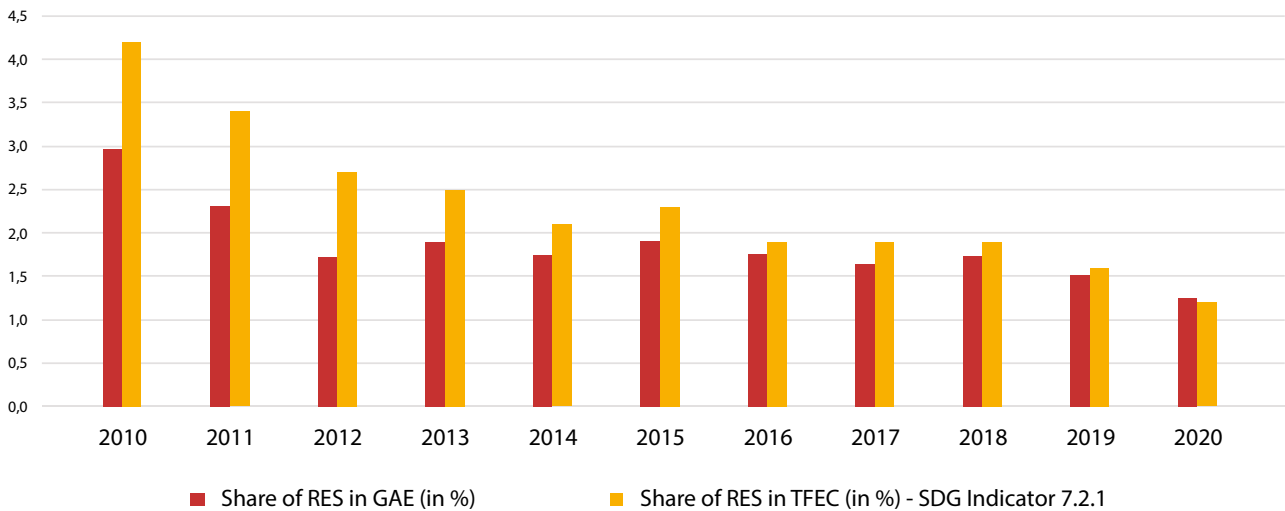


Source: Expertise France from the State Statistical Committee of the Republic of Azerbaijan.

(10) Azerbaijan’s oil production is now declining. Natural gas production is increasing but not enough to compensate the decline in crude oil production.

In Azerbaijan, the share of RES stood at 1.3% of Gross Available Energy and 1.2% of Total Final Energy Consumption in 2020 (Figure 19). During the last decade, the share of RES in Azerbaijan’s GAE and TFEC has been trending downwards. This is due to rising energy demand and lower production of hydroelectricity, a trend that was not compensated by an equivalent increase in other RES.

FIGURE 19: SHARE OF RENEWABLE ENERGY SOURCES (RES) IN GROSS AVAILABLE ENERGY (GAE) AND TOTAL FINAL ENERGY CONSUMPTION (TFEC) IN AZERBAIJAN (IN %)

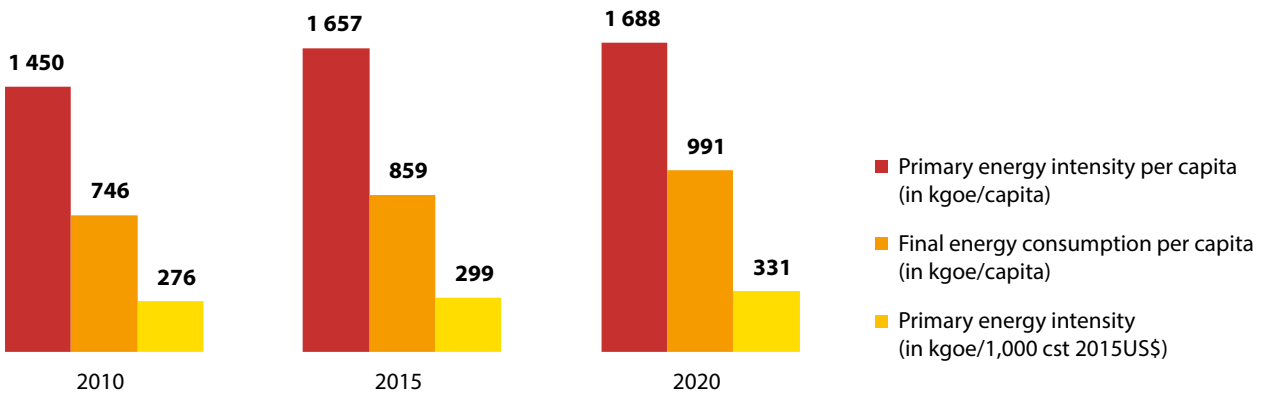


Source: Expertise France from the State Statistical Committee of the Republic of Azerbaijan and Esmap (trackingsdg7.esmap.org).

3.2.4 Key energy intensity indicators

Over the last ten years, Azerbaijan’s economy has increased the amount of energy required to produce a unit of GDP and has therefore become more energy intensive. Over the same period, the energy consumed per capita has also increased.

FIGURE 20: KEY ENERGY INTENSITY INDICATORS FOR AZERBAIJAN



Source: Expertise France from the State Statistical Committee of the Republic of Azerbaijan and the World Bank.

3.3 Georgia

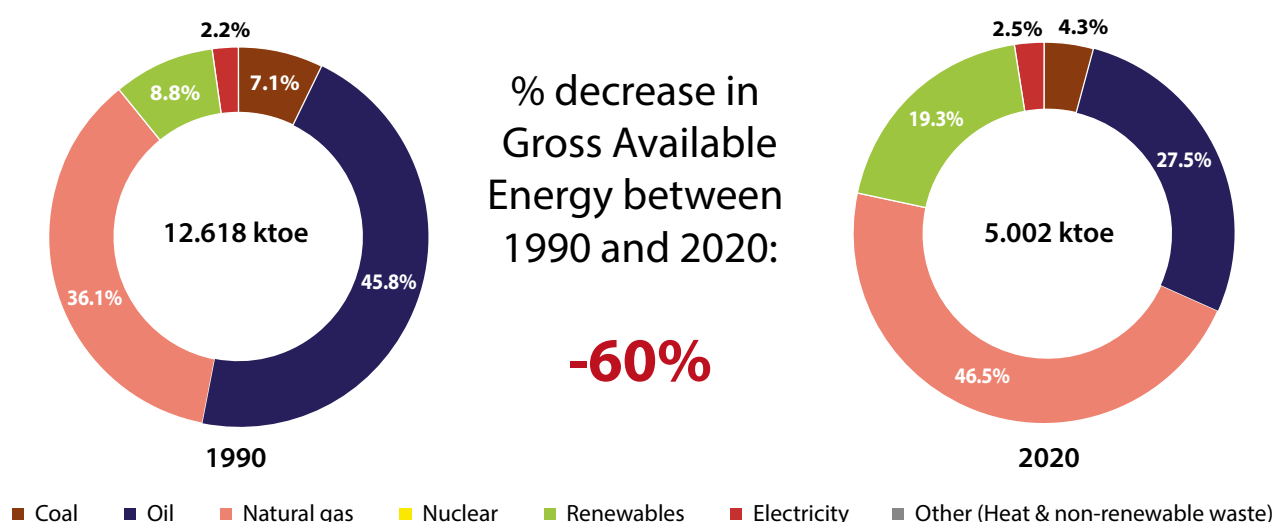
3.3.1 Major developments relating to energy production and consumption since 1990

In 2020, Georgia's Gross Available Energy was still 60% lower than in 1990.

Over the last 30 years, Georgia's primary energy mix witnessed a reduction in the share of fossil fuels (coal, natural gas and oil) from 89% to 78% of Gross Available Energy. This trend was compensated by an increase in the share of renewable energy from 8.8% in 1990 to 19.3% of GAE in 2020. Georgia's RES are hydroelectricity, solid biofuels and geothermal. Electricity imports also contribute positively to Georgia's Gross Available Energy (2.5% of GAE in 2020).

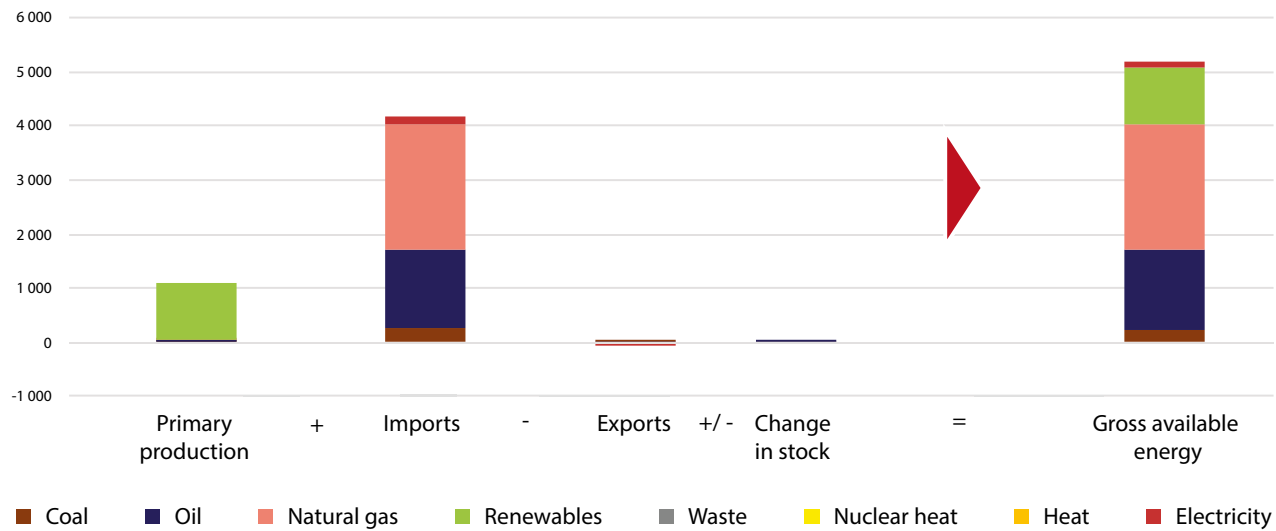
Coal had almost disappeared from Georgia's energy mix from the mid-1990s to the mid-2000s. But its volumes have started to increase in 2007-2008 to supply the cement and steel industry.

FIGURE 21: GROSS AVAILABLE ENERGY IN GEORGIA IN 1990 AND 2020: COMPOSITION AND TRENDS



Source: Expertise France from the National Statistics Office of Georgia, Eurostat and the IEA for 1990 data.

FIGURE 22: FORMATION OF GEORGIA'S GROSS AVAILABLE ENERGY IN 2020 (KTOE)

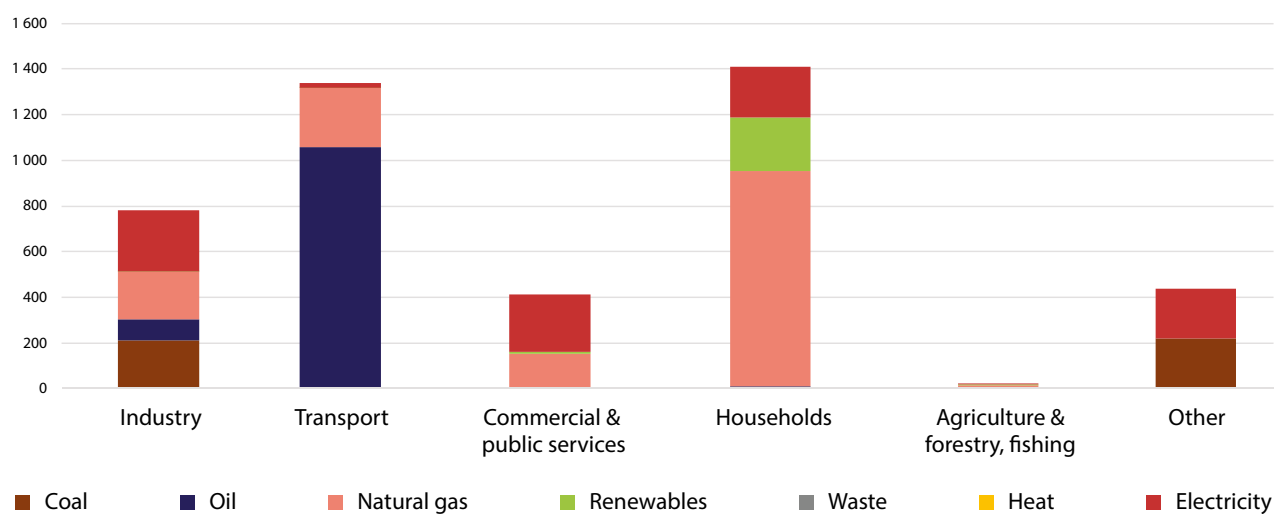


Source: Expertise France from the National Statistics Office of Georgia and Eurostat.

Georgia's primary production is almost entirely made of renewables (>92%). Georgia has a very small domestic production of fossil fuels, including lignite, crude oil, and natural gas. Georgia's primary production only covers 21% of its energy needs in 2020, and the rest is imported. Georgia's main energy imports include coal, crude oil and petroleum products, natural gas and electricity. Georgia has a small oil refining activity (210,000 t/year¹¹) which covers just above 3% of its final consumption of petroleum products.

In 2020, Georgia's Gross Available Energy was still dominated by natural gas (46%), followed by crude oil and petroleum products (27%) and renewables (19%).

FIGURE 23: FINAL ENERGY CONSUMPTION BY SECTOR AND ENERGY IN GEORGIA IN 2020 (KTOE)



Source: Expertise France from the National Statistics Office of Georgia and Eurostat.

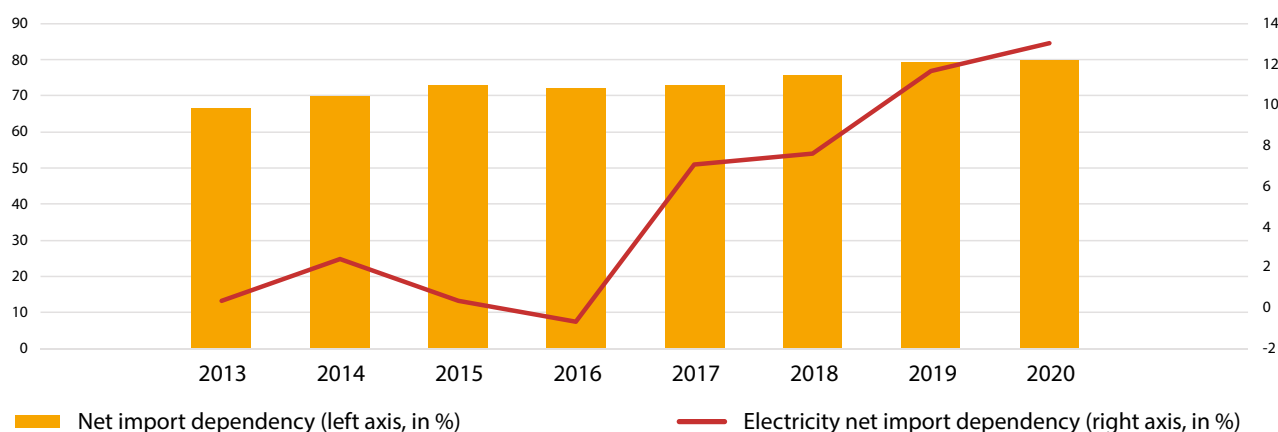
The main final energy-consuming sectors in Georgia are households and transport, with 32% and 30% of Total Final Energy Consumption, respectively, followed by industry (18%) and services (9%). The significant presence of natural gas in transport (20%) is explained by a large fleet of natural gas vehicles and pipeline transport (pumping stations).

(11) Georgia's two refineries do not run at full capacity because of the competition from imports of cheaper petroleum products.

3.3.2 Energy dependence and security

Georgia had a high net import dependency of 80% in 2020. This indicator has deteriorated since 2013, when it stood at 66%. Georgia is also a net importer of electricity since 2017.

FIGURE 24: NET IMPORT DEPENDENCY OF GEORGIA (GROSS AVAILABLE ENERGY AND ELECTRICITY)

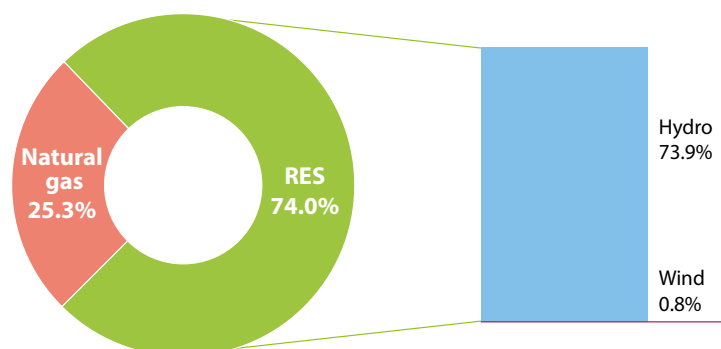


Source: Expertise France from the National Statistics Office of Georgia and Eurostat.

3.3.3 Renewable energy in total energy supply and the electricity and heat mix

Hydroelectricity (73.9%) and natural gas (25.3%) dominate Georgia's electricity mix. Wind represents less than 1% of total gross electricity production.

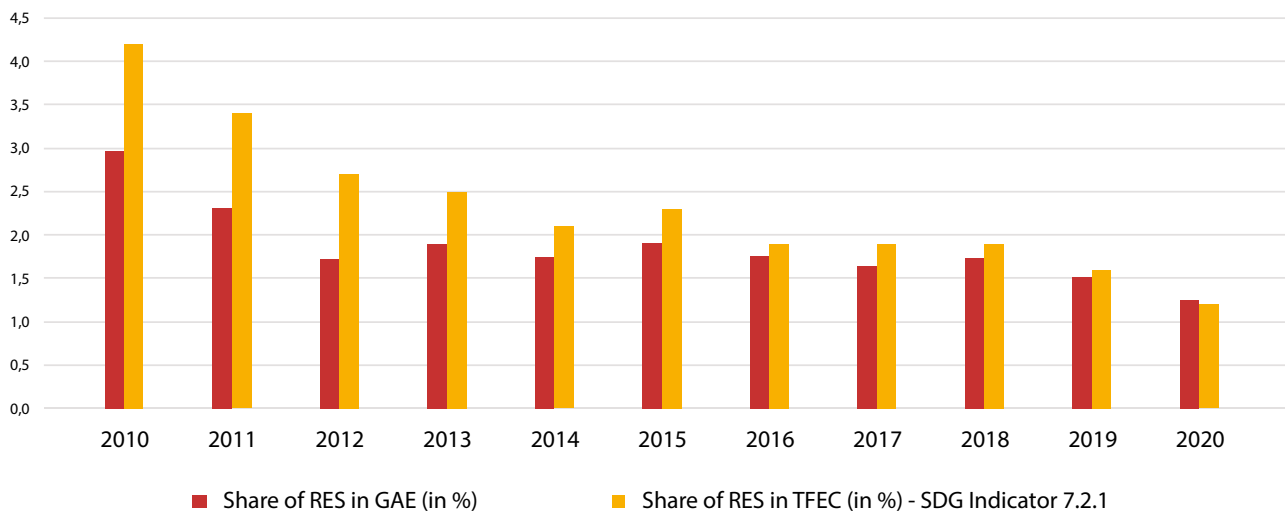
FIGURE 25: ELECTRICITY MIX OF GEORGIA IN 2020 (IN % OF TOTAL GROSS ELECTRICITY PRODUCTION)



Source: Expertise France from the National Statistics Office of Georgia and Eurostat.

In Georgia, the share of RES stands at 19% of Gross Available Energy in 2020 and 25% of Total Final Energy Consumption in 2019, the second highest among EaP countries after Moldova. Georgia's main RES are hydroelectricity and wind to produce electricity and solid biofuels, geothermal and solar thermal for final consumption in households and services. Solid fuels are consumed almost entirely in the residential sector.

FIGURE 26: SHARE OF RENEWABLE ENERGY SOURCES (RES) IN GROSS AVAILABLE ENERGY (GAE) AND TOTAL FINAL ENERGY CONSUMPTION (TFEC) IN GEORGIA (IN %)

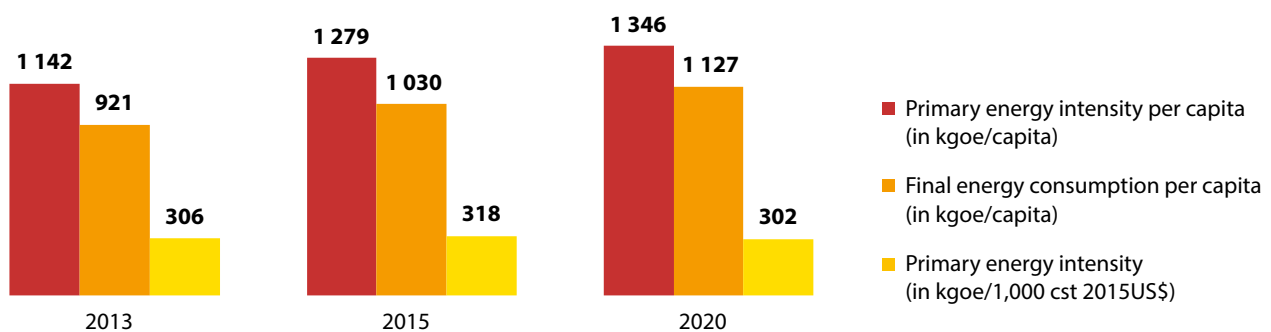


Source: Expertise France from the National Statistics Office of Georgia, Eurostat and Esmap (trackingsdg7.esmap.org).

3.3.4 Key energy intensity indicators

Since 2013, Georgia has stabilised the amount of energy required to produce one unit of GDP and therefore its overall energy intensity. Over the same period, Georgia's primary and final energy consumption per capita have increased significantly, pointing towards a substantial wealth effect, i.e. a steady increase in GDP per capita.

FIGURE 27: KEY ENERGY INTENSITY INDICATORS FOR GEORGIA



Source: Expertise France from the National Statistics Office of Georgia, Eurostat and the World Bank.

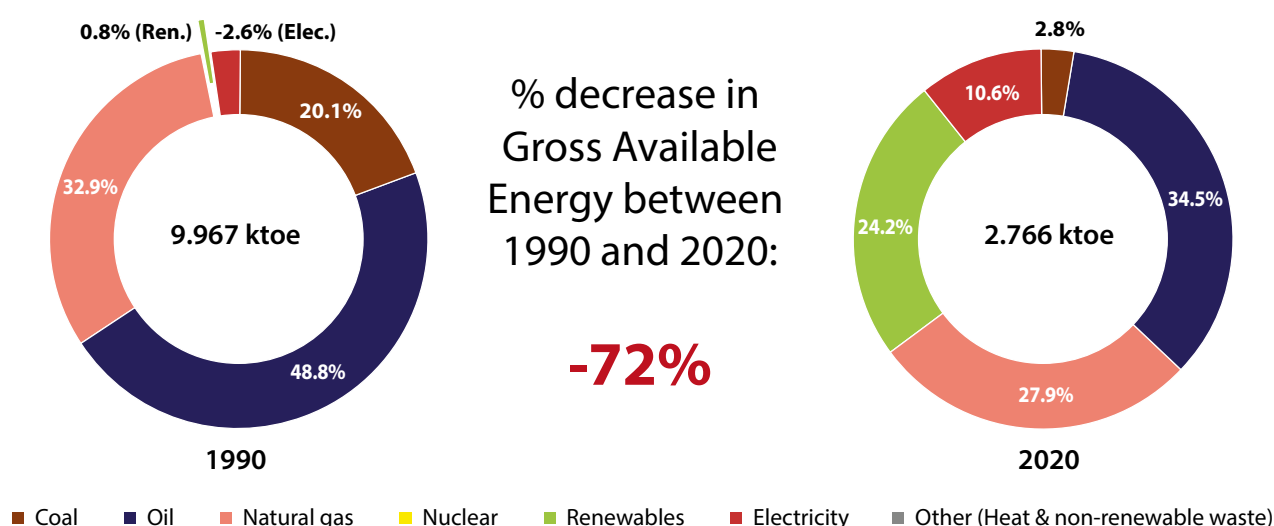
3.4 Moldova

3.4.1 Major developments relating to energy production and consumption since 1990

In 2020, Moldova's Gross Available Energy was 72% lower than in 1990, the largest decrease among EaP countries. It should be noted that data reported by Moldova do not include data for the territory located on the left bank of the Dniester River and the municipality of Bender.

Over the last 30 years, Moldova's primary energy mix witnessed a reduction in the share of fossil fuels (coal, natural gas and oil) from 99.2% to 65.2% of Gross Available Energy. The decrease in the share of fossil fuel was accompanied by an increase in the share of renewable energy from 0.8% in 1990 to 24.2% of Gross Available Energy in 2020 and large imports of electricity.¹²

FIGURE 28: GROSS AVAILABLE ENERGY IN MOLDOVA IN 1990 AND 2020: COMPOSITION AND TRENDS



Source: Expertise France from the National Bureau of Statistics of the Republic of Moldova, Eurostat and the IEA for 1990 data.

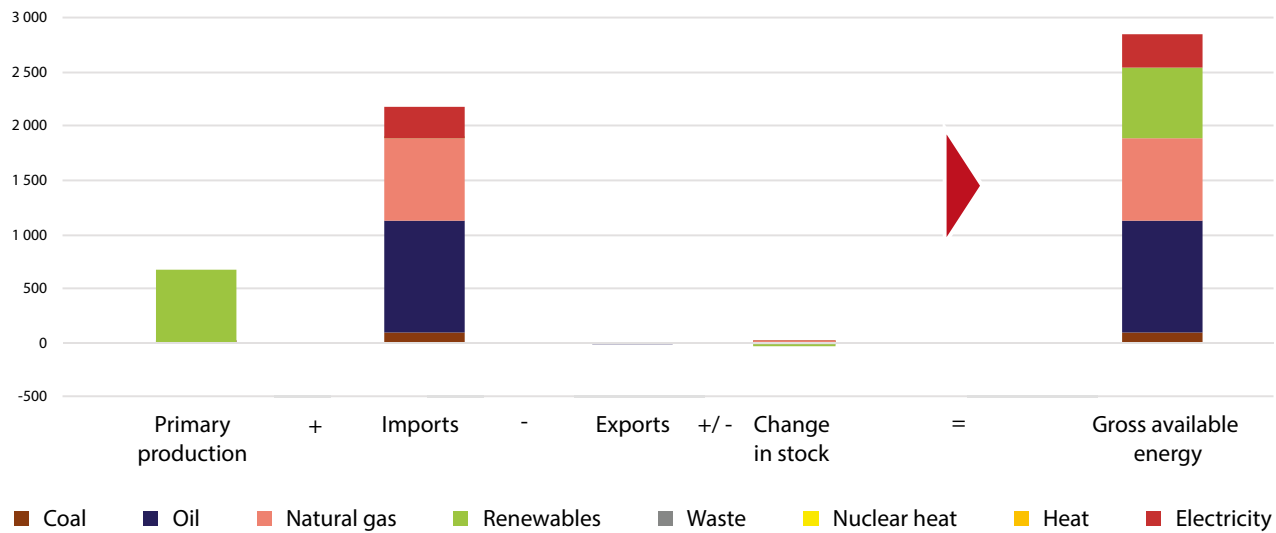
Moldova's primary production is almost entirely made of solid biofuels (>99%). Moldova has a very small domestic production of crude oil and natural gas. Moldova's primary production only covers 24.6% of its energy needs in 2020, and the rest is imported. Moldova's main energy imports include petroleum products, natural gas and electricity.

Transformation activities include the production of heat and electricity, particularly in Combined Heat and Power plants and a small petrochemical industry.

In 2020, Moldova's Gross Available Energy was still dominated by oil (34%), followed by natural gas (28%), renewables (24%), and electricity imports (11%).

(12) Electricity quantities produced in power plants located on the left bank of the Dniester and consumed on the right bank are classified as "other sources" in the NBS energy balance format and as "imports" in the Eurostat balance. The data published by the IEA for Moldova includes all Moldovan territories.

FIGURE 29: FORMATION OF MOLDOVA'S GROSS AVAILABLE ENERGY IN 2020 (KTOE)

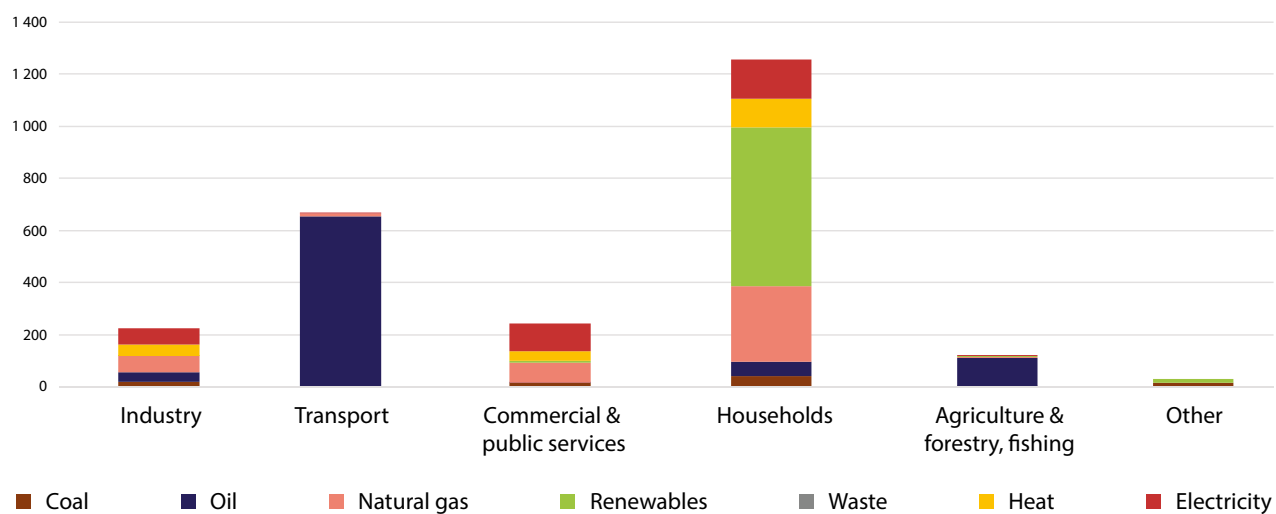


Source: Expertise France from the National Bureau of Statistics of the Republic of Moldova and Eurostat.

Households are the largest final energy-consuming sector in Moldova, accounting for almost half of the country's Total Final Energy Consumption (49%). The second-largest consuming sector is transport (26%) followed by services (10%) and industry (9%). Ninety-seven per cent of the biomass produced in Moldova is consumed in the household sector.

In 2020, Moldova's Total Final Energy Consumption was supplied primarily with petroleum products (34%), renewables (25%), natural gas (17%) and electricity (13%). Heat (7%) is used for space heating, and industrial processes and coal (4%) is consumed in households, services and the industrial branch of non-metallic minerals.

FIGURE 30: FINAL ENERGY CONSUMPTION BY SECTOR AND ENERGY IN MOLDOVA IN 2020 (KTOE)

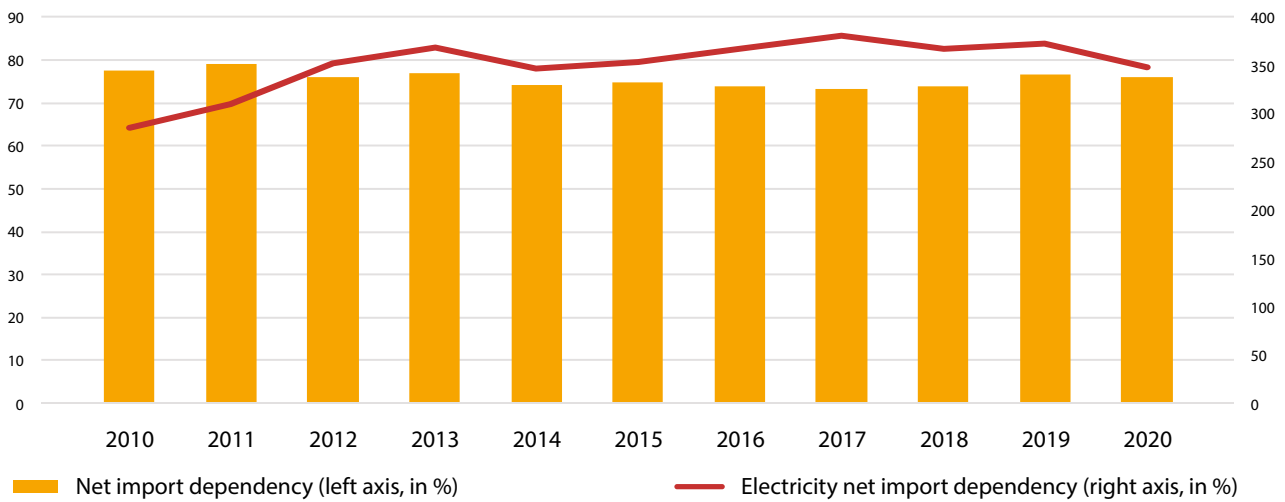


Source: Expertise France from the National Bureau of Statistics of the Republic of Moldova and Eurostat.

3.4.2 Energy dependence and security

Moldova had a high net import dependency of 76% in 2020. This indicator has been relatively stable since 2010. Moldova is also highly dependent on imports of electricity, in particular from the territories situated on the left bank of the Dniester. Moldova imports almost four times as much electricity as its domestic production.

FIGURE 31: NET IMPORT DEPENDENCY OF MOLDOVA (GROSS AVAILABLE ENERGY AND ELECTRICITY)

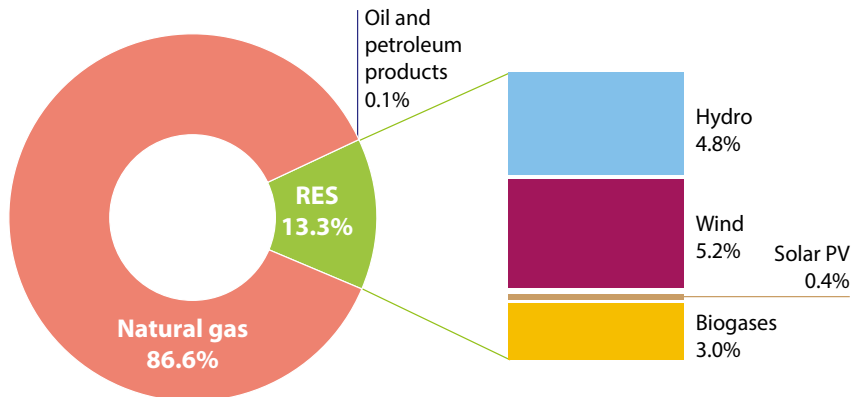


Source: Expertise France from the National Bureau of Statistics of the Republic of Moldova and Eurostat.

3.4.3 Renewable energy in total energy supply and the electricity and heat mix

Renewable Energy Sources represent 13.3% of Moldova’s electricity production which remains predominantly generated from natural gas (86.6%).

FIGURE 32: ELECTRICITY MIX OF MOLDOVA IN 2020 (IN % OF TOTAL GROSS ELECTRICITY PRODUCTION)

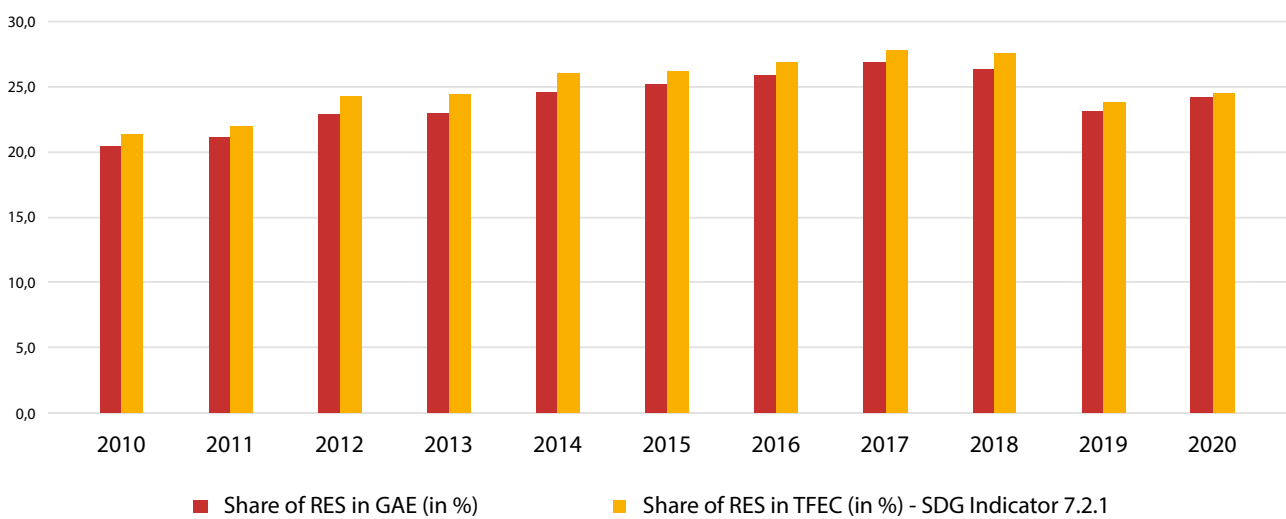


Source: Expertise France from the National Bureau of Statistics of the Republic of Moldova and Eurostat.

The share of RES in primary and final consumption regularly increased from 2010 to 2017 but stabilised in 2018 and dropped in 2019 and 2020 due to lower production of primary solid fuels.

In Moldova, the share of RES stands at 24% of Gross Available Energy and 25% of Total Final Energy Consumption, the highest level among EaP countries. Moldova's main RES are Primary solid fuels, including firewood, pellets and briquettes and, agricultural and forestry wastes. Moldova also produces small quantities of electricity from hydroelectricity, wind, biogas and solar PV.

FIGURE 33: SHARE OF RENEWABLE ENERGY SOURCES (RES) IN GROSS AVAILABLE ENERGY (GAE) AND TOTAL FINAL ENERGY CONSUMPTION (TFEC) IN MOLDOVA (IN %)

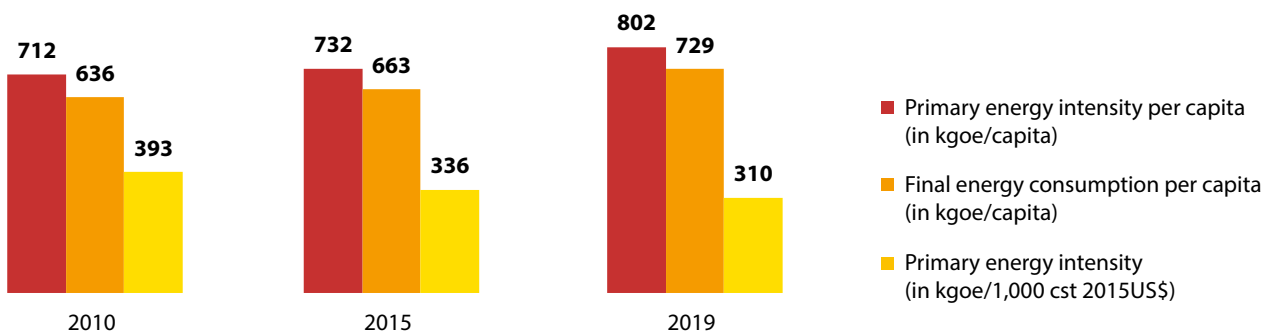


Source: Expertise France from the National Bureau of Statistics of the Republic of Moldova, Eurostat and Esmap (trackingsdg7.esmap.org).

3.4.4 Key energy intensity indicators

Since 2010, Moldova has reduced the amount of energy required to produce a unit of GDP and has become less energy intensive. Over the same period, Moldova's primary and final energy consumption per capita have increased, pointing towards a wealth effect, i.e. an increase in GDP per capita.

FIGURE 34: KEY ENERGY INTENSITY INDICATORS FOR MOLDOVA



Source: Expertise France from the National Bureau of Statistics of the Republic of Moldova, Eurostat and the World Bank.

3.5 Ukraine

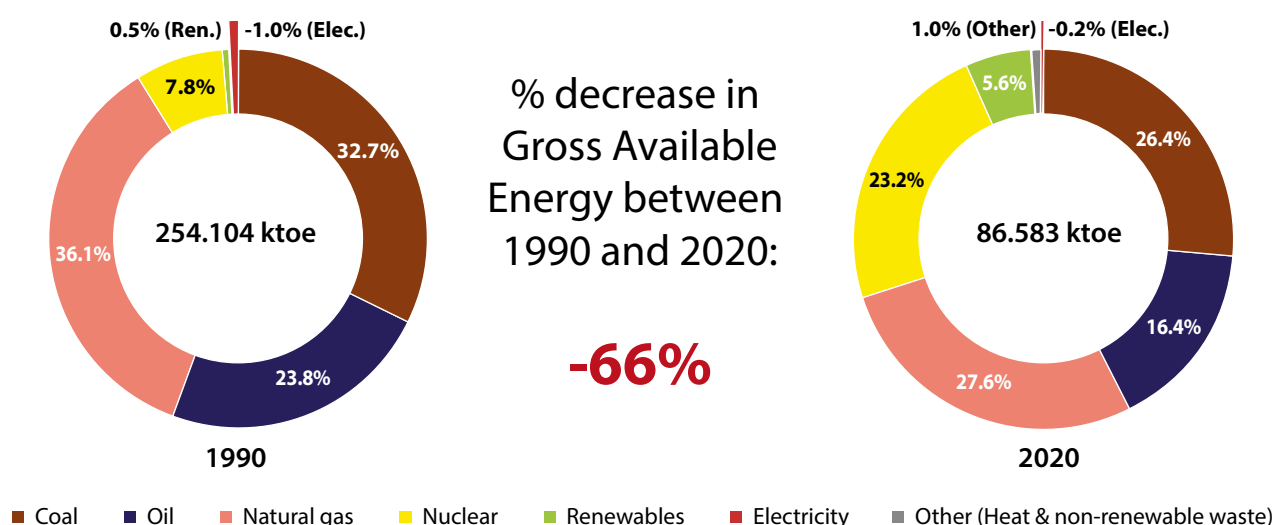
3.5.1 Major developments relating to energy production and consumption since 1990

In 2020, Ukraine's Gross Available Energy was still 66% lower than in 1990, the second-largest decrease among EaP countries after Moldova.

Since 1990 Ukraine's primary energy mix has changed, but mainly because of the collapse of its Gross Available Energy caused by a huge reduction in the amount of fossil fuels consumed in Ukraine's industries. The share of fossil fuels (coal, oil and natural gas) decreased from 93% of total GAE in 1990 to 70% in 2020.

In absolute values, the amount of generation of electricity from nuclear remained stable over the same period. Coupled with GAE's sharp fall, this has increased the share of nuclear in Ukraine's GAE from 8% in 1990 to 23% in 2020. The only energy source that has made significant progress both in terms of volume and share is renewables. Their share increased from 0.5% in 1990 to 5.6% in 2020.

FIGURE 35: GROSS AVAILABLE ENERGY IN UKRAINE IN 1990 AND 2020: COMPOSITION AND TRENDS



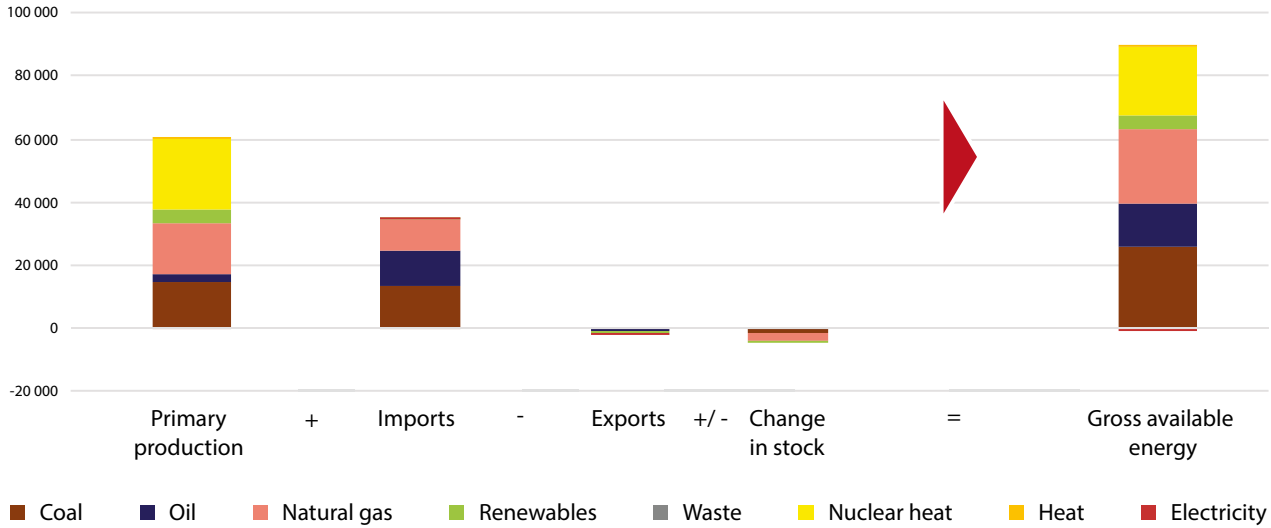
Source: Expertise France from the State Statistics Service of Ukraine, Eurostat and IEA for 1990 data.

Ukraine's primary production accounts for 66% of the country's 2020 GAE and imports for 35%. The country's primary production is well-diversified, with 35% nuclear energy, 28% natural gas, 22% coal, 9% renewables, and 4% oil. Although Ukraine has a significant domestic production of coal, natural gas and, to a lesser extent, crude oil, it needs to import all three fossil fuels in large quantities. Ukraine's imports are made of 36% of coal, 39% of oil and petroleum products and 24% of natural gas.

Ukraine has extensive energy transformation activities, including the production of electricity and heat in dedicated plants and CHP plants, the production of coke from coal in coke ovens and the use of coke in blast furnaces. Other notable transformation activities include oil refining and petrochemicals, peat products, charcoal and biofuels.

In 2020, Ukraine's Gross Available Energy was composed of coal (26%) followed by natural gas (28%), nuclear heat (23%), oil and petroleum products (16%) and renewables (6%).

FIGURE 36: FORMATION OF UKRAINE'S GROSS AVAILABLE ENERGY IN 2020 (KTOE)



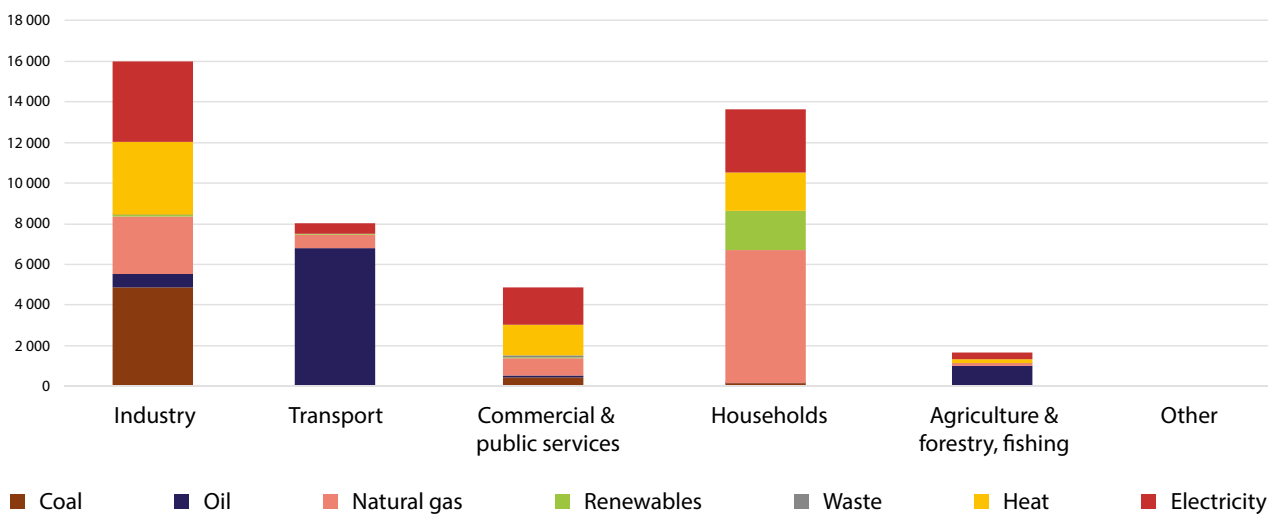
Source: Expertise France from the State Statistics Service of Ukraine and Eurostat.

Industry accounts for more than one-third of the country's Total Final Energy Consumption (36%) and is the largest final energy-consuming sector in Ukraine. Industry is followed by households (31%), transport (18%) and services (11%).

Households consume 89% of the biomass and 57% of the natural gas used in Ukraine. Transport consumes 80% of petroleum products and industry 88% of the coal. Transport uses significant amounts of natural gas, but almost all volumes go to pipeline pump stations.

In 2020, Ukraine's Total Final Energy Consumption was supplied primarily with natural gas (25%), petroleum products (19%) and electricity (22%). Heat (16%) and coal (12%) are also important final energies. Heat is, for instance, used in similar quantities in industry, services and households.

FIGURE 37: FINAL ENERGY CONSUMPTION BY SECTOR AND ENERGY IN UKRAINE IN 2020 (KTOE)

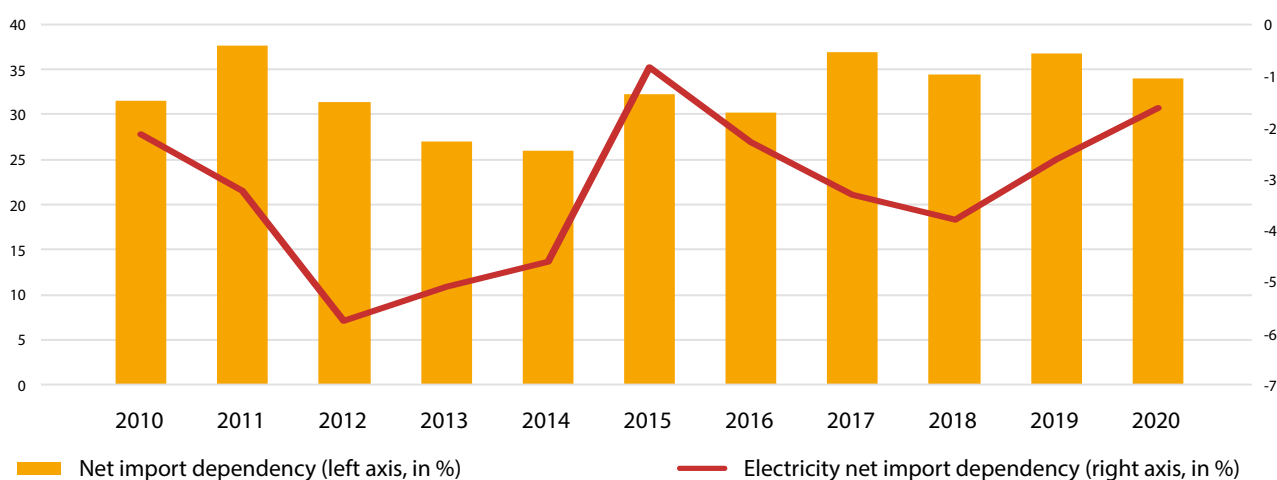


Source: Expertise France from the State Statistics Service of Ukraine and Eurostat.

3.5.2 Energy dependence and security

Ukraine had a net import dependency of 34% in 2020. If one excludes Azerbaijan, a net exporter and a country well-endowed with natural fossil resources, Ukraine has a net dependency that is significantly lower than other EaP countries thanks to its domestic primary production. This indicator has oscillated between 38% in 2011 and 26% in 2014. Ukraine has been a net exporter of electricity since at least 2010.

FIGURE 38: NET IMPORT DEPENDENCY OF UKRAINE (GROSS AVAILABLE ENERGY AND ELECTRICITY)

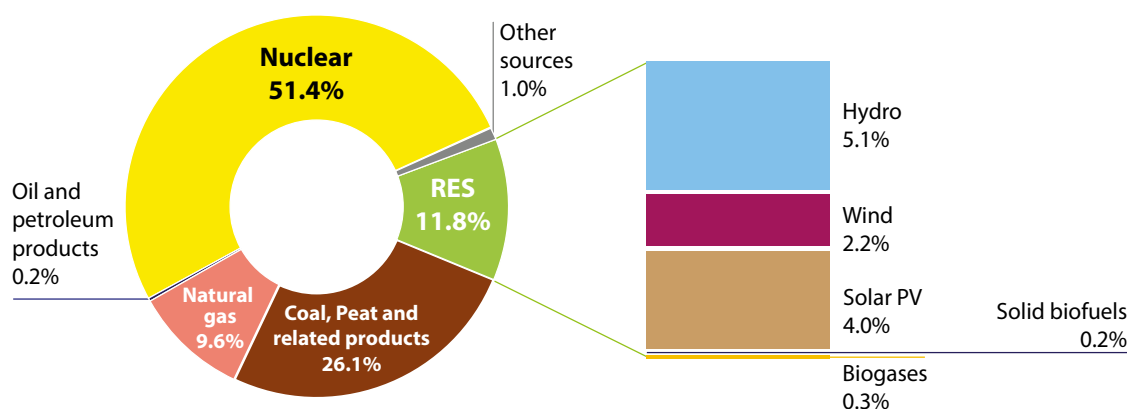


Source: Expertise France from the State Statistics Service of Ukraine and Eurostat.

3.5.3 Renewable energy in total energy supply and the electricity and heat mix

Ukraine produces 11.8% of its electricity from RES, including 5.1% from hydroelectricity and the remainder from solar PV and wind. In 2020, Ukraine produced a total of 148.3 TWh.

FIGURE 39: ELECTRICITY MIX OF UKRAINE IN 2020 (IN % OF TOTAL GROSS ELECTRICITY PRODUCTION)



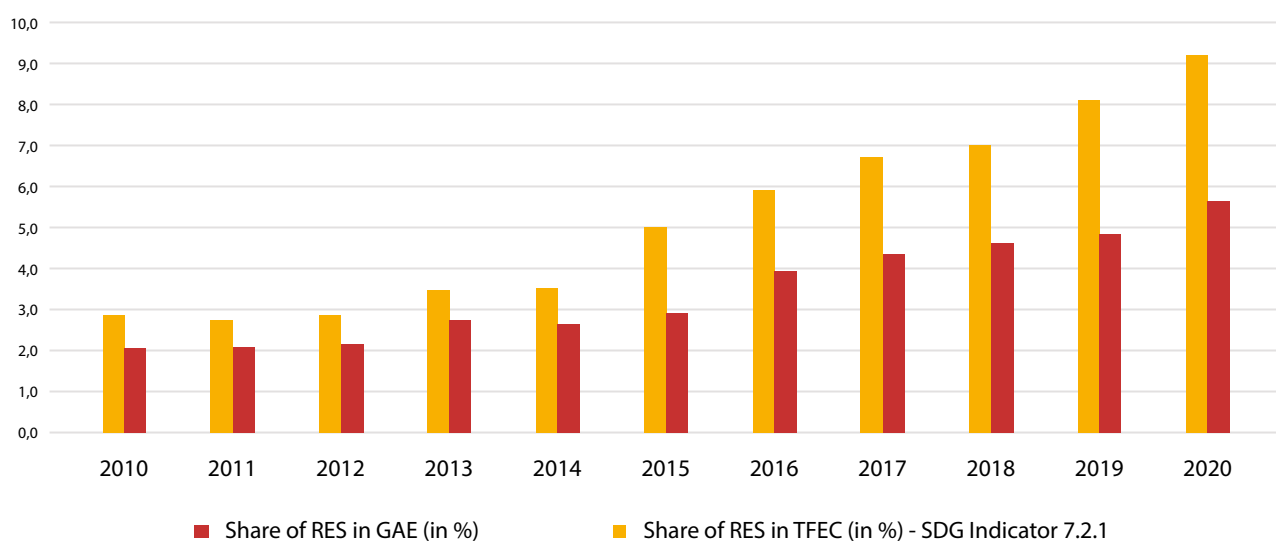
Source: Expertise France from the State Statistics Service of Ukraine and Eurostat.

EVOLUTION OF KEY ENERGY INDICATORS IN PARTNER COUNTRIES

The share of RES in primary and final consumption regularly increased from 2014 to 2020.

In Ukraine, the share of RES stands at 5.6% of Gross Available Energy and 9.2% of Total Final Energy Consumption in 2020. Ukraine's main RES are primary solid fuels which typically include firewood, wood residues and wastes, vegetal or animal. Primary solid fuels are used mainly in the production of heat and electricity, and charcoal. In final demand, primary solid fuels are consumed almost entirely (92%) by households.

FIGURE 40: SHARE OF RENEWABLE ENERGY SOURCES (RES) IN GROSS AVAILABLE ENERGY (GAE) AND TOTAL FINAL ENERGY CONSUMPTION (TFEC) IN UKRAINE (IN %)

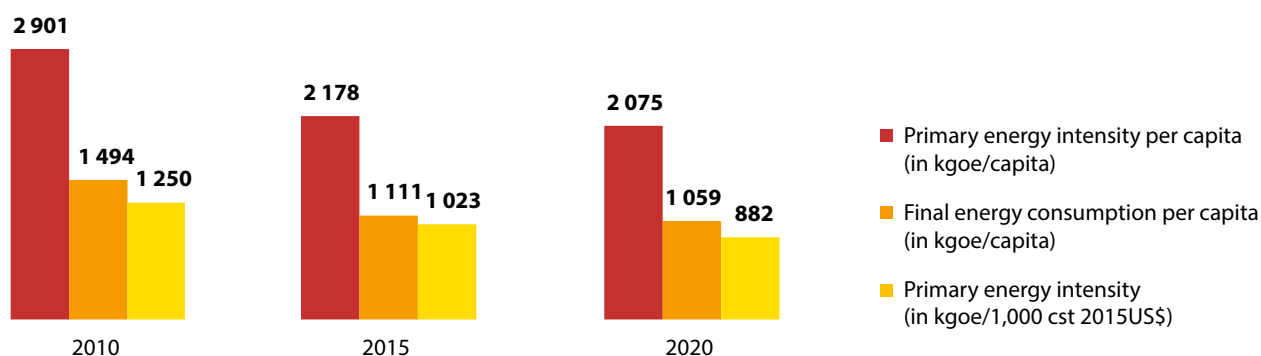


Source: Expertise France from the State Statistics Service of Ukraine, Eurostat and Esmap (trackingsdg7.esmap.org).

3.5.4 Key energy intensity indicators

Since 2010, Ukraine has significantly reduced the amount of energy required to produce a unit of GDP and has become less energy intensive. The same trend is observed for primary and final energy consumption per capita.

FIGURE 41: KEY ENERGY INTENSITY INDICATORS FOR UKRAINE



Source: Expertise France from the State Statistics Service of Ukraine, Eurostat and the World Bank.

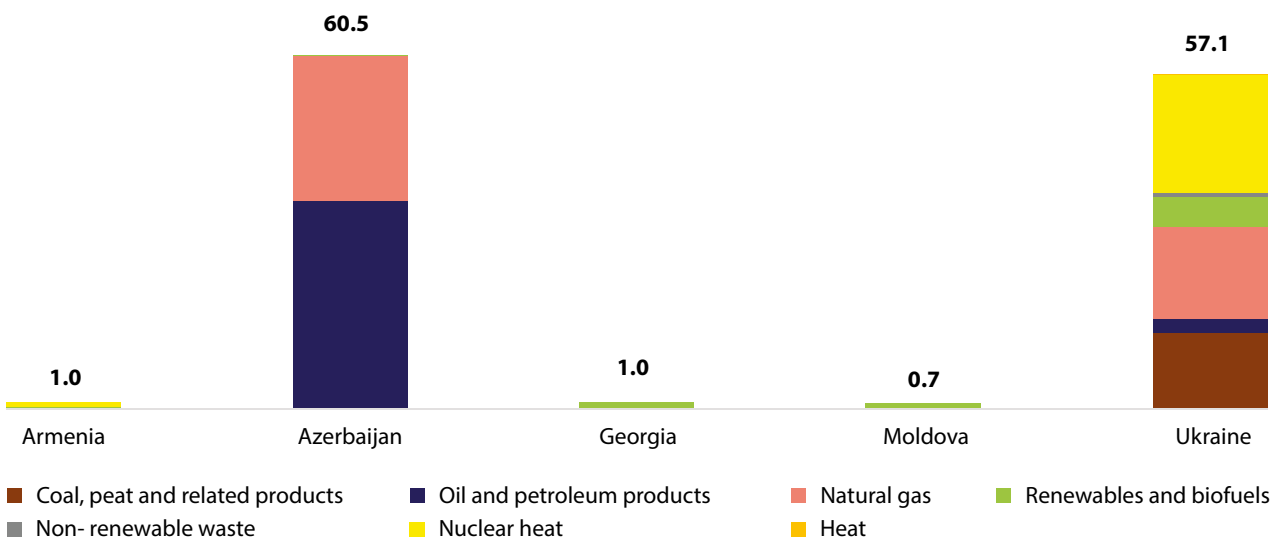
04

*Regional
summary*

4.1 Primary production in EaP countries

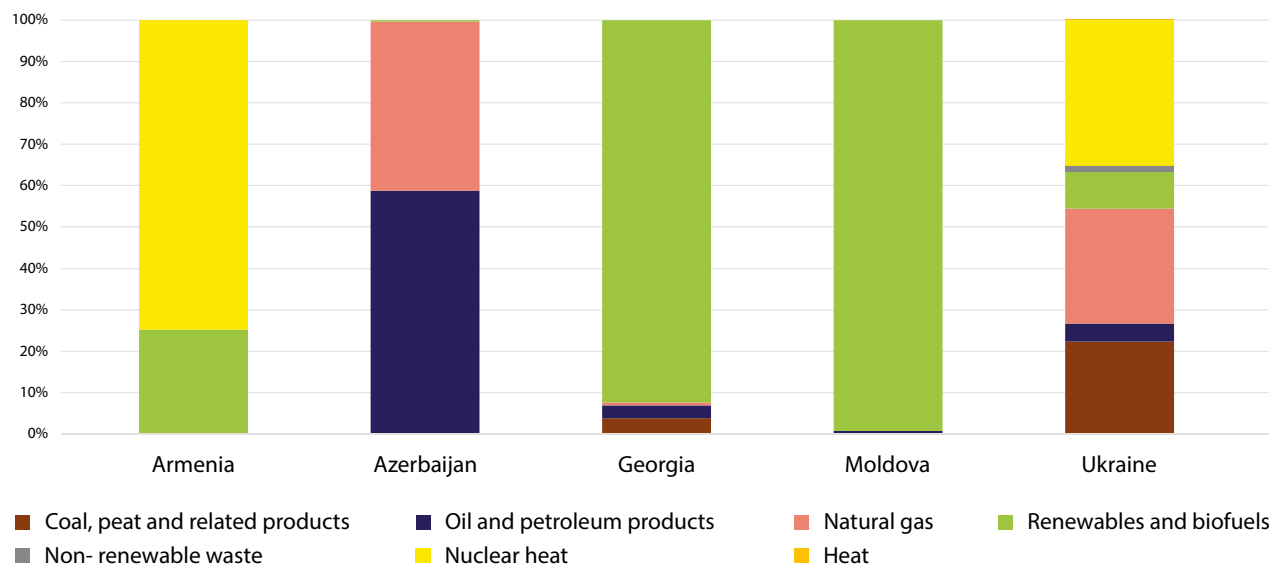
Azerbaijan and Ukraine are by far the leading producers of primary energy in the EaP region. Azerbaijan has abundant oil and natural gas resources, and Ukraine has significant nuclear capacity in addition to important fossil fuel resources (coal and natural gas). Other countries have small domestic primary productions, which include nuclear (Armenia), renewables (Armenia, Georgia, Moldova) or small amounts of fossil fuels (Georgia).

FIGURE 42: PRIMARY ENERGY PRODUCTION IN EAP COUNTRIES IN 2020 (IN MTOE)



Source: Expertise France from EaP national statistical offices and Eurostat.

FIGURE 43: STRUCTURE OF PRIMARY ENERGY PRODUCTION IN EAP COUNTRIES IN 2020 (IN %)

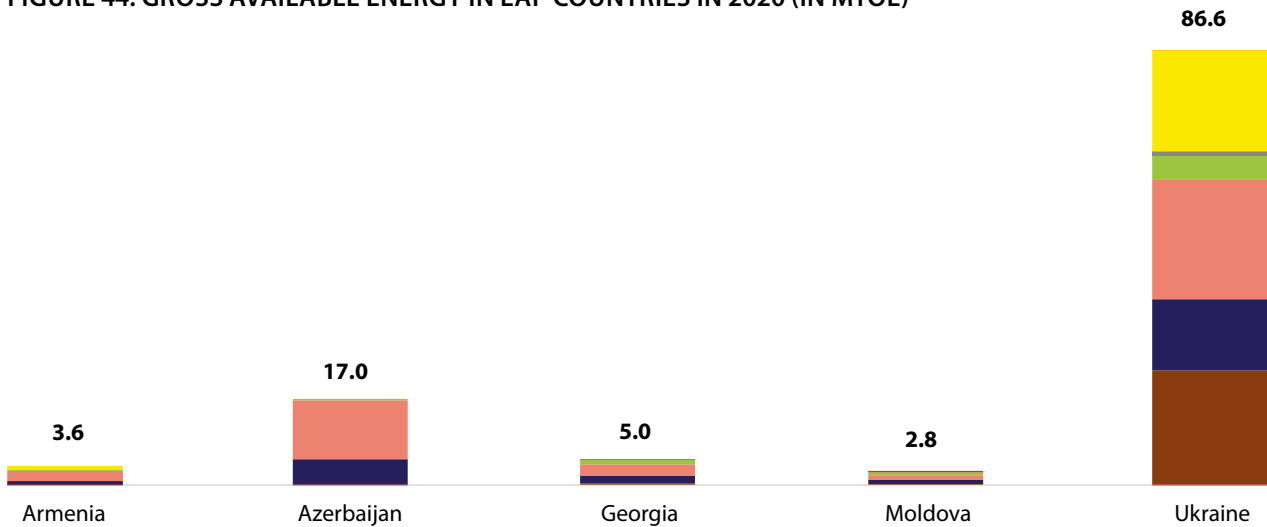


Source: Expertise France from EaP national statistical offices and Eurostat.

4.2 Gross Available Energy in EaP countries

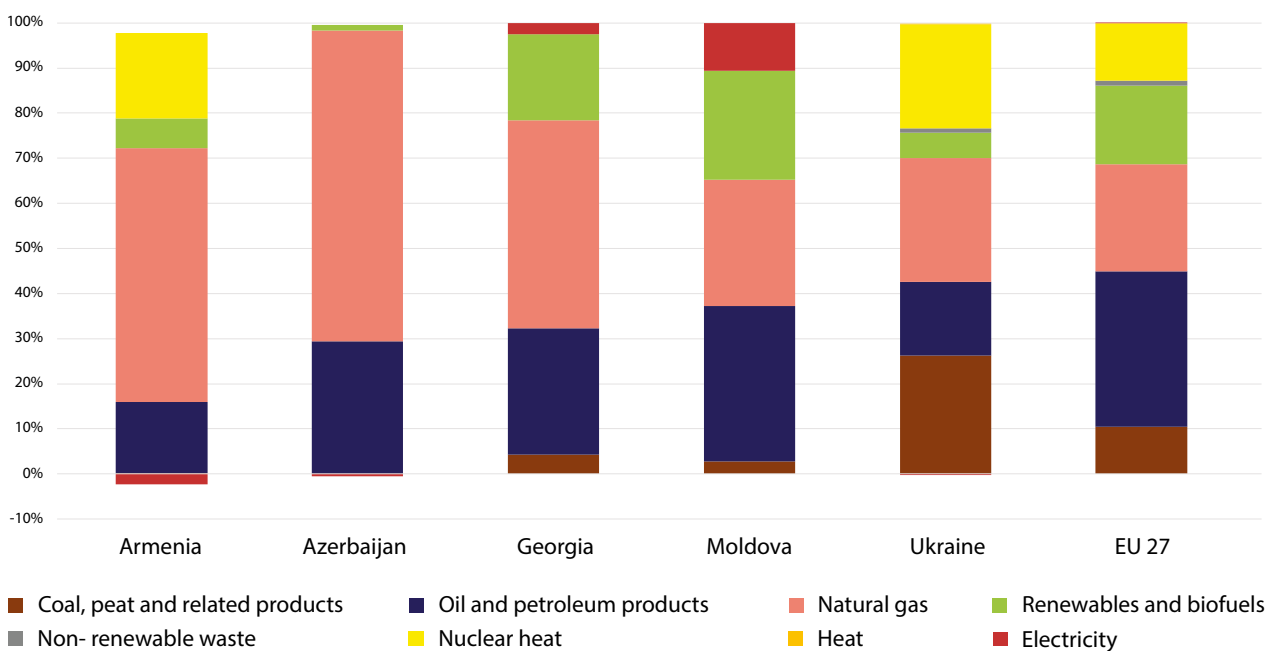
The amount of Gross Available Energy of a country reflects, to a large extent, the size and structure of its economy. Countries with an extensive industry sector will consume, all else being equal, more energy per unit of GDP than countries with little industry and large services sectors. Fossil fuels remain dominant in the GAE mix of the region, as shown in the chart on GAE structure.

FIGURE 44: GROSS AVAILABLE ENERGY IN EAP COUNTRIES IN 2020 (IN MTOE)



Source: Expertise France from EaP national statistical offices and Eurostat.

FIGURE 45: STRUCTURE OF GROSS AVAILABLE ENERGY IN EAP COUNTRIES AND EU 27 IN 2020 (IN %)

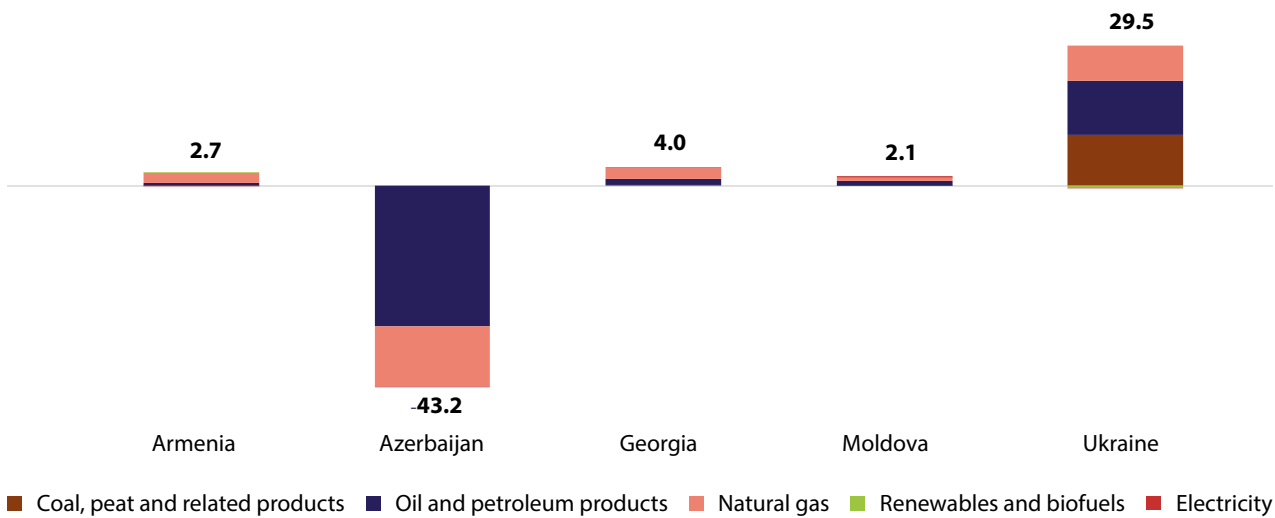


Source: Expertise France from EaP national statistical offices and Eurostat.

4.3 Net imports and dependency indicators in EaP countries

A large producer of oil and gas, Azerbaijan is the only net energy exporter among EaP countries. Although a producer of coal, gas and oil, Ukraine is a net importer of these energies. Imports and exports concern fossil fuels primarily. Electricity is also traded across borders but in much smaller quantities than fossil fuels.

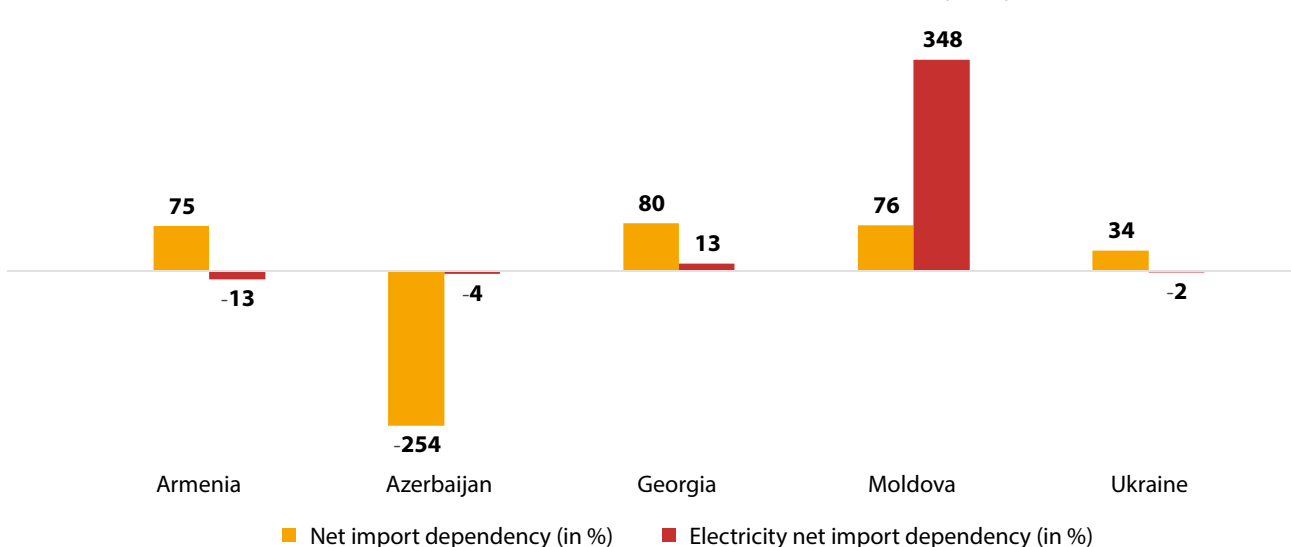
FIGURE 46: NET IMPORTS OF ENERGY IN EAP COUNTRIES IN 2020 (IN MTOE)



Source: Expertise France from EaP national statistical offices and Eurostat.

Most EaP countries have high energy import dependency rates. Exceptions are Azerbaijan, a net exporter, and Ukraine, which has a significant domestic coal and gas production. In 2020, Armenia, Azerbaijan and Ukraine were net exporters of electricity, whereas Moldova and Georgia were net importers.

FIGURE 47: NET IMPORT DEPENDENCY INDICATORS IN EAP COUNTRIES IN 2020 (IN %)

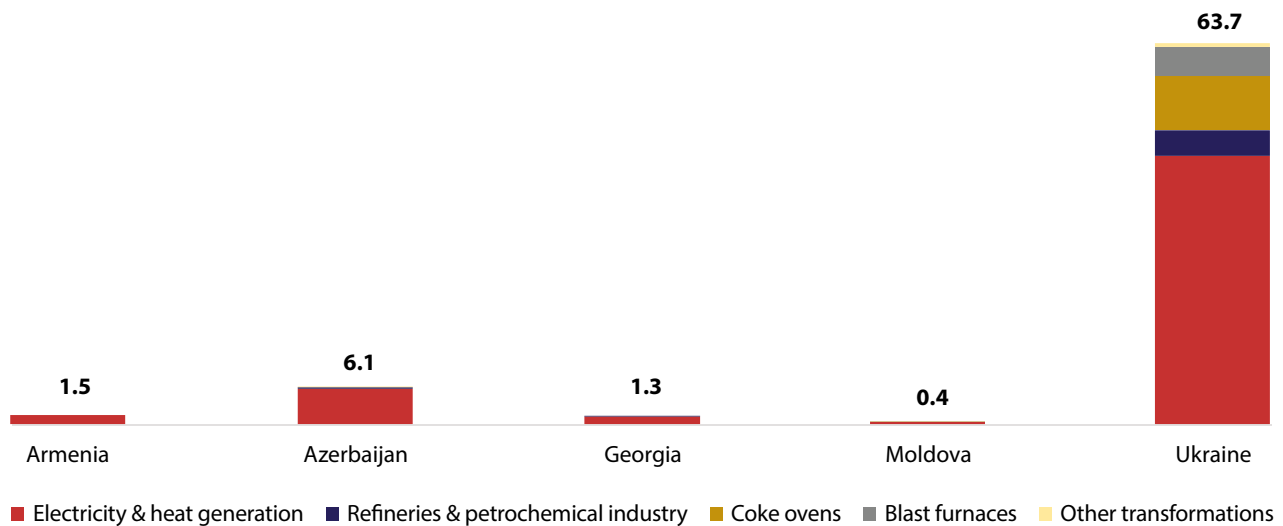


Source: Expertise France from EaP national statistical offices and Eurostat.

4.4 Transformation inputs and outputs in EaP countries

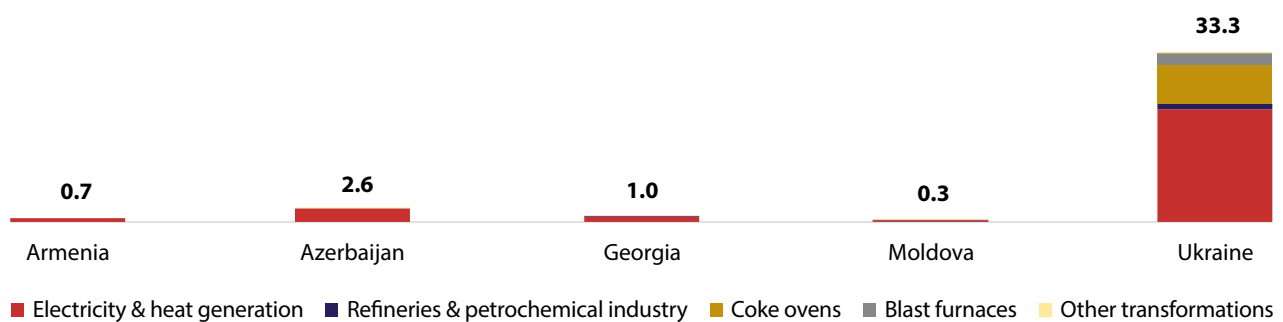
The two charts below show transformation inputs and outputs by activity in each EaP country. The difference between inputs and outputs corresponds to transformation losses. The main transformation activity taking place in EaP countries is the production of electricity and heat. Only Ukraine has significant transformation activities associated with oil refining, petrochemicals, and steelmaking (coke ovens and blast furnaces).

FIGURE 48: TRANSFORMATION INPUT BY TRANSFORMATION ACTIVITY IN EAP COUNTRIES IN 2020 (IN MTOE)



Source: Expertise France from EaP national statistical offices and Eurostat.

FIGURE 49: TRANSFORMATION OUTPUT BY TRANSFORMATION ACTIVITY IN EAP COUNTRIES IN 2020 (IN MTOE)

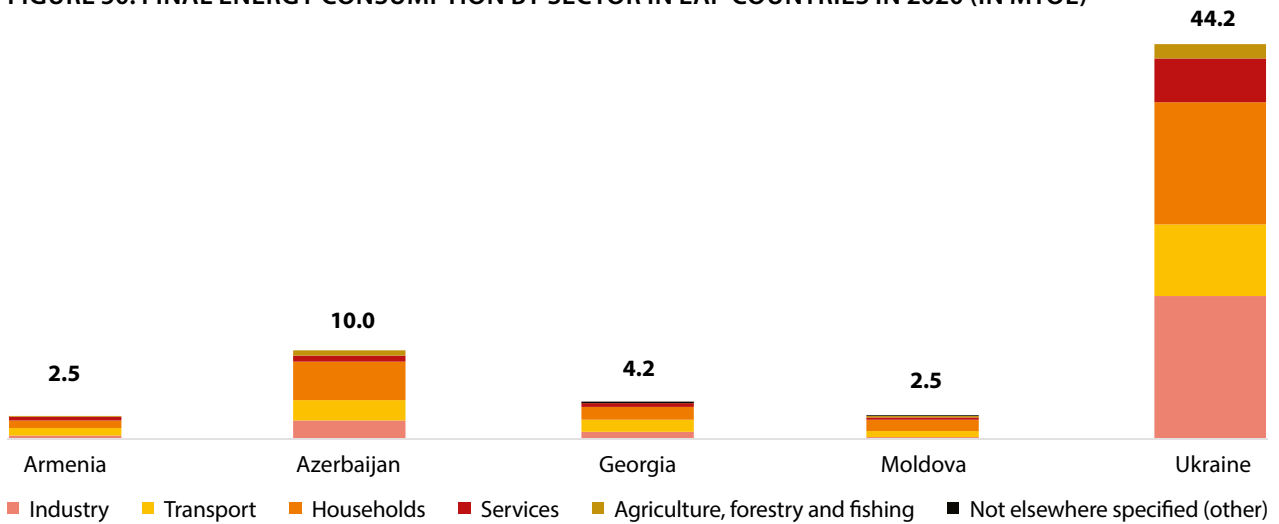


Source: Expertise France from EaP national statistical offices and Eurostat.

4.5 Final Energy Consumption in EaP countries

Final Energy Consumption (FEC) indicates how the different types of energy are consumed in the sectors of the economy. Like GAE, FEC is not only determined by the size and the structure of the economy but also by the total population. Each demand sector (industry, services, households, etc.) has its specific uses of energy. For instance, households use energy for space heating, cooking, sanitary water and electrical appliances. Industry uses energy to generate heat and for motive power to drive machinery.

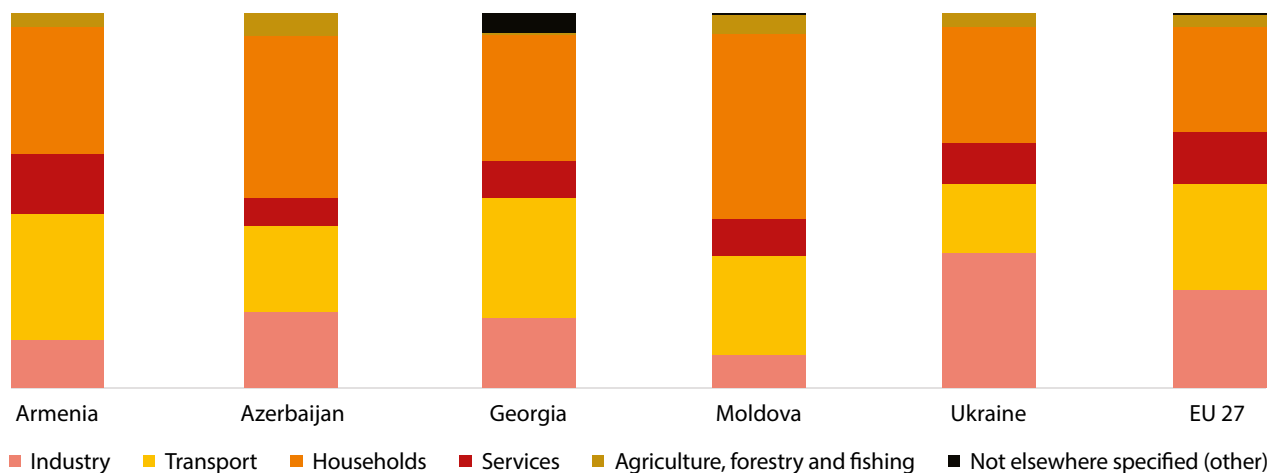
FIGURE 50: FINAL ENERGY CONSUMPTION BY SECTOR IN EAP COUNTRIES IN 2020 (IN MTOE)



Source: Expertise France from EaP national statistical offices and Eurostat.

The structure of FEC by demand sector varies across countries. Industry is a significant energy user in Ukraine. Households represent a substantial energy demand sector in Moldova.

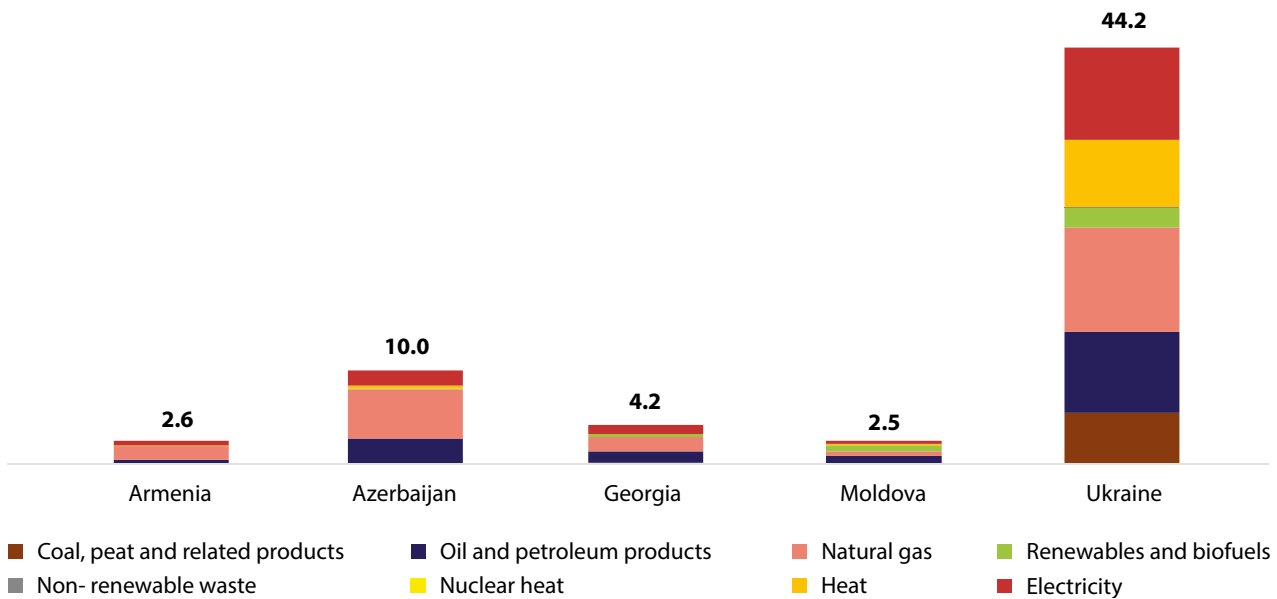
FIGURE 51: STRUCTURE OF FINAL ENERGY CONSUMPTION BY SECTOR IN EAP COUNTRIES AND EU 27 IN 2020 (IN %)



Source: Expertise France from EaP national statistical offices and Eurostat.

The final energy mix shows what type of energy form is used in each country. One of the main differences across EaP countries besides the share of renewables and the fossil fuel mix (coal, oil and gas) resides in the use of heat. Heat is used in Ukraine and to a lesser extent in Moldova and Azerbaijan in industry, households and services.

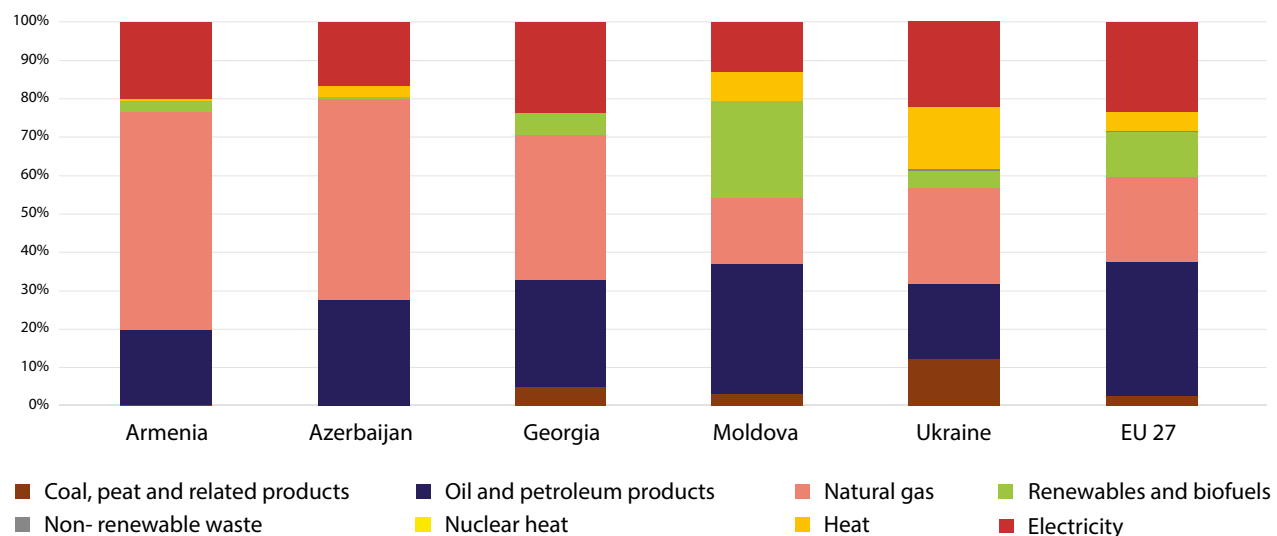
FIGURE 52: FINAL ENERGY CONSUMPTION BY ENERGY PRODUCT IN EAP COUNTRIES IN 2020 (IN %)



Source: Expertise France from EaP national statistical offices and Eurostat.

Low, medium or high-temperature heat is used in many different industrial processes. District heating is used in households and services principally for space heating or water heating purposes. It is important to remember that heat is often produced from fossil fuels, i.e. coal or natural gas in the EaP region.

FIGURE 53: STRUCTURE OF FINAL ENERGY CONSUMPTION BY ENERGY PRODUCT IN EAP COUNTRIES AND EU 27 IN 2020 (IN %)



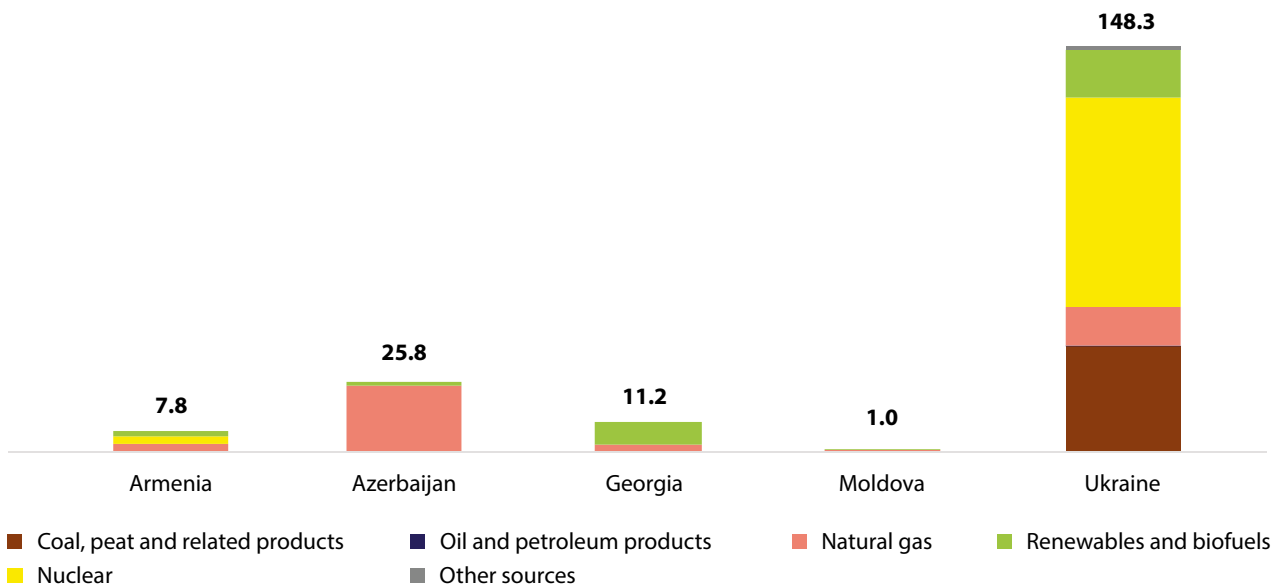
Source: Expertise France from EaP national statistical offices and Eurostat.



4.6 Electricity generation in EaP countries

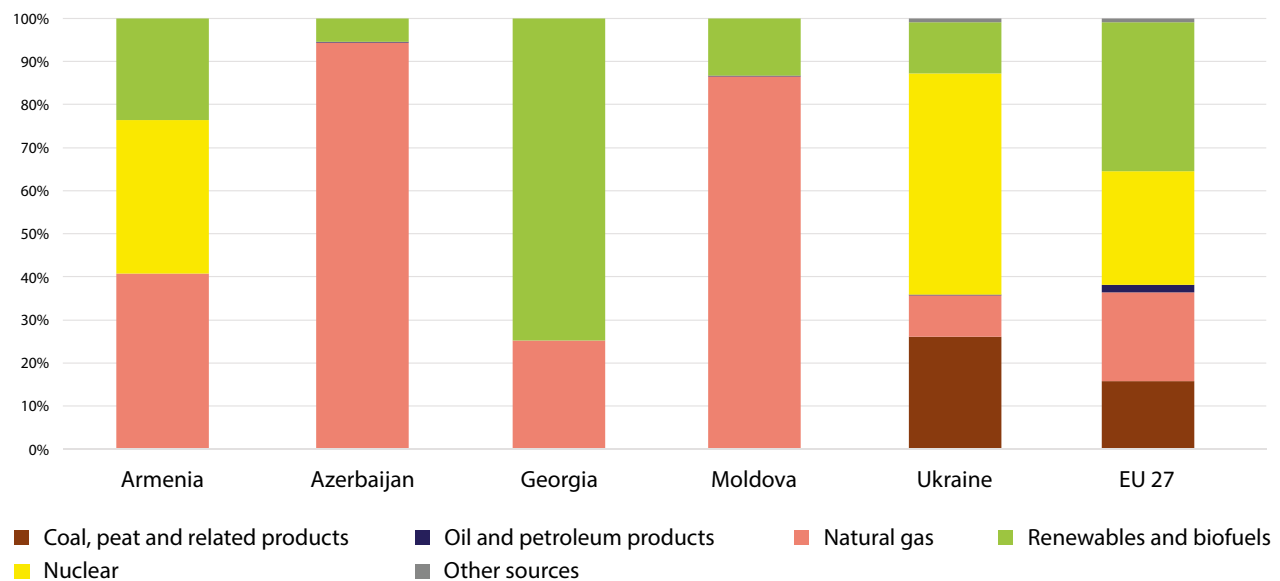
Electricity production in EaP countries is characterised by the dominance of natural gas in Azerbaijan and Moldova, the importance of nuclear in Ukraine and Armenia and the high share of renewables in Georgia and Armenia, two countries with significant hydroelectricity production. Remarkably, Ukraine is the only EaP country that produces electricity using coal.

FIGURE 54: ELECTRICITY GENERATION BY ENERGY PRODUCT IN EAP COUNTRIES IN 2020 (IN TWH)



Source: Expertise France from EaP national statistical offices and Eurostat.

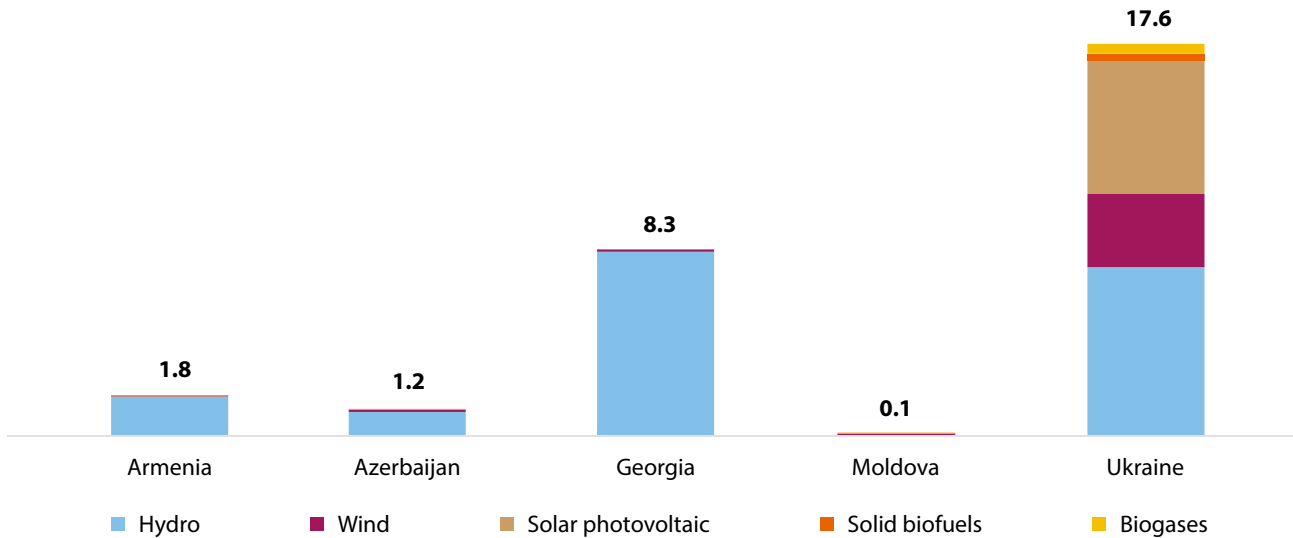
FIGURE 55: ELECTRICITY GENERATION MIX IN EAP COUNTRIES AND EU 27 IN 2020 (IN %)



Source: Expertise France from EaP national statistical offices and Eurostat.

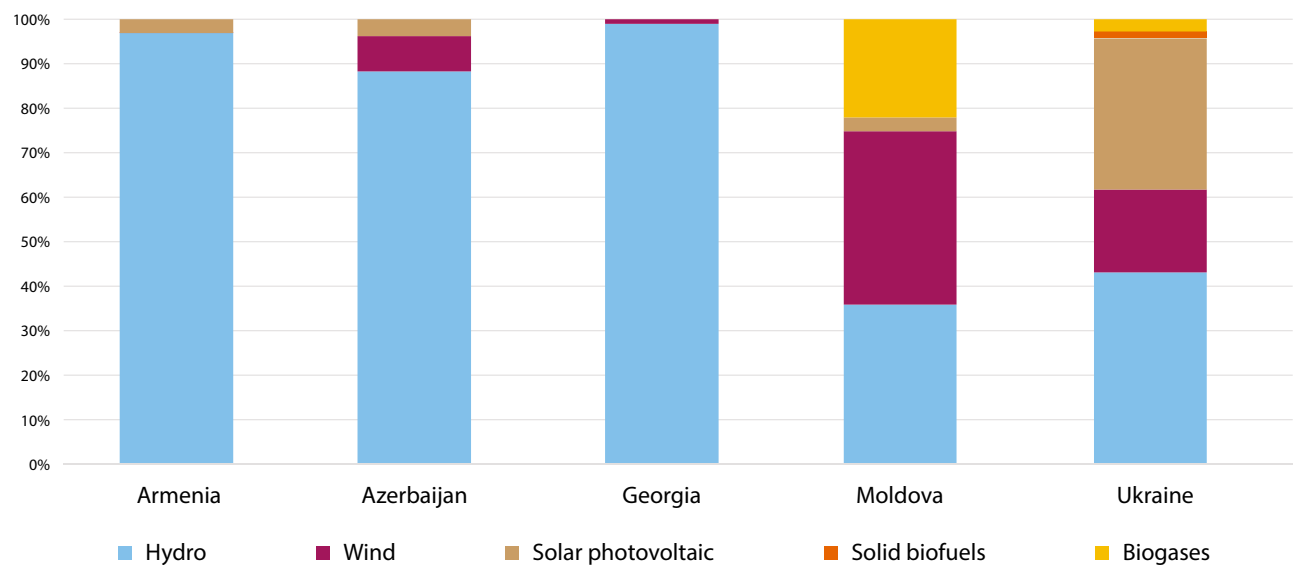
Hydroelectricity is the dominant source of renewable electricity in EaP countries. Other technologies are still emerging, and only Ukraine has a significant electricity production from wind and solar PV. There is also a small production of electricity from biogas in Moldova.

FIGURE 56: GROSS ELECTRICITY PRODUCTION FROM RES IN EAP COUNTRIES IN 2020 (IN TWH)



Source: Expertise France from EaP national statistical offices and Eurostat.

FIGURE 57: GROSS ELECTRICITY PRODUCTION FROM RES IN EAP COUNTRIES IN 2020 (IN %)

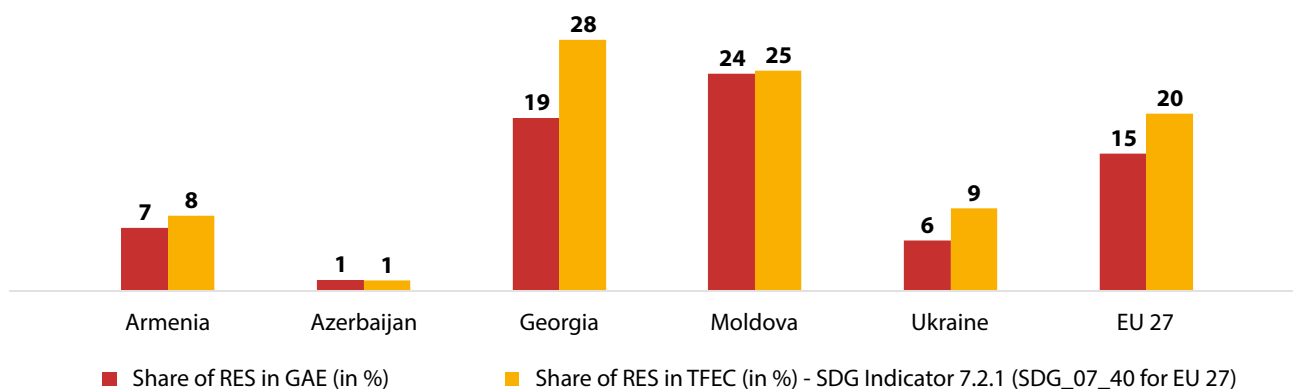


Source: Expertise France from EaP national statistical offices and Eurostat.

4.7 RES in Gross Available Energy and Final Energy Consumption in EaP countries

The share of renewable energy sources in Gross Available Energy gives the percentage of RES in the overall primary supply mix before any energy transformation takes place but considering imports and exports of energy in all forms including electricity and petroleum products. For instance, in 2020, 24% of Moldova's GAE was derived from renewable resources.

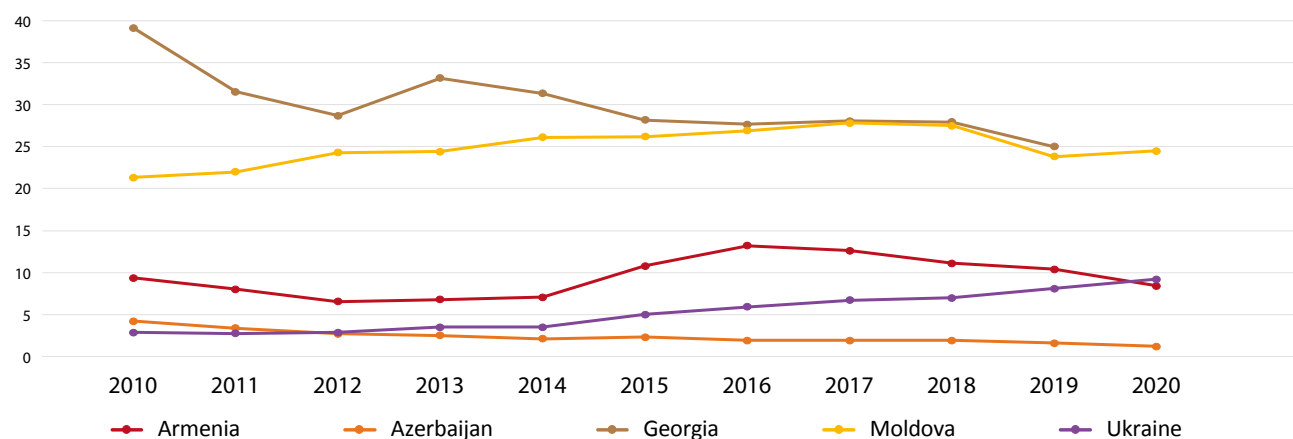
FIGURE 58: SHARE OF RES IN GAE AND TFEC IN EAP COUNTRIES AND EU 27 IN 2020 (IN %)¹³



Source: Expertise France from EaP national statistical offices, Eurostat and Esmap (trackingsdg7.esmap.org).

The share of renewable energy sources in Total Final Energy Consumption (in %) corresponds to indicator 7.2.1 of SDG 7.¹⁴ In 2020, 28% of Georgia's final energy consumption was derived from renewable resources, the highest share in the region. Among EaP countries, only Moldova and Ukraine had a 2020 share of RES in TFEC higher than in 2010 (see Annex 4).

FIGURE 59: SHARE OF RES IN TFEC (IN %) IN EAP COUNTRIES, 2010-2020 (IN %)¹⁵



Source: Expertise France from EaP national statistical offices, Eurostat and Esmap (trackingsdg7.esmap.org).

(13) The share of RES in TFEC is for year 2018 in Georgia.

(14) <https://unstats.un.org/sdgs/files/metadata-compilation/Metadata-Goal-7.pdf>

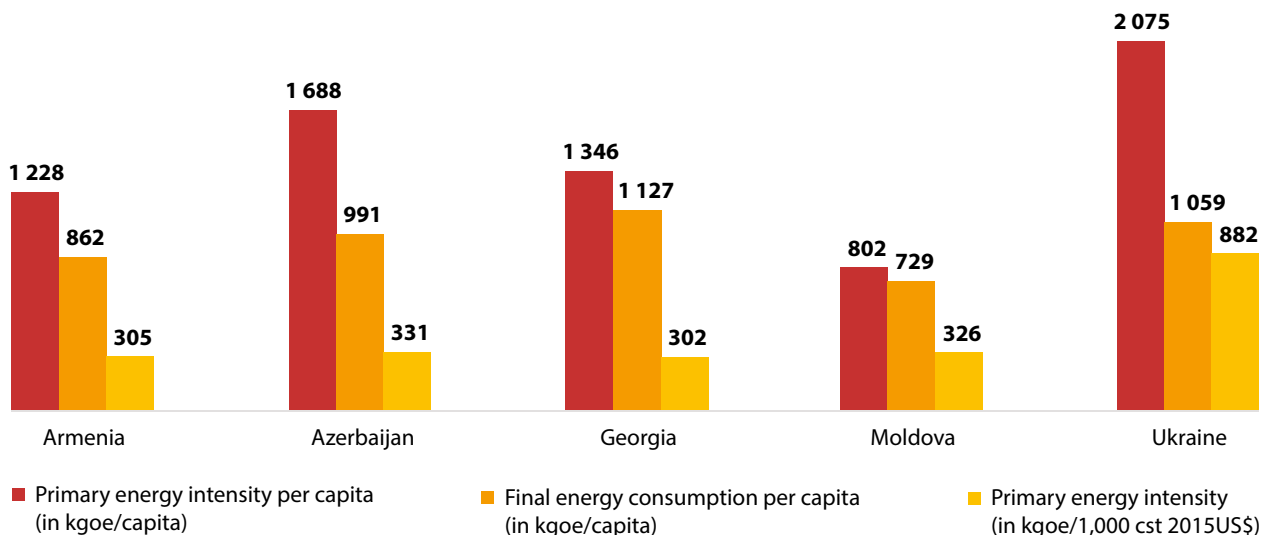
(15) The share of RES in TFEC is for year 2018 in Georgia.

4.8 Energy intensity indicators in EaP countries

Primary or final energy intensity, whether expressed per capita or unit of GDP, measures the amount of energy required to run an economy or provide energy services to all sectors (industry, residential, services, transport and agriculture). Primary energy intensity is calculated as the ration between Gross Available Energy and either (i) Gross Domestic Product (GDP) or (ii) the total population (see Annex 2 for definitions and data sources). Looking at the primary energy intensity expressed in kgoe per unit of GDP, Ukraine is the most energy-intensive economy of the region. This is explained to a large extent by the fact that Ukraine has a relatively large industrial sector compared to the rest of the EaP region. The same is true for the primary energy intensity expressed per capita.

Energy intensity varies across countries and time and is driven by multiple factors such as technical efficiency, energy management practices, consumer behaviour, energy costs, average climate (heating demand), the structure of the economy and the level of wealth (e.g. GDP/capita).

FIGURE 60: ENERGY INTENSITY INDICATORS IN EAP COUNTRIES IN 2020



Source: Expertise France from EaP national statistical offices, Eurostat and the World Bank.

05

Conclusion

The dissolution of the Soviet Union had a deep impact on the energy situation of EaP countries due to a transition shock from a planned industry-heavy economy to a more services-orientated market-based economy.

Key outcomes from the analysis of energy statistics prepared by EaP countries can be summarized as follows:

- Total primary supply of energy in EaP countries collapsed with economic output in the early 1990s. However, the primary energy mix of the region between 1990 and 2020 has not changed drastically.
- The most notable changes are the significant but partial substitution of oil and coal with natural gas and the increased share of hydro and nuclear electricity in the primary mix.
- Most EaP countries have high energy imports dependency rates with the notable exceptions of Azerbaijan, a large oil and gas exporter and Ukraine which covers a significant share of its energy demand with domestic coal and gas production.
- Electricity production in EaP countries is characterized by the dominance of natural gas in Azerbaijan and Moldova, the importance of nuclear in Ukraine and Armenia and the high share of renewables in Georgia and Armenia. Hydroelectricity is the dominant source of renewable electricity in EaP countries and other technologies (PV, wind, biogas) are still at an early development stage.
- The share of renewables remains modest at 8% of GAE for the EaP region - with significant variations across countries - compared with 15% in the EU.¹⁶
- Primary or final energy intensity remains relatively high in EaP countries compared with the EU, pointing to the existence of a large untapped energy efficiency potential in the region, even if differences in the structure of economies is accounted for.

This statistical publication on energy production and consumption in EaP was made possible by the strong dedication of energy statisticians in their respective countries and the constant support provided during the last ten years by the EU and other international donors to improve energy statistics and their alignment with international standards.

As a result, and although there is still room for improvement, national energy balance statistics are now fully comparable within the EaP region and with the EU. They form a strong basis for evidence-based energy and climate policies.

(16) Based on calculations from the EU 27 Energy Balance published by Eurostat.

Annex 1

Methodological notes on the production of energy statistics in the EaP region

Armenia

Topic	Description
Institution(s) responsible for energy statistics	<ul style="list-style-type: none">• Statistical Committee of the Republic of Armenia• Ministry of territorial administration and administration
Main energy statistics products	<ul style="list-style-type: none">• Basic energy statistics• Energy balance (annual)• Energy efficiency indicators (annual)• Electricity balance (annual)• Energy prices (monthly)• Electricity production (monthly)• Capacity of power stations (annual)
Flagship energy statistics publications	<ul style="list-style-type: none">• Statistical yearbook of Armenia, 2020: https://www.armstat.am/en/?nid=586&year=2020
Main data sources	<ul style="list-style-type: none">• Annual questionnaires• Administrative registers• Household's integrated living conditions survey
Energy balance	<ul style="list-style-type: none">• Usual publication date: 5 February of the following year• Format: IEA• Last year available: 2020• Period for which energy balances are available: 2014-2020• Conversion factors: default international values• There are no notable differences in definitions and methodologies with the Eurostat format and concepts• Key areas for improvement and main challenges include:<ul style="list-style-type: none">- Geographical coverage- Coverage of data in some sectors (trade and services, agriculture)- Modelling
Energy efficiency indicators	<ul style="list-style-type: none">• The Statistical Committee of RA is not responsible for the calculation of energy efficiency indicators
Other energy statistics products	
Other methodological observations	
Web link to official national energy statistics	https://www.armstat.am/en/?nid=586&year=2020 https://armstatbank.am/pxweb/en/ArmStatBank/?rxid=65cb8f55-a429-4a31-8422-8264c0049eb6

Source: Expertise France from the Statistical Committee of the Republic of Armenia.

Azerbaijan

Topic	Description
Institution(s) responsible for energy statistics	<ul style="list-style-type: none"> The Department of Energy and Environment Statistics of the State Statistics Committee of Azerbaijan is responsible for the production and dissemination of energy statistics
Main energy statistics products	<ul style="list-style-type: none"> Summarising the methodologies of the UN, the IEA, the EU and other international organisations, the State Statistics Committee of the Republic of Azerbaijan developed a "System of Energy Statistics Indicators". The main purpose of the System of Energy Statistics Indicators was to (i) determine the scope of energy statistics indicators, (ii) prepare indicator definitions following IEA, UN, EU standards, (iii) prepare a calculation methodology and, (iv) obtain the necessary information for compiling the National Energy Balance. The system of indicators consists of two sections: <ul style="list-style-type: none"> - "The list of the main indicators of energy statistics" - "Description of the main energy indicators" The system of indicators creates the basis for the preparation of the relevant survey questionnaires. The metadata system helps respondents understand the meaning of indicators, which ultimately improves the quality of the data obtained. The energy balance, commodity balances for the main types of fuel and energy, energy efficiency indicators, SDG indicators, indicators of energy intensity, self-sufficiency and energy dependence, as well as several other indicators on energy statistics, are developed and published annually on the website of the State Statistics Committee of Azerbaijan
Flagship energy statistics publications	<ul style="list-style-type: none"> Official statistical publications of the State Statistics Committee of the Republic of Azerbaijan in energy statistics: "Energy of Azerbaijan" and "Statistical yearbook of Azerbaijan" published in August each year. All statistical information is publicly available and published on the website www.stat.gov.az <ul style="list-style-type: none"> - http://www.stat.gov.az/menu/6/statistical_yearbooks/ - https://www.stat.gov.az/source/balance_fuel/
Main data sources	<ul style="list-style-type: none"> Energy statistics are established using data from official statistical reports on energy producers and consumers as well as data from administrative sources. All forms used for the reporting of official statistics include methodological explanations and guidance for their completion. Metadata have been compiled for each indicator. This information is publicly available on the website of the Committee. <ul style="list-style-type: none"> - http://www.azstat.org/MetaDataG

Topic	Description
Energy balance	<p>The State Statistics Committee of Azerbaijan established an energy balance using Eurostat's standard for the first time for 2007 data. Since 2011, the energy balance is also available in the IRES format adopted by the UN Statistical Commission.</p> <ul style="list-style-type: none"> • The energy balance combines the commodity balances of individual energy products (oil, gas, electricity, etc.) and is presented in tonnes of oil equivalent (thousand toe) and Terajoules (TJ) • The preparation of the energy balance is carried out using official statistical reporting forms. Enterprises submit reports to the State Statistics Committee through an online platform. • National fuel conversion factors are used when converting energy data from natural units to conventional energy units (toe or TJ). The use of national conversion factors in the development of energy balances is an integral part of the oil strategy that has been implemented in the country. • Energy Balance results are released annually in August. • http://www.stat.gov.az/source/balance_fuel/indexen.php
Energy efficiency indicators	<ul style="list-style-type: none"> • The main energy efficiency indicators are calculated annually and published on the website: https://www.stat.gov.az/source/balance_fuel/ • For example: "Volume of energy consumed for 1 manat of production in (at current prices) in industrial sectors, in kgoe /manat."
Other energy statistics products	<ul style="list-style-type: none"> • According to the State Program for the Development of Official Statistics in the Republic of Azerbaijan for 2013-2017, the Energy and Environment Statistics Department developed, for the first time in 2016, "Accounts of physical flows of energy". The accounts were created based on the Energy Balance of the Republic for 2015-2020. Two Tables were compiled: «Production of energy resources» and «Use of energy products» (in TJ). The specified material is posted on the website • http://www.stat.gov.az/source/balance_fuel/
Other methodological observations	<ul style="list-style-type: none"> • The State Statistics Committee of Azerbaijan is currently working to: <ul style="list-style-type: none"> - Develop national indicators for achieving the Sustainable Development Goals; - Develop a methodology for the statistical assessment of the efficient use of natural resources and energy sources through new technologies, covering the statistical indicators of the "Green Economy"; - Update Updating energy statistics indicators taking into account the experience of international organisations.
Web link to official national energy statistics	<ul style="list-style-type: none"> • https://www.stat.gov.az/source/balance_fuel/?lang=en

Source: Expertise France from the State Statistical Committee of the Republic of Azerbaijan.

Georgia

Topic	Description
Institution(s) responsible for energy statistics	<ul style="list-style-type: none"> National Statistics Office of Georgia – Business Statistics Department, Industry, Construction and Energy Statistics Division
Main energy statistics products	<ul style="list-style-type: none"> Energy Balance of Georgia (annual) Monthly Energy Statistics Indicators (Electricity, Natural gas, Coal, Petroleum products) Data on Consumer Prices on Electricity and Natural Gas (every semester)
Flagship energy statistics publications	<ul style="list-style-type: none"> Energy Balance of Georgia, 2013-2020 Energy Consumption in Households, 2017
Main data sources	<ul style="list-style-type: none"> Georgian National Energy and Water Supply Commission (GNERC): information on natural gas and electricity distribution, losses and prices Electricity Market Operator (ESCO): data on external trade balance for electricity, electricity generation Georgian State Electrosystem (GSE): data on power and load of power plants Enterprise Surveys (annual): data on energy consumption by economic sectors and data of household survey Survey on external economic activities: data on energy import and export Revenue Service of the Ministry of Finance of Georgia, Customs Department: data on export and import
Energy balance	<ul style="list-style-type: none"> Usual publication date: 17 December (national format), 30 November (Eurostat format), 30 November (IEA format) Format: National, Eurostat, IEA, UN-IRES Last year available for each format: 2020 for all formats (national, Eurostat, IEA, UN-IRES) Period for which energy balances are available and comparable for each format: 2013-2020
Energy efficiency indicators	<ul style="list-style-type: none"> Under elaboration Main challenges faced: differences of National Accounts data with World Bank Data
Other energy statistics products	
Other methodological observations	
Web link to official national energy statistics	<ul style="list-style-type: none"> https://www.geostat.ge/en/modules/categories/81/energy-statistics https://www.geostat.ge/en/modules/categories/533/metadata-industry-construction-and-energy-statistics

Source: Expertise France from the State Statistical Committee of the Republic of Georgia.

Moldova

Topic	Description
Institution(s) responsible for energy statistics	<ul style="list-style-type: none"> • Industry and Energy Statistics Division of the National Bureau of Statistics of the Republic of Moldova (NBS) • Energy Efficiency Agency (EEA)
Main energy statistics products	<ul style="list-style-type: none"> • NBS: energy balance, energy prices <ul style="list-style-type: none"> - 1. Monthly: Short-term energy indicators are presented in accordance with international standards (IEA, UN and Eurostat); - 2. Biannual: natural gas and electricity prices - 3. Annual: Energy balance expressed in energy units according to international standards (oil equivalent, coal equivalent, Joules), Commodity balances expressed in corresponding natural units (tonnes, m3, kWh, Gcal, etc.) • EEA: energy efficiency indicators
Flagship energy statistics publications	<ul style="list-style-type: none"> • Energy balance of the Republic of Moldova
Main data sources	<ul style="list-style-type: none"> • Monthly: Data collection is based on the monthly statistical survey according to the statistical report 1-RE, "Stocks, inputs and consumption of basic energy resources." • Biannual: Data collection is based on the biannual statistical survey according to the statistical reports 1-PEE "Electricity prices» and 1-PG "Gas prices." • Annual: Data are collected based on the annual statistical survey according to the statistical report 1-BE "Energy Balance."
Energy balance	<ul style="list-style-type: none"> • Usual publication: 30 November of the following year • Formats: National format, Eurostat • Last year available for each format: <ul style="list-style-type: none"> - National format: 1997-2010 - Eurostat format since 2010 • Period for which energy balances are available and comparable for each format: <ul style="list-style-type: none"> - National format: 1997-2010 - Eurostat format since 2010 • The conversion of natural units of measurement into energy units is carried out following IRES developed by the UN, 2011 • There are no differences between Moldova's energy statistics and Eurostat's format • Key areas for improvement and main challenges: The transition from an approach based on exhaustive surveys to a system based on sample surveys. Estimation of final consumption using extrapolation techniques.
Energy efficiency indicators	<ul style="list-style-type: none"> • To monitor the progress made in the previous year in connection with the achievement of national objectives in the field of energy efficiency, statistical data and a series of key indicators are presented in accordance with Part 1 of Annex No. 7 to Law no. 139/2018 on energy efficiency • Energy consumption trends are also available

Topic	Description
Other energy statistics products	
Other methodological observations	
Web link to official national energy statistics	<ul style="list-style-type: none"> • Publication: https://statistica.gov.md/pageview.php?l=en&id=2197&idc=263 • Statistical databank: https://statbank.statistica.md/pxweb/pxweb/en/40%20Statistica%20economica/?rxid=b2ff27d7-0b96-43c9-934b-42e1a2a9a774 https://statistica.gov.md/category.php?l=en&idc=128 • Metadata: https://statistica.gov.md/public/files/Metadate/en/Energetica_TS_en.pdf https://statistica.gov.md/public/files/Metadate/en/Balanta_energetica_en.pdf • Methodology: https://statistica.gov.md/public/files/Metadate/alte/Metodologie_energetica.pdf (in Romanian only)

Source: Expertise France from the National Bureau of Statistics of the Republic of Moldova.

Ukraine

Topic	Description
Institution(s) responsible for energy statistics	<ul style="list-style-type: none"> • Department of Foreign economic activity and energy statistics of the State Statistics Service of Ukraine (SSSU)
Main energy statistics products	<ul style="list-style-type: none"> • Annual and monthly energy statistics • Annual energy balance and commodity balances • Annual energy intensity for 2007-2020 • Annual energy consumption from renewable sources for 2007-2020 • Annual final Energy Consumption in the Residential / Households Sector by type of end-use • Annual energy balance time series for the period of 1990-2020 • Prices of natural gas and electricity for consumers (semi-annual)
Flagship energy statistics publications	<ul style="list-style-type: none"> • Energy balance of Ukraine • Statistical publication "Fuel and Energy Resources of Ukraine."
Main data sources	<ul style="list-style-type: none"> • Household living conditions survey, Forestry activity, Fuel use and stocks, Energy supply and use, Output and sales of industrial products by type, Foreign trade in goods, Generation and treatment of wastes. • Administrative data: <ul style="list-style-type: none"> - Ministry of Energy of Ukraine - Ministry for Communities and Territories Development of Ukraine - Ukrtransgaz JSC - NERC - State Tax Service of Ukraine • A short description of the primary data sources available to SSSU is available at the following link (meta description of state statistical observation): http://www.ukrstat.gov.ua/metaopus/titul_18eng.htm
Energy balance and related statistics	<ul style="list-style-type: none"> • Usual publication dates: <ul style="list-style-type: none"> - Energy balance: approximately 30 November - Commodity balances: around 8 December - Energy balance data time series for the period of 1990-2020: 10 December - Annual data on fuel use and stocks and energy supply and use: 25 June - Final Energy Consumption for 2007-2020: 10 December, - Total primary energy supply for 2007-2020: 10 December - Energy intensity for 2007-2020: 10 December - Energy consumption from renewable sources for 2007-2020: 10 December - Final Energy Consumption in the Residential / Households Sector by type of end-use: 10 February - Statistical publication «Fuel and Energy Resources of Ukraine»: 24 December • Format: IEA, Eurostat • Last year available 2020 • Period for which energy balances are available and comparable for each format: 2007-2020 • Conversion factors: specific national combination if available or default international values • No differences with international standards and in particular with the Eurostat format • Key areas for improvement and main challenges faced: use of modelling techniques in calculating Final Energy Consumption in the Residential / Households Sector by type of end-use, confidentiality in petroleum products production.

Topic	Description
Energy efficiency indicators	<ul style="list-style-type: none"> • IEA energy indicators questionnaire • Energy consumption from renewable sources for 2007-2020 • Final Energy Consumption for 2007-2020 • Total primary energy supply for 2007-2020 • Energy intensity for 2007-2020 • Final Energy Consumption in the Residential / Households Sector by type of end-use
Other energy statistics products	
Other methodological observations	<ul style="list-style-type: none"> • Data on the share of energy generated from renewable energy sources are provided on the basis of national SDGs, which are published on SSSU's website • https://www.ukrstat.gov.ua/csr_prezent/engl/metadata_e/07/data/7.3.1.xlsx
Web link to official national energy statistics	<ul style="list-style-type: none"> • http://www.ukrstat.gov.ua/operativ/menu/menu_e/energ.htm • http://www.ukrstat.gov.ua/druk/publicat/kat_u/publenerg_u.htm

Source: Expertise France from the State Statistics Service of Ukraine and Eurostat.

Annex 2

Definition of concepts and indicators

Major developments relating to energy production and consumption

#	Indicator	Description	Observation
1	Primary production by energy product (in ktoe and %)	<ul style="list-style-type: none"> Primary production (PPRD) Energy products: Solid fossil fuels (C0000X0350-0370), Peat and peat products (P1000), Oil shale and oil sands (S2000), Natural gas (G3000), Oil and petroleum products excluding biofuel portion (O4000XBIO), Renewables and biofuels (RA000), Non-renewable waste (W6100_6220), Nuclear heat (N900H) 	
2	Gross Available Energy by energy product (in ktoe and %)	<ul style="list-style-type: none"> Gross Available Energy (GAE) Energy products: Solid fossil fuels (C0000X0350-0370), Manufactured gases (C0350-0370), Peat and peat products (P1000), Oil shale and oil sands (S2000), Natural gas (G3000), Oil and petroleum products excluding biofuel portion (O4000XBIO), Renewables and biofuels (RA000), Non-renewable waste (W6100_6220), Nuclear heat (N900H), Electricity (E7000), Heat (H8000) 	<ul style="list-style-type: none"> Gross Available Energy is defined as Primary production + Recovered and recycled products + Imports + Stock changes – Exports From Gross Available Energy to Total Energy Supply: <ul style="list-style-type: none"> = Gross Available Energy - International maritime bunkers = Gross inland consumption - International aviation = Total energy supply¹⁷
3	Total Final Energy Consumption (TFEC) by energy product (in ktoe and %)	<ul style="list-style-type: none"> Energy products: Solid fossil fuels (C0000X0350-0370), Manufactured gases (C0350-0370), Peat and peat products (P1000), Oil shale and oil sands (S2000), Natural gas (G3000), Oil and petroleum products excluding biofuel portion (O4000XBIO), Renewables and biofuels (RA000), Non-renewable waste (W6100_6220), Electricity (E7000), Heat (H8000) 	<ul style="list-style-type: none"> TFEC does not include final non-energy consumption, i.e. the consumption of energy products for their chemical or physical properties without their combustion (natural gas in the chemical industry, lubricants for lubrication, bitumen as road surface, ...)
4	Total Final Energy Consumption (TFEC) by sector in ktoe and %	<ul style="list-style-type: none"> Sectors: Industry, Transport, Services, Residential, Agriculture & forestry, fishing and Non-specified/Other 	<ul style="list-style-type: none"> TFEC does not include final non-energy consumption, i.e. the consumption of energy products for their chemical or physical properties without their combustion (natural gas in the chemical industry, lubricants for lubrication, bitumen as road surface, ...)

(17) Total Primary Energy Supply (TPES) in the IEA format

Energy dependence and security

#	Indicator	Description	Observation
5	• Net import dependency (in %)	• Net imports of energy (imports minus exports) divided by Gross Available Energy, expressed as a percentage	• A negative dependency rate indicates a net exporter of energy
6	• Electricity net import dependency (in %)	• Net imports of electricity (imports minus exports) divided by transformation output, expressed as a percentage	• A negative dependency rate indicates a net exporter of electricity

Renewable energy in total energy supply and the electricity and heat mix

#	Indicator	Description	Observation
7	• Share of renewable energy sources in Gross Available Energy (in %)	• Gross Available Energy from renewable sources divided by the Gross Available Energy of all fuels, expressed as a percentage	• This indicator is different from the “share of renewable energy in the gross final consumption of energy” calculated by EU member states according to the RES directive articles and the SHARES tool.
8	• Share of renewable energy sources in Total Final Energy Consumption (in %)	• Final Energy Consumption from all renewable sources by Total Final Energy Consumption	• Corresponds to Indicator 7.2.1 of SDG 7 • The share of renewables in electricity and heat is broken down by technology
9	• Electricity and heat generation mix (in GWh and %)	• Transformation output from power plants by energy product (Coal, Oil, Natural Gas, Nuclear, Renewable Energy, Other)	• Electricity and heat are considered jointly given the importance of CHP in STEP partner countries
10	• Renewable electricity and heat generation by technology (in GWh and %)	• Transformation output from power plants by renewable energy product (Hydro, Wind, Solar, Geothermal, Biofuels, Renewable Waste)	• Electricity and heat are considered jointly given the importance of CHP in STEP partner countries

Key energy intensity and energy efficiency indicators

#	Indicator	Description	Observation
11	• Primary energy intensity per capita (in toe/capita)	• Gross Available Energy of energy divided by total population expressed in toe per capita	• National statistical offices in EaP countries provide population data
12	• Final Energy Consumption per capita (in toe/capita)	• Final Energy Consumption of energy divided by total population expressed in toe per capita	• National statistical offices in EaP countries provide population data • Excludes non-energy use
13	• Primary energy intensity per unit of GDP (in kgoe / 1,000 constant 2015 US\$)	• Gross Available Energy is divided by gross domestic product (GDP) expressed in kgoe per unit of GDP	• GDP data are provided by the World Bank for all countries and expressed in thousand 2015 US dollars
14	• Efficiency of power and heat generation (in %)	• Transformation output for power and heat plants divided by Transformation input expressed as a percentage	

Annex 3



2020 Energy Balances of EaP countries

TABLE 1: 2020 ENERGY BALANCE OF ARMENIA

ARMENIA, 2020 (ktoe)	Total	Coal, Peat and related products	Oil and petroleum products	Natural gas	Renewables and biofuels	Non-renewable waste	Nuclear heat	Heat	Electricity
+ Primary production	959.9	0,0	0,0	0,0	241.7	0,0	718.2	0,0	0,0
+ Imports	2 826.2	7.6	630.2	2 147.4	13.4	0,0	0,0	0,0	27.5
- Exports	116.4	0,0	1.7	0,0	0,0	0,0	0,0	0,0	114.6
+ Change in stock	-35,0	0,0	-28.8	-6.2	0,0	0,0	0,0	0,0	0,0
= Gross available energy	3 634.7	7.6	599.7	2 141.2	255.1	0,0	718.2	0,0	-87.1
- International maritime bunkers	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
= Gross inland consumption	3 634.7	7.6	599.7	2 141.2	255.1	0,0	718.2	0,0	-87.1
- International aviation	39.2	0,0	39.2	0,0	0,0	0,0	0,0	0,0	0,0
= Total energy supply	3 595.5	7.6	560.5	2 141.2	255.1	0,0	718.2	0,0	-87.1
Transformation input	1 503.5	0,0	0,0	606.2	179.1	0,0	718.2	0,0	0,0
+ Electricity & heat generation	1 503.5	0,0	0,0	606.2	179.1	0,0	718.2	0,0	0,0
+ Coke ovens	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Blast furnaces	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Gas works	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Refineries & petrochemical industry	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Patent fuel plants	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ BKB & PB plants	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Coal liquefaction plants	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ For blended natural gas	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Liquid biofuels blended	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Charcoal production plants	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Gas-to-liquids plants	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Not elsewhere specified	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Transformation output	689.2	0,0	0,0	0,0	0,0	0,0	0,0	15.2	674,0
+ Electricity & heat generation	689.2	0,0	0,0	0,0	0,0	0,0	0,0	15.2	674,0
+ Coke ovens	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Blast furnaces	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Gas works	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Refineries & petrochemical industry	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Patent fuel plants	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ BKB & PB plants	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Coal liquefaction plants	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Blended in natural gas	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Liquid biofuels blended	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Charcoal production plants	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Gas-to-liquids plants	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Not elsewhere specified	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Energy sector	37.1	0,0	0,0	5.3	0,0	0,0	0,0	0,0	31.8
Distribution losses	129.9	0,0	0,0	80.6	0,0	0,0	0,0	0,7	48.6
Available for final consumption	2 614.1	7.6	560.5	1 449.1	76,0	0,0	0,0	14.5	506.5
Final non-energy consumption	64.2	0,0	63.6	0,0	0.5	0,0	0,0	0,0	0,0
Final energy consumption	2 549.9	7.5	497,0	1 449.1	75.5	0,0	0,0	14.5	506.5
+ Industry	328.2	0,0	13.2	173.3	0,0	0,0	0,0	0,0	141.7
+ Iron & steel	21.4	0,0	0,0	14.2	0,0	0,0	0,0	0,0	7.3
+ Chemical & petrochemical	3.5	0,0	0.1	2,0	0,0	0,0	0,0	0,0	1.4
+ Non-ferrous metals	25,0	0,0	5,0	0.6	0,0	0,0	0,0	0,0	19.5
+ Non-metallic minerals	111.2	0,0	0.5	95.9	0,0	0,0	0,0	0,0	14.8
+ Transport equipment	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Machinery	2.1	0,0	0,0	0.6	0,0	0,0	0,0	0,0	1.5
+ Mining & quarrying	81.9	0,0	6.5	7.5	0,0	0,0	0,0	0,0	67.9
+ Food, beverages & tobacco	63.6	0,0	0,0	43.6	0,0	0,0	0,0	0,0	20,0
+ Paper, pulp & printing	5.3	0,0	0,0	3.5	0,0	0,0	0,0	0,0	1.8
+ Wood & wood products	0.1	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0.1
+ Construction	2,0	0,0	0,0	0.6	0,0	0,0	0,0	0,0	1.4
+ Textile & leather	7.1	0,0	1.1	3.3	0,0	0,0	0,0	0,0	2.7
+ Not elsewhere specified (industry)	4.9	0,0	0,0	1.5	0,0	0,0	0,0	0,0	3.3
+ Transport	855.3	0,0	456.4	391.2	0,0	0,0	0,0	0,0	7.7
+ Rail	6,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	6,0
+ Road	847.6	0,0	456.4	391.2	0,0	0,0	0,0	0,0	0,0
+ Domestic aviation	1.1	0,0	0,0	0,0	0,0	0,0	0,0	0,0	1.1
+ Domestic navigation	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Pipeline transport	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Not elsewhere specified (transport)	0.6	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0.6
+ Other	1 366.5	7.4	27.3	884.6	75.4	0,0	0,0	14.5	357.1
+ Commercial & public services	409.2	0.3	8.7	219.4	2.7	0,0	0,0	7.2	170.8
+ Households	862.8	7.1	2.2	599.5	72.7	0,0	0,0	7.3	173.9
+ Agriculture & forestry, fishing	94.5	0,0	16.4	65.7	0,0	0,0	0,0		12.4
+ Not elsewhere specified (other)	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Statistical differences	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0

Source: Expertise France from energy balances published by the Statistical Committee of the Republic of Armenia.

TABLE 2: 2020 ENERGY BALANCE OF AZERBAIJAN

AZERBAIJAN, 2020 (ktoe)	Total	Coal, Peat and related products	Oil and petroleum products	Natural gas	Renewables and biofuels	Non-renewable waste	Nuclear heat	Heat	Electricity
+ Primary production	60 458.3	0,0	35 533.3	24 712.6	212.4	0,0	0,0	0,0	0,0
+ Imports	278.5	0,0	266.8	0,0	0,0	0,0	0,0	0,0	11.7
- Exports	43 510.4	0,0	30 498.8	12 912.6	0,0	0,0	0,0	0,0	99,0
+ Change in stock	-236.4	0,0	-252.6	15.9	0,3	0,0	0,0	0,0	0,0
= Gross available energy	16 990,0	0,0	5 048.7	11 815.9	212.7	0,0	0,0	0,0	-87.3
- International maritime bunkers	32.7	0,0	32.7	0,0	0,0	0,0	0,0	0,0	0,0
= Gross inland consumption	16 957.3	0,0	5 016.0	11 815.9	212.7	0,0	0,0	0,0	-87.3
- International aviation	345.9	0,0	345.9	0,0	0,0	0,0	0,0	0,0	0,0
= Total energy supply	16 611.4	0,0	4 670.1	11 815.9	212.7	0,0	0,0	0,0	-87.3
Transformation input	6 115.8	0,0	234.7	5 701.4	179.7	0,0	0,0	0,0	0,0
+ Electricity & heat generation	5 888.3	0,0	13.1	5 695.5	179.7	0,0	0,0	0,0	0,0
+ Coke ovens	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Blast furnaces	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Gas works	5.9	0,0	0,0	5.9	0,0	0,0	0,0	0,0	0,0
+ Refineries & petrochemical industry	221.6	0,0	221.6	0,0	0,0	0,0	0,0	0,0	0,0
+ Patent fuel plants	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ BKB & PB plants	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Coal liquefaction plants	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ For blended natural gas	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Liquid biofuels blended	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Charcoal production plants	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Gas-to-liquids plants	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Not elsewhere specified	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Transformation output	2 589.8	0,0	38,0	0,0	0,0	0,0	0,0	329.6	2 222.2
+ Electricity & heat generation	2 551.8	0,0	0,0	0,0	0,0	0,0	0,0	329.6	2 222.2
+ Coke ovens	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Blast furnaces	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Gas works	38,0	0,0	38,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Refineries & petrochemical industry	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Patent fuel plants	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ BKB & PB plants	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Coal liquefaction plants	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Blended in natural gas	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Liquid biofuels blended	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Charcoal production plants	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Gas-to-liquids plants	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
+ Not elsewhere specified	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Energy sector	928.7	0,0	353.1	253.7	0,0	0,0	0,0	0,2	321.7
Distribution losses	868.5	0,0	49.7	622.3	0,0	0,0	0,0	20.9	175.6
Available for final consumption	11 288.2	0,0	4 070.6	5 238.5	33,0	0,0	0,0	308.5	1 637.6
Final non-energy consumption	1 315.5	0,0	1 310.6	4.9	0,0	0,0	0,0	0,0	0,0
Final energy consumption	9 917.2	0,0	2 733.9	5 206.2	33,0	0,0	0,0	308.5	1 635.6
+ Industry	2 006.7	0,0	172.5	1 290.3	7.3	0,0	0,0	153.2	383.4
+ Iron & steel	50.5	0,0	0,0	15.9	0,0	0,0	0,0	0,0	34.6
+ Chemical & petrochemical	1 005.3	0,0	64.4	739.7	0,0	0,0	0,0	153.2	48,0
+ Non-ferrous metals	72.7	0,0	0.9	0.6	0,0	0,0	0,0	0,0	71.2
+ Non-metallic minerals	407.5	0,0	0.4	364.1	0,0	0,0	0,0	0,0	43,0
+ Transport equipment	0.5	0,0	0.1	0.2	0,0	0,0	0,0	0,0	0.2
+ Machinery	32.7	0,0	0.9	15.4	0,0	0,0	0,0	0,0	16.4
+ Mining & quarrying	32.5	0,0	9.6	8.8	0.4	0,0	0,0	0,0	13.7
+ Food, beverages & tobacco	187.1	0,0	5.7	112.9	6.3	0,0	0,0	0,0	62.2
+ Paper, pulp & printing	7.4	0,0	0,0	1.9	0,0	0,0	0,0	0,0	5.5
+ Wood & wood products	4.5	0,0	0,0	0.1	0,0	0,0	0,0	0,0	4.4
+ Construction	170.2	0,0	89.3	15.9	0,0	0,0	0,0	0,0	65,0
+ Textile & leather	20.7	0,0	0.5	11.2	0,0	0,0	0,0	0,0	9,0
+ Not elsewhere specified (industry)	15.1	0,0	0.7	3.6	0.6	0,0	0,0	0,0	10.2
+ Transport	2 297.1	0,0	2 234.8	36.2	0,0	0,0	0,0	0,0	26.1
+ Rail	22.5	0,0	2.4	0,0	0,0	0,0	0,0	0,0	20.1
+ Road	2 091.1	0,0	2 055.7	35.4	0,0	0,0	0,0	0,0	0,0
+ Domestic aviation	136.8	0,0	136.8	0,0	0,0	0,0	0,0	0,0	0,0
+ Domestic navigation	39.7	0,0	39.7	0,0	0,0	0,0	0,0	0,0	0,0
+ Pipeline transport	6.8	0,0	0,0	0.8	0,0	0,0	0,0	0,0	6.0
+ Not elsewhere specified (transport)	0.2	0,0	0.2	0,0	0,0	0,0	0,0	0,0	0,0
+ Other	5 613.4	0,0	326.6	3 879.7	25.7	0,0	0,0	155.3	1 226.1
+ Commercial & public services	718.5	0,0	9.5	186.1	18.3	0,0	0,0	20.1	484.5
+ Households	4 295.3	0,0	8.2	3 532.6	7.1	0,0	0,0	135.2	612.2
+ Agriculture & forestry, fishing	599.6	0,0	308.9	161,0	0.3	0,0	0,0	0,0	129.4
+ Not elsewhere specified (other)	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Statistical differences	55.5	0,0	26.1	27.4	0,0	0,0	0,0	0,0	2,0

Source: Expertise France from energy balances published by the State Statistical Committee of the Republic of Azerbaijan.

TABLE 3: 2020 ENERGY BALANCE OF GEORGIA

GEORGIA, 2020 (ktoe)	Total	Coal, Peat and related products	Oil and petroleum products	Natural gas	Renewables and biofuels	Non-renewable waste	Nuclear heat	Heat	Electricity
+ Primary production	1 043.2	40.3	31.8	7.7	963.4	0.0	0.0	0.0	Z
+ Imports	4 022.8	175.3	1 382.3	2 318.0	0.0	0.0	Z	0.0	147.2
- Exports	38.4	0.2	16.2	0.0	0.0	0.0	Z	0.0	22.0
+ Change in stock	-25.4	-2.4	-23.1	0.0	0.0	0.0	Z	Z	Z
= Gross available energy	5 002.1	213.0	1 374.8	2 325.7	963.4	0.0	0.0	0.0	125.2
- International maritime bunkers	3.9	0.0	3.9	0.0	0.0	Z	Z	Z	Z
= Gross inland consumption	4 998.2	213.0	1 370.9	2 325.7	963.4	0.0	0.0	0.0	125.2
- International aviation	56.8	Z	56.8	Z	0.0	Z	Z	Z	Z
= Total energy supply	4 941.5	213.0	1 314.1	2 325.7	963.4	0.0	0.0	0.0	125.2
Transformation input	1 275.0	0.0	37.9	520.1	717.0	0.0	0.0	0.0	0.0
+ Electricity & heat generation	1 237.1	0.0	0.0	520.1	717.0	0.0	0.0	0.0	0.0
+ Coke ovens	0.0	0.0	0.0	0.0	0.0	Z	Z	Z	Z
+ Blast furnaces	0.0	0.0	0.0	0.0	0.0	Z	Z	Z	Z
+ Gas works	0.0	0.0	0.0	0.0	0.0	Z	Z	Z	Z
+ Refineries & petrochemical industry	37.9	Z	37.9	Z	Z	Z	Z	Z	Z
+ Patent fuel plants	0.0	0.0	0.0	Z	0.0	0.0	Z	Z	Z
+ BKB & PB plants	0.0	0.0	Z	Z	0.0	0.0	Z	Z	Z
+ Coal liquefaction plants	0.0	0.0	Z	Z	Z	Z	Z	Z	Z
+ For blended natural gas	0.0	Z	0.0	Z	0.0	Z	Z	Z	Z
+ Liquid biofuels blended	0.0	Z	Z	Z	0.0	Z	Z	Z	Z
+ Charcoal production plants	0.0	Z	Z	Z	0.0	Z	Z	Z	Z
+ Gas-to-liquids plants	0.0	Z	Z	0.0	Z	Z	Z	Z	Z
+ Not elsewhere specified	0.0	0.0	0.0	0.0	0.0	0.0	Z	Z	Z
Transformation output	996.7	0.0	37.1	0.0	0.0	Z	Z	0.0	959.6
+ Electricity & heat generation	959.6	Z	Z	Z	Z	Z	Z	0.0	959.6
+ Coke ovens	0.0	0.0	Z	Z	Z	Z	Z	Z	Z
+ Blast furnaces	0.0	0.0	Z	Z	Z	Z	Z	Z	Z
+ Gas works	0.0	0.0	Z	Z	Z	Z	Z	Z	Z
+ Refineries & petrochemical industry	37.1	Z	37.1	Z	0.0	Z	Z	Z	Z
+ Patent fuel plants	0.0	0.0	Z	Z	Z	Z	Z	Z	Z
+ BKB & PB plants	0.0	0.0	Z	Z	Z	Z	Z	Z	Z
+ Coal liquefaction plants	0.0	Z	0.0	Z	Z	Z	Z	Z	Z
+ Blended in natural gas	0.0	Z	Z	0.0	Z	Z	Z	Z	Z
+ Liquid biofuels blended	0.0	Z	Z	Z	0.0	Z	Z	Z	Z
+ Charcoal production plants	0.0	Z	Z	Z	0.0	Z	Z	Z	Z
+ Gas-to-liquids plants	0.0	Z	0.0	Z	Z	Z	Z	Z	Z
+ Not elsewhere specified	0.0	0.0	0.0	Z	Z	Z	Z	Z	Z
Energy sector	21.6	0.2	0.0	0.0	0.0	0.0	Z	0.0	21.4
Distribution losses	154.9	0.0	0.0	77.1	1.5	0.0	Z	0.0	76.3
Available for final consumption	4 486.6	212.8	1 313.3	1 728.5	244.9	0.0	0.0	0.0	987.0
Final non-energy consumption	297.8	0.0	145.2	152.6	0.0	Z	Z	Z	Z
Final energy consumption	4 188.8	212.8	1 168.1	1 575.9	244.9	0.0	Z	0.0	987.0
+ Industry	783.2	212.7	92.8	207.9	0.9	0.0	Z	0.0	268.8
+ Iron & steel	258.6	90.5	0.2	18.4	0.0	0.0	Z	0.0	149.6
+ Chemical & petrochemical	115.7	0.0	0.0	90.1	0.0	0.0	Z	0.0	25.6
+ Non-ferrous metals	0.0	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0
+ Non-metallic minerals	175.3	121.4	0.2	27.4	0.0	0.0	Z	0.0	26.2
+ Transport equipment	0.6	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.5
+ Machinery	1.9	0.0	0.0	0.6	0.0	0.0	Z	0.0	1.2
+ Mining & quarrying	36.6	0.0	24.2	1.6	0.0	0.0	Z	0.0	10.9
+ Food, beverages & tobacco	64.2	0.8	0.5	41.0	0.8	0.0	Z	0.0	21.2
+ Paper, pulp & printing	3.4	0.0	0.0	2.2	0.0	0.0	Z	0.0	1.2
+ Wood & wood products	0.8	0.0	0.0	0.2	0.1	0.0	Z	0.0	0.5
+ Construction	102.5	0.0	67.7	24.6	0.0	0.0	Z	0.0	10.1
+ Textile & leather	1.4	0.0	0.0	0.5	0.0	0.0	Z	0.0	0.9
+ Not elsewhere specified (industry)	22.2	0.0	0.1	1.3	0.0	0.0	Z	0.0	20.9
+ Transport	1 340.4	0.0	1 058.0	261.9	0.1	0.0	Z	Z	20.4
+ Rail	20.3	0.0	2.0	Z	0.0	0.0	Z	Z	18.3
+ Road	1 165.1	Z	1 048.7	116.3	0.1	0.0	Z	Z	0.0
+ Domestic aviation	0.1	Z	0.1	Z	0.0	Z	Z	Z	Z
+ Domestic navigation	0.2	0.0	0.2	Z	0.0	0.0	Z	Z	Z
+ Pipeline transport	154.3	Z	7.0	145.6	0.0	Z	Z	Z	1.7
+ Not elsewhere specified (transport)	0.4	0.0	0.0	0.0	0.0	0.0	Z	Z	0.4
+ Other	2 065.3	0.1	17.3	1 106.1	243.9	0.0	Z	0.0	697.9
+ Commercial & public services	412.9	0.0	0.2	152.3	9.8	0.0	Z	0.0	250.6
+ Households	1 408.2	0.1	9.7	944.9	233.0	0.0	Z	0.0	220.6
+ Agriculture & forestry, fishing	24.7	0.1	7.4	8.9	1.1	0.0	Z	0.0	7.2
+ Not elsewhere specified (other)	219.5	0.0	0.0	0.0	0.0	0.0	Z	0.0	219.5
Statistical differences	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Eurostat (nrg_bal_c)

TABLE 4: 2020 ENERGY BALANCE OF MOLDOVA

MOLDOVA, 2020 (ktoe)	Total	Coal, Peat and related products	Oil and petroleum products	Natural gas	Renewables and biofuels	Non-renewable waste	Nuclear heat	Heat	Electricity
+ Primary production	681.7	0.0	5.4	0.0	676.2	0.0	0.0	0.0	Z
+ Imports	2 117.2	80.0	972.9	768.8	1.6	0.0	Z	0.0	293.9
- Exports	15.4	0.0	14.2	0.0	1.3	0.0	Z	0.0	0.0
+ Change in stock	-17.6	-2.5	-10.4	3.5	-8.2	0.0	Z	Z	Z
= Gross available energy	2 765.9	77.5	953.8	772.3	668.4	0.0	0.0	0.0	293.9
- International maritime bunkers	0.0	0.0	0.0	0.0	0.0	Z	Z	Z	Z
= Gross inland consumption	2 765.9	77.5	953.8	772.3	668.4	0.0	0.0	0.0	293.9
- International aviation	18.6	Z	18.6	Z	0.0	Z	Z	Z	Z
= Total energy supply	2 747.3	77.5	935.2	772.3	668.4	0.0	0.0	0.0	293.9
Transformation input	353.9	0.0	13.5	311.4	29.0	0.0	0.0	0.0	0.0
+ Electricity & heat generation	339.8	0.0	0.9	311.4	27.4	0.0	0.0	0.0	0.0
+ Coke ovens	0.0	0.0	0.0	0.0	0.0	Z	Z	Z	Z
+ Blast furnaces	0.0	0.0	0.0	0.0	0.0	Z	Z	Z	Z
+ Gas works	0.0	0.0	0.0	0.0	0.0	Z	Z	Z	Z
+ Refineries & petrochemical industry	12.6	Z	12.6	Z	Z	Z	Z	Z	Z
+ Patent fuel plants	0.0	0.0	0.0	Z	0.0	0.0	Z	Z	Z
+ BKB & PB plants	0.0	0.0	Z	Z	0.0	0.0	Z	Z	Z
+ Coal liquefaction plants	0.0	0.0	Z	Z	Z	Z	Z	Z	Z
+ For blended natural gas	0.0	Z	0.0	Z	0.0	Z	Z	Z	Z
+ Liquid biofuels blended	0.0	Z	Z	Z	0.0	Z	Z	Z	Z
+ Charcoal production plants	1.5	Z	Z	Z	1.5	Z	Z	Z	Z
+ Gas-to-liquids plants	0.0	Z	Z	0.0	Z	Z	Z	Z	Z
+ Not elsewhere specified	0.0	0.0	0.0	0.0	0.0	0.0	Z	Z	Z
Transformation output	321.3	0.0	12.5	0.0	0.7	Z	Z	223.7	84.5
+ Electricity & heat generation	308.2	Z	Z	Z	Z	Z	Z	223.7	84.5
+ Coke ovens	0.0	0.0	Z	Z	Z	Z	Z	Z	Z
+ Blast furnaces	0.0	0.0	Z	Z	Z	Z	Z	Z	Z
+ Gas works	0.0	0.0	Z	Z	Z	Z	Z	Z	Z
+ Refineries & petrochemical industry	12.5	Z	12.5	Z	0.0	Z	Z	Z	Z
+ Patent fuel plants	0.0	0.0	Z	Z	Z	Z	Z	Z	Z
+ BKB & PB plants	0.0	0.0	Z	Z	Z	Z	Z	Z	Z
+ Coal liquefaction plants	0.0	Z	0.0	Z	Z	Z	Z	Z	Z
+ Blended in natural gas	0.0	Z	Z	0.0	Z	Z	Z	Z	Z
+ Liquid biofuels blended	0.0	Z	Z	Z	0.0	Z	Z	Z	Z
+ Charcoal production plants	0.7	Z	Z	Z	0.7	Z	Z	Z	Z
+ Gas-to-liquids plants	0.0	Z	0.0	Z	Z	Z	Z	Z	Z
+ Not elsewhere specified	0.0	0.0	0.0	Z	Z	Z	Z	Z	Z
Energy sector	17.7	0.0	0.0	0.1	0.0	0.0	Z	1.2	16.3
Distribution losses	92.1	0.0	2.9	21.1	0.1	0.0	Z	33.2	34.7
Available for final consumption	2 604.9	77.5	931.2	439.6	640.0	0.0	0.0	189.3	327.3
Final non-energy consumption	72.7	0.0	72.7	0.0	0.0	Z	Z	Z	Z
Final energy consumption	2 532.2	77.5	858.4	439.6	640.0	0.0	Z	189.3	327.3
+ Industry	224.3	19.0	36.7	62.6	1.4	0.0	Z	44.1	60.6
+ Iron & steel	0.3	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.3
+ Chemical & petrochemical	10.3	0.0	0.0	2.0	0.0	0.0	Z	5.4	2.8
+ Non-ferrous metals	0.0	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0
+ Non-metallic minerals	91.5	18.4	21.8	37.8	0.0	0.0	Z	0.0	13.5
+ Transport equipment	1.0	0.0	0.0	0.3	0.0	0.0	Z	0.0	0.7
+ Machinery	2.8	0.0	0.1	0.3	0.0	0.0	Z	0.1	2.2
+ Mining & quarrying	5.5	0.0	4.0	0.1	0.0	0.0	Z	0.0	1.5
+ Food, beverages & tobacco	86.6	0.6	0.7	18.9	1.1	0.0	Z	36.9	28.5
+ Paper, pulp & printing	2.5	0.0	0.0	1.0	0.0	0.0	Z	0.4	1.1
+ Wood & wood products	0.8	0.0	0.1	0.0	0.2	0.0	Z	0.0	0.5
+ Construction	11.6	0.0	9.8	0.3	0.0	0.0	Z	0.0	1.5
+ Textile & leather	6.0	0.0	0.0	1.2	0.0	0.0	Z	1.2	3.6
+ Not elsewhere specified (industry)	5.4	0.0	0.2	0.6	0.0	0.0	Z	0.1	4.5
+ Transport	667.4	0.0	653.9	9.9	0.0	0.0	Z	Z	3.6
+ Rail	5.4	0.0	5.4	Z	0.0	0.0	Z	Z	0.0
+ Road	652.2	Z	646.0	6.2	0.0	0.0	Z	Z	0.0
+ Domestic aviation	0.0	Z	0.0	Z	0.0	Z	Z	Z	Z
+ Domestic navigation	0.2	0.0	0.2	Z	0.0	0.0	Z	Z	Z
+ Pipeline transport	3.9	Z	0.0	3.7	0.0	Z	Z	Z	0.2
+ Not elsewhere specified (transport)	5.8	0.0	2.3	0.0	0.0	0.0	Z	Z	3.4
+ Other	1 640.5	58.6	167.9	367.2	638.6	0.0	Z	145.2	263.1
+ Commercial & public services	245.1	15.1	0.9	76.1	9.2	0.0	Z	36.1	107.7
+ Households	1 254.9	42.2	54.8	288.3	611.6	0.0	Z	109.2	148.8
+ Agriculture & forestry, fishing	124.2	1.2	112.1	2.8	1.4	0.0	Z	0.0	6.6
+ Not elsewhere specified (other)	16.3	0.0	0.0	0.0	16.3	0.0	Z	0.0	0.0
Statistical differences	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Eurostat (nrg_bal_c)



TABLE 5: 2020 ENERGY BALANCE OF UKRAINE

UKRAINE, 2020 (ktoe)	Total	Coal, Peat and related products	Oil and petroleum products	Natural gas	Renewables and biofuels	Non-renewable waste	Nuclear heat	Heat	Electricity
+ Primary production	57 120.9	12 752.7	2 475.8	15 855.8	5 069.8	814.2	20 073.0	79.6	Z
+ Imports	30 727.7	11 036.1	11 946.7	7 459.8	51.3	0.0	Z	0.0	233.9
- Exports	1 240.7	38.7	341.3	0.0	418.6	0.0	Z	0.0	441.9
+ Change in stock	-25.3	-903.0	93.0	608.9	175.8	0.0	Z	Z	Z
= Gross available energy	86 582.7	22 847.1	14 174.1	23 924.4	4 878.2	814.2	20 073.0	79.6	-208.1
- International maritime bunkers	0.0	0.0	0.0	0.0	0.0	Z	Z	Z	Z
= Gross inland consumption	86 582.7	22 847.1	14 174.1	23 924.4	4 878.2	814.2	20 073.0	79.6	-208.1
- International aviation	31.6	0.0	31.6	Z	0.0	Z	Z	Z	Z
= Total energy supply	86 551.0	22 847.1	14 142.5	23 924.4	4 878.2	814.2	20 073.0	79.6	-208.1
Transformation input	63 650.3	26 149.0	4 385.5	9 199.4	2 994.7	714.2	20 073.0	134.6	0.0
+ Electricity & heat generation	44 825.6	12 103.2	117.5	9 199.4	2 483.8	714.2	20 073.0	134.6	0.0
+ Coke ovens	9 113.4	9 113.4	0.0	0.0	0.0	Z	Z	Z	Z
+ Blast furnaces	4 736.4	4 736.4	0.0	0.0	0.0	Z	Z	Z	Z
+ Gas works	33.1	33.1	0.0	0.0	0.0	Z	Z	Z	Z
+ Refineries & petrochemical industry	4 258.4	0.0	4 258.4	Z	Z	Z	Z	Z	Z
+ Patent fuel plants	0.0	0.0	0.0	Z	0.0	0.0	Z	Z	Z
+ BKB & PB plants	53.8	53.8	Z	Z	0.0	0.0	Z	Z	Z
+ Coal liquefaction plants	0.0	0.0	Z	Z	Z	Z	Z	Z	Z
+ For blended natural gas	0.0	0.0	0.0	Z	0.0	Z	Z	Z	Z
+ Liquid biofuels blended	49.8	0.0	Z	Z	49.8	Z	Z	Z	Z
+ Charcoal production plants	461.1	0.0	Z	Z	461.1	Z	Z	Z	Z
+ Gas-to-liquids plants	0.0	0.0	Z	0.0	Z	Z	Z	Z	Z
+ Not elsewhere specified	118.6	109.0	9.6	0.0	0.0	0.0	Z	Z	Z
Transformation output	33 327.9	10 028.3	1 073.8	0.0	197.6	Z	Z	9 267.3	12 760.8
+ Electricity & heat generation	22 028.1	0.0	Z	Z	Z	Z	Z	9 267.3	12 760.8
+ Coke ovens	7 650.6	7 650.6	Z	Z	Z	Z	Z	Z	Z
+ Blast furnaces	2 321.0	2 321.0	Z	Z	Z	Z	Z	Z	Z
+ Gas works	0.0	0.0	Z	Z	Z	Z	Z	Z	Z
+ Refineries & petrochemical industry	1 073.8	0.0	1 073.8	Z	0.0	Z	Z	Z	Z
+ Patent fuel plants	0.0	0.0	Z	Z	Z	Z	Z	Z	Z
+ BKB & PB plants	56.7	56.7	Z	Z	Z	Z	Z	Z	Z
+ Coal liquefaction plants	0.0	0.0	0.0	Z	Z	Z	Z	Z	Z
+ Blended in natural gas	0.0	0.0	Z	0.0	Z	Z	Z	Z	Z
+ Liquid biofuels blended	51.1	0.0	Z	Z	51.1	Z	Z	Z	Z
+ Charcoal production plants	146.5	0.0	Z	Z	146.5	Z	Z	Z	Z
+ Gas-to-liquids plants	0.0	0.0	0.0	Z	Z	Z	Z	Z	Z
+ Not elsewhere specified	0.0	0.0	0.0	Z	Z	Z	Z	Z	Z
Energy sector	3 668.3	654.6	38.0	708.9	1.4	0.0	Z	1 007.4	1 258.0
Distribution losses	3 642.4	572.3	7.4	706.2	0.0	0.0	Z	1 028.4	1 328.1
Available for final consumption	48 917.9	5499.5	10 785.5	13 309.9	2 079.7	100.0	0.0	7 176.6	9 966.6
Final non-energy consumption	3 697.7	374.6	1 041.6	2 281.5	0.0	Z	Z	Z	Z
Final energy consumption	44 184.2	5447.7	8 612.3	11 007.8	2 079.7	100.0	Z	7 176.6	9 760.1
+ Industry	15 979.6	4 884.8	639.3	2 829.8	75.6	13.3	Z	3 591.2	3 945.6
+ Iron & steel	8 157.5	4 143.9	73.6	1 450.3	17.4	0.0	Z	1 163.9	1 308.3
+ Chemical & petrochemical	1 247.9	1.3	4.3	140.1	1.8	0.0	Z	759.5	340.8
+ Non-ferrous metals	686.1	94.0	9.1	159.7	0.0	0.0	Z	295.2	128.0
+ Non-metallic minerals	1 585.6	609.1	220.2	467.2	13.9	0.0	Z	65.8	209.4
+ Transport equipment	188.5	0.4	5.5	81.2	0.3	0.0	Z	33.8	67.4
+ Machinery	401.9	4.0	8.7	111.6	2.2	0.0	Z	64.5	211.0
+ Mining & quarrying	1 250.1	8.4	125.7	220.3	0.6	0.0	Z	70.8	824.4
+ Food, beverages & tobacco	1 464.2	23.0	20.8	162.3	10.8	12.5	Z	840.3	394.5
+ Paper, pulp & printing	245.4	0.0	1.8	20.7	0.0	0.0	Z	143.7	79.1
+ Wood & wood products	197.0	0.0	5.9	1.5	24.3	0.0	Z	96.7	68.6
+ Construction	254.2	0.5	149.7	7.9	1.7	0.0	Z	12.2	82.3
+ Textile & leather	51.6	0.0	0.2	4.6	1.1	0.0	Z	17.5	28.2
+ Not elsewhere specified (industry)	249.5	0.2	13.9	2.5	1.3	0.8	Z	27.3	203.5
+ Transport	8 017.7	2.6	6 808.2	664.5	51.1	0.0	Z	Z	491.2
+ Rail	420.0	2.6	21.3	Z	0.0	0.0	Z	Z	396.1
+ Road	6 765.9	0.0	6 696.5	18.2	51.1	0.0	Z	Z	0.0
+ Domestic aviation	88.9	0.0	88.9	Z	0.0	Z	Z	Z	Z
+ Domestic navigation	1.6	0.0	1.6	Z	0.0	0.0	Z	Z	Z
+ Pipeline transport	668.6	0.0	0.0	644.7	0.0	Z	Z	Z	24.0
+ Not elsewhere specified (transport)	72.7	0.0	0.0	1.6	0.0	0.0	Z	Z	71.1
+ Other	20 187.0	560.3	1 164.7	7 513.5	1 953.0	86.7	Z	3 585.4	5 323.3
+ Commercial & public services	4 869.9	421.5	125.0	833.5	33.8	86.7	Z	1 515.6	1 853.7
+ Households	13 654.3	133.5	33.3	6 556.8	1 891.6	0.0	Z	1 896.1	3 143.1
+ Agriculture & forestry, fishing	1 662.8	5.3	1 006.5	123.2	27.7	0.0	Z	173.6	326.5
+ Not elsewhere specified (other)	0.0	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0
Statistical differences	1 035.9	-322.7	1 131.7	20.5	0.0	0.0	0.0	0.0	206.5

Source: Eurostat (nrg_bal_c)

Annex 4

Selected time series and indicators in EaP countries (2010-2020)

TABLE 6: KEY ENERGY INDICATORS FOR ARMENIA (2010-2020)

Energy independence and security

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Net import dependency (in %)	-	-	-	-	-	67	67	68	72	74	75
Electricity net import dependency (in %)	-	-	-	-	-	-16	-13	-14	-18	-12	-13

RES in total energy supply and consumption

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Share of RES in GAE (in %)	-	-	-	-	-	8,7	10,5	10,0	9,4	8,7	7,0
Share of RES in TFEC (in %) - SDG Indicator 7.2.1	9,4	8,0	6,6	6,8	7,1	10,8	13,2	12,6	11,1	10,4	8,4

Gross electricity production (GWh)

Energy type	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Coal, Peat and related products	0	0	0	0	0	0	0	0	0	0	0
Natural gas	1 438	2 390	3 399	3 173	3 289	2 801	2 581	2 872	3 376	3 047	3 166
Oil and petroleum products	0	0	0	0	0	0	0	0	0	0	0
Nuclear	2 490	2 548	2 311	2 360	2 465	2 788	2 380	2 620	2 076	2 198	2 756
Renewables and biofuels	2 563	2 492	2 326	2 177	1 996	2 210	2 354	2 274	2 340	2 435	1 837
Non-renewable wastes	0	0	0	0	0	0	0	0	0	0	0
Other sources	0	0	0	0	0	0	0	0	0	0	0
Total	6 491	7 430	8 036	7 710	7 750	7 799	7 315	7 765	7 791	7 680	7 759

Gross electricity production from RES (GWh)

Renewable energy type	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Hydro	2 556	2 489	2 322	2 173	1 992	2 206	2 351	2 269	2 318	2 371	1 778
Wind	7	3	4	4	4	3	2	2	2	3	2
Solar photovoltaic	0	0	0	0	0	1	1	3	19	61	57
Solid biofuels	0	0	0	0	0	0	0	0	0	0	0
Biogases	0	0	0	0	0	0	0	0	0	0	0
Renewable municipal waste	0	0	0	0	0	0	0	0	0	0	0
Sub-total	2 563	2 492	2 326	2 177	1 996	2 210	2 354	2 274	2 340	2 435	1 837

Energy intensity and efficiency indicators

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Primary energy intensity per capita (in kgoe/capita)	-	-	-	-	-	1 095	1 056	1 122	1 081	1 172	1 228
Final energy consumption per capita (in kgoe/capita)	-	-	-	-	-	697	696	738	724	814	862
Primary energy intensity (in kgoe/1,000 cst 2015US\$)	-	-	-	-	-	312	299	295	269	270	305
Efficiency of power and heat generation (in %)	-	-	-	-	-	42,9	44,5	44,3	46,7	46,3	45,8

Macroeconomic Indicators

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Population in thousands (Eurostat)	3 249	3 263	3 274	3 027	3 017	3 011	2 999	2 986	2 973	2 965	2 960
GDP in million constant 2015 USD (World Bank)	8 514	8 914	9 555	9 871	10 226	10 553	10 574	11 368	11 959	12 867	11 915

Source: Expertise France from the Statistical Committee of the Republic of Armenia, Eurostat, Esmap and the World Bank.

TABLE 7: KEY ENERGY INDICATORS FOR AZERBAIJAN (2010-2020)
Energy independence and security

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Net import dependency (in %)	-416	-345	-308	-307	-296	-288	-286	-260	-269	-254	-254
Electricity net import dependency (in %)	-2	-3	-2	-2	-1	-1	-4	-5	-5	-5	-4

RES in total energy supply and consumption

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Share of RES in GAE (in %)	3,0	2,3	1,7	1,9	1,7	1,9	1,8	1,6	1,7	1,5	1,3
Share of RES in TFEC (in %) - SDG Indicator 7.2.1	4,2	3,4	2,7	2,5	2,1	2,3	1,9	1,9	1,9	1,6	1,2

Gross electricity production (GWh)

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Coal, Peat and related products	0	0	0	0	0	0	0	0	0	0	0
Natural gas	15 240	17 280	20 664	21 711	23 210	21 252	20 170	21 020	23 128	24 109	24 372
Oil and petroleum products	23	338	503	18	40	1 607	2 591	1 325	49	53	54
Nuclear	0	0	0	0	0	0	0	0	0	0	0
Renewables and biofuels	3 447	2 676	1 821	1 625	1 479	1 829	2 192	1 976	2 052	1 910	1 413
Non-renewable wastes	0	0	0	0	0	0	0	0	0	0	0
Other sources	0	0	0	0	0	0	0	0	0	0	0
Total	18 710	20 294	22 988	23 354	24 728	24 688	24 953	24 321	25 229	26 073	25 839

Gross electricity production from RES (GWh)

Renewable energy type	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Hydro	3 446	2 676	1 821	1 489	1 300	1 637	1 959	1 746	1 768	1 565	1 070
Wind	1	0	0	1	2	5	23	22	83	105	96
Solar photovoltaic	0	0	0	1	3	5	35	37	39	44	47
Solid biofuels	0	0	0	0	0	0	0	0	0	0	0
Biogases	0	0	0	0	0	0	0	0	0	0	0
Renewable municipal waste	0	0	0	134	174	182	175	170	162	196	201
Sub-total	3 447	2 676	1 821	1 625	1 479	1 829	2 192	1 976	2 052	1 910	1 413

Energy intensity and efficiency indicators

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Primary energy intensity per capita (in kgoe/capita)	1 450	1 549	1 609	1 614	1 637	1 657	1 610	1 598	1 587	1 743	1 688
Final energy consumption per capita (in kgoe/capita)	746	800	808	830	870	859	884	837	869	999	991
Primary energy intensity (in kgoe/1,000 cst 2015US\$)	276	299	308	296	296	299	304	304	300	324	331
Efficiency of power and heat generation (in %)	40,0	39,1	40,0	40,7	41,8	38,9	40,2	38,6	41,1	43,1	43,3

Macroeconomic Indicators

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Population in thousands (Eurostat)	8 998	9 111	9 235	9 356	9 477	9 593	9 706	9 810	9 898	9 981	10 067
GDP in million constant 2015 USD (World Bank)	47 219	47 266	48 289	51 095	52 500	53 074	51 429	51 532	52 305	53 613	51 307

Source: Expertise France from the State Statistical Committee of the Republic of Azerbaijan, Eurostat, Esmap and the World Bank.

TABLE 8: KEY ENERGY INDICATORS FOR GEORGIA (2010-2020)

Energy independence and security

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Net import dependency (in %)	-	-	-	66	70	73	72	73	76	79	80
Electricity net import dependency (in %)	-	-	-	0	2	0	-1	7	8	12	13

RES in total energy supply and consumption

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Share of RES in GAE (in %)	-	-	-	28	27	24	25	24	23	20	19
Share of RES in TFEC (in %) - SDG Indicator 7.2.1	39	32	29	33	31	28	28	28	28	25	-

Gross electricity production (GWh)

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Coal, Peat and related products	0	0	0	0	0	0	16	25	12	0	0
Natural gas	0	0	0	1 788	2 036	2 379	2 220	2 208	2 103	2 840	2 821
Oil and petroleum products	0	0	0	0	0	0	0	0	0	0	0
Nuclear	0	0	0	0	0	0	0	0	0	0	0
Renewables and biofuels	0	0	0	8 271	8 335	8 454	9 338	9 298	10 034	9 016	8 339
Non-renewable wastes	0	0	0	0	0	0	0	0	0	0	0
Other sources	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	10 059	10 371	10 833	11 574	11 531	12 149	11 856	11 160

Gross electricity production from RES (GWh)

Renewable energy type	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Hydro	0	0	0	8 271	8 335	8 454	9 329	9 210	9 949	8 932	8 248
Wind	0	0	0	0	0	0	9	88	84	85	91
Solar photovoltaic	0	0	0	0	0	0	0	0	0	0	0
Solid biofuels	0	0	0	0	0	0	0	0	0	0	0
Biogases	0	0	0	0	0	0	0	0	0	0	0
Renewable municipal waste	0	0	0	0	0	0	0	0	0	0	0
Sub-total	0	0	0	8 271	8 335	8 454	9 338	9 298	10 033	9 017	8 339

Energy intensity and efficiency indicators

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Primary energy intensity per capita (in kgoe/capita)	-	-	-	1 142	1 217	1 279	1 320	1 340	1 329	1 398	1 346
Final energy consumption per capita (in kgoe/capita)	-	-	-	921	1 000	1 030	1 099	1 110	1 091	1 122	1 127
Primary energy intensity (in kgoe/1,000 cst 2015US\$)	-	-	-	306	312	318	320	309	293	293	302
Efficiency of power and heat generation (in %)	-	-	-	76,8	74,3	73,7	79,9	79,1	81,2	75,6	77,6

Macroeconomic Indicators

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Population in thousands (Geostat)	3 800	3 774	3 739	3 718	3 717	3 722	3 729	3 726	3 730	3 723	3 717
GDP in million constant 2015 USD (World Bank)	11 741	12 610	13 414	13 899	14 515	14 954	15 389	16 134	16 915	17 758	16 557

Source: Expertise France from the National Statistics Office of Georgia, Eurostat, Esmap and the World Bank.

TABLE 9: KEY ENERGY INDICATORS FOR MOLDOVA (2010-2020)
Energy independence and security

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Net import dependency (in %)	77	79	76	77	74	75	74	73	74	77	76
Electricity net import dependency (in %)	285	310	352	368	347	353	367	381	367	372	348

RES in total energy supply and consumption

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Share of RES in GAE (in %)	20	21	23	23	25	25	26	27	26	23	24
Share of RES in TFEC (in %) - SDG Indicator 7.2.1	21	22	24	24	26	26	27	28	28	24	25

Gross electricity production (GWh)

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Coal, Peat and related products	0	0	0	0	0	0	0	0	0	0	0
Natural gas	956	920	882	841	875	862	831	799	846	795	851
Oil and petroleum products	29	20	16	16	14	8	17	17	8	4	1
Nuclear	0	0	0	0	0	0	0	0	0	0	0
Renewables and biofuels	79	76	34	48	74	69	58	80	100	142	131
Non-renewable wastes	0	0	0	0	0	0	0	0	0	0	0
Other sources	0	0	0	0	0	0	0	0	0	0	0
Total	1 064	1 016	932	905	963	939	906	896	954	941	983

Gross electricity production from RES (GWh)

Renewable energy type	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Hydro	79	76	34	45	59	50	39	48	44	65	47
Wind	0	0	0	1	1	2	3	7	23	43	51
Solar photovoltaic	0	0	0	0	1	2	2	2	3	3	4
Solid biofuels	0	0	0	0	0	0	0	0	0	0	0
Biogases	0	0	0	2	13	15	14	23	30	31	29
Renewable municipal waste	0	0	0	0	0	0	0	0	0	0	0
Sub-total	79	76	34	48	74	69	58	80	100	142	131

Energy intensity and efficiency indicators

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Primary energy intensity per capita (in kgoe/capita)	712	726	712	719	727	732	762	803	847	802	-
Final energy consumption per capita (in kgoe/capita)	636	656	637	645	645	663	692	729	762	729	-
Primary energy intensity (in kgoe/1,000 cst 2015US\$)	393	379	373	346	333	336	335	337	340	310	326
Efficiency of power and heat generation (in %)	87,2	88,7	88,7	88,2	85,9	88,8	89,7	90,5	89,0	91,5	90,7

Macroeconomic Indicators

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Population in thousands (NBS Moldova)	3 564	3 560	3 560	3 559	3 558	3 555	3 553	3 551	3 548	3 543	-
GDP in million constant 2015 USD (World Bank)	6 452	6 828	6 788	7 401	7 772	7 745	8 087	8 466	8 830	9 155	8 480

Source: Expertise France from the National Bureau of Statistics of the Republic of Moldova, Eurostat, Esmap and the World Bank.

TABLE 10: KEY ENERGY INDICATORS FOR UKRAINE (2010-2020)

Energy independence and security

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Net import dependency (in %)	32	38	31	27	26	32	30	37	34	37	34
Electricity net import dependency (in %)	-2	-3	-6	-5	-5	-1	-2	-3	-4	-3	-2

RES in total energy supply and consumption

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Share of RES in GAE (in %)	2,1	2,1	2,2	2,7	2,6	2,9	3,9	4,4	4,6	4,9	5,6
Share of RES in TFEC (in %) - SDG Indicator 7.2.1	2,9	2,7	2,9	3,5	3,5	5,0	5,9	6,7	7,0	8,1	9,2

Gross electricity production (GWh)

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Coal, Peat and related products	67 303	74 141	79 973	80 127	69 540	55 345	59 618	47 843	47 724	44 608	38 632
Natural gas	18 160	18 804	16 484	14 869	13 663	10 819	11 426	8 807	11 859	12 719	14 195
Oil and petroleum products	822	555	535	390	216	746	1 615	1 314	1 221	467	252
Nuclear	89 152	90 248	90 137	83 209	88 389	87 627	80 950	85 576	84 398	83 003	76 203
Renewables and biofuels	13 391	11 200	11 749	15 782	11 011	8 676	10 884	12 451	14 595	13 215	17 559
Non-renewable wastes	0	0	0	0	0	0	0	0	0	0	3
Other sources	0	0	0	0	0	468	79	45	37	129	1 421
Total	188 828	194 948	198 878	194 377	182 819	163 681	164 572	156 036	159 833	154 141	148 264

Gross electricity production from RES (GWh)

Renewable energy type	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Hydro	13 152	10 946	10 994	14 473	9 321	6 971	9 304	10 519	12 007	7 855	7 564
Wind	51	90	288	639	1 130	1 084	954	983	1 188	2 020	3 271
Solar photovoltaic	0	30	333	569	429	477	491	739	1 099	2 933	5 969
Solid biofuels	188	134	134	101	130	135	80	115	125	195	284
Biogases	0	0	0	0	0	10	56	95	176	212	471
Renewable municipal waste	0	0	0	0	0	0	0	0	0	0	0
Sub-total	13 391	11 200	11 749	15 782	11 011	8 676	10 884	12 451	14 595	13 215	17 559

Energy intensity and efficiency indicators

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Primary energy intensity per capita (in kgoe/capita)	2 901	2 782	2 704	2 565	2 340	2 178	2 157	2 116	2 223	2 135	2 075
Final energy consumption per capita (in kgoe/capita)	1 494	1 527	1 461	1 436	1 280	1 111	1 146	1 116	1 147	1 117	1 059
Primary energy intensity (in kgoe/1,000 cst 2015US\$)	1 250	1 133	1 096	1 037	1 050	1 023	985	940	950	879	882
Efficiency of power and heat generation (in %)	50,8	49,1	49,1	49,4	46,8	45,6	47,8	47,7	47,8	47,3	49,1

Macroeconomic Indicators

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Population in thousands (Eurostat)	45 783	45 598	45 453	45 373	45 246	42 760	42 591	42 415	42 217	41 984	41 733
GDP in million constant 2015 USD (World Bank)	106 195	111 978	112 149	112 199	100 891	91 031	93 253	95 454	98 784	101 944	98 118

Source: Expertise France from the State Statistics Service of Ukraine, Eurostat, Esmap and the World Bank.



“Energy Production and Consumption in Eastern Partnership Countries” is one of the flagship regional publications produced within the framework of the STEP programme. It allowed the national statistical institutes of the five partner countries to work together to improve data comparability, quality of data and metadata and presentation standards while contributing to facilitating the use of statistics in evidence-based decision-making. Each chapter of this publication presents statistical information in tables and figures, accompanied by a descriptive text highlighting the main findings. This publication is developed as part of the STEP programme which is funded by the EU, managed by Eurostat and implemented by Expertise France.

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<https://armstat.am/en/>

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