

ICAT Kyrgyzstan Project

Report on Deliverables 1-4



Ministry of Natural Resources,
Ecology and Technical Supervision
of the Kyrgyz Republic

 **ICAT** Initiative for
Climate Action
Transparency

Initiative for Climate Action Transparency – ICAT

Diagnosis/Scoping report containing the scope in activity 1

Deliverable # 1

Brief report from the Inception Workshop

Deliverable # 2

Detailed work plan for the ICAT project

Deliverable # 3

Training workshop on the selected modelling tool

Deliverable # 4

AUTHOR

Aleksandr Temirbekov

Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic

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Acronyms

BAU	Business As Usual scenario
BRT	Biannual Report on Transparency
CHS	Community heating systems
CHP	Central heating plant
CPHP	Combined Power Heat Plant
CRT	Common Reporting Tables
CTF	Common Reporting Formats
GACMO	Greenhouse Gas Abatement Cost Model
GHG	Greenhouse Gases
GPD	Gross Domestic Product
GSP CBIT	Global Support Programme Capacity Building Initiative for Transparency
HPP	Hydro Power Plant
ICAT	Initiative for Climate Action Transparency
LCOE	Levelized cost of electricity
MNRETS	Ministry of Natural Resources, Ecology and Technical Supervision
MRV	Measurement Reporting and Verification
NC	National Communication
NDC	Nationally Determined Contribution to Paris Agreement
NDP	National Development Programme
NDS	National Development Strategy
NGHGI	National GHG Inventory
NSC	National Statistic Committee
Q&A	Questions and Answers
RES	Renewable energy sources
SPP	Solar Power Plant
TES	Total energy supply
TFC	Total final consumption
TIMES	The Integrated MARKAL-EFOM System
TNA	Technology Needs Assessment
TOR	Terms of Reference
UNEP CCC	United Nations Environment Programme Copenhagen Climate Centre
UNFCCC	United Nation Convention on Climate Change

USD	United States dollars
WPP	Wind Power Plant

Measurement Units

Gg	Gigagram = kiloton
kt	kilotons
kWh	kilowatt hours
J	Joule
M	Mega
P	Peta
T	Terra
W	Watt

Introduction

The Initiative for Climate Action Transparency (ICAT) was established in 2015 at the COP that adopted the Paris Agreement to support the implementation of the Agreement's Enhanced Transparency Framework. ICAT provides countries with tailored support and practical tools and methodologies to build robust transparency frameworks needed for effective climate action in sync with national development priorities. The projects ICAT supports relate to: building or enhancing transparency frameworks for mitigation; building a monitoring and evaluation approach for adaptation; building or enhancing frameworks to track progress in implementing nationally determined contributions; assessing the impacts of climate policies; estimating or enhancing projections of greenhouse gases; integrating and/or aggregating climate actions at the subnational level and for non-State actors; building a tracking system for just transition processes; establishing or enhancing a climate data system; and putting in place a framework to track climate finance.

To address Kyrgyz Republic's needs and, to support the country's initiatives to track the implementation of its Nationally Determined Contributions (NDC) and the achievement of climate targets, Kyrgyz Republic is engaging with the Initiative for Climate Action Transparency (ICAT) through its international implementing partners, UNEP Copenhagen Climate Centre (UNEP CCC). Through this collaboration, Kyrgyz Republic is expecting to get support on the development of country – tailored tools and frameworks to measure and project desirable GHG impacts from climate interventions, planned in their NDC. It is expected to improve monitoring, tracking and reporting arrangements on the implementation of its NDC's and the achievements of climate targets, which would help Kyrgyz Republic to meet the enhanced transparency requirements of the Paris Agreement. Following the country's sectorial priorities, the ICAT project will focus on the Energy sector and the transport as a sub-sector.

This is the first Report by the National Lead Expert, which compile corresponding deliverables form the UNOPS Contract TOR assigned for the first reporting period.

1. Diagnosis/Scoping report containing the scope in activity 1 (Deliverable 1)

This stocktaking exercise was planned for the inception phase of this project to set the scene for the trainings in GHG emissions projections and NDC tracking tool development for the Energy and Transport Sectors. The next paragraphs present relevant aspects related to the project Outcome 1 A Framework for projections of emissions and key NDC tracking indicators in the selected sectors is developed and implemented.

The scope in activity 1 is aimed to implement project inception phase and conduct situation analysis for the targeted Energy sector and Transport sub-sector.

1.1 The current status of the Energy sector and the

Transport sub-sector

1.1.1 Introduction

The Kyrgyz Republic is a land-locked, lower-middle-income country located in Central Asia with an area of 199,951 km² that has abundant natural resources and potential for the expansion of its hydroelectricity production, agriculture sector, and tourism industry. Mountains occupy 94% of the territory of Kyrgyzstan. Since gaining independence in 1991, the Kyrgyz Republic has experienced political instability, with several political upheavals leading to the overthrow of presidents in 2005, 2010, and 2020. Since 2021, the political situation has stabilized, with the presidential form of government having consolidated.

In 2023, the country has an estimated population of 7.1 million, current Gross Domestic Product (GDP) of \$13.9 billion, with an estimated GDP per capita of USD 1,970.¹ Kyrgyzstan shares its northern border with Kazakhstan, its southern border with Tajikistan, its eastern border with China, and its western border with Uzbekistan.

1.1.2 The Energy Sector analysis

The Kyrgyz Republic's plentiful water resources make hydropower the most important energy source; it also has significant deposits of coal, but oil and natural gas resources are marginal. The country is dependent on the import of natural gas, oil and oil products.²

Domestic energy production consists mainly of hydroelectricity and coal mining, topped with limited oil and gas extraction.

In 2020, the total energy supply (TES) amounted to 3.8 million tons of oil equivalent (Mtoe) (+37% since 2010), of which about one-third was covered by imports. Total final consumption (TFC) in 2020 was 3.2 Mtoe, of which 37% was oil, 33% electricity, 15% coal 9% district heat and 5% natural gas.

The residential sector accounted for 47% of the TFC, followed by the transport sector (34%). The remaining amount was reportedly consumed by industry (9%), and services and other sectors (11%).

Primary energy production in Kyrgyzstan amounted to 2.4 Mtoe in 2020. This mainly composed of hydroelectricity (49% in 2020) and coal (40%).

TES stood at 3.8 Mtoe in 2020, an increase of 37% since 2010. Oil and oil products accounted for 33% of TES, hydroelectricity for 32% and coal for 27%. Natural gas virtually covered the rest with an 8% share in 2020 except for hydro, the contribution of renewables is negligible, although studies to quantify the energy consumption of biomass

¹ World Bank. Kyrgyz Republic Overview: Development news, research, data. <https://www.worldbank.org/en/country/kyrgyzrepublic/overview>

² IEA. 2022. Kyrgyzstan 2022. Energy Sector Review. <https://iea.blob.core.windows.net/assets/9d0cb3be-48fd-424f-8968-e543a43e8614/Kyrgyzstan2022.pdf>

have not been conducted yet.³

Data collection on energy consumption is not fully compatible with international definitions, therefore sectoral consumption shares may not be fully comparable with other countries.

The energy statistics on production of coal, lignite, crude oil and natural gas is displaying growth during the last fifteen years (see fig.1).

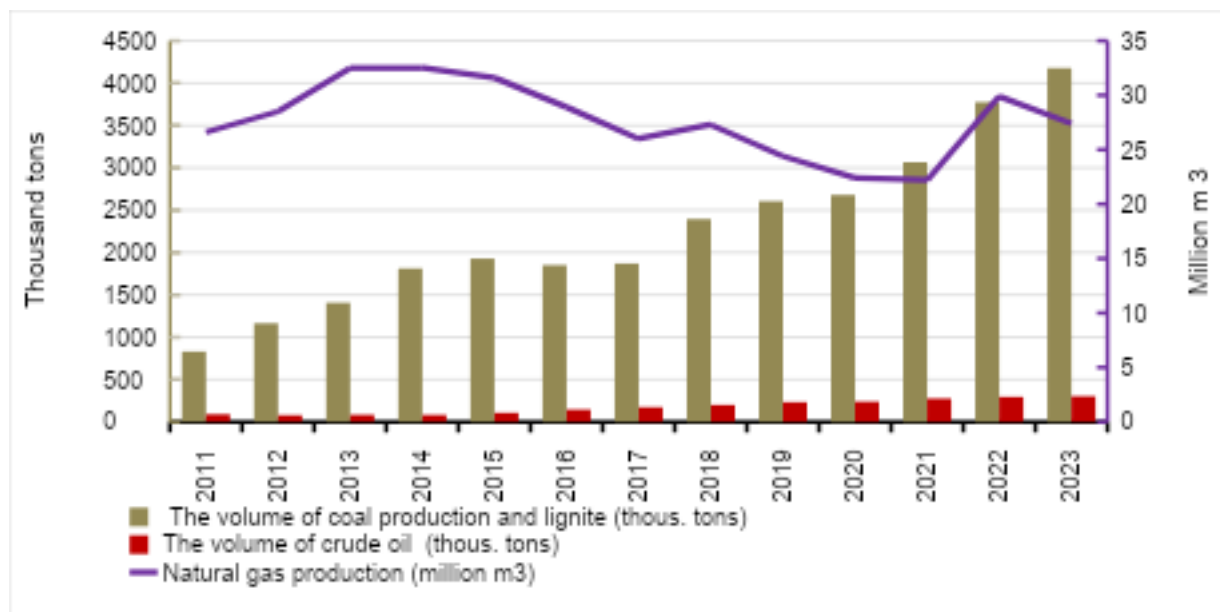


Figure 1. Dynamic of the primary fuel types production⁴

Thus, in 2024, the production of coal and lignite increased by 429%, crude oil – by 232% and gas by 6%.⁵

However, this is far below the growing energy consumption (see fig.2).

³ Ibid.

⁴ National Statistic Committee (NSC). <https://www.stat.gov.kg/ru/statistics/promyshlennost/>

⁵ Ibid.

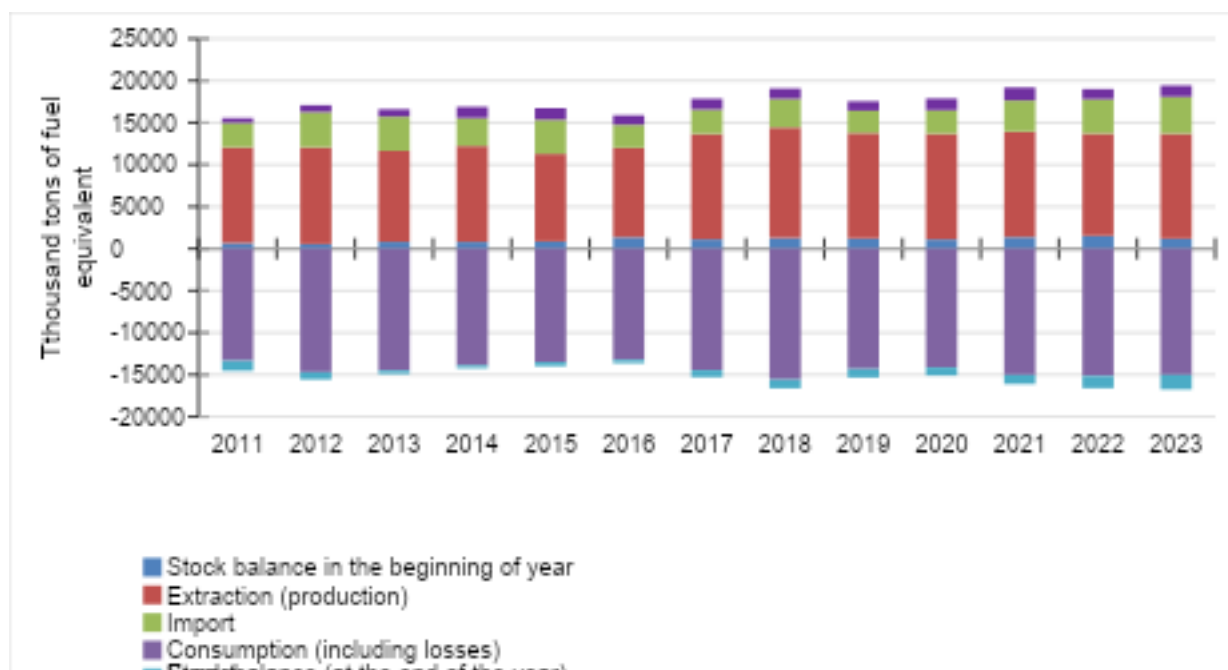


Figure 2. Fuel and energy resources dynamic

The TFC in Kyrgyzstan amounted to 3.2 Mtoe in 2020. The residential sector has the largest consumption with 47%, followed by transport (34%), industry (9%) and other sectors (11%).⁶

Domestic energy production is mainly from hydroelectric power plants and coal mining. The residential sector is the largest energy-consuming sector in the country, followed by transport and industry. Citizens enjoy universal access to electricity and one of the lowest residential electricity tariffs in the world.⁷

Kyrgyzstan, an energy-deficient country, has seen a net energy import of 50-100 PJ per year for the past 20 years. The energy sector constitutes around 4% of the GDP, with a heavy dependence on hydropower resources.⁸ Kyrgyzstan relies heavily on hydropower plants for electricity, and imports oil products and natural gas, mainly from Russia and Kazakhstan. Historically, the region's energy and water supply were closely tied to the operation of large hydropower plants and reservoir levels, impacting neighbouring countries such as Uzbekistan, Tajikistan, and Kazakhstan. Coordination among these countries became more challenging after gaining independence in the early 1990s. Today, the aging infrastructure and climate change further complicate energy security, as changing river flow patterns affect the sector.

The alternation between low-water and high-water years, with a difference in hydropower production of approximately 2 TWh/year, results in uneven energy production in Kyrgyzstan and regularly recurring energy crises.⁹ These challenges have arisen amidst

⁶ IEA. 2022. Kyrgyzstan 2022. Energy Sector Review. <https://iea.blob.core.windows.net/assets/9d0cb3be-48fd-424f-8968-e543a43e8614/Kyrgyzstan2022.pdf>

⁷ Ibid.

⁸ Eclareon GmbH.. 2023. Enabling PV in Kyrgyzstan.

⁹ Ibid

increasing energy consumption and the absence of new power stations being commissioned. The most energy-deficient regions in the country are Chui, Talas, and Issyk-Kul, heavily reliant on external supplies of all forms of energy resources, including electricity.

In July 2023, a state of emergency was declared in Kyrgyzstan by the President, effective from August 1, 2023, until December 31, 2026. This decision is justified by the urgent need to address the energy crisis in Kyrgyzstan, brought about by climate challenges, insufficient water runoff in the Naryn River basin, and a shortage of power generating capacity in the face of rapidly growing electricity consumption.¹⁰

The situation with fuels and energy consumption in 2023 is presented on fig.3

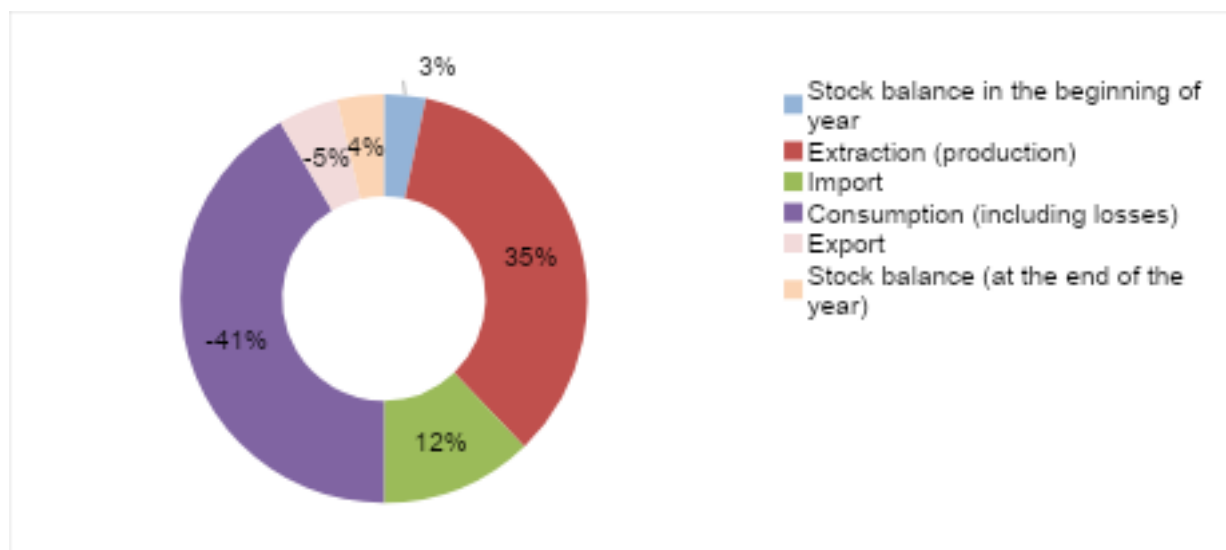


Figure 3. Fuel and energy resources in 2023¹¹

In Kyrgyzstan, **electricity** is primarily generated from hydropower plants, followed by thermal power stations operating mostly on coal. In 2023, the country produced approximately 13.8 TWh of electricity, of which 87% came from hydropower¹² (fig. 4).

¹⁰ Decree of the President of the Kyrgyz Republic No. 178 dated July 24, 2023, regarding the state of emergency in the energy sector of the Kyrgyz Republic. [URL: <http://cbd.minjust.gov.kg/act/view/ru-ru/435085>]

¹¹ NSC. <https://www.stat.gov.kg/ru/statistics/promyshlennost/>

¹² Ibid.

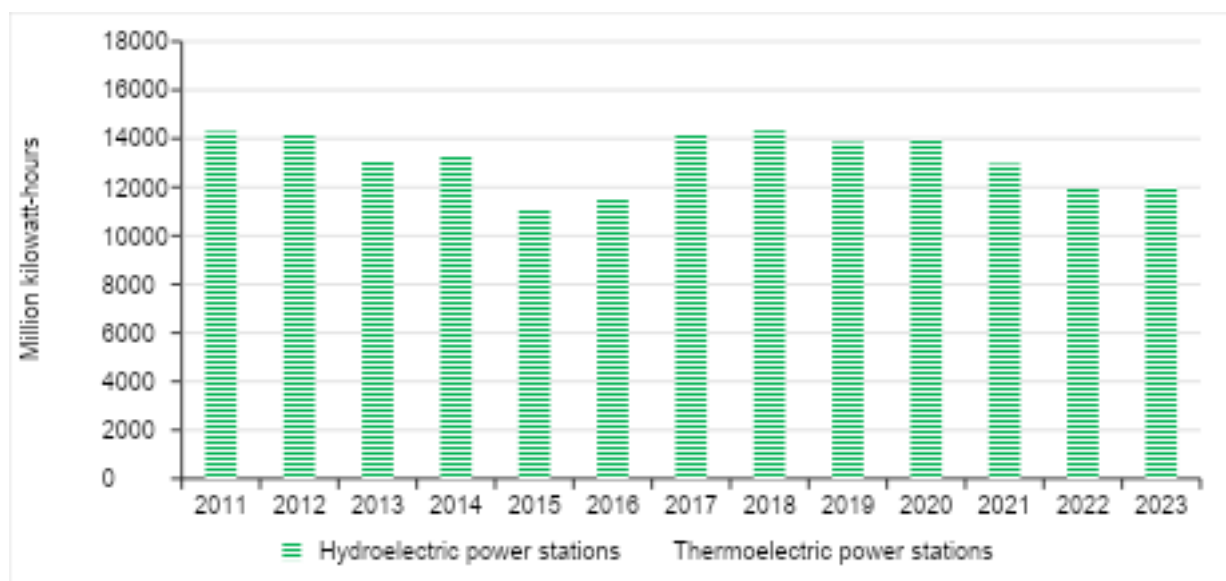


Figure 4. The generation of electric power by stations

The dynamic of the electricity consumption by sector in the period 2011-2023 is presented in fig.5

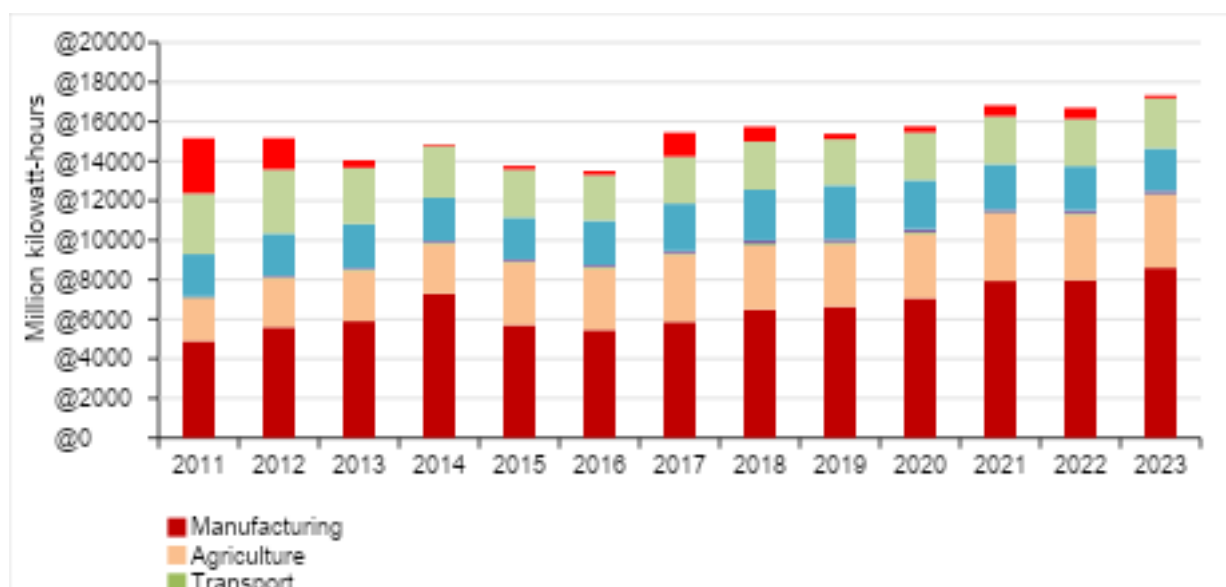


Figure 5. Electricity consumption by sectors in the period 2011-2023.

Within the period 2011-2023, the highest growth was observed in the construction sector (167%), manufacturing (76%), agriculture (72%). At the same time, less electricity was consumed in transport sector (-6%). Less electricity was exported (-95%), and lost during transmission (-17%).¹³

The shares of the electricity consumption by sectors in 2023, are shown in fig. 6

¹³ NSC. <https://www.stat.gov.kg/ru/statistics/promyshlennost/>

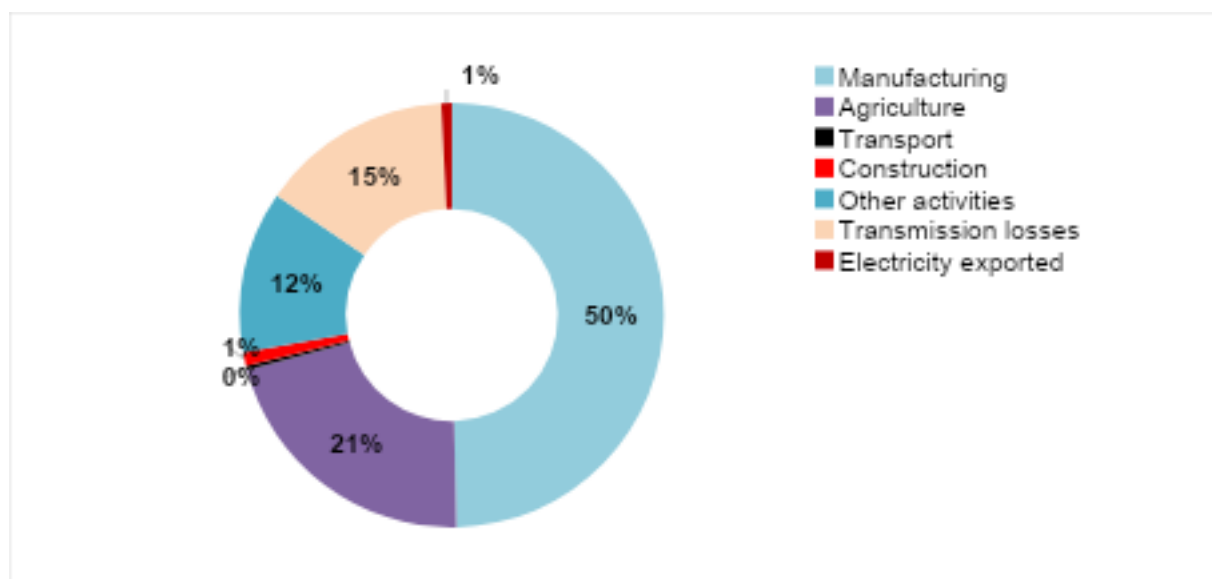


Figure 6. The shares of sectors in electricity consumption in 2023.

In Kyrgyzstan, seven out of the nine largest **power stations** are hydroelectric power plants, with the exception of thermal power plants in two biggest cities Bishkek and Osh, which are also vital for district heating in these cities (Table 1). The total installed capacity of those stations is 3,945 MW.¹⁴

Table 1. Main power stations of Kyrgyzstan¹⁵

Power plant	Commissioning year	Capacity (MW)	Power source
Uch-Kurgan	1961	180	hydro
At-Bashi	1970	40	hydro
Toktogul	1975	1200	hydro
Kurpsay	1982	800	hydro
Tash-Kumyr	1987	450	hydro
Shamaldysay	1992	240	hydro
Kambarata-2	2010	120	hydro
Bishkek CPHP	1961	812	thermal power plant
Osh CPHP	1966	50	thermal power plant

Alongside with the big hydropower plants there is a dozen of small hydropower plants with total capacities of 53.5 MW presented in table 2.

Table 2. Small hydropower plants operational in Kyrgyzstan¹⁶

¹⁴ Ministry of Energy, Asian Development Bank. 2022. Master Plan for Complex Development of the Energy Sector of the Kyrgyz Republic. https://minenergo.gov.kg/media/uploads/2022/12/07/mp-kr-finalreport-rev5_v2_en_website_hQEeGIO.pdf

¹⁵ Ministry of Energy, Asian Development Bank. 2022. Master Plan for Complex Development of the Energy Sector of the Kyrgyz Republic. https://minenergo.gov.kg/media/uploads/2022/12/07/mp-kr-finalreport-rev5_v2_en_website_hQEeGIO.pdf

¹⁶ Ministry of Energy, Asian Development Bank. 2022. Master Plan for Complex Development of the Energy Sector of the Kyrgyz Republic.

Power plant	Capacity (MW)
JSC "Chakan" including the following set of SHPP (including Lebedinovka HPP, Cascade of Alamedin HPPs and Bystrovka HPP)	38.4
LLC Kalinin Hydroelectric Power Station	1.4
LLC Issyk-Ata HPP	1.6
AOOT "Naiman-HPP"	0.6
LLC "Construction company ARK"	1.4
Hydroelectric Power Station PSKH "Maryam"	0.5
Sokuluk HPP-2	2.4
LLC "Tegirmentinskiye HPPs" HPP No. 2	3
LLC "Konur-Olonskaya HPP"	3.6
Ton HPP	3.6
LLC "Kok-Sai HPP"	3.4
SHPP "Dzhidalik", OJSC "Kadamzhaysky antimony plant	1
Kyrgyz-Ata SHPP	0.4
Dzhiptik	2
Ak-Bura (Ozгур) HPP	0.23
Buiga HPP	0.4
Oktalio HPP	0.85
Total	63.38

According to the Ministry of Energy about 31 small HPP will be put into operation by 2027.

All those **hydropower generating** facilities provide for the energy security of Kyrgyzstan so far. At the same time, existing assets are generally worn-out due to long service time and poor maintenance, and several rehabilitation projects are under way to refurbish and increase the generating capacity.

The issues affecting the power generation sector are:

- Most of the assets are older than 30 years, they are at the end or beyond their techno-economic life and need urgent rehabilitation/replacement.
- Because electricity tariffs are subsidized and below generation costs, power companies lack fund to perform proper maintenance on existing assets and to rehabilitate/replace those worn out.
- Aging and scarce maintenance heavily affects generation capacity and efficiency of the assets, and results in the poor reliability of the power supply.
- Poor condition of transmission and distribution assets results in high technical losses, as well as poor metering and billing practices result in high commercial losses.
- The huge dependence on HPPs makes the Kyrgyz power generation system significantly dependent on the availability of water, which changes over the years and which could decrease in the future due to climate change.
- There is a mismatch between the seasonality of the country's electricity demand,

which is higher in winter due to space heating, and the seasonality of HPPs water inflow and especially Toktogul water reservoir release of water for agricultural irrigation, as the latter are higher in the summer months.¹⁷

As for the **heating sector**, due to the country cold climate, the availability and reliability of both space heating and sanitary hot water have a strong impact on the well-being of the population and on the quality of the public services.

In general, the assets of heat generation and distribution are in poor condition, due to ageing and to lack of funds for maintenance activities, resulting in a low-quality level of the service. In recent years, this situation has increased the winter use of electricity for heating, stressing both the power generation plants and the transmission grid, and making it very hard to balance the winter demand for electricity with domestic generation.

Various systems provide the Kyrgyz population with heat for space heating and hot water:

- Individual stove/boilers.
- Small/large centralized boilers, supplying up to a reduced number of buildings.
- Large community heating supply (CHS) systems.

CHS systems supply only 19% of the overall households. CHS is available in urban areas of the following regions: Chui (that includes Bishkek and Tokmok), Osh, Jalalabad, Talas, Naryn and Issyk-Kul.

The issues related to the heating sector are:

- Tariffs related to residential CHS space heating and hot water are below the cost recovery level.
- The majority of CHS infrastructures came on-line from 20 up to 50 years ago.
- Low reliability of heat supplied by CHS systems boosted the use of a supplementary heating technology, especially electric radiators, characterized by a very low capital investment.
- In general, only few final users connected to CHS have space heating and sanitary water meters.
- Furthermore, these customers are not able to regulate their consumption due to the lack of apartment-level thermostatic valves. Therefore, most customers' bills are based on regulations and not on their actual consumption.
- Bishkek heat distribution sets the maximum operating temperature to 80/90°C, reducing the maximum amount of heat that can be delivered, leaving part of the demand unmet and cutting the maximum heat well below the actual capacity of the refurbished Bishkek CHP plant.
- Many boilers supplying CHS systems, designed to operate on natural gas, now operate on coal or fuel oil, with less capacity and efficiency. Furthermore, many of them are outdated and poorly maintained.
- Single stoves fired by solid fuel, the main heating sources for households not connected to the CHS networks, have a very low thermal efficiency, which results in

¹⁷ Ministry of Energy, Asian Development Bank. 2022. Master Plan for Complex Development of the Energy Sector of the Kyrgyz Republic.
https://minenergo.gov.kg/media/uploads/2022/12/07/mp-kr-finalreport-rev5_v2_en_website_hQEeGIO.pdf

- high fuel consumption as well as high indoor and outdoor air pollution.
- Most of the buildings built up to year 1990 are poorly insulated and maintained, with high heat losses and poor comfort levels.¹⁸

The **transmission network** in national electricity grid of Kyrgyzstan has mainly three different high voltage levels i.e. 500 kV, 220 kV and 110 kV. As for power transformers, some of them are aged and close to the end of their lifetime.

As a general comment, we note that most of the elements listed in these tables have more than 25 years of operation and this could affect the reliability of the network components and the quality of supply, in case proper maintenance programs are missed. Data from national electrical grid regional centers show that the consumers did not receive more than 428MWh of electricity during 2020 because of 74 faults.¹⁹

Despite a reduction in recent years, the level of the **electricity losses** in the Kyrgyz power system, especially in the distribution system, is still higher than the neighbor countries.

In electricity supply to final consumers, losses refer to the amounts of electricity injected into the transmission and distribution grids and not paid by users. There are technical and non-technical losses.

Technical losses (TL) naturally occur due to dissipation in electricity system components, such as transmission and distribution lines, transformers and measurement systems. Non-technical losses (NTL), caused by actions external to the power system, consist primarily of electricity theft and customers not paying their electricity bill. Errors in record keeping and accounting can also cause non-technical losses.

The losses of the transmission grid are normally lower than those of the distribution network and under the complete control of the transmission systems operator. Conversely, distribution losses are more critical since:

- Distribution grids are particularly widespread in the territory, with thousands of feeders and cables whose conditions are not well known.
- Several operators are active and sometimes the ways they operate their distribution networks are different.
- Connecting thousands of loads is often a source of technical and non-technical losses.

The main causes for technical losses are in general:

- Quite long feeders, with respect to the high-density load supplied, which characterizes the MV feeders, especially in the most populated cities.
- The average distance between each medium voltage and low voltage substation that, if too long, can cause a very high average length of the medium voltage feeders.
- The average power factor of the low voltage system, which can also involve a low power factor in the medium voltage network.

¹⁸ Ministry of Energy, Asian Development Bank. 2022. Master Plan for Complex Development of the Energy Sector of the Kyrgyz Republic.

https://minenergo.gov.kg/media/uploads/2022/12/07/mp-kr-finalreport-rev5_v2_en_website_hQEeGIO.pdf

¹⁹ Ibid.

- The efficiency of some electrical components (distribution transformers), if not aligned with the actual best technologies.

1.1.2.1 Renewable Energy

The potential for Photovoltaic (PV) deployment in the Kyrgyz Republic is good due to the favorable solar irradiation. Currently, there are no large-scale ground-mounted solar PV plants. Based on solar data, rooftop PV is a practical option in a country like Kyrgyz Republic, that has a large share of individual houses. Almost any roof could host some PV modules: various reports suggest that many roofs of the Kyrgyz households are decent enough to host PV modules. Trees and nearby buildings are in general not that tall, making the risk of shadowing negligible. Even high-rise apartment blocks in Bishkek and other cities may have room for rooftop PV systems.

The present strategy seems largely based on the assumption that, except HPPs, RES like Solar and Wind can only play a minor role in the Kyrgyz power system. Levelized cost of electricity (LCOE) for large-scale PV is already lower than the LCOE for fossil fueled power generation in most countries, testifying that PV is going to become a pillar in the implementation of a more sustainable energy system.²⁰

1.1.2.2 Legal frames for the Energy Sector

The legislation of the Kyrgyz Republic in the field of fuel and energy complex is based on the following fundamental laws:

- Law “On Energy” (October 30, 1996, No. 56);
- Law “On Electricity” (January 28, 1997, No. 8);
- Law “On Energy Saving” (July 7, 1998 No. 88);
- Law on Renewable Energy Sources (December 31, 2008 No. 283);
- Law on Energy Efficiency of Buildings (March 2013).

The Law of the Kyrgyz Republic “**On Energy**” was adopted on October 30, 1996. It defines the principles of organization and regulation of economic activities in the fuel and energy complex. The provisions of this Law apply to all enterprises of the fuel and energy complex regardless of their form of ownership. The objectives of this Law are to improve the economic efficiency and reliability of the fuel and energy complex, and to protect the interests of consumers and producers.

The Law of the Kyrgyz Republic “**On Electric Power**” was adopted on January 28, 1997. It is based on the provisions of the Law of the Kyrgyz Republic “On Energy”, and applies to all legal entities regardless of their form of ownership, as well as individuals who produce, transmit, distribute, sell and consume electric and thermal energy. The purpose of this Law is to ensure reliable, safe and uninterrupted supply of electricity, heat and improve the quality of services provided to all consumers, to create a competitive environment and form an energy market, encourage private sector development and attract investments. It

²⁰ Ministry of Energy, Asian Development Bank. 2022. Master Plan for Complex Development of the Energy Sector of the Kyrgyz Republic.
https://minenergo.gov.kg/media/uploads/2022/12/07/mp-kr-finalreport-rev5_v2_en_website_hQEeGIO.pdf

stipulates the necessity to include energy saving costs in the cost of electricity and heat. The law also established the rights and obligations of consumers and the schemes of their contractual relations with suppliers. An important aspect of the law was that it established not only administrative, but also criminal liability for theft of electricity and heat and other actions related to illegal use of electricity. However, this provision is still not widely used in practice

The **Law on Energy Saving** was adopted in 1998 to improve the efficiency of energy use in its generation, transmission and consumption. However, due to the fact that this legal act had an indirect rather than a direct purpose, it did not have a significant impact on improving the energy saving policy in the Republic. In addition, by-laws and instructions were not developed for its practical implementation, and there was no clear distribution of responsibility and motivation system for its implementation. The Energy Saving Fund proposed under the Law turned out to be an ineffective financial instrument, as specific mechanisms for budget support were not worked out with the Ministry of Finance. Therefore, on December 24, 2008, amendments were made to the Law "On Energy Saving". The new version of this law defines the procedure for development and state supervision of energy saving policy implementation; sources of financing; creation and use of various programs for accounting of production and consumption of energy resources, energy surveys and organization of state statistics in the field of energy saving. It is envisaged to establish an Energy Saving Fund, which will accumulate financial resources from various sources to stimulate the introduction of innovative energy saving technologies. At the same time, funding for commercial projects will be provided on a repayable basis. The law also introduces mechanisms to stimulate the development of energy saving through grants, accelerated depreciation rates, and the establishment of electricity prices to ensure a short payback period for capital investments.

The law provides for energy expertise on energy efficiency assessment, energy use efficiency expertise, organization of energy accounting and control, and safety of energy equipment. The expertise activities are aimed at identifying the efficiency of energy use in the organization of production activities of economic entities and their compliance with energy use standards.

There is still no state body in the structure of state administration unambiguously responsible for implementation of energy saving policy. Today, current energy saving activities at energy enterprises are regulated by internal orders. In accordance with them, each energy enterprise develops an annual plan of measures to save fuel and energy resources with monthly reporting on its implementation.

Law "On Renewable Energy Sources" was signed on 13.01.2009 by the President of the Kyrgyz Republic. This law establishes the legal, organizational, economic and financial foundations, mechanisms for regulating relations between the state, producers, suppliers and consumers of renewable energy sources, equipment for the production and installations for the use of renewable energy sources. The purpose of the law is the development and use of renewable energy sources, improvement of the energy structure, diversification of energy resources, improvement of the social status of the population, ensuring energy security, environmental protection and sustainable economic development. It should be noted that the law provides for fundamentally important

provisions for the development of renewable energy sources, in particular, exemption from customs duties on installations and equipment for the production of renewable energy sources, as well as the fact that tariffs for energy from renewable energy sources should ensure the payback of costs and reimbursement of investments within a period not exceeding 8 years. However, for the practical implementation of the law, it was necessary to develop by-laws and provide a mechanism for implementing specific steps, including a methodology for calculating tariffs for different producers of "green" electricity, taking into account profitability and environmental benefits.

The law provides for to establish surcharges to the tariff for electricity generated from renewable energy sources and small hydroelectric power plants for the payback period of projects using renewable energy sources. This surcharge will be implemented by multiplying the maximum of the current tariffs for electricity by the corresponding coefficient approved for each type of renewable energy source:

- for installations using water energy, the coefficient is 2.1;
- for installations using solar energy, the coefficient is 6.0;
- for installations using biomass energy, the coefficient is 2.75;
- for installations using wind energy, the coefficient is 2.5;
- for installations using earth energy, the coefficient is 3.35

The Law of the Kyrgyz Republic "**On Energy Efficiency of Buildings**" was adopted on July 26, 2011. The purpose of the law is to improve legislation in the field of energy conservation. The law establishes the legal basis for assessing energy efficiency and reducing energy consumption of buildings, energy-efficient construction, and regulates legal and organizational relations between building owners, regardless of ownership, certified specialists and government executive bodies. The law applies to new and existing buildings during their design, commissioning, after energy renovation, as well as when leasing or selling, through the establishment of mandatory energy certification of buildings and their labeling. The law also regulates activities related to the efficient use of energy resources in buildings, during the operation of boilers, heating systems and hot water supply.

1.1.2.3 National Policy Provisions for the Energy Sector

Among the main strategic document of the national development policy the following could be mentioned:

In 2018, the Kyrgyz government adopted its long-term **National Development Strategy for 2018-2040** (NDS)²¹. Among others, it sets several important objectives to the energy sector which clearly demonstrate the priority development pathways:

- Increasing power generating capacity, which refers to hydropower facilities.
- Financial recovery of the energy sector, which indicates the need to revise tariffs for energy use. As well as strict measures to reduce technical losses, which should be reduced by 11.6% by 2023
- Updating and modernizing energy transmitting and distributing equipment and

²¹ Endorsed by Decree of the President of the Kyrgyz Republic #221 as of October 31, 2018.

power grids, notes that upgrading and modernizing energy equipment, power lines, and hot water supply networks is one of the tasks for the energy sector. For these purposes, conditions will be created for the annual renewal of equipment and networks by at least 1.5%, taking into account the disposal of funds.

- Modernization and implementation of energy-efficient technologies will be carried out by large-scale implementation of energy efficiency and energy saving programs. As a first step, radical measures will be taken to technologically update all municipal enterprises responsible for maintaining basic infrastructure - lighting, waste, water supply and sanitation. These reforms will begin with two main cities of the country - Bishkek and Osh.
- Expanding the contribution of renewable energy sources indicates that local energy supply systems, the use of solar, wind and water energy, and the subsoils will contribute to greater energy independence. The implementation of the planned projects will increase the capacity of the energy system of Kyrgyzstan by at least 10% within 5 years, or by 385 MW.
- Gasification of the country notes that on the basis of the program by 2023 no less than 60 settlements will be gasified with coverage of more than 90 thousand households including 20 suburbs of the capital city of Bishkek.

In 2021, the **National Development Program till 2026**²² has been adopted to implement provisions of the NDS's first phase. Among the main provisions related to the Energy sector are the following:

- construction of the big hydroelectric power facilities of Kambaratinskaya HPP-1, Verkhne-Narynsky cascade of HPPs, Suusamyr Kokomerensky cascade of HPPs, Kazarmansky cascade of HPPs, etc.
- construction of small HPPs;
- implementation of the "CASA-1000" project to expand transboundary electrical grid to export electricity;
- implementation of the energy efficiency project for buildings;
- development of alternative energy sources (solar and wind energy).
- modernization of the street lightning to transit to energy saving technologies and automation of the street lighting management.

In June 2024, the **National Energy Program** (NEP) of the Kyrgyz Republic for the period up to 2035 was reviewed and approved at a meeting of the Zhogorku Kenesh (Parliament) of the Kyrgyz Republic. The program defined the main directions for the development of the energy sector. It covers all the aspects of production, transmission and distribution of energy, participation in regional electricity markets, fuel production, import in case of shortage, export in case of excess. The trends towards the introduction of innovative technologies and full digitalization of the energy system, adaptation to climate change and compliance with international obligations, energy efficiency and energy saving, economically sound tariff policy, implementation of anti-corruption and anti-crisis measures in management and control were also reflected in the program.

The program's priorities are:

²² Endorsed by Decree of the President of the Kyrgyz Republic #435 as of October 12, 2021.

- Sustainable development of the fuel and energy complex and renewable energy sources.
- Managing demand for energy resources in the real sector and the population.
- International cooperation, strengthening foreign energy policy.
- Energy efficiency, energy conservation, ecology and adaptation to climate change.
- Financial recovery and economically sound tariff policy.
- Improving institutional reforms, ensuring innovative development and personnel training.

Among the main results of the program implementation should be the following:

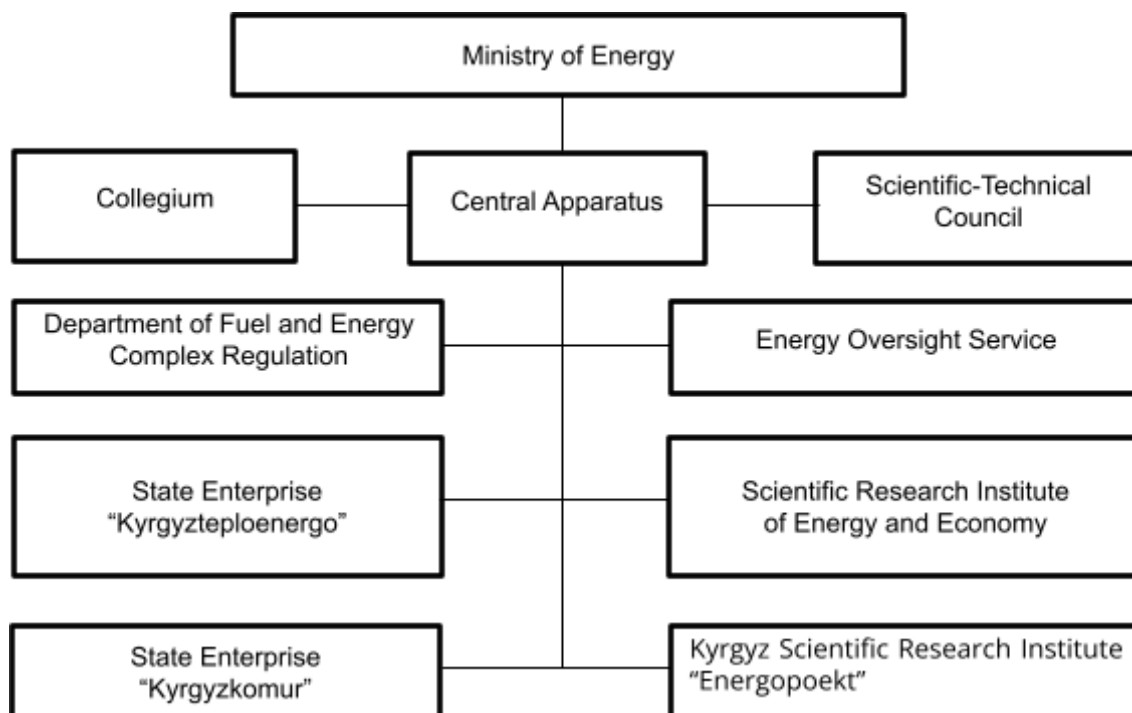
- In the electric power industry: rehabilitation and reconstruction of a number of hydroelectric power plants, commissioning of new units, commissioning of small hydroelectric power plants, as well as the construction of Kambaratinskaya HPP-1.
- Construction of solar and wind power plants (SPP and WPP) - SPP with a total capacity of 3650 MW with a generation of 6.6 billion kWh per year, and 2 WPPs with a total capacity of 400 MW with 560 million kWh per year.
- Expansion of electric networks: with the expectation of growth in distributed capacities associated with the start of energy exports to Afghanistan and Pakistan.
- Development of heat supply to populated areas,
- Introduction of power plants: using renewable energy sources, commissioning of new hydroelectric power plants, SPP and WPP
- In the coal industry: modernization and technical re-equipment of enterprises, development of new deposits, solution of other industry tasks, with a final increase in coal production to 2.5 million tons by 2027, and a projected increase in production of over 5.5 million tons by 2035,
- In the oil and gas industry: Increasing the production of oil and gas at all fields, commissioning new fields, increasing the volume of geological and technical activities at existing wells and annual drilling of new wells, obtaining licenses for geological exploration and accelerating geological exploration at explored fields,
- In gas supply: development of existing gas fields, loans to the population at reduced interest rates for the connection to gas grids, gasification of populated areas, new buildings, residential areas, analysis of the feasibility of converting coal-fired boiler houses to gas.

It states that assuring accelerated rates of production of electric and thermal energy, coal, oil and natural gas will help bring the country out of the energy crisis by 2026, and the energy sector out of the emergency situation. Further measures will be designed to consolidate the effect and to strengthen industry to meet the challenges by 2035.

The above review showed that the Kyrgyz Republic is well provided with a legislative and regulatory framework for the successful development of the fuel and energy complex. However, the implementation of adopted laws, strategies, programs and other government documents is insufficient and leaves much to be desired, in addition, some laws and programs require revision, which the Government of the Republic is gradually trying to undertake.

1.1.2.4. Institutional Arrangements and Governance of the Energy

Sector



Beside the Ministry there are several other important stakeholders in the Energy Sector, including:

- Open Joint Stock Company (OJSC) "Electrical Stations"
- OJSC "Bishkekteploset"
- OJSC "Chakan HPP" (9 small HPP)
- OJSC "National Electrical Grids" and a Training Centre
- OJSC "Kyrgyz Energy Calculation Centre"

1.1.3 The Transport Subsector analysis

Kyrgyzstan is a land-locked country in Central Asia with 4,5 thousand km borderline with China, Kazakhstan, Tajikistan and Uzbekistan and with 199,9 thousand km² of the land area. Country lays on the western and central parcels of the Tian-Shan Mountains and this influences the connectivity within and with the outside of the country as follow:

- The Northern Kyrgyzstan within Talas and Chui Valleys is largely corresponding to Talas and Chui Provinces with well accessible six road and one railway transborder connections with Kazakhstan;
- Southern Kyrgyzstan with high mountainous frames and lower hilly mountain footings and flat rimlands of the Ferghana Valley connected with Uzbekistan and Tajikistan through a multitude of roads and two railway connections in the Soviet past. The border delimitation and its closure in many places forced Kyrgyzstan to build internal roads. The South of the country connects with the North of the country by Bishkek-Osh highway. The South is also connected with Tajikistan and China;

- Inner Tian-Shan is a high mountainous part of the country combining high mountain ranges with high mountain depressions and wide valleys. It has one road connection to Kazakhstan via Issyk-Kul Province and two main roads Bishkek-Osh and Bishkek-Naryn -Torugart, those connecting North and South of the country and Kyrgyzstan with China respectively. There is a new construction is taking place of the alternative North-South highway.

While Kyrgyzstan positions itself as a potential transit hub for goods and visitors between Chinese and Western markets, major infrastructure improvements would be necessary. The poor quality of Kyrgyzstan’s infrastructure and the country’s mountainous geography impede trade flows and access to international markets. The country’s rail network is underdeveloped, and consequently road transport accounts for the bulk of passenger and freight traffic.²³

The road network is one of the largest assets of Kyrgyzstan, the value of which can be measured by the costs of its construction and reconstructions, and through the social and economic benefits that it provides. The quality of life of the population and entrepreneurship is directly dependent on the transport and of the quality and durability of the roads and their further development. In Kyrgyzstan, the 96% of freight and 98% of passenger traffic is carried by road. Hence, the road transport is a major component of the transport system of the country. Its resilience and efficiency are a prerequisite for growth of the economy, stable trade turnover and local development of the high mountainous and remote regions of the country.

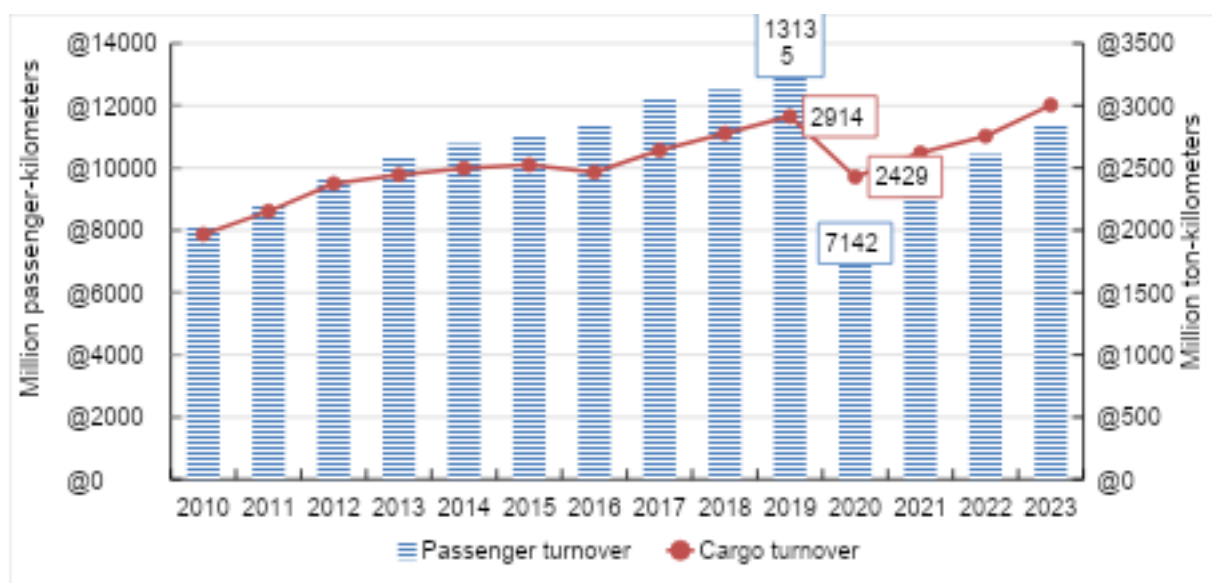


Figure 7. Dynamic of the passenger and cargo turnover by all types of transport in 2010-2023

According to the NSC data the passenger and cargo turnover delivered by all types of transport is growing and in 2023 it makes up repeatedly 11,350.7 million passenger-kilometers and 3,004.3 million ton-kilometers. The influence of COVID-19 in Kyrgyzstan resulted in the decrease of both indicators by 46% for passenger transport services and by 17% for the cargo transportation.

²³ UN ESCAP. 2019. Study Report on Resilience of Road and Rail Infrastructure in Kyrgyzstan.

The transport statistic also provides information about the performance of the sector in terms of the transport services by type of transport. The major part of passengers' transportation in Kyrgyzstan is provided by buses (see fig 8).

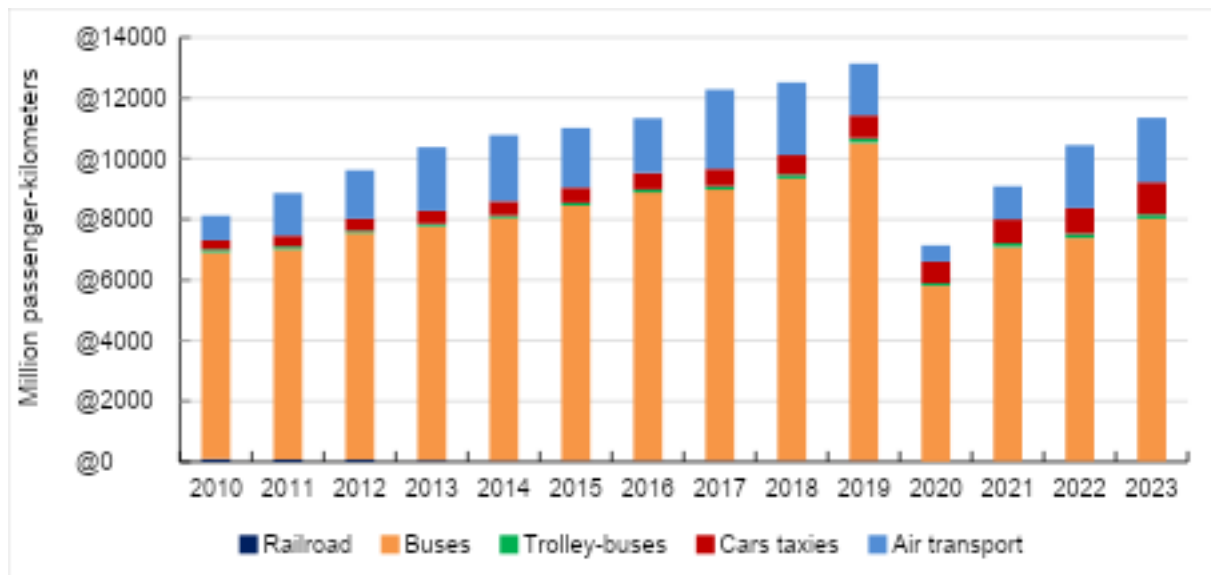


Figure 8. Dynamic of passengers' transportation by transport type.

The cargo transportation and turnover is dominated by the motor vehicles (trucks) and the railway transport. Thus, in 2024 about 44,3 mln. tons were delivered by trucks, 9,2 mln. t - by railway, 442,8 thousand t by pipeline transport and 44,8 thousand t - by air.²⁴

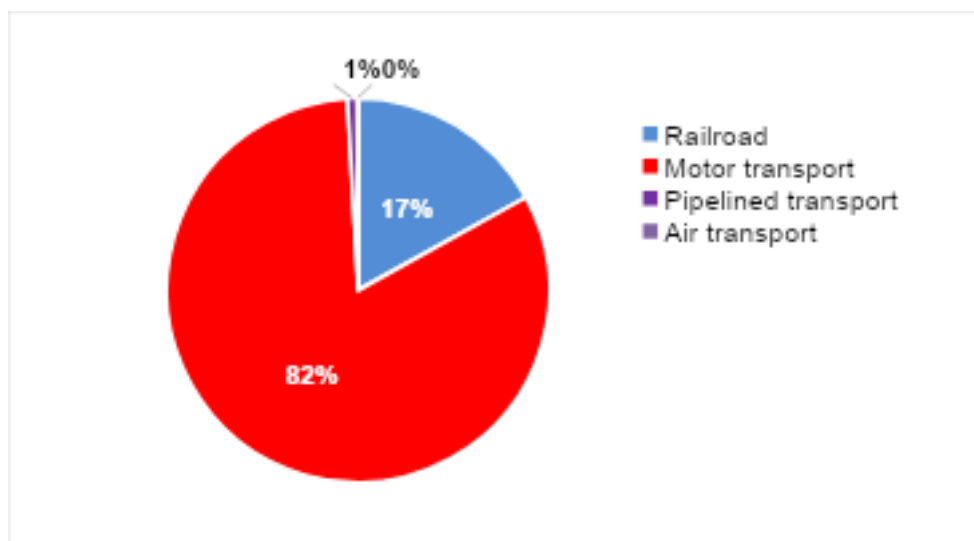


Figure 9. The shares of the transport types in delivering cargo in 2024

In terms of the revenues for passengers' transportation cars, air transport and buses are the most benefiting types of transport (see fig. 10).

²⁴ NSC site- <https://stat.gov.kg/ru/statistics/transport-i-svyaz/>

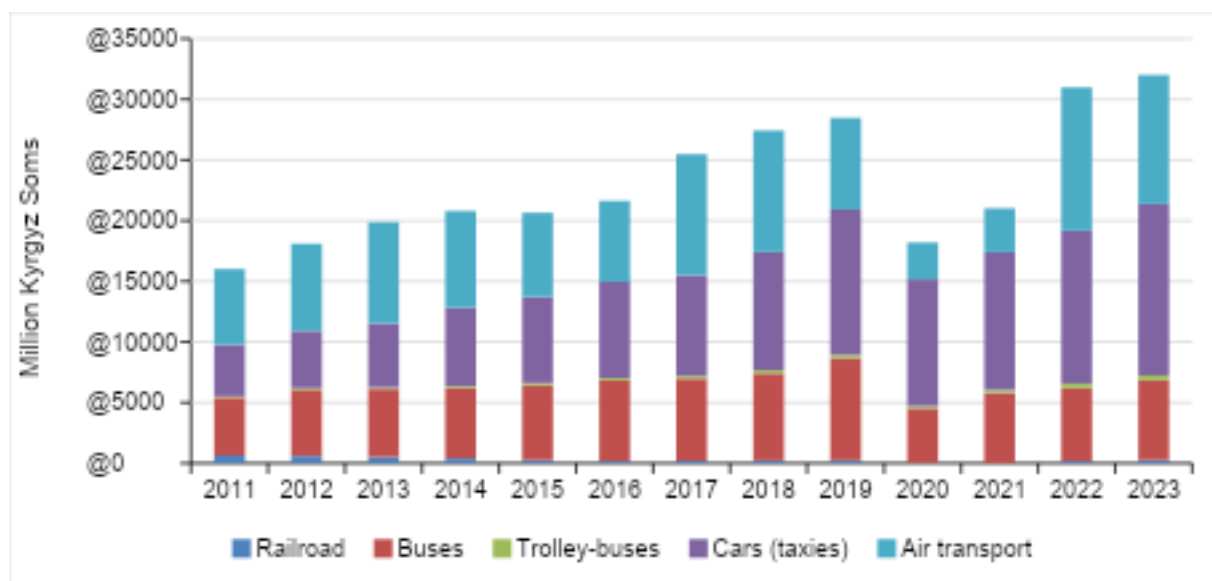


Figure 10. Revenues of passengers' transportation by types of transport in the period of 2011-2023

With cargo transportation the revenues of freight are distribute between motor vehicles (trucks), railway and air transportation (fig. 11).

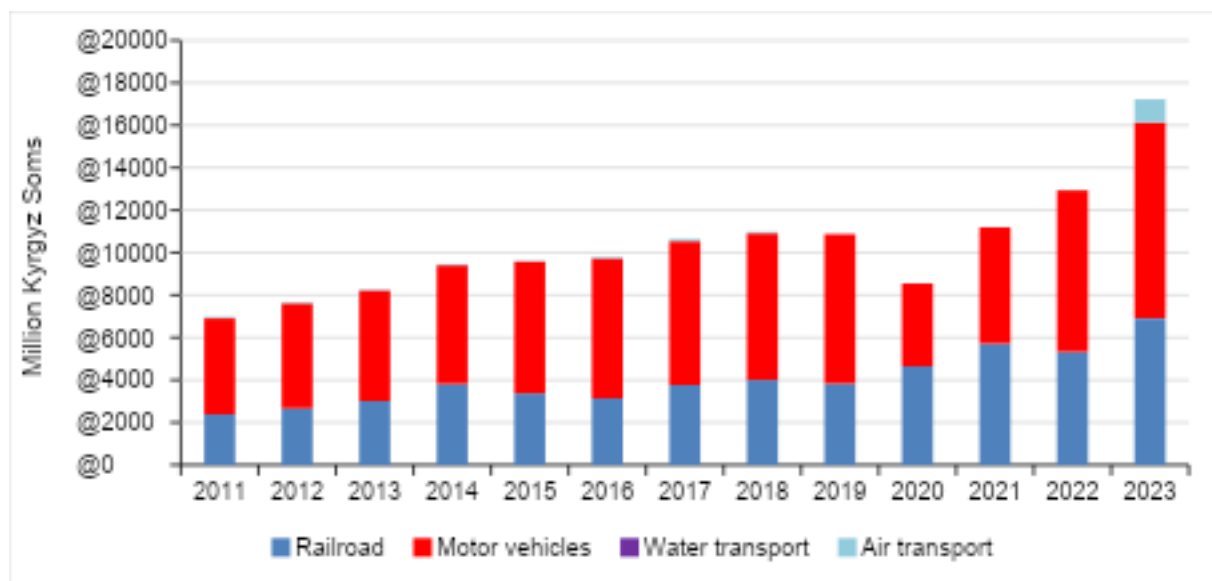


Figure 11. Revenues of freight by all types of transport in the period 2011-2023

The Government of Kyrgyzstan, despite its limited financial abilities, keeps the development of the transport system in the priority.

The total length of public roads maintained by the Ministry of Transport and Communication (MTC) of Kyrgyzstan is about 18,585 km. Roads of cities, other settlements, agricultural, industrial and of the other use are 15190 km. Highways of general use according to their economic and administrative purpose are subdivided into international roads with a total length of 4100 km, national - 5335 km, and local - 9149 km. The length of public roads with hard surface is 7580 km, including cement-concrete - 10 km,

asphalt-concrete - 5698 km and black gravel - 1871 km. Gravel roads - 9388 km. There are still 1,617 km of unpaved roads.²⁵

According to the MTC, today, the vehicle fleet of the Kyrgyz Republic consists of 1,361,114 vehicles, including 1,083,096 passenger cars, 228,843 trucks and more than 39,832 buses and minibuses. According to the data of the National Statistic Committee, which refers to the State Agency for Registration of Vehicles and Drivers under the Cabinet of Ministers of the Kyrgyz Republic, in the period 2011-2024, the growth in number of the individual vehicles has made up 245% (see fig. 7).

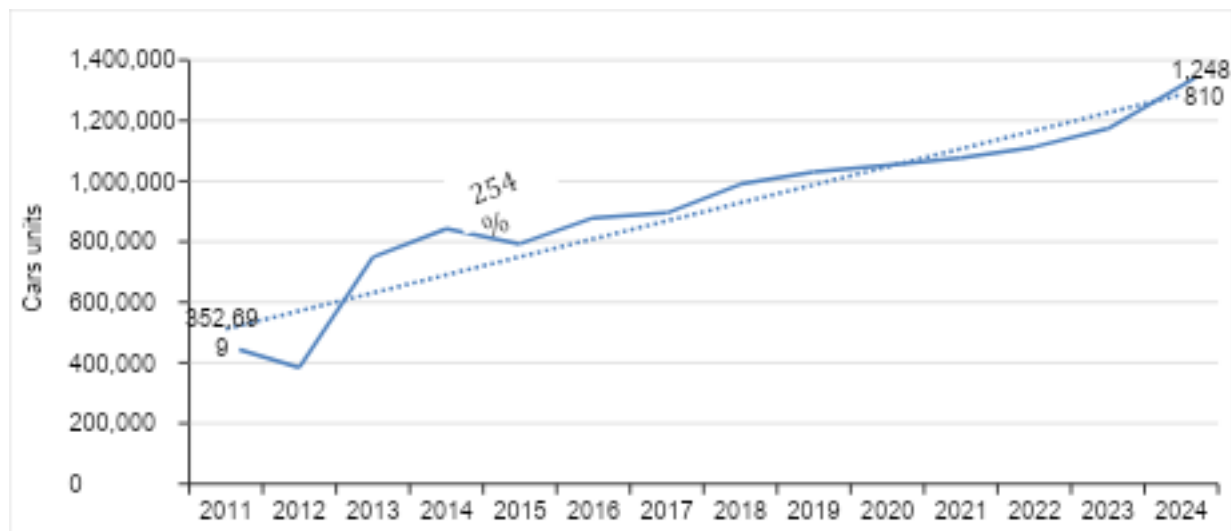


Figure 12. Number of registered cars of individual owners²⁶

The automobile industry involves 254 legal entities providing passenger transportation services and 138 legal entities providing cargo transportation services, as well as more than 13,000 individuals providing passenger transportation services and 7,000 individuals providing cargo transportation services. In addition, to 60 enterprises of the structural divisions of the MTC providing the automobile transport process (bus stations, auto stations, etc.).²⁷ There are about 32,000 employees working in the latter enterprises.²⁸

Due to mountain terrain, the Kyrgyz railways are only 424.6 km long. The network is represented by two geographically separated sections. The northern section - 323.4 km Balykchy - Turksib (Kazakhstan), and the southern section - 101.2 km, providing access from Kyrgyzstan to the railway network of neighboring countries - Kazakhstan and Uzbekistan.²⁹

Train traffic on the Kyrgyz Railways, beside six new diesel locomotives, is carried out by locomotives built 40 years ago. The standard service life of most diesel locomotives - the main driving force of the Kyrgyz Railways - was expired in 1993-2001, but they are still in operation. The situation is similar with shunting diesel locomotives. Depreciation of rolling

²⁵ NSC site- <https://stat.gov.kg/ru/statistics/transport-i-svyaz/>

²⁶ Based on NSC site - <https://stat.gov.kg/ru/statistics/transport-i-svyaz/>

²⁷ Ministry of Transport and Communication site: <https://mtd.gov.kg/transportnaya-sistema/>

²⁸ Source: <https://traceca-org.org/ru/strany/kyrgyzstan/avtomobilnyi-transport/>

²⁹ Main Directions of the Kyrgyz Republic Railway Transport Development for 2022-2026 approved by Resolution of the Cabinet of Ministers of the Kyrgyz Republic # 258 as of May 22, 2022.

stock: diesel locomotives - 88%, freight carriages - 60%, passenger carriages - 63%, railway track infrastructure - 35%.³⁰

The Kyrgyz Republic has air traffic agreements with 31 countries of the world, of which regular flights are carried out to cities of countries: Russia, Kazakhstan, Uzbekistan, Tajikistan, China, Turkey, Mongolia, India, UAE, Kuwait. To date, 31 regular international air lines and 4 domestic air lines operate in the Kyrgyz Republic.

There are four international airports in Kyrgyzstan: Manas International Airport, Osh Airport, Karakol International Airport and Issyk-Kul International Airport, the last one being operational only in summer time. At Manas International Airport 16 airlines operate and serve flights to and from 22 destinations. In Osh Airport 9 airlines provide transport services to and from 13 destinations.³¹

The largest airline in the country with scheduled passenger traffic and in terms of fleet size is Kyrgyzstan Airlines. It flies to 10 domestic and international airports. It currently has a fleet of 15 aircrafts. The main airlines for civil passenger traffic in Kyrgyzstan are give in table 3 below.

Table 3. The main national airlines of Kyrgyzstan³²

IATA	Name	Callsign	Fleet size	Destinations
R8	Kyrgyzstan Airlines	Kyrgyz	15	10
YK	Avia Traffic	Atomic	6	16
TEZ	TezJet Airlines	Tezjet	3	6
QH	Air Kyrgyzstan	Altyn Avia	2	3
ZM	Air Manas	Air Manas	1	2

The main bulk of international flights outside the Kyrgyz Republic is carried out by foreign airlines. The airports of domestic airlines remain unprofitable for a long time, due to the fact that flights to these airports are not operated or the number of flights performed is insufficient. The main reason for this situation is the fact that many residents of the regions are not able to buy air tickets for domestic flights, and prefer cheaper and more affordable road transport. Another reason is the absence in the air fleet of airlines of the Kyrgyz Republic of planes with a capacity of 50-70 seats for flights on domestic airlines.

Water transport exists only on Issyk Kul Lake, and has drastically shrunk since recent years. Kyrgyzstan's only port is Balykchy, a town on Issyk Kul Lake. None of Kyrgyzstan's rivers are navigable, and the country has no canals.

1.1.3.1 Legal frames for the Transport Sector

The existing system of the regulatory framework governing activities in the road sector consists of the following main regulatory legal acts:

- Law of the Kyrgyz Republic "On automobile roads".

³⁰ The Cabinet of Ministers of the Kyrgyz Republic. 2022. Main Directions of the Kyrgyz Republic Railway Transport Development for 2022-2026.

³¹ World Data Info. Infrastructure and transportation in Kyrgyzstan. <https://www.worlddata.info/asia/kyrgyzstan/transport.php>

³² Ibid.

- Law of the Kyrgyz Republic "On the road fund".
- Law of the Kyrgyz Republic "On railway transport" # 121 dated July 18, 2016.
- The Air Code of the Kyrgyz Republic # 218 dated August 6, 2015.
- Draft Law of the Kyrgyz Republic "On navy transport".

The Law of the Kyrgyz Republic "**On automobile roads**" defines the economic, legal bases and principles of management of the republic's highways by organizations and enterprises, affects and regulates almost the entire range of issues related to the road industry. However, not all provisions of this law regulating certain areas of activity in the road industry are implemented due to the absence of a number of by-laws.

The Law of the Kyrgyz Republic "**On the road fund**" defines the legal bases and sources of formation of the Road Fund of the Kyrgyz Republic, its purpose and use. In practice, many provisions of this law are not implemented. In addition, the volumes of funds from the sources of the Road Fund are low and are subject to revision.

Law of the Kyrgyz Republic "**On railway transport**" regulates public relations between carriers, government agencies, passengers, consignors (shippers), consignees (recipients), individuals and legal entities in the transportation of passengers, baggage, freight, cargo baggage and mail by rail. It states that railway transport is an integral part of the unified transport system of the Kyrgyz Republic. Rail transport consists of public rail transport, non-public rail transport, and technological rail transport.

The Air Code of the Kyrgyz Republic establishes the legal basis for the use of the airspace of the Kyrgyz Republic and activities in the field of civil aviation in order to meet the needs of the population of the Kyrgyz Republic for safe air transportation. It states that the purpose of state regulation and supervision of activities in the field of civil aviation and the use of airspace of the Kyrgyz Republic is to ensure safe air transportation and aviation work. The provisions of this Code shall apply to all activities in the field of civil aviation carried out within the territory and airspace of the Kyrgyz Republic: 1) aircraft included in the State Register of Civil Aircraft of the Kyrgyz Republic; and 2) foreign aircraft whose activities are provided for by international treaties that have entered into force in accordance with the procedure established by law, to which the Kyrgyz Republic is a party.

Draft Law of the Kyrgyz Republic "**On navy transport**" regulates public relations arising between state bodies, individuals and legal entities in the field of water transport during navigation, transportation of passengers, baggage and cargo, operation of ships, including on water bodies not related to waterways, and also defines their rights, duties and responsibilities.

1.1.3.2 National transport policy provisions

The National Development Strategy for 2018-2040 and the **National Development Program until 2026** define that transport and logistics integration and solving the problem of the country's transport isolation are among the most important priorities. Both provide for the following:

- The state will direct its efforts to the rehabilitation and preservation of highways, the creation of liberal, safe international transport corridors, including the use of

- new technologies in the design and construction of roads.
- A transit railway "China-Kyrgyzstan-Uzbekistan" and a railway line connecting the north and south of the country will be built.
 - Transport in the Kyrgyz Republic will be gradually converted to electric drive: electric cars, electric trucks, high-speed electric trains, trolleybuses and electric trains. In the future, a network of high-speed electric battery charging stations will be created and the state motor transport fleet will be gradually converted to electric vehicles;
 - The air traffic control and airspace service systems of the Kyrgyz Republic will be modernized, radio equipment, radar, navigation and communication equipment will be updated during reconstruction, development or construction at international airports and domestic airports.
 - It is planned to revise the policy for the development of the transport sector, the introduction of cost-effective solutions, which in turn will reduce the level of emissions of pollutants and greenhouse gases.
 - Ecologically sustainable public transport using electric traction and gas motor fuel will be developed in cities. Large and medium-capacity public transport should serve at least 80 percent of urban passenger traffic.
 - The main tool for implementing projects in this area will be public-private partnership (PPP).

Among the main sectoral policy documents are the following:

- **Main Direction of the Kyrgyz Republic Road Sector Development 2023-2030.**³³ It sets the goal to promote the economic development of the country by providing the population with access to markets for goods, labor and social services and to achieve sustainable functioning of the road sector through improving the road management system.
In order to achieve the goal and focus on maintaining international transport corridors in good structural condition and improving international corridors passing through the territory of our republic, as well as priority highways of national and local importance, the following priorities are set:
 - 1) The further effective functioning of the transformed road sector management system;
 - 2) Transport and logistics integration and solving the problem of the country's transport isolation;
 - 3) Development and ensuring the safety of transport infrastructure to ensure comfortable, safe and continuous movement of passengers and goods;
 - 4) Deployment of informational intelligent transport systems;
 - 5) Improving road safety.
- Resolution of the Cabinet of Ministries **"On the Measures of the Road Sector System Transformation"**.³⁴ The document provides for the structural changes in the systems of the Ministry of Transport and Communication aimed to optimize the

³³ Endorsed by Resolution of the Cabinet of Ministers of the Kyrgyz Republic # 71 dated February 10, 2023.

³⁴ # 346 dated December 24, 2021.

structure and sets up a new management organigram (see fig. 8).

- **Main Directions of the Kyrgyz Republic Railway Transport Development in 2022-2026.**³⁵ It presents the conceptual directions for the development of railway transport including the following:

1. Increasing the export and transit potential of the Kyrgyz Republic and integration into international transport systems.
2. Reconstruction and renewal of fixed assets of railway transport, electrification of the main sections of railways.
3. Strengthening the system of ensuring the safety of train traffic on the railway.
4. Improving the quality and availability of railway transport services.
5. Increasing the human resources potential of the railway transport of the Kyrgyz Republic.

6. Expansion of public-private partnership in the implementation of projects for the renewal and modernization of railway transport funds of the Kyrgyz Republic.

It also sets the goal of the sector to create conditions for ensuring economic growth and social well-being in the Kyrgyz Republic by effectively and fully meeting the needs of the economy, business entities and the population of the Kyrgyz Republic for safe railway transportation. Among the sectoral priorities the following are mentioned:

- improving the quality of life of the population and the competitiveness of the economy of Kyrgyzstan;
 - creation of an internal network of railway transportation and development of transit potential of the republic;
 - renovation and modernization of railway infrastructure;
 - strengthening the human and scientific potential of the Kyrgyz Railway.
- The **Concept of the Kyrgyz Republic Civil Aviation Development for 2021-2025** was developed by the Ministry of Transport and Communication. It stipulates that it is necessary to strengthen state support for the development of regional airports and national air companies in the acquisition of aircraft, with the provision of benefits to the Kyrgyz Republic performing domestic flights. Despite the current conditions of airport infrastructure, the Kyrgyz Republic has a favorable geographical location. In addition, there is huge potential for the development of transit air transportation. The goal is to achieve an increase in the level of flight safety, as well as to double the volume of air transportation, both on domestic and international routes.

The Concept defines the following priorities for the sectoral development:

- Improving the level of flight safety of domestic air carriers
- Improving the system of state management of the civil aviation authority
- Need to update the aircraft fleet.
- Creating a modern aircraft maintenance center
- Improving the system of personnel provision for civil aviation
- Improving the air traffic services system

³⁵ # 258 dated May 20, 2022.

- o Development of the infrastructure of airports in the Kyrgyz Republic
- o Development of ultra-light and light aviation in the Kyrgyz Republic
- o Expanding the geography of flights

No strategies to develop water transport in Kyrgyzstan are available so far.

1.1.3.3. Institutional arrangements and Governance of the Transport subsector

The about mentioned Resolution of the Cabinet of Ministries “On the Measures of the Road Sector System Transformation” defined the following institutional arrangements for the Transport sector of Kyrgyz national economy:

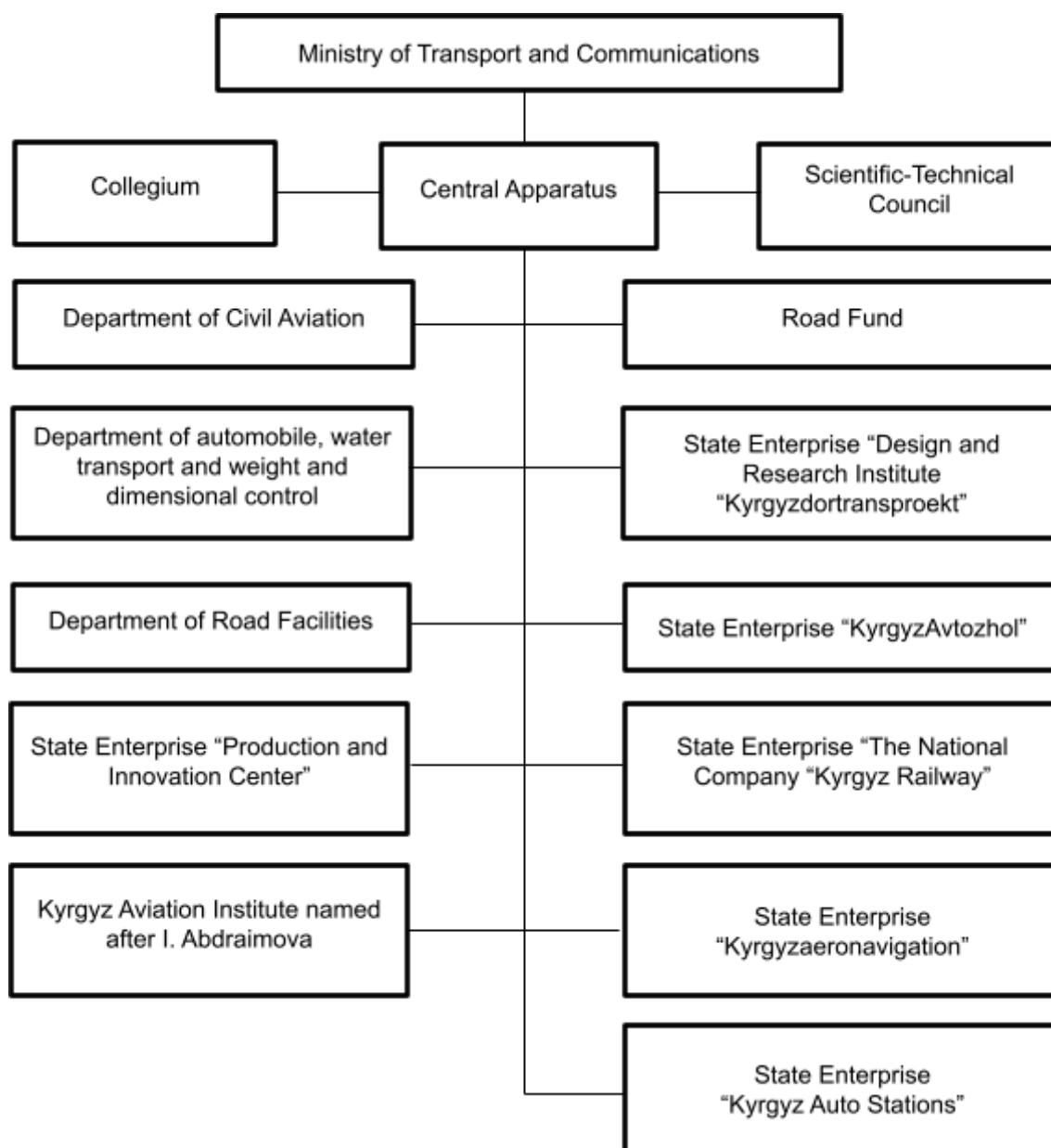


Figure 13. Institutional Arrangement of the transport subsector of Kyrgyzstan

1.2 GHG Emissions in the Energy sector and Transport subsector

1.2.1 Energy Sector and Transport GHG Emissions

The Energy sector GHG emissions if considered from the base year 1990 clearly reflects the historic pathway of Kyrgyzstan after the collapse of the USSR, when the economic, political and social integration links suddenly vanish and the independent Kyrgyzstan had to recover and return to the sustainable development track.

The dynamic of the Energy sector GHG emissions reflects that sharp decline in energy production and consumption that occurred after the national economy recession in the period of 1990-2000, then an increasing return to the stable economic development period of 2001-2018, and then decreasing trend related to COVID-19 economic impact (2019-2020).

In terms of the total GHG emissions trends, in 2020 compared to 1990, GHG emissions of the Energy sector decreased from by 78,5 % and made up 4,421 kt CO₂e. In the period of 2001-2018, GHG emissions of the sector increased by 147% up to 10,923 kt CO₂e and after the COVID-19 period, reduced in 2020 by up to 7,648 kt CO₂e compared to 2018.³⁶

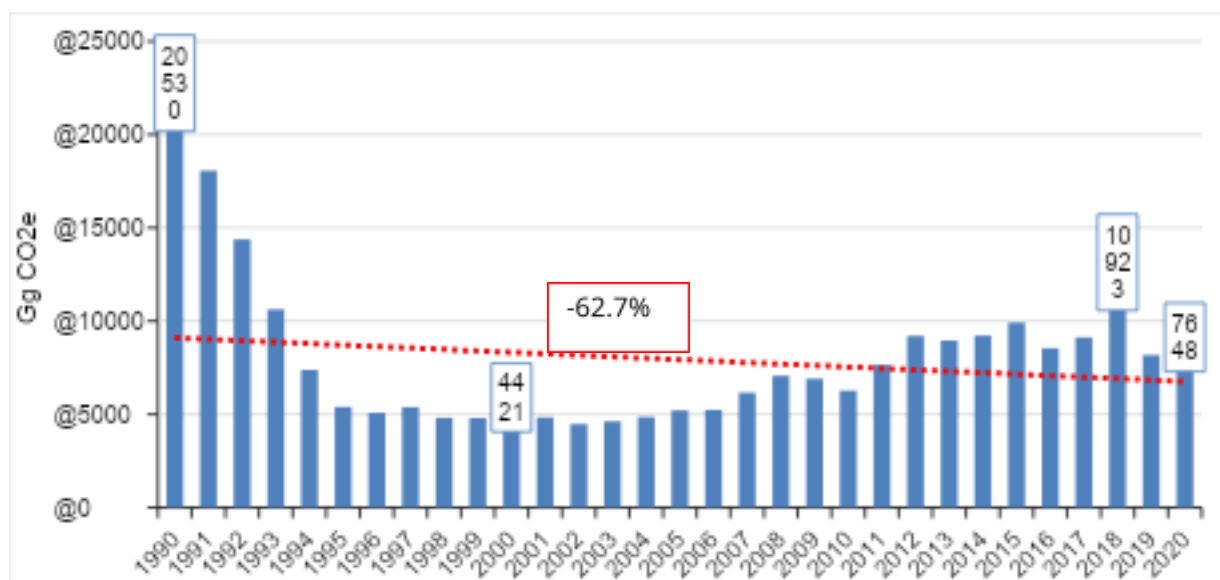


Figure 14. The general trend in the Energy Sector GHG emissions trend

The emissions of all three direct greenhouse gases occur in the sector, including carbon dioxide (CO₂), methane (CH₄) and Nitrous Oxide (N₂O).

In 2020, Energy sector GHG emissions by gases were the following: 7,155.292 kt of CO₂; 18.478 kt of CH₄ and 0.338 kt of N₂O. These volumes mark a considerable decrease since 1990. Thus, carbon dioxide (CO₂) emissions have reduced by 63.2%, emissions of methane

³⁶ Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic. 2024. National Inventory Report on GHG emission and Removals for 1990-2020.

(CH₄) have been reduced by 55.3% and nitrous oxide (N₂O) emissions - by 54.7%.³⁷

The Energy sector has been always is the main emitting sector in Kyrgyzstan (see fig.7).

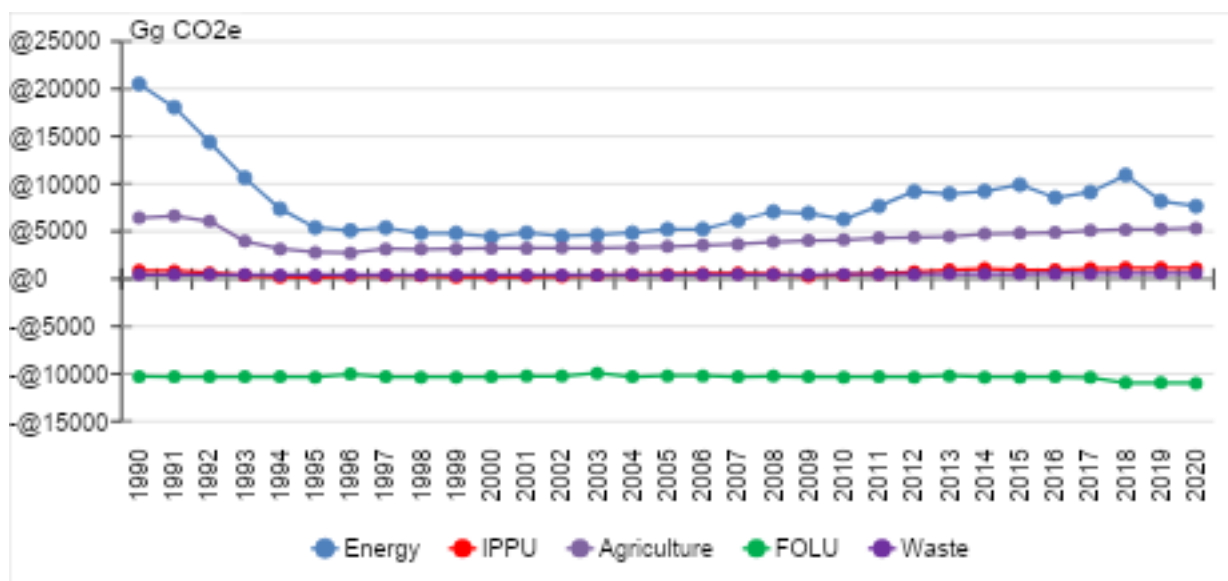


Figure 15. Dynamic of the GHG emissions and removals in the period on 1990-2020 by categories³⁸

However, the total volume of the Energy sector emissions since 1990 reduced by 62,8%, as well as its share in the overall national total emissions from 72 to 52 %³⁹. (See fig.8 below without FOLU).

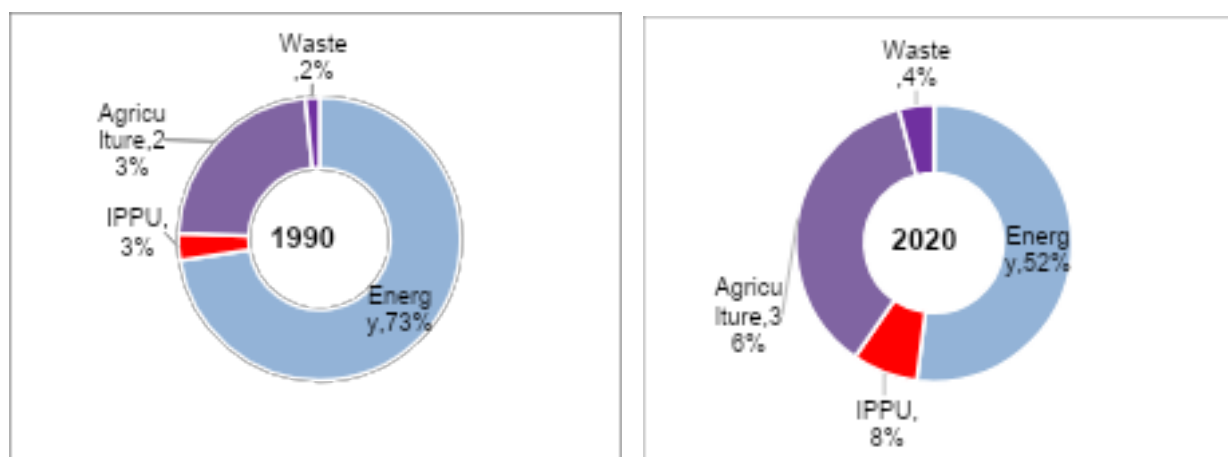


Figure 16. Total national GHG emissions by categories shares.⁴⁰

The dynamic of the Energy sector emissions by categories demonstrates generally decreasing trend compared to 1990 except of the transport category (see fig.15).

³⁷ Ibid.

³⁸ Based on Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic. (2024) National Inventory Report on GHG emission and Removals for 1990-2020.

³⁹ Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic. (2024) National Inventory Report on GHG emission and Removals for 1990-2020.

⁴⁰ Based Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic. (2024) National Inventory Report on GHG emission and Removals for 1990-2020.

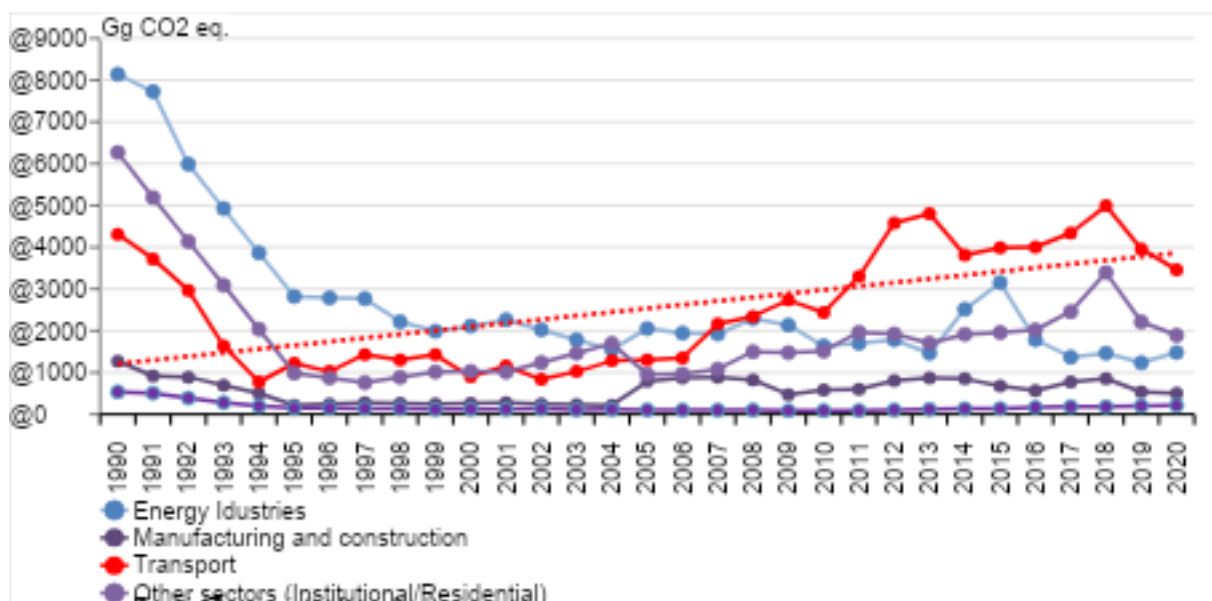
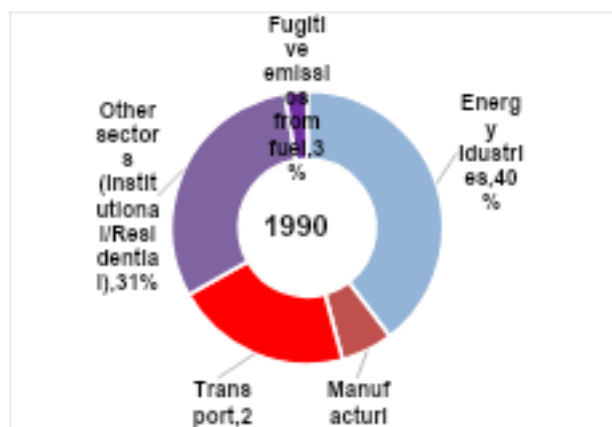


Figure 17. The Energy Sector GHG Emissions by source in 1990-2020.

Thus, compared to 1990 in 2020, emissions in the Energy Industries category decreased by 81.8%, emissions in the “Other” sectors (Institutional/Residential) by 69.8%, in the Manufacturing and Construction by 59.9%, in the Fugitive emissions from fuel by 60%, where as in transport sector by 19.8%.

The emission categories contribution to the total emissions of the Energy sector in 2020 changed since 1990, the Transport category contribution increased by 25% points, evidently at the expense of the Energy Industry decrease by 21% points and the Other Sectors category decrease by 5% points (see fig. 16).



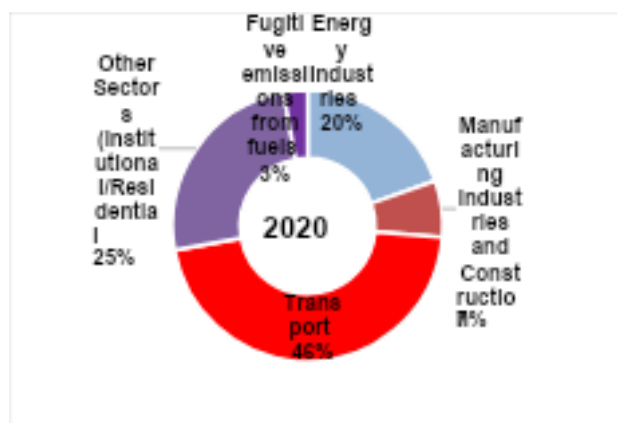


Figure 18. The Energy Sector GHG Emissions by source in 1990 and in 2020.

The Transport subsector being among the main key categories with 3460,716 kt CO₂e of GHG emissions in 2020. The major contributor is the category of Road Transportation.

1.2.2 Data collection and data sources for the Energy sector NGHGI

Until NC 4 and BUR 1, NGHGI has been conducted once in five years, and only after the Paris Agreement ratification, it will be conducted once in two years. This fact completely changes the situation with the process of data collection and data sets management for NGHGI.

Data collection for NGHGI has been always organized by means of official letters-requests for data and information signed by the UNFCCC focal point. According to the national legislation the responses shall return in two weeks period with the maximum delay of 30 days. Evidently, the process of collection though formalized not always resulted in the sufficient data acquisition. To a great extent formal data collection was always complemented by experts' exploration of various technical publications and reports produced by multiple international development partners.

Since all the rounds of NGHGI began with the Inception Workshops an Inter Sectoral Working Group (ISWG), including nominated sectoral specialists from all the line ministries was established and formalized by a service note of the UNFCCC. And those ISWG members also assured data collection from their organization. Further, information is in the table 4

Table 4. Data sources relevant for NGHGI

#	Institutions	Type of Data
1.	National Statistic Committee	Fuel and Energy Balance Consumption of fuel by types (solid, liquid, gaseous) and by sectors Number of vehicles Dynamic tables of passengers and cargo turnover

#	Institutions	Type of Data
2.	Ministry of Energy and its subordinate organizations	Fuel produced by types Electrical energy produced and supplied Amount of thermal energy produced and supplied Import of electrical power and fuel by type Export of electrical power and fuel by type Energy losses during transmission and distribution
3.	Ministry of Transport and Communications and its subordinate organizations	Amount of fuel consumed as per transport types International and domestic flights Number of passengers and amount of cargo transported
4.	State Archive	All types of data to fill in long time series data gaps
5.	Ministry of Natural Resources, Ecology and Technical Supervision	National Inventory Reports with time series of GHG emissions by categories and gases.
6.	City hall of Bishkek and Osh	Municipal transport organization on fuel consumption by types Combined heat and electricity plants output data and consumed fuel by types Data on institutional boilers production and fuel consumed by types Data on residential sector fuel consumption by types
7.	Private companies	Electricity distributing companies Coal mining and trading companies Petrol trading companies Gas supplying companies Private transport companies Cars' traders
8.	International development partners of UN systems, MLB, bilateral agencies.	Technical reports on relevant sectors
9.	International data banks (WB data, IEA)	All sectors' Data and future Projections
10.	Sectoral Scientific Research Institutions	Research papers on Energy and Transport

1.2.3 Institutional arrangements for national GHG inventories

The next table is presenting the main actors for NGHGI process and their roles in it.

Table 5. Institutions involved into NGHGI and their roles

#	Institutions	Role in NGHGI
1.	Coordination Council for Climate Change Ecology and Sustainable Development including all relevant ministers chaired by the Prime-minister	Approval of the prepared climate reporting documents: <ul style="list-style-type: none"> • NC • BTR • NIR Approve climate change addressing documentation^ <ul style="list-style-type: none"> • NDC • NAP • LTS on Carbon neutrality
2.	Ministry of Natural Resources, Ecology and Technical Supervision (MNRETS)	Focal point and the leading agency to conduct NGHGI: <ul style="list-style-type: none"> • tendering for NGHGI executor and needed experts • engagement of all the relevant data-providers • data requesting letters and time control • organization of the data quality assurance events • contract control of the NGHGI implementing organization • organization of the NGHGI results quality assurance events • presentation of the NIR on the validation event • presentation of the NIR to Coordination Council • Publication and communication of NIR to a wider public • Posting of CRT on the online ETF tool • Submission of NIR to UNFCCC
3.	NGHI Executing organization	Establish the Technical Group of Experts Develop NGHGI preparation Plan and internal procedures Define the method and data needs Draft data requesting letters to MNRETS Process all the responses Compile normalized data time series Conduct consultations with the relevant stakeholders on the data and method Estimate GHG emissions Conduct internal quality control Organize consultations on the NGHGI results Compile tables for NIR Present NGHGI on the validation event Upload CRT to ETF tool
4.	Ministry of Energy and its subordinate organizations	Data provider Quality assurance party Validation party

#	Institutions	Role in NGHGI
5.	Ministry of Transport and Communications and its subordinate organizations	Data provider Quality assurance party Validation party
6.	City hall of Bishkek and Osh	Data provider Quality assurance party Validation party
7.	Private companies	Data provider Quality assurance party Validation party
8.	International development partners of UN systems, MLB, bilateral agencies.	Participants of the NGHGI organized events
9.	Scientific Research Institutions	Data providers Quality assurance experts Validation party

The organigram of institutional arrangement implemented during the fourth round of NGHI is presented in fig.17 below.



Figure 19. Institutional arrangement for NGHGI 4 in Kyrgyzstan

1.2.4 Key priorities for national GHG inventory

The preparation of the NGHGI always needs a lot of efforts and additional resources to comply with the requirements of the UNFCCC and IPCC guidelines. Since in countries like Kyrgyzstan with rather low institutional capacities and memory each new round of UNFCCC reporting reveals a lot of gaps in data, capacities, institutional set up, policy and legislation.

Under the Convention, one of the key reports is the National Communication (NC), including the national GHG inventory, which started in 1997 for non-Annex I Parties. Biennial Update Reports (BURs) were introduced as an additional requirement for non-Annex I Parties following the Cancun Agreements in COP 16, 2010 and the Durban decisions at COP 17 in 2011. The first BURs from non-Annex I Parties were to be submitted by December 2014. The BUR contains updates of information on national circumstances and institutional arrangements relevant to the preparation of the national communications, national GHG inventories, including a NIR, information on mitigation actions, needs and support received, and information on domestic measurement reporting and verification. Even though developing countries were requested to prepare BURs biennially, only a few countries had the capacity to meet the 2014 deadline and continue submitting BURs biennially.

In fact, that was a sign that such short time for the preparation of the climate reporting documents is a challenge for a lot of Non-Annex I countries.

With the introduction of the ETF by the Paris Agreement, the key report becomes the BTR, including the NIR, to be submitted every two years starting from the first submission, no later than 31st December 2024

And here is the main problem. Not all the countries which lack institutional set up to conduct climate reporting activities on a permanent basis can quickly shift from four years engagement to the reporting to UNFCCC to two years, because it requires considerable change in the national public governance systems dealing with climate change actions.

Article 13 of the Paris Agreement established an Enhanced Transparency Framework (ETF) for action and support in order to build mutual trust and confidence among the Parties and to promote the effective implementation of the Paris Agreement. The ETF is designed with built-in flexibility, which takes into account Parties' different capacities and builds upon the collective experience of transparency under the Convention (UNFCCC). Its implementation is pursued in a facilitative, non-intrusive, non-punitive manner that is respectful of national sovereignty and is designed to avoid placing an undue burden on the Parties.

Modalities, procedures and guidelines for the transparency framework for action and support referred to in Article 13 of the Paris Agreement (MPG) introduced by the Decision 18/CMA.1 and operationalized by Decision 5/CMA.3 of the conference of parties were expected to provide greater clarity on how the ETF implementation process will unfold, scheduling the submission of the first BTR (and NIR) at the latest by 2024 BTRs and NIRs

will then be submitted every two years.

However, again only half of the countries managed to meet the established deadline. It is again a clear signal that the undue “burden” which ETF aimed to avoid exist and hampers the reporting process, creating consequently various stress to many Governments.

No doubt, it is connected with different starting points of the countries to proceed to ETF. Evidently UNFCCC efforts and investment in capacity building did not bring needed effect, the gaps in national capacities of the countries were underestimated and remained the main challenge to UNFCCC implementation.

At the moment the following **key priorities to establish the NGHl systems** in Kyrgyzstan are identified:

1. Institutionalizing the NGHGI in the expanded MNRETS organizational structure as a staff branch under the Department of Climate Change
2. Developing the adequate technical capacities for all the aspects of NGHGI in all the sectors.
3. Developing and formalizing the national MRV system on GHG inventory by elaborating monitoring systems, mechanisms and tools.
4. Establishing and formalizing the climate statistics data sets stock and archive.
5. Legalizing NGHGI by a set of legal documents, including corresponding amendment to Regulations of relevant ministries and organizations.

1.3 The domestic MRV system

At the moment there is no domestic MRV system in Kyrgyzstan. The country uses international MRV system reporting on climate action to UNFCCC through National Communications and Biannual Update Reports using the funding from the UNFCCC financial mechanism.

However, the legal base for MRV was established in 2007 by the adoption of a special law. According to this Law on State Regulation and Policy in the field of Emissions and Removals of Greenhouse Gases, **the monitoring of emissions and removals of greenhouse gases is to be conducted to provide state bodies, that regulate and control climate change, as well as individuals and legal entities with timely and reliable information on the emissions level and absorption** of GHG from different sources and sinks. It also states that the state monitoring of greenhouse gases emissions and removals is an integral part of the environmental monitoring, and the results of greenhouse gases emissions monitoring are subject to registration in the state cadaster of greenhouse gas emissions and removals after verification in accordance with the established procedure by a specially authorized state body.⁴¹

Moreover, it defines that the results of inventories, and the monitoring of greenhouse gases emissions and the results of climate projects leading to a reduction in greenhouse gas emissions and an increase in greenhouse gas absorption are subject to verification.

⁴¹ Law of the Kyrgyz Republic “On State Regulation and Policy in the field of Emission and Removals of Greenhouse Gases” dated May 25, 2007 No. 71. Article 10, paragraph 1.

The information on that verification should be reflected in the State Inventory of Greenhouse Gases Emissions and Removals.⁴²

Evidently it could serve as a solid basis to establish national MRV systems. Unfortunately, these provisions of the Law did not work due to the lack of necessary by-laws: developed methodologies, instructions and procedures, as well as the absence of the necessary qualified human resources.

One of the main reasons for such a long delay with the domestic MRV systems putting in place is the lack of sufficient technical capacity and human resources to implement adequately climate change and MRV related functions enlisted in the Regulations of the Environment Protection State Entity (first the State Agency, then the State Committee and now the Ministry of Natural Resources, Ecology and Technical Supervision), which is the UNFCCC focal point. The entity does not seem capable to implement a lot of functions mentioned in its Regulations approved by the Government.⁴³ Among those are the following, providing the MNRETS among other:

- develops and approves in accordance with the established procedure, rules, regulations, instructions, methodologies, standards and other norms on issues within the competence of the Ministry;
- organizes work on conducting an inventory of emissions of pollutants, greenhouse gases into the atmospheric air;
- organizes work on mitigation and adaptation measures in the field of climate change;
- takes part in development of forms of state statistical reporting in the field of climate, provides collection and processing of primary statistical data and reports of nature users;
- provides assistance in the development of green economy, mitigation and adaptation to climate change through coordination of attracting financial resources and investments from climate and other funds;
- implements state regulation in the field of environmental protection and climate change,
- organizes and manages design and survey, scientific and production research works in the climate sphere,
- coordinates actions on implementation of the UNFCCC and the Paris Agreement;
- coordinates attraction of financing from the Green Climate Fund and other funds, organizations;
- coordinates work on development of the National Strategy on Climate Change, preparation of national communications and reports on climate change.

To do all this, currently there is only one Climate Policy Unit in the Ministry with 4 people staff.

Currently, the key elements of the domestic MRV system are found in the UNFCCC mechanisms established for Non-Annex I countries reporting on current and expected emissions.

⁴² Ibid. Art. 11, paragraphs 3, 4

⁴³ Resolution of the Cabinet of Ministers of the Kyrgyz Republic as of 15 November 2021, # 263

Kyrgyzstan already reports on national emissions and their trends in four National Communications (2003-2009, 2016, 2024) and one BUR (2022). These documents were developed on the project basis that made possible to collect leading national expertise to conduct data collections, research and analysis of technical reports of international consultants from various climate projects.

The attempts to contribute to the national MRV systems establishment was taken several times. In 2018, under the GEF-UNDP project "Strengthening Institutional and Legal Capacity to Ensure Improved National Environmental Information Management and Monitoring System," an analysis and methodological comparison of 39 main indicators developed by the UNECE working group on a set of key statistics related to the climate change was conducted.

A preliminary analysis showed that out of 39 indicators, out of which 17 already had a methodology at the national level, but only a few of them were fully in line with the approaches proposed by the UNECE working group. Data were collected for 14 indicators; thus, 14 data sets were collected partially, and data for 11 indicators were not collected at all.

However, this set of 39 indicators could form the basis for the development of national climate change statistics in Kyrgyzstan.⁴⁴

It is clear, that the development of a domestic MRV system for Kyrgyzstan should be carried out in full compliance with the UNFCCC guidelines on greenhouse gases, mitigation and adaptation actions and will also include the MRV on climate finance. This system will reflect the Kyrgyz Government's vision of a designed MRV system, inter alia, tracking the progress towards achieving the NDC targets of the Paris Agreement and the implementation of the UNFCCC requirements on the Enhanced Transparency Framework.

The MNRETS is expecting the future national MRV system of the Kyrgyz Republic will follow the principles of cost-efficiency and maximum use of existing infrastructure and processes for data collection, reporting and verification, including quality control and quality assurance procedures. Indeed, the creation of the MRV system is a complex process that requires adequate time and resources. In addition to the establishment of working organizational structures, there is a need for the legal consolidation of the system through the relevant Government decrees on the MRV. The existing legislative framework provides the initial legal basis for the implementation of the MRV system. However, the practical application of the MRV system in Kyrgyzstan today is limited by the lack of the necessary measurement, reporting and verification tools, clear modalities, procedures and guidelines.

Additionally, MRV systems will require detailed standards and rules, including appropriate templates and forms for measurements and reporting, establishing a baseline or reference point, as well as the establishing an accreditation system for validators, checking the reliability of submitted reports, which also requires the development of appropriate tools. All these instruments should be approved by the relevant decisions of the

⁴⁴ UNDP. Guidance on national Green Growth indicators of Monitoring and Evaluation in the Kyrgyz Republic. -B. 2013.

Government of Kyrgyz Republic. In doing so, the development of these tools will be accompanied by measures to build the necessary human capacity in the relevant organizations and institutions.

Based on the experience of Kyrgyzstan in reporting on **adaptation actions** in previous NCs and on the availability of data on adaptation in the country, it is proposed to use the adaptation tracking system as an information base for Adaptation Communication to the Convention. As there are a lot of organizations in Kyrgyzstan involved in the implementation of adaptation projects in different organizational forms and ownerships, at different levels and in different regions, it is envisaged that a harmonized reporting format on adaptation actions will be developed for different levels and different regions to include adaptation actions into the national M&E system.

1.4 GHG Emissions Projections

To develop a projection of future emissions, a historical analysis of the correlation of dynamics of the main development factors and GHG emissions was carried out. Data on changes in GDP and population of the country were used as indicators of these factors. (See fig.18 and 19).

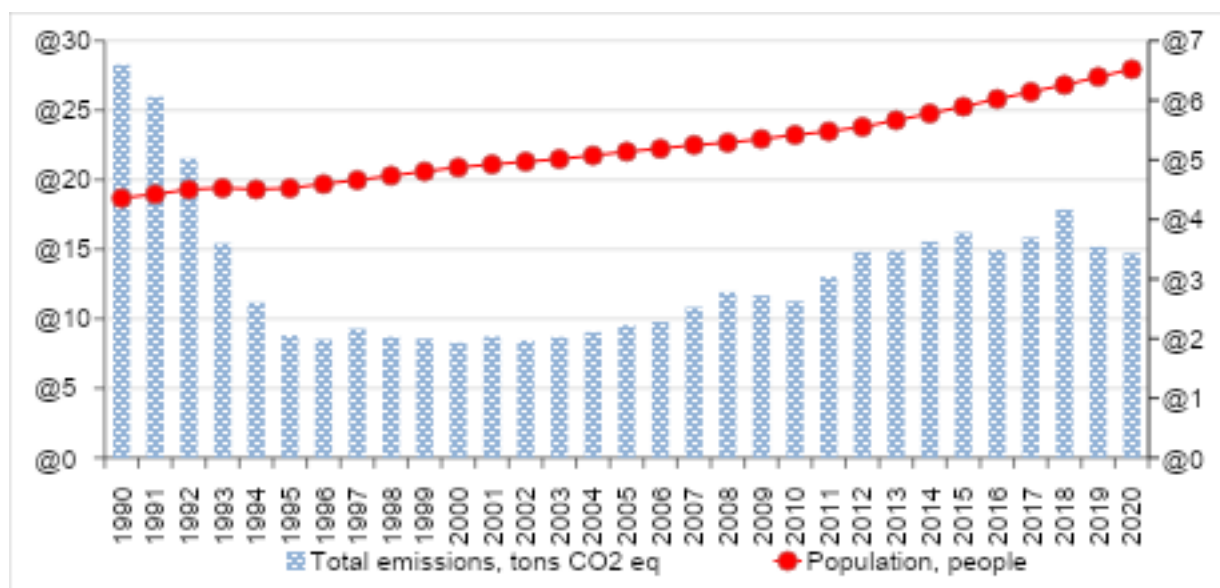


Figure 20. Dynamics of GHG emissions and the population of the Kyrgyz Republic in the period 1990-2020⁴⁵

⁴⁵ Ministry of Natural Resources, Ecology and Technical Supervision, GEF-UNEP. Database of IPCC Inventory Software V2.54. – B., 2021 and data of National Statistical Committee of KR - <http://www.stat.kg/ru/statistics/naselenie/>

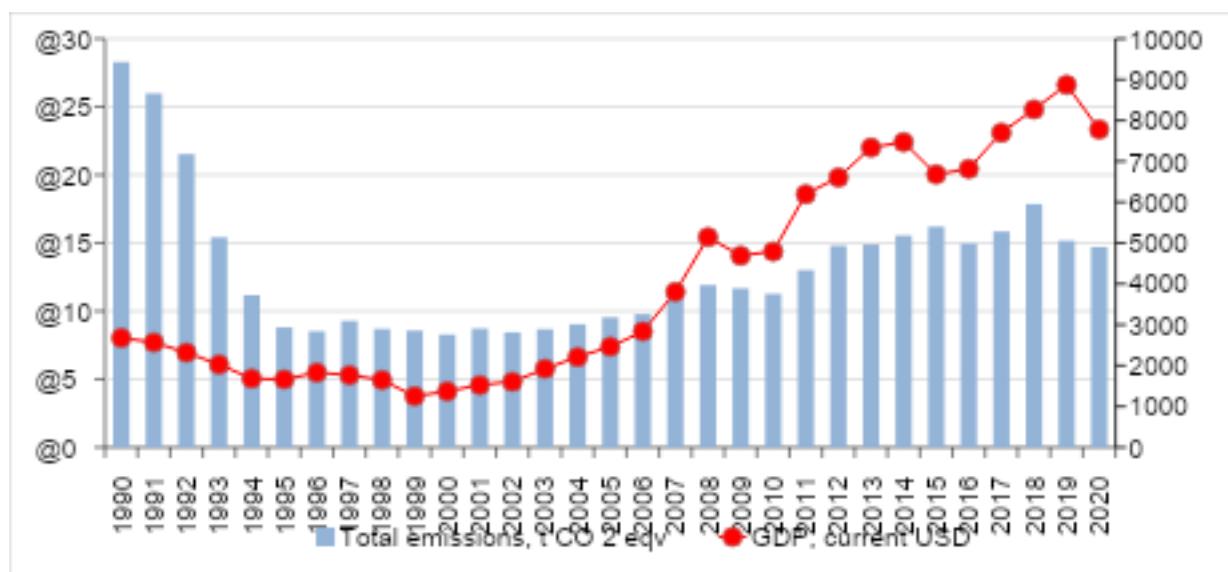


Figure 21. Dynamics of GHG emissions and GDP of the Kyrgyz Republic in the period 1990-2020.⁴⁶

During the analysis and expert consultations, a common indicator was determined that combines the above development factors, both in terms of the economy and population growth and corresponding consumption - GDP of PPP per capita. Based on the analysis of the historical time series of this indicator, the values of this indicator were calculated for the time series up to 2050, which became the basis for determining correlations and trend equations. Since this work was carried out with the involvement of experts from different sectors, during the discussions it was decided to fix on the linear trend of future projections of GHG emissions.

To determine correlations, analysis was carried out for all sectors, as well as for national, total and net emissions. As a result, the trends with the highest coefficients of determination (R^2) were selected according to the linear trend. Trends in the correlation of GHG emissions and GDP of PPP per capita were considered for the time series: 1990-2020; 1996-2020; 2000-2020 and 2006-2020.

Given the sharp fall in GDP over the period 1990-1996, the most appropriate time series trend of correlation of total emissions in CO₂ equivalent with GDP of PPP per capita in US\$ 2021 was determined as the basis for projecting future emissions. The correlation determination coefficient (R^2) in the Energy sector made up 0.84 for the trend of the 2000-2020-time interval. Therefore, in order to model future emissions for the “business as usual” scenario, i.e., “without action” the obtained corresponding linear trend equations was used.

⁴⁶ Ministry of Natural Resources, Ecology and Technical Supervision, GEF-UNEP. Database IPCC Inventory Software V2.54. – B., 2021 and World Bank open data - <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=KG>

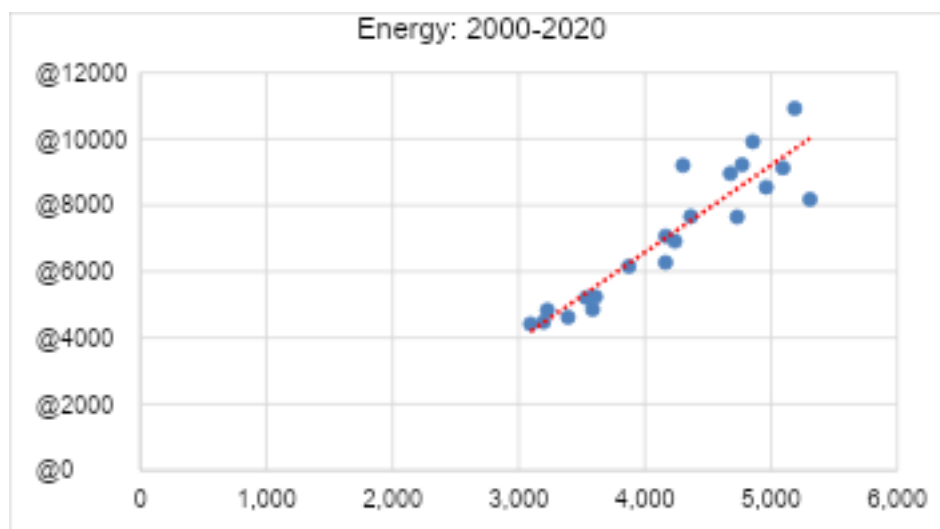


Figure 22. Correlation diagrams of GHG emissions of sectors and GDP of PPP in the period 2000-2020.⁴⁷

This approach to using linear trend equations is rather simplistic and was used only to demonstrate the need for mitigation actions and the development of low-carbon development strategies of Kyrgyzstan as a contribution to achieving the goals of the Paris Agreement and the transition to low-carbon development to achieve carbon neutrality by 2050. More complex multi-factor models for projecting future emissions will be applied in the future as national models of future economic development, changes in consumption patterns and social development are developed, also taking into account the deviation of various development factors and their indicators. Accordingly, as the models become more complex, the forecast values of future emissions will also change.

1.4.1 Business as usual scenarios by sectors

Scenarios of future GHG emissions of the Energy sectors without mitigation measures or the so-called “Business as usual” (BAU) scenarios were calculated using the linear trend equations of the above correlations of the dynamics of sectoral emissions and the dynamics of changes in GDP of PPP per capita. Calculations of future emissions of sectors were carried out for three BAU scenarios: Medium, Low and High.

The values of future GHG emissions in CO₂ equivalent for the Energy sector under three scenarios up to 2050 are presented in table 6.

Table 6. The values of projected GHG emissions up to 2050 under three scenarios in the Energy sector.⁴⁸

Year	Scenarios			Year	Scenarios		
	Medium	Low	Hight		Medium	Low	Hight

⁴⁷ Development of authors based on materials: Ministry of Natural Resources, Ecology and Technical Supervision, GEF-UNEP. Database of IPCC Inventory Software V2.54. – B., 2021 and Kadyraliev A. Technical report of UNDP expert on economical modeling. Bishkek. 2021.

⁴⁸ The author’s calculations.

2020	7648,189	-	-	2036	20232,737	22900,84	15617,87
2021	9387,713	9585,757	9002,573	2037	20971,212	24075,41	15851,65
2022	10008,295	10352,91	9512,679	2038	21731,005	25299,99	16086,88
2023	10650,245	11158,71	10033,66	2039	22512,191	26576,62	16322,57
2024	11228,121	11869,54	10482,92	2040	23314,838	27907,41	16557,82
2025	11824,072	12609,84	10939,63	2041	23849,920	28844,43	16652,29
2026	12438,761	13282,04	11404,66	2042	24342,289	29737,89	16748,07
2027	13216,081	14125,23	11878,68	2043	24845,558	30657,53	16824,78
2028	14026,731	15007,85	12362,22	2044	25303,321	31604,42	16902,98
2029	14729,090	15932,29	12855,72	2045	25771,220	32500,66	16982,81
2030	15456,672	16901,04	13359,56	2046	26190,781	33422	17043,57
2031	16210,662	17916,56	13770,45	2047	26619,371	34286,19	17105,96
2032	16992,171	18806,34	14187,48	2048	27057,336	35173,21	17170,03
2033	17802,554	19731,73	14611,61	2049	27443,507	35996,9	17214,8
2034	18643,158	20693,71	15044,08	2050	27837,987	36841,16	17261,2
2035	19515,348	21774,29	15386,15				

The projections of future emissions of the Energy sector until 2050 under three scenarios is shown in fig. 21.

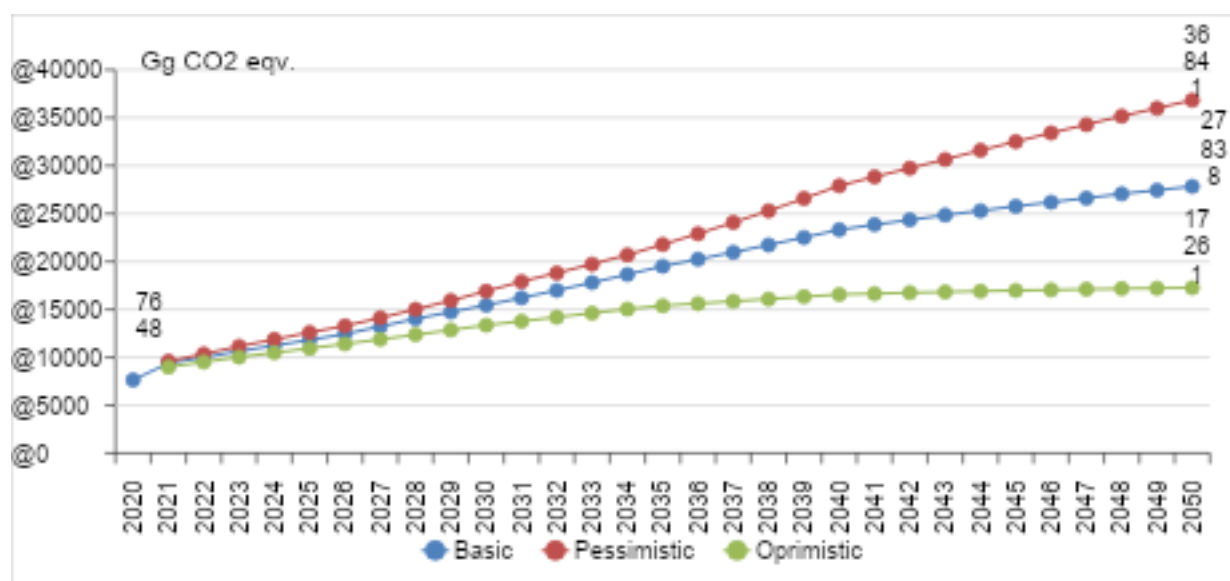


Figure 23. Dynamics of emissions in the Energy sector until 2050 under three scenarios.⁴⁹

The same approach of correlation and regression analysis was undertaken for the **Transport sector**. The determination coefficient value of R2 for correlation between the GDP of PPT per capita and Transport GHG emissions for the period 2000-2020 made up - 0.85 (see fig.22). Thus, the equation of linear trend was used to calculate the values of the Transport GHG emissions till 2050.

⁴⁹ The author's calculations.

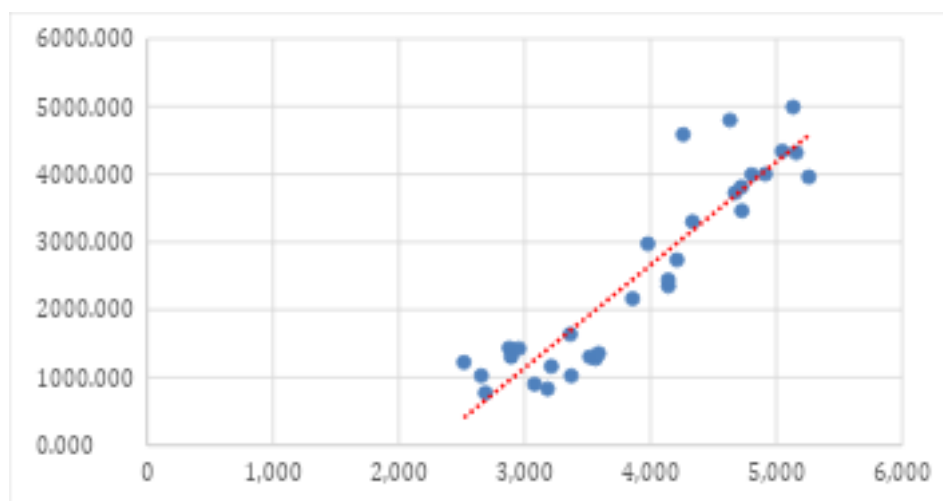


Figure 24. Correlation of GDP per capita with the GHG Emissions. Equation of linear trend.

The calculated values of future GHG emissions in CO₂ equivalent for the Transport subsector under three scenarios up to 2050 are presented in table 7.

Table 7. The calculated values of projected GHG emissions up to 2050 under three scenarios in the Transport subsector.⁵⁰

Year	Scenarios			Year	Scenarios		
	Medium	Low	Hight		Medium	Low	Hight
2024	4584,416	4541,101	4629,920	2038	8059,180	6303,456	8813,557
2025	4789,429	4700,621	4882,589	2039	8277,355	6340,989	9177,517
2026	5000,872	4864,367	5094,074	2040	8500,610	6378,952	9552,834
2027	5291,400	5032,456	5384,035	2041	8633,474	6397,752	9823,099
2028	5593,096	5204,829	5684,467	2042	8768,878	6416,895	10099,623
2029	5834,016	5381,394	5995,558	2043	8907,023	6436,442	10382,625
2030	6082,113	5562,097	6317,520	2044	9048,361	6456,451	10672,364
2031	6337,200	5693,028	6650,621	2045	9192,765	6476,969	10969,079
2032	6599,559	5826,270	6914,604	2046	9239,455	6478,217	11143,434
2033	6868,929	5961,776	7185,686	2047	9287,837	6479,963	11320,855
2034	7145,865	6099,513	7464,187	2048	9338,083	6482,227	11501,493
2035	7430,335	6192,813	7786,200	2049	9390,212	6485,021	11685,446
2036	7635,782	6229,425	8118,242	2050	9444,194	6488,356	11872,849
2037	7845,339	6266,290	8460,583				

The projections of future emissions of the Transport subsector until 2050 under three scenarios is shown in fig. 22.

⁵⁰ The author's calculations.

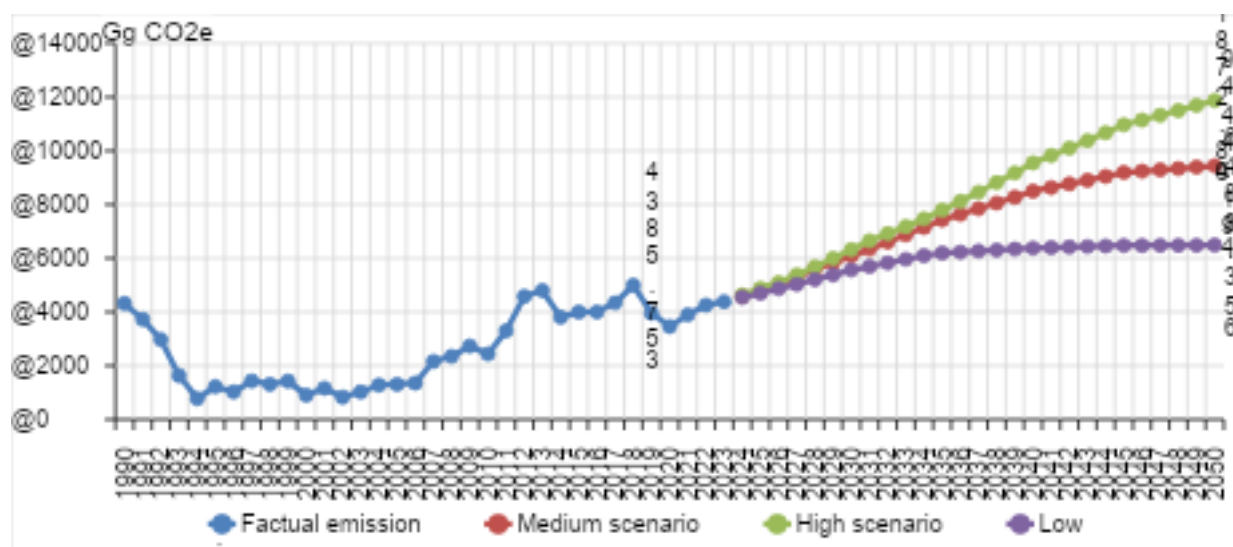


Figure 25. The dynamic of GHG emission in the Transport subsector for the period 1990-2020 and their projections till 2050.

1.5 NDC tracking in the selected sectors.

NDC tracking in Kyrgyzstan is one of the new areas of climate reporting. The country presented two NDC in 2015 and 2021, but never reported on the progress made to achieve the targets highlighted there. In BUR 1 Kyrgyzstan has reported on the NDC 1 planned targets and in NC 4 on NDC 2 Implementation Plan.

Now as Kyrgyzstan proceeds to NDC 3 preparation process, the analysis to assess the progress to NDC 2 target has been launched with data collection on the sectoral indicators of NDC 2 Implementation Plan. When collected, the information will be handed over to mitigation specialists who will conduct needed calculations and compare achieved result against NDC targets.

During NDC 3 preparation process it is also expected that UNFCCC will develop or chose one of the available NDC tracking tools and put it into operation as one of the possible national MRV system tool.

1.6 Needs and gaps for effective compilation of the national inventory reports for the selected sectors.

According to Decision 17/CP.8 of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC), non-Annex I party to the UNFCCC must identify weaknesses and gaps, development priorities, financial and technical support and capacity building needs in their countries, as well as the activities, measures and programs proposed and implemented to address limitations and fill gaps.

The analysis of shortcomings and gaps is mainly based on information presented in the fourth National Communication of the Kyrgyz Republic under the UNFCCC, the first

Biennial Update Report, and the updated NDC, as well as the Technological Action Plan of Kyrgyzstan, and other different technical report of the climate action projects. The country's efforts to combat climate change are growing and, importantly, cover a wide range of sectors and measures. The analysis identified some of barriers that to varying degrees impede these efforts.

1.6.1 Gaps and difficulties

Underdeveloped system of NGHGI and data. Focal Point organize the process of NGHGI and manage the GHG emissions and removals data, but does not register conducted studies and their data and does not have an archive. This is largely due to the lack of Monitoring, Reporting and Verification systems, appropriate hardware and software. Creating a separate unit dedicated entirely to climate change could help overcome this barrier.

Insufficient institutional organization. There are no structural units or working groups dealing with NGHGI in the country's governmental institutions, business and self-governance bodies. Typically, responsibility for climate change issues is assigned to one staff member, who is also responsible for other duties. This barrier can be overcome by institutionalizing NGHGI tasks in ministries, business and self-governing organizations through the creation of appropriate organizational units, through the creation of a service or the appointment of a special employee. It is also important to redistribute responsibilities and powers between central and local governments, create an effective format for coordination with the private sector. NGHGI matters have not yet been formalized in governmental institutions. In most cases, NGHGI as other climate change issues are not considered cross-sectoral and actual in regulations. Therefore, it is necessary to intensify efforts to integrate climate change and NGHGI into the strategies and plans of line ministries, businesses and municipalities, organize capacity building and awareness-raising activities and for government officials so that they take climate change issues into account in their daily activities, including at the planning stage of new projects.

Insufficient technical capacities on NGHGI thematic. This problem is closely related to the previous one. At present there is a shortage of specialists in mathematic modelling and econometry, scenario planning, GHG inventory, system administrators for data management, specialists in mitigation to assess and calculate emissions reductions and verify corresponding reports.

Coordination between government agencies: Although the Kyrgyz Republic has been actively involved in national and international climate change processes since 2000, coordination among government agencies remains weak. One of the important steps for solving this problem was the creation of the Coordination Council on Climate Change, Ecology and Sustainable Development (CCCCESD) to coordinate measures to reduce greenhouse gas (GHG) emissions and improve climate-resilient development. The composition, structure and functions of the it, as defined in its Regulations, are important evidence that coordination of the activities of government bodies dealing with climate change issues, as well as the definition and effective implementation of climate change policies in general, are priorities for the country.

To actually engage other ministries and relevant organizations into NGHGI, to is necessary to revise their Regulations and to integrate there certain function to support NGHGI process with data, labor and other resources.

Information on the support needed to fill gaps and address shortcomings in the main areas of climate action is presented in tab. 8.

Table 8. Kyrgyzstan's climate change activities support needs⁵¹

No	Gaps and shortcomings in areas	Necessary support	Type of support ⁵²
GHG Inventory			
1.	Gaps in activity data	Formation of relevant data bases with an open access module	F, T, CB
2.	Lack of knowledge on the second level of NGGI	Conducting personnel training	F, T, CB
3.	Lack of a unified GHG emissions inventory database	Formation of relevant data bases with an open access module	F, T, CB
4.	Uncertainty assessment	Conducting personnel training	F, T, CB
Future Emissions Projection Modelling			
5.	Lack of knowledge on modeling future sector development scenarios	Conducting personnel training	F, T, CB
6.	Lack of methodology for long-term design of development scenarios by sector	Development of a guide to the methodology for developing long-term sector development scenarios	F, T, CB
Climate change mitigation/GHG emission reduction			
7.	Lack of knowledge on calculating the values of mitigation potential and volumes of reduced GHG emissions	Conducting personnel training	F, T, CB
8.	Lack of methodology for calculating GHG emission reductions	Development of a guide to the methodology for developing long-term sector development scenarios	F, T, CB

⁵¹ The author's development

⁵² F – financial; T – technical; CB – capacity building

2. Brief report from the Inception Workshop (Deliverable 2)

The ICAT project in Kyrgyzstan Inception Workshop was held on March 3, 2025 in the conference hall of the City Hotel in Bishkek.

The agenda of the event:

ICAT project Inception Session		
09.00-09.15	Welcome remarks <ul style="list-style-type: none"> Ministry of Natural Resources, Ecology and Technical Supervision (MNRETS) ICAT, UNEP CCC 	Aizada Barieva, Head of the Climate Policy Department of MNRETS Aiyngul Kerimray, UNEP CCC Researcher
09.15-09.25	Introduction of participants	
09.25-09.45	Presentation: The National Climate Policy of Kyrgyzstan	Aizada Barieva, Head of the Climate Policy Department of MNRETS
09.45-10.05	Presentation: About ICAT, ICAT project in Kyrgyzstan	Aiyngul Kerimray, UNEP CCC Researcher
10.05-10.15	Questions, comments, debate	
10.15 – 10.30	Next steps. Integration of ICAT project into the current climate action and processes	Aizada Barieva, Head of the Climate Policy Department of MNRETS

The workshop was opened with the welcome remarks' session:

- On behalf of the Ministry of Natural Resources, Ecology and Technical Supervision the Head of the Climate Policy Department Ms Aizada Barieva:
 - We are glad that ICAT is supporting Kyrgyzstan with this valuable project to develop technical capacities of our experts
 - In fact, the project will open an opportunity for us for better transparency.
 - The Ministry will provide all the necessary support for the project implementation
- On behalf of ICAT and UNEP CCC Ms Aiyngul Kerimay,
 - UNEP CCC is honored to support Kyrgyzstan for transparency
 - The main goal to support the Government of Kyrgyzstan is to establish adapted frames for transparency by means of training in GACMO and NDC tracking tool
 - UNEP CCC has a lot of projects implemented all around the world, TNA, GSP CBIT, on Article 6 are among those.

Presentation by Ms Aizada Barieva: National Climate change Policy of Kyrgyzstan

1. Legal frames for climate action. The new climate law is currently under public debate.
2. Development strategies integrating climate change provisions.
3. Development of the adequate national climate action mechanisms and tools
4. Establishment of the green and climate resilient frames for financial sector.

Presentation by Ms Aiymgul Kerimray: Transparency for effective climate action

1. What is ICAT and its main activities
2. Project supported by ICAT
3. Where ICAT is working: 50 countries and regional nets
4. Development of the projection frames for GHG emissions
5. Improvement of the climate action monitoring to assess chosen policy and measures
6. Objectives:
 - a. GHG emissions projections
 - b. Progress of mitigation measures
 - c. Frames for NDC monitoring in the Sectors

Questions, comments and answers session:

Mr Shamza Soodanbekov, Scientific Research Institute for Energy and Economy under the Ministry of Energy, Senior researcher

1. Do you have figures on the GHG emissions reduction, actual figures on fuel combustion for energy and heat production, for transport?
2. Way we take here only energy and transport, why there is no mining industries. Only Kumtor Gold Mining site damaged 50 glaciers and this also influence climate change. Climate changed in the Issyk-Kul region; rivers level is low. Less water is now in the Water Reservoirs of Toktogul Hydro Power Station. Do we have projections or plans of actions to address all these trends?

Ms Aizada Barieva, Head of the Climate Policy Department

- In my presentation I have shown the list of documents with climate change mitigation and adaptation actions that address all you mentioned. Our NDC Action Plan provides for dozens of activities both conditional and unconditional, I also showed the identified finance needed to implement all those measures. Our NDC mitigation policy and measures will be implemented till 2030. Besides, we are now work to endorse the Concept for Climate Neutrality till 2050, for which NDC measures will be the first phase. There are also additional measures that we need to implement to achieve carbon neutrality and we need to mobilize climate finance for this.
- As for glaciers, their melting is not causing climate change but vice versa climate change and increased temperatures and precipitation patterns influenced glaciers.

- The second question answer is the following: Energy sector and transport are the most GHG emitting sectors and we decide to start with them to develop applicable tools to address growing emissions. Indeed, the Ministry of Natural Resources, Ecology and Technical Supervision is working to establish the adequate regulatory framework, mechanisms and tools for all the sectors.

Mr. Rajap Baialiev, Expert in Transport

- As for concrete climate actions, we defined a lot of them in the NDC Implementation Plan, which is posted on the site of the Ministry. Please, have a look at it once to see what kind of mitigation and adaptation activities we are going to undertake to fight climate change
- UNEP CCC is proving in GACMO a wide set of possible mitigation actions and not only for energy and transport. We will see it during the training.

Ms Svetlana Samarets, Technologist of the Bishkek Thermo Power Plant.

- Our company is doing a lot of calculations on the quality of fuel we use coal, fuel oil and we send a lot of data to the Ministry of NRETS and to the National Statistic Committee. We have poorly equipped laboratory and we still use obsolete calculation tables developed during the Soviet times and simple re-endorsed lately.
- Who can confirm, assess, review our calculations? How we can monitor the changes?
- There should be a system to control and check all types of emission calculations.
- We burn different coals and we really need to explore them in the laboratory.

Ms Aiyngul Kerimpay, UNEP CCC

- You speak about the emissions of polluting gases and substances, and for this you use proven methodology how to calculate them. GHG emissions are estimated using internationally accepted methodology of IPCC. We do not use laboratory measurement rather calculation as per IPCC Methodology.

Mr. Aleksandr Temirbekov, National Lead Expert

- As for validation and verification, you should know that the drafted Climate Law, mentioned in the presentation of the Ministry contains all the areas of climate actions including the systems of MRV. It will be operated by a set of by laws including that on MRV and providing for validation and verification. This will be a consequent process: the LAW and then a set of regulations, instructions and tools, also to calculate carbon balance for all economy activity entities, maybe including governmental bodies.

Mr. Rajap Baialiev, Expert in Transport

- GHG emissions we calculate using the IPCC Guidelines 2006 and the IPCC GHG Inventory software v.2.95. Our estimations were verified by the ICA procedure and we will address all the remarks they identified in the report

Mr. Edilbek Bogonbaev

- Bishkek Thermo Power Plant urgently need that laboratory modernization for permanent estimation, they also provide a lot of useful information for GHG inventory about the coal they use, since they use the coal from different mines with different quality.

Ms Aiyngul Kerimray, UNEP CCC

- Using GACMO with a list of measures, we can prioritize them, since there are also some data on the cost of a measure. So, we can see, what measures with a low price can reduce more GHG emissions.

Mr Mirbek Esengulov, researcher, Institute for Energy and Economy

As a member of the scientific community, I would say that we are glad that ICAT project has started since the accent on transparency for GHG inventory and mitigation measures and provides for the involvement of all the stakeholders. It is clear that it is not possible to measure everything, and to predict but we would try to jointly formulate clear assumptions. Thus, we should also be ready and understand that we will always have certain uncertainty.

Closing of the Inception Workshop session:

Ms Aizada Barieva, Head of the Climate Policy Department

- To roundup our ICAT project Inception session, I would like to inform that this project is timely contributing to Kyrgyzstan efforts to analyze NDC 2 to see the progress on adaptation, mitigation and support and to proceed to NDC 3.
- All that we will do within the ICAT project will be also used in our climate reporting documents BRT 1 and 2 and NC 5, the corresponding GEF funded UNDP implemented project being started recently.
- The outputs of the ICAT project will be used also to develop out regulatory documents, bylaws on climate policy opalization, and the Climate Law adoption.
- We also see that the methodologies and tools provided by the ICAT project will be used to mobilize climate finance and for capacity building of our experts.
- And finally, we will definitely use the outputs of the ICAT project for the soon started national CBIT project.

In the debate during the workshop the following **proposals of the participants** were highlighted:

1. ICAT should continue to provide capacity building for the specialists of the Energy and Transport sectors on NDC tracking tool with practical exercise;
2. The project could provide more training on to on GHG Inventory software and CRT use;
3. Other sectors beside Energy and Transport could be also involved into capacity building on GHG emissions projections;
4. ICAT could provide capacity development on the ETF online tool;

5. ICAT could also provide training on GHG inventory QA&QC Plan, GHG Inventory Improvement Plan and Archiving of the GHG inventory data;
6. Preparation of UNFCCC reporting tables and formats and MRV tools.



3. Detailed work plan for the ICAT project (Deliverable 3)

The detailed plan for the ICAT project implementation has been developed and agreed upon with the UNFCCC focal point, i.e., the Ministry of Natural Resources, Ecology and Technical Supervision in February.

4. Training workshop on the selected modelling tool (Deliverable 4)

At the beginning of March 2025 ICAT project conducted a training workshop, covering the following topics:

1. Training on the use of the Greenhouse Gas Abatement Cost Model (GACMO) and
2. Deep-dive into tracking NDC mitigation commitments under the Paris Agreement

4.1 Training on the use of the Greenhouse Gas Abatement Cost Model (GACMO)

Two-days training in GHG emission projections using GACMO methodology was conducted on March 3-4 in the conference hall of the City Hotel in Bishkek according the following agenda:

Day 1. March 3, 2025. Agenda:

Time	Session	Presenter
10.30-10.50	Introduction to GACMO methodology: Context and GACMO application to develop, update and tracking NAD	Aiyngul Kerimray, UNEP CCC Researcher
10.50 – 11.10	Introduction to GACMO methodology: Survey of GACMO tables	Aiyngul Kerimray, UNEP CCC Researcher
11.10 – 11.20	Questions and answers	
11:20 – 11:40	Coffee-break	
11.40-13.00	Practical exercises to establish base year, energy balance, GHG balance. Presentation of the results received by the participants	All the participants
13:00 – 13:45	Lunch	
13:45 – 15:15	Hand-on exercises to develop Business-as Usual scenario: Growth levels Presentation of the results gained by the participants	All the participants
15:15 – 15:30	Coffee-Break	
15.30-16.450	Hands on exercise on the sheet “Assumptions” (grid of emissions factors, energy prices). Presentation of the results received by the participants	All the participants
16:45 – 17:00	Questions and answers	All the participants

Presentation of Ms Aiyngul Kerimray on GACMO tool

Questions, answers and discussions.

Mr Valery Shevchenko, Expert in IPPU and Agriculture:

1. Has this model been probated in developing countries that have great data sets and what are the results?
2. What is the accuracy of the GACMO projections on GHG Emissions, are there any comparison of those projections with the actual data on GHG emissions?
3. Have you ever compared this GACMO projections with the projections of the other models?

Ms Aiyngul Kerimray:

- Developed countries have a lot of other models of this kind. In fact, GASMO aimed to support developing countries which have limited data and need urgently to calculate future projections. Developed countries can use other models some free and some payable. For instance, we tried to use TIMES in Kazakhstan and for several years tried to fill it with data but failed. In India, we tried to use LEAP for one of the regions but also failed to fill it with the data till the end. That-is why GASMO is intended to support developing countries with limited data and technical capacities.

Mr Rajap Baialiev, expert in Transport and Energy:

ICAT and GASMO is an international support to our country and we welcome all the support that is not a credit/loan but a grant one.

Ms Oksana Zabenko, Expert in Waste:

Can I use GASMO for the Waste sector GHG emissions projections?

Ms Aiyngul Kerimray:

Yu will see later during the hands-on exercise that GACMO has got a set of mitigation actions for the Waste sector.

Ms Nataliya Slepchenko, Expert in climate change policy:

GASMO is about Energy, why, it is only one sector emitting GHG?

Ms Aiyngul Kerimray:

Yes, you are right the major part of actions address the Energy sector. And the major part of the GHG emissions in Kyrgyzstan and in a lot of other countries is from this sector, but there are a lot of mitigation measures for other sectors, too.

Mr Mirbek Esengulov, Researcher of the Institute for Energy and Economy:

We have a lot of fuels types with quite a diverse feature we should consider all of them to assess the emissions and to plan mitigation measures.

Ms Aiyngul Kerimray:

You will see that all the main fuel types are presented in GACMO and we will try to discuss it altogether.

Then the participants proceed to hands-on exercises guided by Ms Aiyngul Kerimray.

Training on GACMO

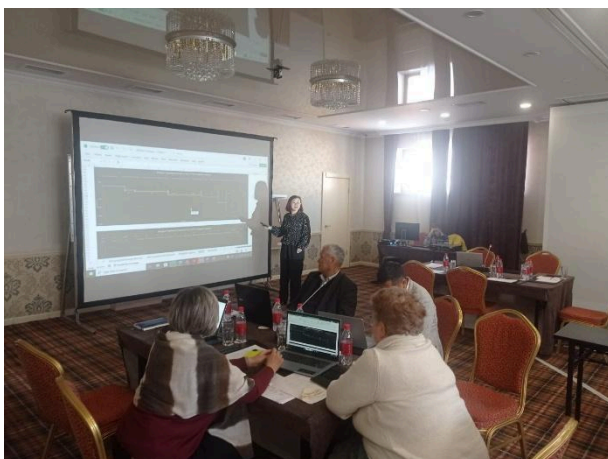
The following exercises have been undertaken by the participants:

- Exercise 1. Electricity price
- Exercise 2. Gas price
- Exercise 3. Grid emission factor
- Exercise 4. Population and GDP
- Exercise 5. Energy Balance – transport consumption
- Exercise 6. Electricity generation
- Exercise 7. GHG emissions inventory
- Exercise 8. Growth rate
- Exercise 9. Results analysis

All those were taken to cover the first six steps to develop GACMO tool:

- Step 1 Assumptions
- Step 2 Energy Balance
- Step 3 GHG Balance
- Step 4 Growth
- Step 5 BAU projected Energy Balances
- Step 6 BAU projected GHG Balances

Photo gallery





Day 2. March 4, 2025. Agenda

Time	Sessions	Presenter
09.00-09.30	Development of the mitigation scenario. Technologies tables (how to define technological variant). Discussion on data sources for mitigation policy and measures	Aiyngul Kerimray, UNEP CCC Researcher
09.30-10.30	Hands-on exercises on the mitigation options in the sector of "Energy Generation". Presentation of the results gained by the participants	All the participants
10.30-10.45	Coffee-Break	
11.45-12.30	Hands-on exercises on the mitigation options in the sector of "Transport". Presentation of the results gained by the participants	All the participants
12:30-13.30	Lunch	

Time	Sessions	Presenter
13.30-15.00	Hands-on exercises on the mitigation options in the sector of "Buildings". Presentation of the results gained by the participants	All the participants
15:00 – 15:15	Coffee-Break	
15.15-15.45	GACMO results: <ul style="list-style-type: none"> • GHG emissions as per BAU scenario and mitigation scenario. • Emission reduction cost and benefits curve • Tracking progress. GACMO use for BTR, filling in the CTF tables with the GACMO results for NDC tracking.	Aiyngul Kerimray, UNEP CCC Researcher
15.45-16.15	Hands-on training to analyze GACMO results: MAR curve, GHG emissions projections.	All the participants
16.15 – 16.30	Next steps to develop GCMO models for Kyrgyzstan	All the participants
16.30-17.00	Final speeches and assessments	

Training on GACMO continued with a major focus on hand-on training exercises

The second day was aimed to cover the further steps of GACMO tool development including the following:

- Step 7 Mitigation options
- Step 8 Results
- Step 9 Results in BTR format
- Step 10 Tracking

It was more intensive and include the following set of exercises guided by the trainer – Ms Aiyngul Kerimray:

Energy Sector

- Exercise 1. – Hydro energy development
- Exercise 2. – Solar electrical power development
- Exercise 3. – Solar insolation
- Exercise 4. – Investment costs of solar PV systems
- Exercise 5. – Construction of new Wind Power stations

Transport sector

- Exercise 6. Electrical transport development
- Exercise 7. Average cost of an electrical and diesel vehicles
- Exercise 8. Bicycle lanes infrastructure development

Buildings' sector

- Exercise 9. Scaling up energy-efficient stoves in households
- Exercise 10. Gasification of households

Results analysis

- Exercise 11. Comparison of mitigation measures
- Exercise 12. Emission reduction in other years
- Exercise 13. Results analysis

All the exercises have been fulfilled by the participants supported by the trainer, many of them showing the results on the big screen.

Photo gallery



At the end of the training all the participants assess conducted ICAT project training event using online survey that was designed to help ICAT monitor and evaluate the effectiveness of its workshop approach across its various programs.

On the results of the GACMO training all the participants were awarded with the ICAT UNEP CCC Certificate of Attendance.

4.2 Deep-dive into tracking NDC mitigation commitments under the Paris Agreement

Two-days training in NDC tracking was organized by ICAT with fair contribution from GSP CBIT project. The WS involving the key national stakeholders for validation of indicators to track NDC progress in fact set the scene to Outcome 3/Output 3,1 on tracking indicators of NDC and helped the participants to better understand reporting tables and develop NDC

tracking indicators. Practical exercises helped also to develop certain skills to manage the Common Tabular Formats and to fill in them as appropriate.

The WS was conducted on March 5-6 in the conference hall of the City Hotel in Bishkek according the following agenda:

Day 1: NDC, Mitigation and tracking progress

Time	Activities	Speakers
09.00-09.15	Welcome remarks and introductions	Aizada Barieva, Head of the Climate Policy Department of MNRETS
09.15-09.35	Presentation: The Enhanced Transparency Framework and Modalities, Procedures, and Guidelines with a focus on NDC tracking provisions	Aiyngul Kerimray, Scientist (Energy), UNEP-CCC
09.35-10.05	Presentation: The introduction to the Biennial Transparency Report content	Aiyngul Kerimray, Scientist (Energy), UNEP-CCC
10.05-10.20	Q&A	
10.20-10.35	Coffee Break	
10.35-11.05	Presentation: Overview of specific flexibility provisions for those developing country Parties that need it in the light of their capacities. Practical examples of reporting on the application of certain flexibility provisions in BTR.	Aiyngul Kerimray, Scientist (Energy), UNEP-CCC
11.05-11.35	Presentation: Definitions and development of NDC indicators	Aiyngul Kerimray, Scientist (Energy), UNEP-CCC
11.35-12.05	Presentation: Introduction and explanation of CTF tables	Aiyngul Kerimray, Scientist (Energy), UNEP-CCC
12.05-12.40	Exercise: Filling Appendix and CTF Tables 1,2: description, definitions to understand NDC and structured summary	All participants
12:40-13:40	Lunch	
13:40-14.10	Presentation: Tracking progress of NDC: Mitigation assessment and elements of mitigation tracking	Aiyngul Kerimray, Scientist (Energy), UNEP-CCC
14.10-14.40	Presentation. Filling CTF Tables 3: Methodologies and accounting approaches. Practical example.	
14.40-15.10	Exercise: Filling CTF Table 4: Tracking progress made in implementing and achieving the NDC.	All participants
15:10-15:25	Coffee Break	
15.25-15.50	Exercise: Filling CTF Table 4: Tracking progress made in implementing and achieving the NDC.	Aiyngul Kerimray, Scientist (Energy), UNEP-CCC

Time	Activities	Speakers
15.50-16.35	Exercise Part 1: Filling CTF Table 5: Mitigation policies and measures, actions, and plans	All participants
16.35-16.45	Q&A Conclusions Feedback from the participants	All participants
	End of Day 1	

The second training course began with the welcome speech from Ms Aizada Barieva

Presentation of Ms Aiyngul Kerimray on the Enhanced Transparency Framework and Modalities, Procedures, and Guidelines with a focus on NDC tracking provisions

CTF tables for the electronic reporting of the information necessary to track progress made in implementing and achieving NDCs include the following:

- NDC definition and methods
 - **Appendix:** Description of a Party’s NDC
 - **Table 1:** Description of selected indicators
 - **Table 2:** Definitions needed to understand the NDC
 - **Table 3:** Methodologies and accounting approaches
- Current mitigation status and tracking progress
 - **Table 4:** Tracking progress
 - **Table 5:** Mitigation policies, measures, actions and plans (Achieved)
 - **Table 6:** Inventory summary
- Projections and expected emissions reduction
 - **Table 5:** Mitigation policies, measures, actions and plans (expected)
 - **Table 7:** Projections “with measures” scenario
 - **Table 8:** Projections “with additional measures” scenario
 - **Table 9:** Projections “without measure” scenario
 - **Table 10:** Projections of key indicators
 - **Table 11:** Key underlying assumptions and parameters of projections
- Response measures
 - **Table 12.** Information necessary to track progress on the implementation and achievement of the domestic policies and measures implemented to address the social and economic consequences of response measures

Questions, answers and discussions.

Ms Nurida Baizakova, Climate finance expert:

Is there any need to show the amount of expenses or costs of the NDC mitigation measures when we track NDC progress?

Ms Aiyngul Kerimray:

There are tables CTF on the finance technologies and capacity building support needed and received but we now focus on the NDC progress reporting only OHYB

Presentation of Ms Aiyngul Kerimray Overview of specific flexibility provisions for those developing country Parties that need it in the light of their capacities. Practical examples of

reporting on the application of certain flexibility provisions in BTR.

The samples of filled in CTF tables from Brazil, Tunisia, Argentina, Australia and Japan were presented.

Questions, answers and discussions.

Mr Rajap Baialiev, Expert in transport:

Can we use flexibility on some GHG gases and also categories?

Ms Aiyngul Kerimray:

Yes, but you need to clearly describe the reasons and causes when you expect to resolve those.

Mr. Valery Shevchenko, Expert in IPPU and Agriculture:

Why it is mentioned that scenario 'without measures' is not obligatory?

Ms Aiyngul Kerimray:

It concerns only those countries that mentioned the base year for their NDC mitigation targets, and not baseline scenario. They compare GHG emissions in the target year with those in the base year.

Mr Rajap Baialiev, Expert in transport:

In our NDC we include certain measures and calculated per cent of our BAU scenario reduction, but recently we learn that our City Hall implemented some mitigation activities (bicycle lanes) not planned in NDC. Can we include them into our NDC progress assessment?

Ms Aiyngul Kerimray:

You should include all the measures that lead to the achievement of your NDC mitigation targets.

Aleksandr Temirbekov, BTR compiler:

We were trained in GACMO tool use and really highly appreciate it. We have found out it possesses a lot of mitigation measures which we use in our NDC 2 Implementation Plan and we are going to use it for projection of GHG emission reduction in NDC 3. But we want to use our own GHG emissions projections till 2030. Can we do this?

Ms Aiyngul Kerimray:

Yes, but you will have to explain how you calculated your projections, describe your methodology, formulas, etc.

Practical exercises undertaken include the following:

Exercise 1. Fill in the Appendix table on Kyrgyzstan NDC description.

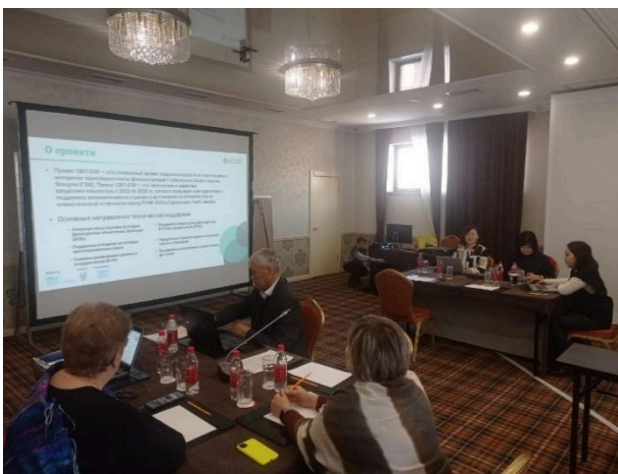
Exercise 2. Fill in Table 1 CTF. Structured summary: Description of selected indicators.

Exercise 3. Fill in Table 2 CTF. Structured Summary: Definitions Needed to Understand NDC.

Ms Aiyngul Kerimray: Presentation on **CTF table 3** Methodologies and accounting approaches and **CTF table 4** Tracking progress in implementing and achieving the NDC

After the presentations the first training day was closed.

Photo gallery





Day 2: Projections and Data

Time	Activities	Speakers
09.00-09.30	Exercise Part 2: Filling CTF Table 5: Expected and achieved emission reduction from policies and measures	All participants
09.30-10.00	Presentation: Elements on Projections of GHG emissions	Aiymgul Kerimray, Scientist (Energy), UNEP-CCC
10.00-10.20	Exercise: Filling CTF Tables 6,7,8,9: Summary of GHG emissions and projections	All participants
10:20-10:35	Coffee Break	
10.20-12.00	Exercise: Filling CTF Tables 7,8,9: Projections	All participants
12.00-12.30	Presentation: Supporting tools to develop economy wide GHG emissions projections (GACMO and LEAP)	Aiymgul Kerimray, Scientist (Energy), UNEP-CCC
12.30-12.40	Q&A	
12:40-13:40	Lunch	
13.40-14.40	Exercise: Filling CTF Tables 10,11: Projections of key indicators, key underlying assumptions and parameters	All participants
14.40-15.10	Presentation: Data needs and how to gather or estimate missing data	Aiymgul Kerimray, Scientist (Energy), UNEP-CCC
15:05-15:20	Coffee Break	
15.20-15.50	Presentation: Filling CTF Tables 12: Social and economic consequences of response measures. Practical example	Aiymgul Kerimray, Scientist (Energy), UNEP-CCC
15.50-16.05	Q&A. Evaluation. Conclusions	All participants

The second day started with the filling CTF Table 5: Expected and achieved emission reduction from policies and measures which was not finished in the first day and further discussion with presentation of the results on the big screen of a final variant.

Ms Aiyngul Kerimray: Which mitigation actions need to be reported in BTRs?

- Those that have the most significant impact on GHG emissions or removals.
- Those that impact key categories in the national inventory.
- Mitigation co-benefits of adaptation actions, if included in the NDC
- Actions that influence international transport

Ms Aiyngul Kerimray: Presentation on: Elements on Projections of GHG emissions.

- Table 5: Mitigation policies, measures, actions and plans

The sample of the filled in table from Mauritius, Belize and once mitigation measure from Kyrgyzstani NDC was provided. Then all the participants started to fill in Table 5 individually.

Exercise: Filling CTF Tables 6,7,8,9: Summary of GHG emissions and projections

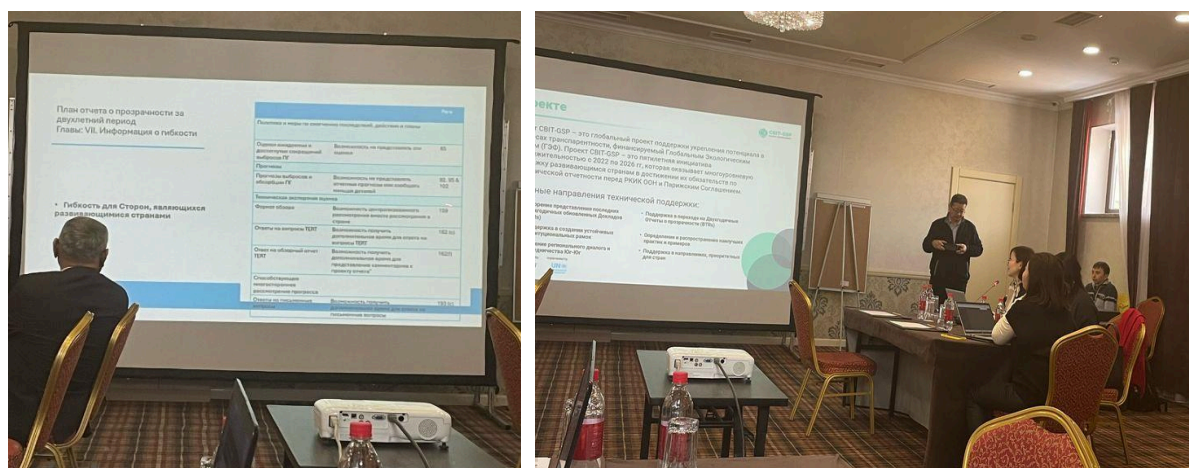
- Table 6: Inventory summary

The examples from Japan, Austria, Columbia and Kyrgyzstan NDC were discussed and participants try to fill in the table individually. Then one of the participants presented the filled in table on the big screen. The rest CTF tables including the following:

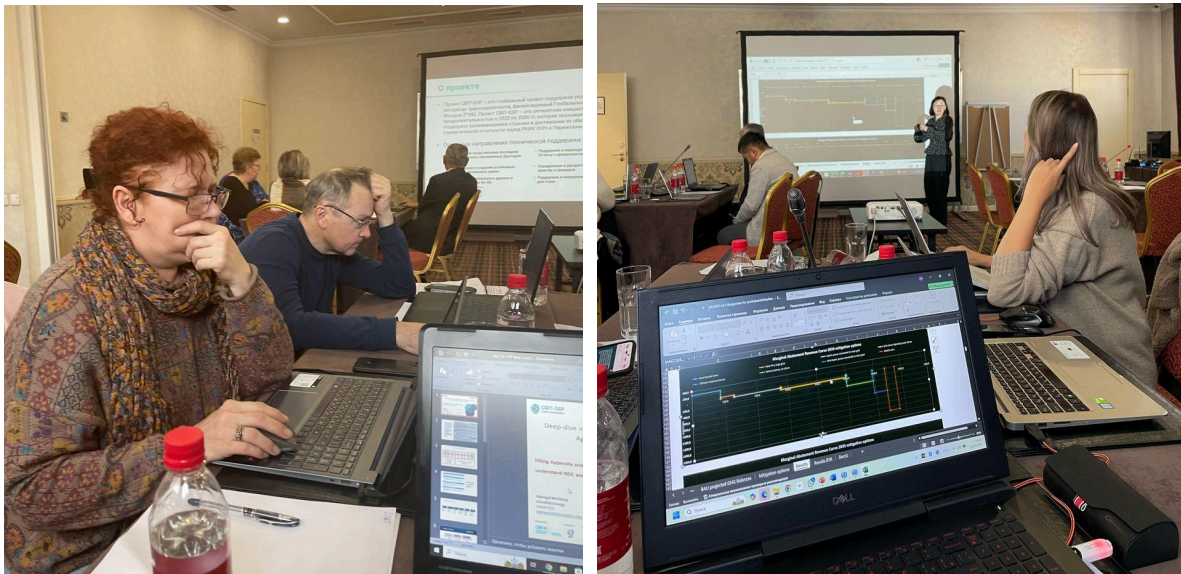
- Table 7: Projections “with measures” scenario
- Table 8: Projections “with additional measures” scenario
- Table 9: Projections “without measure” scenario

Were also duly filled in under the guidance of the Trainer- Ms Aiyngul Kerimray.

Photo gallery



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After the end of the training all the participants were awarded with the Certificates of attendance.