





CLIMATE CHANGE MITIGATION AND ACTION PLAN

(2024-2030)

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ABBREVIATIONS

EU DGMMU AFAD AKAKDO R&D ASHB ATY AUS GDoll BRSA BEP BIM BM UNFCCC BOTAS BSGM BTGM BÜGEM BVKm SKDM CBSGM CH4 CO2 CORSIA	European Union Directorate General for European Union and Foreign Relations Disaster and Emergency Management Presidency Land Use, Land Use Change and Forestry Research and Development Ministry of Family and Social Services Waste Derived Fuel Intelligent Transportation System General Directorate of Infrastructure Investments Banking Regulation and Supervision Agency Energy Performance in Buildings Building Information Modeling United Nations United Nations Framework Convention on Climate Change Boru Hatları ile Petrol Taşıma A.Ş. Directorate General of Fisheries and Aquaculture Directorate General of Crop Production Billion-Vehicle Km Carbon Regulatory Mechanism at the Border General Directorate of Geographic Information Systems Methane Carbon dioxide
\mathbf{BM}	
UNFCCC	<u> </u>
BOTAŞ	
	Directorate General of Fisheries and Aquaculture
	Directorate General of Information Technologies
	Directorate General of Crop Production
	<i>5</i> ,
	9 1
CEMGM	
ÇSGB	Carbon Offsetting and Mitigation Scheme for International Aviation Directorate General for Combating Desertification and Erosion
ÇŞİDB	Ministry of Labor and Social Security
ÇYGM	Ministry of Environment, Urbanization and Climate
TÜDKİYEB	Change General Directorate of Environmental
DKMPGM	Management
DSI	Central Union of Sheep and Goat Breeders of Turkey General
TDSYMB WTF	Directorate of Nature Conservation and National Parks
W I F EA	General Directorate of State Hydraulic Works
ECD	Central Union of Cattle Breeders of Turkey Nature Based
ECD	Solutions
	Electric Vehicle
	Energy Identity Certificate

EMRA	Energy Market Regulatory Authority
EPİAŞ	Enerji Piyasaları İşletme A.Ş.
EPS	Energy Performance Contract Ministry
ETKB	of Energy and Natural Resources
ETS	Emissions Trading System
EUAŞ	Electricity Generation Inc.
EYDB	Department of Education and
GES	Publication Solar Power Plant
GKGM	Directorate General of Food and
GSYİH	Control Gross Domestic Product
GW	Gigawatt
ha	Hectare
HAYGEM	General Directorate of Animal
HFC	Husbandry Hydrofluorocarbon
HFC	Ministry of Treasury and Finance
HMB	High Speed Train
HT	International Cooperation Program on Assessment and Monitoring of Air
ICP	Pollution Impacts on Forests
	Intergovernmental Panel on Climate Change International
IPCC	Transferable Mitigation Outputs Ministry of Interior
ITMO	Climate Change Mitigation Strategy and Action Plan
ID	Climate Change Directorate
DASEP	Climate Change and Adaptation Coordination Board
IDB	Monitoring, Reporting and Verification
IDUKK	Turkish Employment Agency
IRD	Good Agricultural Practices
ISKUR	Public Oversight, Accounting and Auditing Standards Authority General Directorate
ITU	of Highways
KGK	Public Procurement Authority
GM KİK	Small and Medium Enterprises
KOBİ	Small and Medium Enterprises Development Organization Ministry of Culture and
KOSGEB	Tourism
KTB	Low Carbon Economy Ministry of
LCE	National Education General
MEB	Directorate of Meteorology Million
MGM	Hectares
mha	General of Mining, Petroleum Affairs
MPIGM	Mineral Research and Exploration
MTA	Organization

Mton Million Tons MUSIAD Independent Industrialists and Businessmen's MW**Association Megawatt MWs** Megawatt Hour MYK Vocational Qualifications N2O **Authority Nitrous Oxide** NDC **Declaration of National Contribution** Nuclear Regulatory Authority NDK NF3 Nitrogen Trifluoride NGS **Nuclear Power Plant** NIR National Inventory Report NSE Net-Zero Emissions **NSEB** Nearly Zero Energy Buildings General OGM Directorate of Forestry OVP Medium Term Program SCT Special Consumption PA Tax Paris Agreement PERGEM General Directorate of Personnel PFC Perfluorocarbon PGM General Directorate of Personnel Post and Telegraph Organization RTÜK Radio and Television Supreme SBB SF6 Council **SGB** Presidency of the Republic of Turkey Directorate of **SGK** Strategy and Budget Sulfur Hegzafluoride SKHP Directorate of Strategy Development SKLP Social Security Institution SPK STB Sustainable Urban Mobility Plan Sustainable SYGM Urban Logistics Plan Capital Markets Board **TAGEM** Ministry of Industry and TİGEM Technology General Directorate of TB Water Management **TBB** General Directorate of Agricultural Research and Policies General TCDD Directorate of Agricultural Enterprises TUCA Ministry of Trade Banks **TEDAS** Association of Turkey TEİAS General Directorate of State Railways of the Republic of Turkey Turkish **Environment Agency** Turkish Electricity Distribution Co. Turkish Electricity Transmission Co.

TEMSAN Turkey Electromechanical Industry Inc. TENMAK Turkish Energy, Nuclear and Mineral Research Council Tons of TEP Oil Equivalent TKDK Agriculture and Rural Development Support Institution TKGM General Directorate of Land Registry and Cadastre TKİ Turkish Coal Enterprises Turkish TLLira TOB Ministry of Agriculture and Forestry Union of Chambers and Commodity TPAO Exchanges of Turkey TRGM Turkish Petroleum Corporation General Directorate of Agricultural Reform TSE TSKB Turkish Standard TÜBİTAK Turkish Standards Institute Industrial TÜİK Development Bank of Turkey TÜCA Scientific and Technological Research Council of Turkey TÜNAŞ Turkish Statistical Institute TÜRASAŞ Turkish Environment Agency TURKISH Turkey Nükleer Enerji A.Ş. PATENT Türkiye Raylı Sistem Araçları Sanayii Anonim Şirketi Turkish TURKEYBİR Patent and Trademark Office TÜSİAD Turkish Feed Industrialists' Association TÜYEKAD Turkish Industry and Business Association TVKGM Turkish Feed Additives Manufacturers, Importers and Distributors Association TWh General Directorate of Nature Assets Protection TZOB Terawatt Hour Union of Chambers of Agriculture of UAYP Turkey Ministry of Transport and **UDHAM** Infrastructure National Waste UHDGM Management and Action Plan VKT Transportation, Maritime Affairs and Communication Research Center Directorate YEK-G General Directorate of Transportation Services Regulation YEKA Vehicle-Km Traveled YEKDEM Renewable Energy Resource Guarantee System Renewable YeS-TR Energy Resource Areas YFK Renewable Energy Resources Support Mechanism National Green YHT Certificate System YÖK High Science Council High Speed Train Higher **Education Council** Green Public Procurement

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Preface

Climate change is one of the biggest environmental threats we face in today's world. This universal problem negatively affects not only individuals and countries, but also our common home, our world, and poses a serious risk to the sustainability of our planet. Recent studies reveal that the global temperature increase compared to the pre-industrial period has reached 1.1 °C and annual global greenhouse gas emissions have reached 59 billion tons of CO2 equivalent. At this critical point, we have the responsibility to take a decisive stance to reduce greenhouse gas emissions that cause climate change.

In order to effectively combat climate changeit is necessary to accelerate efforts towards the goal of limiting the global temperature increase to 1.5 °C as set out in the Paris Agreement. In this framework, Turkey became a party to the Paris Agreement in 2021 and announced its "Net Zero Emission" target for 2053. Following these developments, Turkey updated its Intended Nationally Determined Contribution (NDC) submitted to the United Nations in 2015 and increased its emission reduction target from 21% to 41% according to the reference scenario. These developments have demonstrated Turkey's determination in the fight against climate change.

Taking into account the 2053 Net Zero Emission Target, 12th Development Plan, Medium Term Program and NDC, it was decided to prepare a new climate change strategy and action plan in order to determine Turkey's targets for combating climate change in the coming period and to design the activities to be carried out in this context. In this framework, "Climate Change Mitigation Strategy and Action Plan 2024-2030" was prepared with the contributions of all relevant stakeholders under the coordination of our Climate Change Directorate. This document outlines the process until 2030 in the fight against climate change.

and includes the relevant strategy and action plan in this regard. This plan is based on scientific grounds and includes institutional policies, expert opinions, greenhouse gas mitigation needs and provides a comprehensive approach.

Our Strategy and Action Plan 49 strategies and 260 actions covering GHG mitigation policies in the energy, industry, buildings, transportation, waste, agriculture and Land Use, Land Use Change and Forestry (LULUCF) sectors, carbon pricing mechanisms and just transition. This strategy and action plan should be seen as a turning point in Turkey's fight against climate change and should be implemented with strong cooperation between the public, private sector, civil society and individuals.

This document aims to unite around a common vision in the fight against climate change and to build a sustainable future together. In this context, I believe that our Strategy and Action Plan will contribute to the realization of our vision of taking steps towards a more sustainable world at both national and global level.

Mehmet ÖZHASEKİ
Minister of Environment, Urbanization and Climate Change

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Executive Summary

The adverse effects of Climate Change have started to be clearly felt today and there has been an increase in the occurrence of extreme climate and weather events such as extreme heat waves, sudden and heavy rainfall, floods and droughts both regionally and globally. The main reason for this situation is seen as the rapid increase in greenhouse gas emissions released into the atmosphere as a result of the increasing use of fossil fuels with the industrial revolution. As a result, the average global temperature increased by approximately 1.1 °C from 1850 to 2020, and if this trend continues, the global temperature increase is expected to reach 3 °C by the end of this century.

The Nations Framework Convention on Climate Change (UNFCCC was adopted in 1992, the Kyoto Protocol in 1997 and the Paris Agreement in 2015 to jointly combat climate change on a global basis. With the Paris Agreement, a paradigm shift was made in the fight against climate change and numerical targets were set to limit the global temperature increase. In order to achieve the goal of limiting the global temperature increase to 1.5 °C set by the agreement, it was stated that 45% emission reduction should be achieved by 2030 and net zero emissions should be achieved by mid-century. Turkey continues toboth reducing greenhouse gas emissions and to the adverse effects of climate change within the framework of the principle of "common but differentiated responsibilities and relative capabilities" of the UNFCCC, to which Turkey became a party in 2004. Turkey became a party to the Paris Agreement on September 21, 2021, and the 2053 Net Zero Emission Target was announced on September 27, 2021 as a whole with the green development revolution. Following these developments, Turkey became a party to the Paris Agreement on November 11, 2021. Turkey has demonstrated its determination in the fight against climate change by both setting a net zero emission target and becoming a party to the Paris Agreement.

Upon becoming a party to the Paris Agreement, Turkey has been responsible for updating its National Determination of Contribution (NDC), the Climate Change Mitigation Strategy and Action, and the 2053 Long-Term Climate Change Strategy.

cooperation with the United Nations Development Program (UNDP). This one

Within this framework, the national mitigation target, which was announced as up to 21% reduction compared to the Reference Scenario in 2015, was updated and increased to 41% and the Updated First National Contribution Statement was submitted to the UNFCCC on April 13, 2023.

Following the announcement of our 2053 Net Zero Target, Turkey's first Climate Council was organized by the Ministry of EnvironmentUrbanization and Climate Change between February 21-25, 2022 to determine the building blocks of our country's long-term roadmap for climate change with all stakeholders. Around 5,000 people from various stakeholder groups including public and private sectors, universities, NGOs and students attended the Council. After the Council, a roadmap guiding Turkey's long-term climate change policies was determined with a total of 217 recommendations, 76 of which were prioritized. This roadmap served as the basis for the preparations for the Climate LawNDCClimate Change Mitigation Strategy and Action Plan and Long Term Climate Change Strategy.

12. In the Development Plan (2024-2028), under the title of "Environmental Protection", there is a measure on reducing greenhouse gas emissions and strengthening climate change adaptation actions by taking into account national conditions within the framework of the Paris Agreement and Turkey's National Contribution Declaration. On the other hand, in the Medium Term Program (MTP) 2024-2026, under the title of "Green Transformation", it is stated that "In line with the 2053 net zero emission target and national development priorities, the green transformation process of our country will be accelerated with an approach that supports greenhouse gas emission reduction, increases adaptation capacity to climate change, competitiveness and efficiency, considers fair transition and develops national incentive mechanisms by making maximum use of global financing resources". With the Presidential Decree No. 85 dated 29/10/2021 (Official Gazette 29/10/2021- 31643), the duties of "determining policies, strategies and actions at national and international level within the scope of Turkey's efforts to combat and adapt to climate change, carrying out negotiation processes, ensuring coordination with institutions and organizations" were assigned to the Climate Change Presidency.

In this regard, within the framework of the Climate Council Decisions, 12th Development Plan and MTP 2024-2026, there are decisions and measures for the preparation of the Climate Change Mitigation Strategy and Action Plan, and the Directorate of Climate Change has been assigned in this context.

In this context, after the completion of the NDC studies, the preparation of Turkey's Climate Change Mitigation Strategy and Action Plan (2024-2030) was initiated and the process was carried out in a transparent and manner. The scope of the Action Plan includes Energy, Industry, Buildings, Transportation, Agriculture, Waste

7 main mitigation sectors, namely Land Use, Land Use Change and Forestry (LULUCF), and 2 cross-cutting theme areas, namely Just Transition and Carbon Pricing Mechanisms.

was determined. Within the scope of the preparation of the Action Plan, first of all, existing national and international

In this frameworknumerous sectoral workshops and meetings were organized with the participation of more than 2,000 people from 175 institutions and organizations from the publicprivate and non-governmental sectors to identify and consult on strategies and actions for these sectors.

In this context, 49 strategies and 260 actions for 7 main mitigation sectors and 2 cross-cutting theme areas are among the main sectoral strategies of the Action Plan;

- Mainstreaming energy efficiency in all sectors,
- the use of renewable energy,
- Reducing the carbon footprint and carbon intensity of industrial products,
- · Mainstreaming sustainability reporting,
- Promoting circular economy and resource efficiency in manufacturing industry sectors
- Expansion of almost zero-energy buildings,
- Expanding the use of district heating and cooling systems,
- Development of electrification systems in the transportation sector,
- Development of integrated transportation systems,
- Ensuring transition to zero/low emission transportation systems,
- and enhancing sinks to effectively combat climate change,
- Ensuring the transition of forestry and agriculture enterprises to a circular bioeconomy with high added value,
- Scaling up environmentally friendly agricultural practices,
- Ensuring conscious fertilizer use,
- · Reducing methane emissions from livestock,
- Prevention and reduction of waste before it occurs,
- Increasing the use of waste as raw material/resource in production,
- Establishment of an emissions trading system in Turkey,
- Conducting infrastructure studies on other carbon pricing mechanisms,
- Development and dissemination of clean technologies,
- Ensuring digitalization in all sectors,
- Develop incentives and support mechanisms for greenhouse gas mitigation,
- · Development of sustainable investment instruments,

- Planning the transition to a low-emission economy on the principle of equitable transformation,
- Capacity building for just transition and employment transformation,
- Integrating Turkey's net zero emission target into the education system.

The Action Plan, which sets out GHG mitigation policies for sectors with a participatory and inclusive perspective, provides a roadmap for responsible and relevant organizations with the main strategies and actions directly aimed at GHG emission mitigation determined to achieve the targets of the NDC. Effective implementation and monitoring of the Action Plan cooperation and coordination among various sectors and levels of government. In this context, it is of great importance that the strategies and actions determined in this context are implemented sensitively by the relevant institutions and organizations.

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INTR ODUC TION

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1. Introduction

In the "Sixth Assessment Report" published by the Intergovernmental Panel on Climate Change (IPCC), it is stated that human activities, particularly greenhouse gas emissions, are indisputably causing global warming, that global temperatures havearound 1.1°C since the pre-industrial revolution periodif the current processes continue, global warming will be around 3°C by 2100. The report states greenhouse gas emissions from unsustainable energy use, land use and other activities continue to increase, widespread and rapid changes are occurring in all ecosystems, and human-induced climate change is affecting the climate in every region of the world. It is also important to note that this is already having negative impacts on a global basis, and that vulnerable communities that have historically contributed the least to climate change are disproportionately negatively affected.

The IPCC's "Special Report on Global Warming of 1.5°C", on the other hand, shows that estimates of the global emission consequences of the current national contribution statements submitted under the Paris Agreement are likely to increase global warming after 2030.

1.5 It underlines that it shows that it cannot limit warming to 1.5°C. On the other hand, climate-related risks to health, livelihoods, food security, food safety, water supply, human security and economic growth are projected to increase with 1.5°C warming and rise further with 2°C.

1.1. Process in the Context of Climate Change and the Paris Agreement

In 1988, the World Meteorological Organization and the UN Environment Programme established the scale of climate change, The First Assessment Report of the IPCC in 1990, which was established to provide scientific assessments of the timing and potential environmental and socioeconomic impacts and to develop possible mitigation strategies, that human activities have significantly increased the amount of greenhouse gases in the atmosphere and led to global warming. The outputs of this report formed the basis for the adoption of the United Nations Framework Convention on Climate Change (UNFCCC) in 1992.

The international climate change regime is shaped by the UNFCCCKyoto Protocol and the Paris Agreement and the work of their respective bodies. The regime is continuously reviewed and updated to respond to new or changing circumstances and scientific knowledge.

Article 2 of the UNFCCC defines the objective of the Convention as "stabilizing greenhouse gas concentrations in the atmosphere at a level that prevents dangerous anthropogenic interference with the climate system". This stabilization needs to be achieved within a timeframe that allows ecosystems to naturally adapt to climate change, food production not to be threatened and economic development to proceed in a sustainable manner.

Within the framework of achieving the ultimate goal of the Convention, the Kyoto Protocol, which includes quantified emission limitation and reduction targets for Annex I countries, was signed in 1997. However, the exclusion of some large emitters and emerging economies from this framework led to a gradual narrowing of the scope of the Protocol in terms of total global greenhouse gas emissions and led to the realization that a broader-based approach was needed to include all countries, especially all large emitting countries and economies, in global efforts to combat climate change.

The Cancun and Durban Conferences laid the foundation for the negotiations that led to the adoption of the Paris Agreement. The Cancun Agreements set a long-term goal of keeping the increase in global average temperature below 2°C above pre-industrial revolution levels. To strengthen the multilateral rules-based regime under the Convention, the Durban Conference initiated "a process to develop a protocol, other legal instrument or agreed outcome with legal force applicable to all Parties under the Convention".

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The Paris Agreement, which was prepared to accelerate efforts to combat climate change and set more ambitious targetson December 12, 2015 at the Nations in Paris, France.

Adopted by 196 countries at the Conference of the Parties (COP21to the Framework Convention on Climate Change and entered into force on November 4, 2016. The Paris Agreement, whose overall goal is to keep the increase in global average temperature below 2°C compared to the pre-industrialization period and, if possible, limit it to 1.5°C, is a legally binding international agreement on climate change. According to the IPCC, in order to limit global warming to 1.5°C, greenhouse gas emissions peak no later than 2025 and be reduced by 45% in 2030 compared to 2019, reaching net zero by mid-century.

The Paris Agreement is a milestone in the multilateral climate change process, as it is the first time that an Agreement all countries together to tackle climate change and adapt to its impacts. Implementing the Paris Agreement requires economic and social transformation based on the best available science. The Agreement works on an increasingly ambitious five-year cycle of climate action led by countries, called the Nationally Determined Contribution (NDC). According to the Agreement, countries parties are obliged to submit their NDCs to the UNFCCC Secretariat every five years, and each successive NDC is intended to reflect a progressively higher degree of ambition compared to the previous NDC.

In their NDCs, countries set out the steps they will take to reduce greenhouse gas emissions and adapt to the impacts of climate change and their respective targets in order to achieve the goals of the Paris Agreement.

On the other hand, in order to better frame efforts towards the long-term goal, the Paris Agreement Under Article 4, Parties are invited to submit their long-term low-emission climate change strategies. Within the scope of the Long-Term Climate Change Strategies submitted by 70 countries of far, countries describe their long-term strategies and actions in line with their own capabilities and circumstances.

Long-term strategies a long-term view of NDCs. However, NDCs are placed in the context of countries' long-term planning and development priorities, providing a vision and direction for future development processes.

1.2. Turkey's Process of Combating Climate Change

Taking into account development priorities and international developments, Turkey addresses economic, social and environmental issues in a balanced manner and aims to move towards sustainable development. On the other hand, Turkey contributes to global efforts to combat climate change with its special conditions and national opportunities. According to the IPCC, the Mediterranean Basin, including Turkey, is one of the regions that will be most affected by climate change. There has been a significant increase in the number of occurrences of meteorological disasters in Turkey, especially since 2018. Between 2010 and 2021, 8,274 natural disasters with meteorological character affecting different parts of our country to different extents reported. The natural disasters that are expected to increase in Turkey due to climate change are listed as forest fires, storms, floods, hail, heat waves, landslides and avalanches.

Turkey became a party to the UNFCCC in 2004 and to the Kyoto Protocol in 2009. The Paris Agreement, which was adopted on December 12, 2015 and entered into force on November 4, 2016 and covers the period after the Kyoto Protocol as the implementation period, is an important turning point. Turkey accepted the Paris Agreement in 2015 and signed the Agreement on April 22, , emphasizing that it is a developing country. The Law on the Ratification of the Paris Agreement was published in the Official Gazette dated October 7, 2021 and numbered 31621. The said Law stipulates that "Turkey will implement the Agreement as a developing country and within the scope of national contribution declarations, provided that the Agreement and its mechanisms do not prejudice its right to economic and social development".

The 2053 net zero emission target was announced by our President on September 27, 2021 and thus the green development move of our country was initiated. The 2053 Net Zero Emission Target and the green transformation process initiated as a result of Turkey's will to become a party to the Paris Agreement brings about a comprehensive change and transformation in all sectors. In order to carry out this process together with all our institutions, the Climate Change Presidency was established on October 29, 2021 as an institution affiliated to the Ministry of Environment, Urbanization and Climate Change. The Climate Change Presidency is responsible for determining policies, strategies and actions at national and levelconducting negotiation processes ensuring coordination with institutions and organizations within the scope of Turkey's to combat and adapt to climate change.

¹As of January 2024

Turkey believes that the Paris Agreement offers an important opportunity for a green and sustainable world and supports the implementation of climate change mitigation and adaptation policies. In addition,

As a country in the process of accession to the European Union (EU), Turkey closely follows EU policies and develops legislation on climate change and environmental issues in order to align with the relevant acquis. Turkey's climate change policy is structured through various local and national policy documents, strategies and action plans on mitigation and adaptation. On the other hand, there are various plans and strategies prepared, updated or under preparation by relevant ministries and public institutions to identify and realize Turkey's mitigation potential.

1.3. Turkey's National Contribution

NDCs are at the heart of the Paris Agreement and achieving its long-term goals. Considering the "principle of common but differentiated responsibilities and relative capabilities", it is envisaged that the UNFCCC Parties will contribute to global climate actions as much as possible in line with their own efforts and in this context, countries are requested to update their NDCs, which include the activities they carry out to achieve the main objective of the Agreement on mitigation, adaptation, finance, technology transfer and capacity buildingevery 5 years and submit them to the UNFCCC Secretariat.

Pursuant to decisions 1/CP.19 and 1/CP.20, the Republic of Turkey submitted its Intended Nationally Determined Contribution (INDC) to the UNFCCC in September 2015 towards its ultimate goal set out in Article 2 of the Convention. With its INDC, Turkey announced its greenhouse gas mitigation target of up to 21% by 2030 compared to the baseline scenario.

Parties to the Paris Agreement are obliged to submit their NDCs to the UNFCCC every five years, each time with more ambitious mitigation targets (and optionally climate change adaptation targets). In this context, Turkey submitted its First Updated National Contribution to the UNFCCC on April 13, 2023. Turkey has committed to reduce its GHG emissions by 41% by 2030 compared to the baseline scenario (695 Mt CO2 equivalent in 2030). Turkey's updated NDC is economy-wide and includes comprehensive mitigation and adaptation actions as well as means of implementation. Turkey's mitigation target is a step towards its long-term goal of achieving net zero by 2053.

1.4. Turkey's Greenhouse Gas Emissions

The national GHG emission inventory is prepared using the 2006 IPCC Guidelines. The GHG Inventory includes direct greenhouse gases such as carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), fluorinated gases (F-gases), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF6) and nitrogen trifluoride (NF3). The inventory includes GHG emissions from energy, industrial processes and product use, agriculture and waste, and emissions and removals from land use, land use change and forestry (LULUCF).

Total GHG emissions, excluding the Land Use, Land Use Change and Forestry (LULUCF) sector, are estimated at 564.4 Mtonnes CO2-equivalent in 2021. This implies an increase of 40.4 Mtonnes or 7.7% in emissions compared to 2020 and an increase of 157.1% compared to 1990 [1] (Table 1, Figure 1).

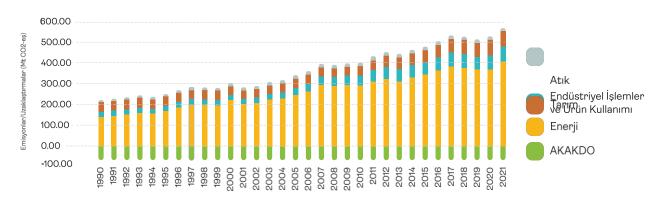


Figure 1 - Greenhouse gas emissions and removals (1990-2021) [1]

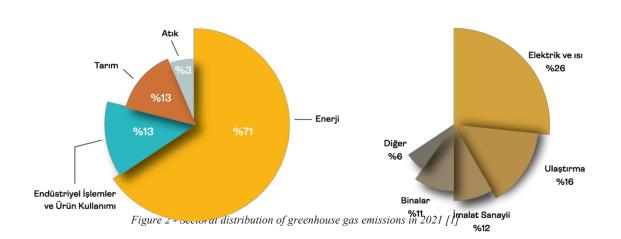
Energy emissions increased by 9.8% in 2021 compared to 2020, reaching 402.5 Mton CO2-equivalent. This is an increase of 188.4% compared to 1990. Emissions from industrial processes and product use amounted to 75.1 Mtonnes CO2-equivalent in 2021, an increase of 9.8% compared to 2020.

increased by 10.6%. Emissions in the agriculture and waste sectors in 2021 to 72.1 Mtonnes CO2-eqd and 14.7 Mtonnes CO2-eqd, respectively.

Table 1- Greenhouse Gas Emissions and Removals (1990-2021) [1]

	1990	1995	2000	2005	2010	2015	2020	2021
Energy	139,54	166,30	216,04	244,48	287,88	341,99	366,57	402,48
Industrial Processes and Product Utilization	22,86	25,52	26,20	34,25	49,06	59,72	67,96	75,14
Agriculture	46,05	44,08	42,33	42,44	44,41	56,13	73,15	72,08
AKAKDO	-66,51	-67,77	-68,05	-71,78	-71,88	-72,81	-56,95	-47,15
Waste	11,08	12,35	14,34	16,40	17,45	17,12	16,31	14,70

Figure 2 shows the breakdown of the national inventory by the four main emission categories in a pie chart on the left-hand side. In 2021, the energy sector had the largest share with 71.3% of total emissions. The energy sector was followed by industrial processes and product use with 13.3%, agriculture with 12.8% and waste with 2.6% (Figure 2). The pie chart on the right-hand side of the same figure shows the shares of energy sub-sectors in total emissions.



Quantitative data on GHG emissions of fluorinated gases from industrial processes and product use are given below (Figure 3, Table 2).

Table 2 - Fluorinated Greenhouse Gas Emissions (Million tons CO_{2-equivalen}) [1]

	1990	1995	2000	2005	2010	2015	2020	2021
HFCs	0,0	0,0	0,1	1,1	3,1	4,8	6,5	7,2
PFCs	0,5	0,4	0,4	0,4	0,4	0,1	0,0	0,0
SF ₆	0,0	0,0	0,0	0,0	0,1	0,1	0,2	0,1

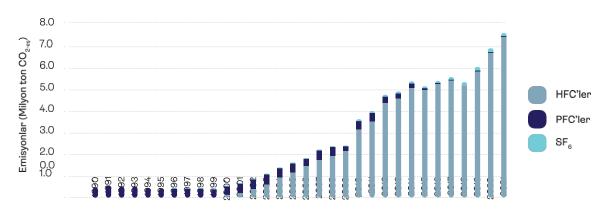


Figure 3 - Fluorinated greenhouse gas emissions (1990-2021) [1]

1.5. Climate Change Mitigation Strategy and Action (CCMASAP) Preparation Process

Turkey's accession to the Paris Agreement accelerated national efforts to combat climate change. As a result of Turkey's first Climate Council held on 21-25 February 2022217 recommendations were adopted to create a vision for Turkey's 2053 net zero target, 76 of which were prioritized and all recommendations were shared with the public. These decisions formed the basis for the preparations of the Climate Law, NDC, Climate Change Mitigation and Adaptation Action Plans and Long Term Climate Change Strategy.

In the 12th Development Plan (2024-2028), under the title of "Environmental Protection", there are measures for the preparation of road maps and related strategies and action plans for reducing greenhouse gas emissions and strengthening climate change adaptation actions, taking into account national conditions within the framework of the Paris Agreement and Turkey's National Contribution Declaration. On the other hand, in the Medium Term Program (MTP) 2024-2026, under the title of "Green Transformation", it is stated that "In line with the 2053 net zero emission target and national development priorities, the green transformation process of our country will be accelerated with an approach that supports greenhouse gas emission reduction, increases adaptation capacity to climate change, prioritizes competitiveness and efficiency, considers fair transition, and develops national incentive mechanisms by making maximum use of global financing resources".

In our country, with the "Presidential Decree on the Organization of the Presidency" dated 29/10/2021 and numbered 85 (Official Gazette 29/10/2021-31643), the duties of "determining policies, strategies and actions at national and international level within the scope of Turkey's efforts to combat and adapt to climate change, carrying out negotiation processes, ensuring coordination with institutions and organizations" were assigned to the Climate Change Presidency.

Within the framework of the Climate Council DecisionsDevelopment and MTP 2024-2026, the preparation of the Climate Change Mitigation Strategy and Action Plan (2024-2030) was initiated and the process was carried out in a transparent and participatory manner. The process of preparing the Climate Change Mitigation Strategy and Action Plan was carried out in parallel with the NDC preparationsthe basic principles for the work were determined and reflected in the whole process (Figure 4).

The action plan is structured on seven main mitigation sectors, namely "Energy, Industry, Buildings, Transport, Waste, Agriculture and LULUCF", which are defined as key mitigation sectors, and two cross-cutting theme areas, namely "Just Transition and Carbon Pricing Mechanisms". Action Plan

The preparatory work was carried out in coordination with the NDC policy formulation work. The aim was to ensure coherence and consistency between the NDC and 2030 action plans. Studies;

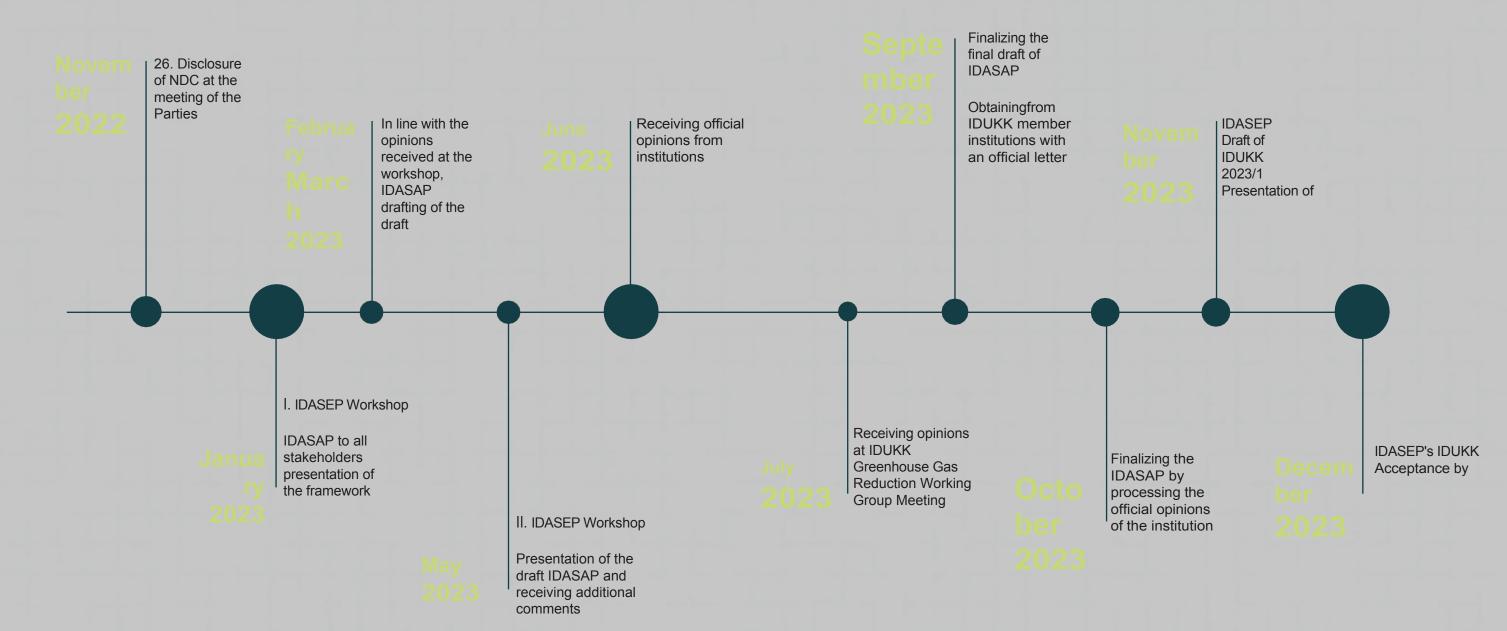
Turkey's climate change policies, strategies, plans and measures

needs analysis. Following the completion of the needs analysis and policy mapping, all ministries and private sector were involved in the process of collecting dataidentifying assumptionsformulating the National Contribution Statement and Climate Change Mitigation Strategy and Action Plan policies and measures. During the document preparation process, more than 100 meetings were held with stakeholders from all sectors. More than 2,000 people from the public, private sector and civil society organizations in the meetings. Gender balance was observed among the participants. In addition to the stakeholder opinions received through meetings, bilateral meetings and e-mails, opinions were received twice through official letters and reflected in the action plan. Following these efforts, the Climate Change Mitigation Strategy and Action Plan 2024-2030 was submitted to the Climate Change and Adaptation Coordination Board for approval. IDASAP preparation process is shown in Figure 5.



Figure 4 - Principles of NDC and IDASAP preparation process

Figure 5 - Climate Change Mitigation Strategy and Action preparation process



1.6 Summary of Climate Change Mitigation Strategy and Action (CCMASAP)

The action plan addresses 7 main mitigation sectors: Energy, Industry, Buildings, Transportation, Waste, Agriculture and LULUCF. Electricity generation is included under the energy sector and energy use in other sectors is evaluated under the relevant sectors. In order to ensure integrity while preparing the Action Plan, issues such as incentives for the sector, financing needs, technology, capacity building and training activities included under the strategies and actions of the relevant sectors. As a result of the meetings and studies conducted during the preparation of the Action Plan, it was decided to open separate chapters for "just transition and carbon pricing mechanisms" and to elaborate strategies and actions for these issues, except for 7 sectors. On the other hand, it has been taken into consideration to mainstream social equality of opportunity in strategies and actions for all sectors.

The Action Plan includes 49 strategies in 9 chapters and 260 actions under these strategies (Table 3). The strategies set out the steps to be taken in different areas such as legislation, technical infrastructure, technology, finance, capacity building, training and public awareness at sectoral scale (Table 4). Various monitoring indicators and responsible institutions and organizations have also been identified for each action under these strategies. There are 47 responsible institutions and organizations in total under the Action Plan.

Table 3 - Number of Strategies and Actions by Sector

· ·	
Energy	5 strategies, 37 actions
Industry	8 strategies, 32 actions
Buildings	6 strategies, 18 actions
Transportation	4 strategies, 36 actions
Waste	9 strategies, 34 actions
Agriculture	7 strategies, 27 actions
AKAKDO	5 strategies, 49 actions
Fair Transition	1 strategy, 7 actions
Carbon Pricing Mechanisms	4 strategies, 20 actions
Total	49 strategies, 260 actions

Table 4 - Sectoral Strategies

ENERGY

- Reducing the carbon intensity of electricity generation
- Aligning the electricity sector with other sectors and supporting demand response
- Strengthening electricity infrastructure, increasing efficiency and reducing technical losses in transmission and distribution
- Expanding the use of low-carbon generation technologies in electricity generation and strengthening alternatives
- Establishing a carbon capture, utilization and storage roadmap to reduce unavoidable greenhouse gas emissions

INDUSTRY

- Utilizing the energy efficiency potential of the manufacturing industry at the highest level
- Increasing the use of renewable energy for the manufacturing industry
- Reducing the carbon footprint of the manufacturing industry and reducing intensity per GDP
- Dissemination of sustainability reporting
- Capacity building of manufacturing industry stakeholders
- Promote circular economy and resource efficiency for all manufacturing industry sectors
- Developing new technology options through R&D and innovation with national resources
- Developing sustainable investment instruments and creating appropriate financing sources for investors
- Improving energy efficiency in existing buildings
- Improving the energy efficiency of new buildings
- Improving energy efficiency in the use of electrical appliances, equipment and devices in buildings
- Expanding and supporting the use of district heating and cooling systems
- Promoting the use of environmentally friendly design and building materials through the implementation of the National Green Certification System (YeS-TR)
- Ensuring disseminating and promoting the use of Information Modeling (BIM) tools in ensuring digital transformation in the construction ecosystem

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TRANSPORT

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- Providing modal shift to sea/rail
- Increasing efficiency in the transportation sector
- Use of sustainable/clean energy sources in transportation systems
- Carrying out the necessary infrastructure activities for decarbonization of the sector

WASTE

- Prevention and reduction of waste and wastewater before they occur
- Increasing the rate of recycling and recovery of waste
- Reducing the proportion of waste sent to sanitary landfills without pre-treatment
- Improving wastewater management and treatment infrastructure
- Developing human resources and raising social awareness within the scope of zero waste practices and greenhouse gas emission reduction
- Develop incentives and financing mechanisms to improve waste management, taking into account circular economy principles and greenhouse gas emission reduction
- Increasing R&D activities and developing technological infrastructure to improve waste management by taking into account circular economy principles and greenhouse gas emission reduction
- Increasing the use of waste as raw material/resource in production
- Reducing greenhouse gas emissions from vehicles used in waste management

AGRICULTURE

- Reducing methane emissions from livestock
- Ensuring efficiency in the use of chemical fertilizers
- Reducing the use of pesticides and anti-microbials
- Improving loss, waste and residue management in agricultural production
- Enabling land and soil management
- Ensuring access of farmers to appropriate financing opportunities
- Scaling up training, awareness-raising and capacity-building activities for stakeholders operating in the agriculture sector in a gender-balanced manner

USEAND FORESTRY

- Protecting, managing, sustainably managing and expanding ecosystems, regularly increasing greenhouse gas sequestration on an annual basis by increasing wetlands, reducing emissions from ecosystems
- Ensuring the transition of forestry and agricultural enterprises to a circular bioeconomy with high added value
- Doubling project support to 2020 levels by 2030 in order to strengthen the sector in terms of R&D and innovation
- Increasing the number of technical staff and professionals trained in carbon management in the sector
- Development of technology infrastructure for the LULUCF sector

FAIR TRANSITION

Capacity building for just transition and employment transformation

CARBON MECHANISMS

- Establishment of Emissions Trading System (ETS) in Turkey
- Conducting infrastructure studies on other carbon pricing instruments
- Establishing infrastructure for voluntary carbon market and national offsetting
- Conducting studies to evaluate participation in Article 6 of the Paris Agreement

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1.7 IDASEP Monitoring System

Monitoring and evaluation are critical in ensuring the long-term success of the action plan. The monitoring process plays two important roles.

- Monitoring the performance of the actions in the plan
- Determining whether the planned outputs and outcomes of its actions have been achieved

A successful monitoring and evaluation process an important role in improving the effectiveness of actions and accountability. A proper monitoring system can also help to ensure continued support for actions and any additional funding that may be required.

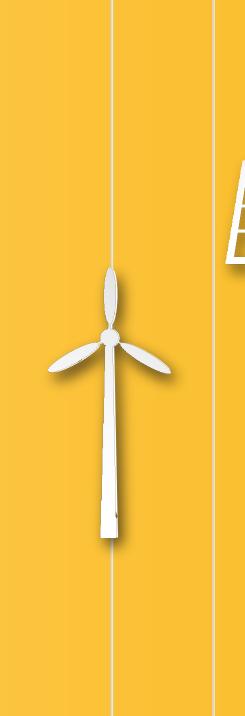
In order to effectively monitor the Action Plan, an online monitoring system will be established under the climate portal prepared by the Climate Change Presidency and the activities of all responsible and relevant institutions will be continuously monitored and reported in an up-to-date manner.

Within the scope of the Climate Change Mitigation Strategy and Action Plan, the institutions responsible for each action will enter the developments of the previous year into the online monitoring system between January 1 and March 31 each year. In line with the information entered into the system, annual monitoring and evaluation reports will be prepared byof Climate Change with the contributions of the main responsible institutions from the sectors by June 30th of each year at the latest.

The recommendations and steps to be taken in the monitoring and evaluation report will be discussed in the Climate Change and Adaptation Coordination Board Working Groups. Annual evaluation reports prepared under the coordination of the Climate Change Directorate of the Ministry of Environment, Urbanization and Climate Change will be submitted to the Climate Change and Adaptation Coordination Board until 31st.

maypossibleindividual revisions to the action plan in line with the needs.

CURRE NT SITUATION AND RELATED AND ACTIONS FOR





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2.1.1 Current Status

Turkey's energy sector demand is also increasing due to population growth and economic growth. According to 2021 Energy Balance Table data, total energy supply 159.432 million toe (tons of oil equivalent). In the same year, electricity and heat generation amounted to 334,723 GWh [2].

Turkey's installed electricity capacity at 106,071 MW as of the end of November 2023. The share of renewable energy sources in total installed capacity reached approximately 53%. In 2013, the abrogated "Regulation on Unlicensed Electricity Generation in the Electricity Market" entered into force, which led to a significant increase in distributed electricity generation capacity, especially solar energy. Hydroelectric power plants account for the largest portion of installed capacity with 31,596 MW. The second highest installed capacity belongs to natural gas cycle power plants with 25,352 MW. Wind power ranks third with 11,643 MW, while domestic coal power plants and imported coal power plants have an installed capacity of 11,440 MW and 10,374 MW, respectively. Solar energy capacity has made a significant breakthrough and increased to 11,268 MW. [3] In the last two decades, electricity generation from renewable energy sources has increased both in terms of share and resource diversity, with the strategies, policies and support mechanisms implemented. By the end of 2022 imported coal and domestic coal-based electricity generation will have a share of approximately 35% in total electricity generation. On the other hand, the share of natural gas-based electricity generation has increased since 2008. It declined from 50% to 23% by the end of 2022.

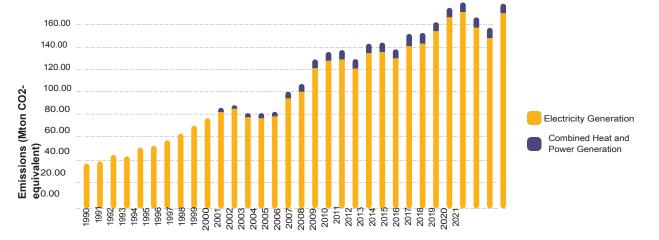


Figure 6 - Emissions from electricity generation and their evolution [1]

As of the end of 2022, Turkey has become one of the major sources of renewable energy with an installed capacity of 56,393 MW [4] This rapid growth rate in recent years can be summarized as the abundance of renewable energy resources in Turkey, the policies and incentives implemented for renewable energy resources, and the private sector's shift of investments from fossil resources to renewable energy.

Electricity generation is one of Turkey's major emission sources and has been increasing over the years. As electricity generation increases in Turkey, the change in GHG emissions may differ according to the primary energy sources used (Figure 7).

Table 5 - Total GHG Emissions of Electricity and Heat Generation (million tons CO2-equivalent) [1]

	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Emissions	32,9	46,0	73,4	85,4	108,9	120,0	120,9	116,1	127,0	128,0	135,6	146,2	150,0	139,1	131,7	149,4

In 2021, electricity and heat generation emissions are 149,395 Mt CO2-equivalent and the emissions from the electricity sector alone are 140,720 Mt CO2-equivalent (Table 5). Emissions from electricity generation account for 24.8% of total emissions [1].

For example, in 2021, the share of hydroelectric resources decreased and was replaced by natural gas, and emissions from electricity generation increased compared to the previous years.

On the other hand, there is a relative decoupling between electricity generation and associated emissions (Figure 8). While electricity generation shows a continuous increase, the associated emissions follow a fluctuating path. This situation may allow for absolute decoupling once Turkey's electricity sector becomes low-carbon.

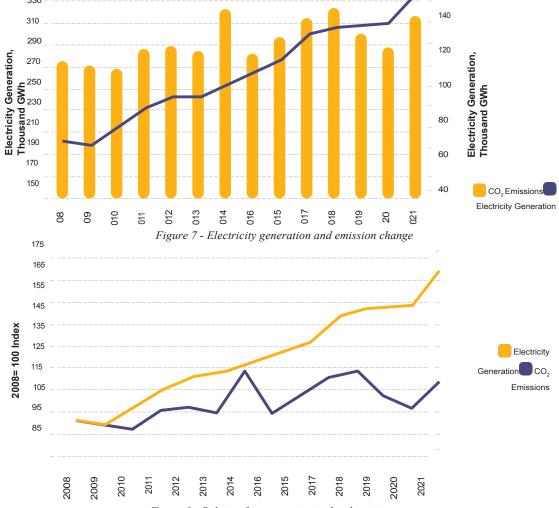


Figure 8 - Relative fragmentation in the electricity sector [1] [2]

The main legislation, policy and strategy documents related to the energy sector in Turkey are presented in Table 6 and Table 7.

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Basic Legislation	Purpose and Scope
Electricity Market Law (Law No. 6446)	Establishment of a financially strong, stable and transparent electric energy market operating under the provisions of private law in a competitive environment in order to provide electricity to consumers in a sufficient, high quality, continuous, cost-effective and environmentally friendly manner, and establishment of an independent regulation and supervision in this market aimed to be ensured.
Law on the Utilization of Renewable Energy Resources for Electricity Generation - (Law No. 5346)	Expanding the use of renewable energy resources for electricity generation, bringing these resources into the economy in a reliable, economical and high quality manner, increasing resource diversity, reducing greenhouse gas emissions, utilizing wastes, protecting the environment and developing the manufacturing sector needed to realize these objectives intended.
Energy Efficiency Law (Law No 5627)	It is aimed to increase efficiency in the use of energy resources and energy in order to use energy effectively, prevent waste, alleviate the burden of energy costs on the economy and protect the environment.
Certification and Support of Renewable Energy Sources Regulation	It is aimed to encourage the generation of electricity based on renewable energy resources and to issue Renewable Energy Resource Certificates to legal entities holding generation licenses for generation facilities based on renewable energy resources.
Regulation on Renewable Energy Resource Areas	It is aimed to establish large-scale renewable energy resource areas (YEKA) on public and treasury immovables and privately owned immovables, and to domestically produce high-tech components used in electricity generation facilities based on renewable energy resources.

Basic Legislation	Purpose and Scope
Electricity Market License Regulation	It aims to determine the procedures and principles regarding pre-licensing and licensing practices in the electricity market and the rights and obligations of pre-license and license holders.
Regulation on Unlicensed Electricity Generation in the Electricity Market	To ensure that consumers meet their electricity needs from their own generation facilities, to bring small-scale generation facilities to the national economy in ensuring security of supply and to ensure the effective use of small-scale generation resources; to determine the procedures and principles to be applied to real or legal persons who can generate electrical energy intended.
Electricity Generation and Electricity Storage Facilities Acceptance Regulation	It is aimed to carry out the acceptance procedures of electricity generation and electricity storage facilities in accordance with the relevant legislation and standards; to connect the facilities to the transmission or distribution networks in harmony and to determine the procedures and principles regarding the authorization of acceptance procedures.
Regulation on Renewable Energy Resource Guarantee Certificate in the Electricity Market	For the purposes of expanding the use of renewable energy resources in electricity generation and consumption and protecting the environment, establishing a renewable energy resource guarantee system that enables the monitoring, proving and disclosure of the fact that a certain amount or proportion of the electricity energy supplied to consumers is produced from renewable energy resources by legal entities holding a license, and the supply of electricity energy produced from renewable energy resources to consumers by documenting it, and the operation of this system in a non-discriminatory, objective and transparent manner he aim is to determine the procedures and principles regarding the procedures
Regulation on Storage Activities in the Electricity Market	Within the scope of the Electricity Market Law No. 6446 dated 14/3/2013, it is aimed to determine the procedures and principles regarding the establishment of electricity storage units or facilities, their connection to the transmission or distribution system and the use of these units or facilities in market activities.

Table 7 - Key Policy Documents on Energy

Policy Documents	Aims and Objectives
	The main objective is to achieve a competitive structure that maximizes energy self-sufficiency by utilizing domestic and renewable energy resources, utilizing nuclear technology in electricity generation, increasing energy efficiency, prioritizing localization in energy technologies, new technologies, strengthening our strategic position in international energy trade, based on continuous, quality, sustainable, secure and affordable supply of energy, resource diversification in energy supply and net zero emission target for 2053. The development plan includes the following measures:
12th Development Plan (2024-2028)	Efforts for efficient use of energy in all areas will continue. Akkuyu Nuclear Power Plant (NPP) will start electricity generation with all its units. Efforts to increase the installed capacity of nuclear power plants will continue. Efforts for new technologies such as small modular reactors, fusion technologies and advanced generation reactors. Within the scope of the net zero emission target, renewable energy-based electricity generation will be increased and integrated into the grid in order to meet the increasing electrification with cleaner sources. New Renewable Energy Resource Areas (YEKA) tenders with local component obligation will be held and efforts will be made to develop offshore YEKA projects. Planning and investment studies will be carried out for the development of electricity grids, taking into account the potential renewable resource areas and the pace of development of renewable energy and electric vehicles. The flexibility of electricity grids will be increased to minimize the negative impacts of intermittent renewable energy generation on the grid. Energy storage systems, including pumped storage HEPPs, will be established. Efforts will be made to develop a domestic electrolyzer for green hydrogen production. R&D studies on transportation and storage of hydrogen will be continued. Efforts will be made to increase the number of qualified personnel needed in the energy sector.

Policy Documents	Aims and Objectives
NDC 2023	The policies in the NDC document related to the energy sector are as follows: Energy efficiency and renewable energy potential will be maximized, 33 GW of solar capacity, 18 GW of wind capacity, 35 GW of hydroelectric capacity and 4.8 GW of nuclear capacity; 2.1 GW of battery and 1.9 GW of electrolyzer capacity; the share of renewable energy sources in primary energy consumption will be increased to 20.4% by 2030; primary energy intensity will be 0.113 TOE/thousand \$2015 and final energy intensity will be 0.08 TOE/thousand \$2015 in 2030; Emission Trading System, which is one of the mitigation tools in emission-intensive sectors, will be established.
National Energy Efficiency Action Plan (2017-2023)	Determine the potential of cogeneration and district heating-cooling systems and prepare a road map; provide consumers with comparable and more detailed billing information; create an energy platform for smart management of metering information; expand smart meters; implement minimum performance standards for transformers; increase energy efficiency in general lighting; improve efficiency in electricity transmission and distribution activities; increase efficiency in existing electricity generation plants; implement demand side response market infrastructure will be established.
Energy Efficiency Strategy Document (2012-2023)	Efficiency in electricity generation, transmission and distribution will be increased; energy losses and harmful environmental emissions will be reduced; average total cycle efficiency, including waste heat recovery, of coal-fired power plants across the country will be raised above 45% by 2023. By 2023, demand side management measures will be developed to reduce electricity energy intensity by at least 20%.

Policy Documents	Aims and Objectives
Turkey National Energy Plan (2022)	By 2035: Primary energy consumption be 205.3 mtoe and electricity consumption will be 510.4 TWh. Electricity / final energy consumption share 24.9%. Energy intensity will be reduced by 35.3%. Electricity installed capacity will be 189.7 GW (52.9 Solar, 29.6 Wind, 7.2 Nuclear) and additional installed capacity will be 96.9 GW. Renewable energy will reach 54.7% of total electricity generation and 64.7% of installed capacity. Battery (7.5 GW), electrolyzer (5 GW), Demand side (1.7 GW) installed price will be created.
Turkey Hydrogen Technologies Strategy and Roadmap	domestic and national technologies, it is aimed to create an effective value chain from production to end-use of green hydrogen and contribute to the 2053 Net Zero target. In this context, it is aimed to reduce the cost of green hydrogen production below USD 2.4/kgH $_{\rm 2}$ in 2035 and USD 1.2/kgH $_{\rm 2}$ by 2053 and to increase the electrolyzer installed power capacity to 2 GW in 2030, 5 GW in 2035 and By 2053, the target is to reach 70 GW.
National Climate Change Strategy Document (2010-2020)	Within the framework of financing (internal and external) opportunities by taking into account the energy supply security of renewable energy resources and climate change issues, clean production technologies and techniques will be used at the highest level; the use of zero emission technologies will be encouraged and R&D studies will be supported. upgrading of existing thermal power plants will be completed; alternative conomic instruments for fuels will be developed.
Climate Change Action Plan (2011-2023)	Energy intensity will be reduced; the share of clean energy in generation and utilization will be increased; greenhouse gas emissions from coal use in electricity generation will be limited by implementing clean coal technologies and efficiency enhancing measures; and lesses and leakages in

electricity distribution will be reduced.

technologies and efficiency enhancing measures; and losses and leakages in

Aims and Objectives

Renewable energy will continue to be supported and the system infrastructure will be made more flexible for both generation and self-consumption, and R&D and support mechanisms will be developed for all purposes; Roadmap for reducing emissions from electricity generation in line with the 2053 NSE target and evaluation of alternative fuel utilization Development of natural gas exploration and production activities, transmission infrastructures; encouraging the use of waste heat and expanding heat pump, district heating and solar collector applications in heating and cooling; reducing emissions from electricity generation by evaluating carbon capture, utilization and storage technologies in electricity generation from coal; increasing education, green employment, digital transformation, storage and demand-based applications for the transformation of the energy sector.

2.1.2 Strategy and Actions

Energy, which has a decisive role in achieving economy-wide low-emission development decarbonization of electricity generation in the sector, matching the sector with other sectors and supporting demand response, strengthening electricity infrastructure and increasing efficiency, and developing a carbon capture, utilization and storage roadmap to reduce unavoidable greenhouse gas emissions.

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Strategy E-S.1

Reducing the Carbon Intensity of Electricity Generation

Energy policies are intertwined with climate policies and have become one of the most important elements and tools of combating climate change. The Paris Agreement and Turkey's 2053 vision call for greater emphasis on renewable energy. Renewable energy sources will account for more than half of the installed capacity in 2022. Despite this momentum, it is assessed that more renewable energy installed capacity for emission reduction on a national basis. Turkey, which has achieved an increase above world averages especially in increasing resource diversity and increasing the share of renewable energy, needs to further increase the installed capacity based on solar and wind, which have high potential, both to reduce the current account deficit and to ensure energy supply security. In this context, in line with the targets set in Turkey's National Energy Plan, it is aimed to have solar (32,900 MW), wind (18,100 MW), hydroelectric (35,100 MW), geothermal and biomass (5,100 MW), electrolyzer (2,000 MW) and reduce CO2 emissions per electricity generation by 20% by 2030. In addition, it is important to provide financial and technical support for distributed renewable energy applications for small-scale grid users especially households, and to continue renewable energy support mechanisms such as YEKA. Supporting R&D activities and preparing a roadmap for emerging technologies such as wave, offshore wind and floating SPP energy are also among the targets.

E-S.1.1	Increasing the installed capacity of solar energy
E-S.1.2	Increasing the installed capacity of wind energy
E-S.1.3	Increasing the installed capacity of hydroelectric power
E-S.1.4	Increasing the total installed capacity based on geothermal and biomass energy
E-S.1.5	Increasing the use of hydrogen in electricity generation and increasing the installed capacity of electrolyzers during the plan period
E-S.1.6	Developing a biomass roadmap
E-S.1.7	Supporting R&D activities to reduce carbon intensity per electricity generation
E-S.1.8	Increasing the use of Renewable Energy Resource Guarantee System (YEK-G) and green tariffs
E-S.1.9	Scaling up distributed renewable energy applications for small-scale grid users, especially residential households
E-S.1.10	Increasing the implementation of Renewable Energy Resource Area (YEKA) and identifying potential YEKA areas
E-S.1.11	Determining the roadmap for wind, solar and wave energy technologies
E-S.1.12	Developing and supporting R&D activities on technologies to generate electricity from wave energy

E-S.1.13

Reducing carbon intensity in electricity by increasing low-carbon energy investments

E-S.1.14

Increasing the installed capacity of nuclear energy

Strategy E-S.2

Matching the electricity sector with other sectors and demand side Supporting participation

The transition to a smart grid in Turkey requires a flexible structure that will not compromise system security in matching demand and supply at high capacities and quantities. There is a need to expand energy storage systems at grid and distributed scales, to create structures that allow demand-side energy management, and to develop innovative business models that provide opportunities for consumers and producers to prefer flexibility structures under free market conditions. Matching the electricity sector with other key sectors such as buildings, transportation and industry will be possible through effective balancing of supply and demand. It is also aimed to encourage R&D efforts for the use of solar energy in the agricultural sector.

In order to ensure efficient use of energy from generation to final consumption, an Energy Obligation System will be established and targets will be set for distribution or supply companies. In addition, standards of market mechanisms such as White Certificates will be established and verification processes will be determined for the effective implementation of the Energy Obligation System. These processes will be monitored and evaluated transparently.

Certification is important for the continuity and sustainability of alternative renewable energy sources (e.g. sustainable biogas and green hydrogen). This action will be completed by 2030, with the aim of establishing sustainable biogas and green hydrogen certification, establishing biogas legislation and standards, and working towards their injection into natural gas networks. It is planned to first establish the legal infrastructure for the introduction of system entry incentives for sustainable biogas and green hydrogen to be transported in the natural gas transmission and distribution system, and then to carry out secondary legislation and infrastructure studies.

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E-S.2.1	Increasing battery capacity
E-S.2.2	Increasing the integration of renewable energy systems into charging infrastructures
E-S.2.3	Raising awareness on energy efficiency in electricity use
E-S.2.4	Encouraging R&D studies on the use of solar energy in agriculture
E-S.2.5	Providing trainings on distributed systems and low-carbon energy technologies in line with green transformation
E-S.2.6	Developing a white certificate system and market in energy efficiency
E-S.2.7	Certification of sustainable biogas and green hydrogen, establishment of biogas legislation and standards, injection studies into natural gas networks

Strategy E-S.3

Strengthening electricity infrastructure, increasing efficiency and reducing technical losses in transmission and distribution

Strong transmission and distribution infrastructures to strengthen the electricity infrastructure. The areas where energy efficiency can be most concretely implemented are electricity transmission and distribution improvements. The technical loss rate, currently around 12%, is targeted to be reduced. In this context, it is important to make grid operations more secure and efficient and to increase support for distributed generation and self-consumption based on renewable energy sources. There is a need for a distributed electricity infrastructure where electricity is generated close to where it is consumed and can meet the peak loads required by electric charging capacities, generating consumers to participate in the market, enabling bi-directional energy flows, converting electricity into different types of energy and storing it.

An action plan without a systematic roadmap for the digital transformation process in energy will be incomplete in practice. The integration of digital systems with energy technologies

digital transformation roadmap in energy. In this context, determining the digital transformation roadmap in energy and rehabilitation of distribution networks, including transformers. In addition, it is aimed to integrate digital systems with energy technologies by disseminating smart meters and encouraging R&D activities. In particular, it is aimed to strengthen transmission and distribution lines to ensure the effective integration of renewable energy resources into the system and to take supportive measures for smart grid and microgrid applications.

In order for the energy sector to benefit more from efficiency-enhancing projects, it is aimed to raise awareness, for which regular training activities should be carried out.

E-S.3.1	Reducing the level of technical losses across the country
E-S.3.2	Dissemination of smart meters and encouragement of R&D activities
E-S.3.3	Raising awareness for the energy sector to benefit more from efficiency- enhancing projects
E-S.3.4	Strengthening transmission and distribution lines to ensure the effective integration of renewable energy resources into the system and taking supportive measures for smart grid and microgrid applications
E-S.3.5	Rehabilitation of distribution networks, including transformers
E-S.3.6	Preparation of digital transformation roadmap in energy

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Strategy E-S.4

Utilization of low-carbon generation technologies in electricity generation mainstreaming and strengthening alternatives

Small modular reactors are not a new concept in the nuclear power industry, although they are now recognized as an innovative technology with a high potential for proliferation in the nuclear energy field. What makes existing small modular reactor designs groundbreaking is not their size, but their superior safety features, their construction and installation methods, and their cost-effectiveness compared to large reactors. Small modular reactors have many technical features that increase predictability in project management and reduce construction costs and lead times. These can help reduce greenhouse gas emissions. Overall, while small modular reactors may offer some potential benefits as a low-carbon energy source, it is important to carefully assess all potential environmental and safety impacts before implementing them as a GHG mitigation strategy. Furthermore, the implementation of education and training programs at different levels to rapidly develop competent human resources related to nuclear energy and safety is aimed at improving the capacity of vocational and technical training in the field of nuclear energy technologies. Legislation needs to be amended to create an incentive mechanism for hybrid systems where small modular reactors can be combined with innovative clean energy technologies (hydrogen, power-to-fuel, power-to-storage, power-to-x, etc.).

Supporting applications for hydrogen production, storage, distribution and utilization and addressing hydrogen within an energy system is important for low carbon energy supply. In this context, it is aimed to map the storage areas of green and pink hydrogen, to create the infrastructure for the transmission and distribution of hydrogen through existing natural gas pipelines, to carry out feasibility studies for its use in existing natural gas cycle power plants and to ensure hydrogen distribution by using the existing natural gas infrastructure. Within the scope of dissemination and utilization of alternative energy resources, it is aimed to determine the supply potential and areas of use for resources such as synthetic methane, synthesis gas, sodium borohydride, ammonia, methanol and fuel cells.

E-S.4.1	Conducting technical and commercial feasibility studies for the use of small modular reactors and exploring potential sites
E-S.4.2	Implementation of education and training programs at different levels to rapidly develop competent human resources related to nuclear energy and security
E-S.4.3	Supporting R&D projects for hydrogen production, storage, distribution and utilization
E-S.4.4	Mapping the storage areas of green and pink hydrogen, conducting the necessary feasibility studies for the transmission and distribution of green and pink hydrogen through existing natural gas pipelines, creating infrastructure, implementing training programs at different levels to rapidly develop competent human resources, and legislative studies to determine the appropriate ratio of hydrogen mixture to be made into existing natural gas transmission and distribution lines
E-S.4.5	Determining the supply potential and utilization areas for resources such as synthetic methane, syngas, sodium borohydride, ammonia, methanol and fuel cells
E-S.4.6	Implementation of education and training programs at different levels to rapidly develop competent human resources related to nuclear energy and security

Strategy E-S.5

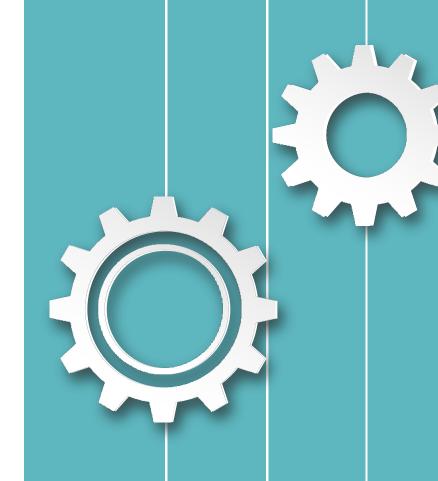
Carbon neutralization to reduce unavoidable greenhouse gas emissions Developing a roadmap for capture, utilization and storage

Carbon capture, utilization and storage (CCSR) is an important mitigation strategy that captures carbon dioxide (CO2) emissions from power plants and other industrial sources, utilizes them at potential sites and stores them in underground geological formations. CCSD is often considered as a potential technology for reducing GHG emissions from fossil fuel power plants, especially coal-fired power plants, which are the major source of CO2 emissions.

Technical feasibility studies are targeted to be completed by 2025 to investigate technologies for emission mitigation such as carbon capture, utilization and storage, their economic potential, appropriate supply chain infrastructure and processes, and to identify targets. In this context, it is aimed to prepare a roadmap on carbon capture, utilization and storage for Turkey, create a carbon storage atlas and identify its potential. It is important to support R&D activities in carbon capture, utilization and storage, to realize pilot plants and to support the sectors that can be implemented by creating incentive mechanisms.

E-S.5.1	Investigating technologies for emission reduction such as carbon capture, utilization and storage for fossil fuel-based power plants, their economic potential, appropriate supply chain infrastructure and processes, and identifying targets
E-S.5.2	Creation of a carbon storage atlas for Turkey
E-S.5.3	Preparation of a roadmap on carbon capture, utilization and storage
E-S.5.4	Supporting R&D activities on carbon capture, utilization and storage, realizing pilot plants and creating incentive mechanisms





INDUST RY

2.2.1 Current Status

The industrial sector is one of the most important sectors of the Turkish economy, with manufacturing industry accounting for the largest share of value added in the industrial sector. Turkey's industrial sector comprises a wide range of sub-sectors that collectively account for a significant share of the country's GDP. Iron and steel, chemicals, pharmaceuticals, electrical and electronic equipment, construction materials, automotive industry products, and ready-made clothing and apparel are important export sub-sectors.

According to TURKSTAT dataat current prices according to the production method increased by 106.9% in 2022 compared to the previous year and reached 15 trillion 11 billion 776 million TL. The share of the manufacturing industry sector in GDP was realized as 22.1% and is given in Figure 9. [5]

One of Turkey's main goals is to improve the production of intermediate and final products in sectors that rely heavily on imports. In order to achieve these goals, the state of the technical infrastructure and the process of change that the sector is undergoing are of critical importance. New technologies an important role in achieving competitiveness and low carbon targets in the world market. The penetration of new technologies, especially in the manufacturing industry, and the ability of companies to innovate are necessary for businesses to compete more fiercely in the global economy.

While the share of high-tech and medium-high technology companies in the total number of companies in the sector by technology level in 2022 is approximately 12.17% (Figure 10), when the turnover generated by the companies according to their technology status is analyzed, the distribution changes in favor of high-tech and medium-high technology companies and their share of turnover increases to 27.8% (Figure 11).

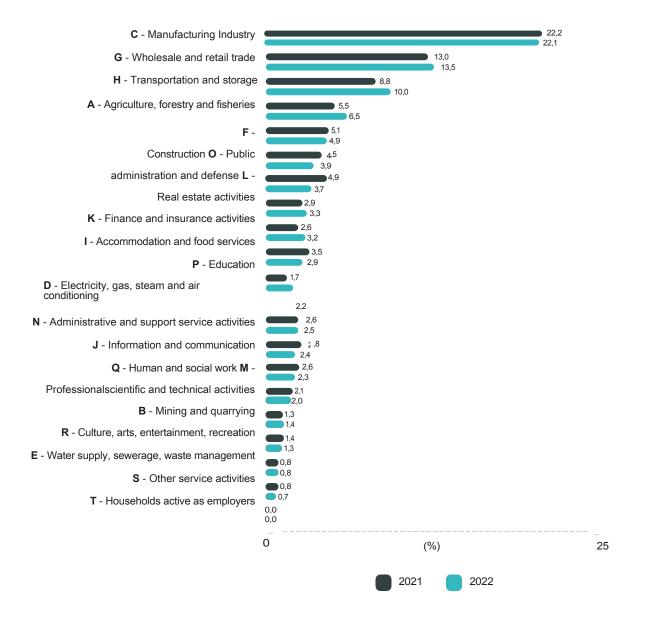


Figure 9 -Gross domestic product, share ratios at current prices at A21 level by branches of economic activity, 2021-2022 [6]

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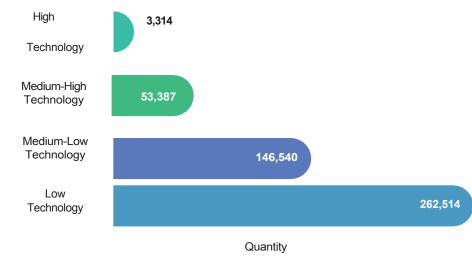


Figure 10 - Technology level in manufacturing industry by number of enterprises (2022[6]

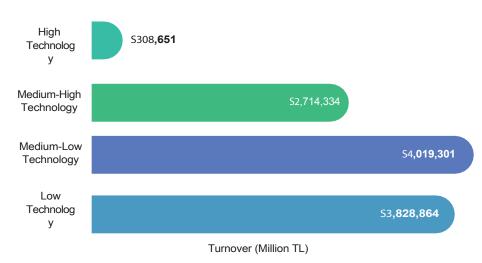


Figure 11 - Technology level in manufacturing industry by enterprise turnover (2022[6]

While the number of high-tech companies is 0.7% of the total, their share of turnover is nearly four times at 2.8%. Again, the share of medium-high technology companies in turnover,

share in the number of organizations is 25%, approximately 2.2 times higher than its share in the number of organizations. Medium-low

While the proportion of low-tech companies remains unchanged, low-tech companies, which account for more than half of total industrial companies, account for only 35.2% of turnover. The cost of low-carbon development depend on the technology profile of the industrial sector.

As of 2021industrial sector emissions amounted to 141.4 Mt CO2eq. and its share in Turkey's overall emissions reached 25%. These emissions include energy and process emissions of 66.24 and 75.14 Mt CO2equivalent, respectively. The emissions discussed in this section are direct emissions only and do not include emissions from the sector's electricity consumption. Total industrial emissions increased from 60.0 Mton CO2 equivalent in 1990 to 141.4 Mton CO2 equivalent in 2021. [1] (Table 8, Figure 12)

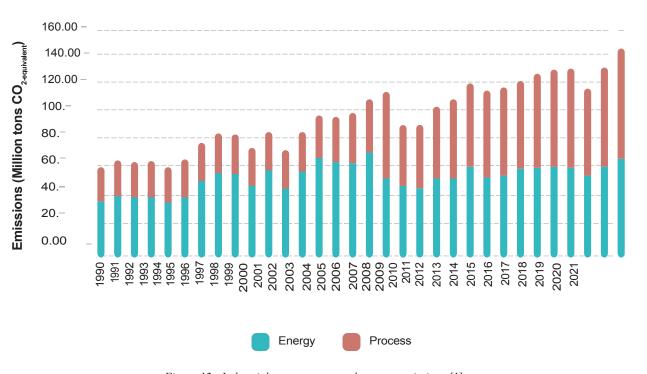


Figure 12 - Industrial sector energy and process emissions [1]

Table 8 energy and process emission data for the industrial sector.

Table 8 - Industrial Sector Energy and Process Emissions (Mton CO_{2-pautyalom}) [1]

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Energy	37,16	40,33	39,33	39,99	35,88	40,00	50,59	56,04	55,48	47,37	57,94
Process	22,86	24,58	24,29	24,80	24,11	25,52	26,16	27,01	27,31	25,78	26,20
Total	60,02	64,91	63,62	64,79	59,99	65,52	76,75	83,04	82,79	73,16	84,14
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Energy	45,66	57,12	66,69	63,86	63,01	70,09	71,88	47,36	46,23	52,33	52,59
Process	25,85	26,83	28,18	30,76	34,25	36,76	39,67	41,69	43,07	49,06	53,96
Total	71,51	83,95	94,87	94,62	97,26	106,85	111,55	89,04	89,30	101,39	9 106,55
	2012	2013	2014	2015	2016	2017	2018	8 2019	2020	202	21
Energy	61,06	52,98	54,44	59,59	60,08	3 60,19	59,6	7 54,56	60,19	9 66,	24
Process	56,27	59,33	60,06	59,72	63,75	66,63	67,7	4 59,0	0 67,96	6 75, ²	14
Total	117,32	112,31	114,50	119,31	123,8	3 126,8	2 127,4	41 113,5	7 128,1	5 141	,37

Looking at the energy-related emissions of the industrial sector, 4 main sub-sectors stand out. Cement (non-metallic minerals), iron-steel, food, beverages and tobacco and paper production, although varying in order of magnitude and production amounts over the years, maintain the general trend and account for a significant portion of the energy emissions of the industrial sector (Figure 13, Table 9).

In Table 9, data on combustion emissions of the industrial sector are given on a yearly basis.

Table 9 - Industrial Sector Combustion Emissions (Mton CO,) [1]

	1990	1991	1992	1993	1994	1995 1	996	1997 1	1998 1	1999	2000	
ron and Steel	6,69	6,55	7,07	6,41	6,24	5,59 6	5,33	6,35 6	6,15 5	5,58	6,57	
Non-Ferrous Metals	1,09	1,02	1,07	0,98	1,31	1,76 1	1,36	1,25 1	1,17 1	1,70	1,95	
Chemicals	4,89	4,46	4,93	4,81	4,24	4,96 4	1,88	4,95 4	1,09	3,59	3,76	
Pulp, Paper and Printing	0.00	0.00	0.00	0.00	0,00	0.00	0.00	0,00),00 (0.00	0.00	
ood, Beverages and Toba	ссо	2,91	2,91	2,35	2,15	1,58 1	1,69	2,24 2	2,19 2	2,65	2,03	2,1
Minerals	8,26	9,40	8.20	8.16	9,51	8,79 1	10,35	9,50 8	3,40	10,76	9,25	
Other	13,32	16,00 15,	73 17,49		13.00	17.21 2	25,43	31.80 3	3.03 23	3.71	34.26	
	2001	2002	2003	2004	2005	2006	2007	2008	2009	20	10	2011
ron and Steel	6,73	6,46	6,19	5,06	5,48	4,52	4,64	4,22	2,04	3,	66	3,99
Non-Ferrous Metals	1,99	2,14	1,94	2,19	2,23	2,49	2,40	0,24	0,99	1,1	15	0,76
Chemicals	5,07	4,56	4,39	6,86	5,35	4,49	2,06	0,95	2,45	2,	90	3,14
Pulp, Paper and Printing	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,	00	0,78
Food, Beverages and Fobacco	3,99	3,92	2,71	2,35	2,13	2,02	1,39	1,37	0,46	0,	88	3,39
Minerals	8,85	8,91	10,15	13,22	14,88	14,90	13,50	18,59	16,51	21	,36	25,3
Other	19,04	31,13	41,31	34,19	32,95	5 41,67	47,90	21,98	23,77	7 22	2,38	15,2
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		
Iron and Steel	4,38	4,64	4,99	5,29	4,19	4,33	4,27	4,62	5,63	5,82		
Non-Ferrous Metals	1,17	0,76	0,99	1,20	1,41	1,14	0,81	0,77	0,69	0,87		
Chemicals	4,65	3,94	3,70	6,69	6,07	5,32	7,03	6,40	6,84	8,30		
Pulp, Paper and Printing	0,74	0,77	0,89	0,96	1,08	0,94	0,98	1,02	1,27	1,28		
Food, Beverages and Fobacco	3,54	3,61	3,33	4,37	4,97	4,93	5,09	5,19	5,88	6,34		
Minerals	27,94	26,37	28,26	29,95	31,63	32,58	30,22	25,45	29,62	32,72	2	
Other	18,64	12,89	12,29	11,13	10,73	10,96	11,27	11,10	10,25	10,91		

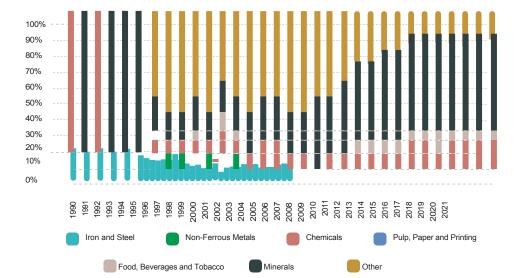


Figure 13 - Industrial sector combustion emissions [1]

Cement and iron and steel production lead the sector's process emissions. These two sectors accounted for around 74.7% of total process emissions in 2021 (Figure 14).

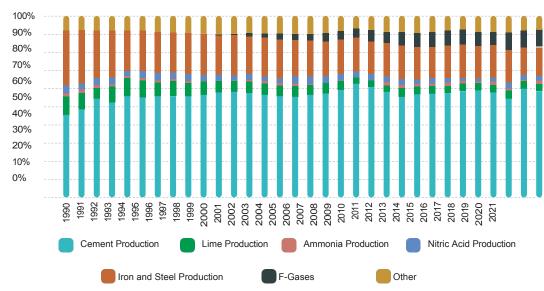


Figure 14 - Industrial sector process emissions [1]

In Table, data on process emissions in the industrial sector are given on a yearly basis.

Table 10 - Industrial Sector Process Emissions (Mton CO) [1]

	1990	1991	1992	1993	1994	1995	1996	1997	1998	199	9 2000)
Cement Production	10,44	12,02	13,27	13,05	13,49	14,13	14,66	15,10	15,29	14,5	59 15,18	
Lime Production	2,25	2,18	1,45	2,13	2,39	2,36	1,96	2,24	2,00	1,86	1,65	
Ammonia Production	0,42	0,40	0,39	0,35	0,27	0,35	0,33	0,33	0,30	0,10	0,09	
Nitric Acid Production	1,06	0,85	0,96	0,94	0,65	1,00	1,02	1,04	0,99	0,9	2 0,85	
Iron and Steel Production	6,95	7,31	6,37	6,43	5,44	5,68	6,03	5,93	6,25	5,9	5,73	
F-Gases	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,0	0 0,12	
Other	1,73	1,81	1,86	1,90	1,86	2,01	2,17	2,36	2,49	2,41	2,59	
	2001	2002	2003	2004	2005	2006	2007	200	8 20	09	2010	201
Cement Production	15,09	15,51	16,02	17,21	19,12	20,84	22,78	3 24,8	5 27	,04	29,98	31,4
Lime Production	1,52	1,62	1,70	1,82	1,92	2,08	2,28	1,92	1,6	1	1,71	2,0
Ammonia Production	0,08	0,36	0,36	0,46	0,57	0,12	0,00	0,15	0,0	00	0,12	0,8
Nitric Acid Production	0,74	0,83	0,75	0,72	1,35	1,68	1,53	1,47	1,3	4	1,65	1,74
Iron and Steel Production	5,79	5,62	6,09	6,75	6,91	7,16	7,73	8,05	5 8,1	1	8,88	9,9
F-Gases	0,23	0,42	0,63	0,91	1,15	1,42	1,71	1,90	2,1	1	3,05	3,4
Other	2,40 2012	2,47 2013	2,63 2014	2,90 2015	3,24 2016	3,45 2017	3,64 2018	3,34 201 9			3,66 2021	4,5
Cement Production	31,37	33,91	34,50	34,44	37,53	39,47	39,41	32,3	5 40,	81	44,23	
Lime Production	2,61	2,49	2,51	2,43	2,66	2,68	2,79	2,56	2,8	1	2,75	
Ammonia Production	1,04	0,64	0,82	1,19	0,79	0,52	1,05	0,56	0,5	4	1,49	
Nitric Acid Production	1,78	1,79	1,81	1,45	1,22	1,16	1,82	2,02	2,0	1	2,02	
Iron and Steel Production	10,48	10,58	10,49	10,74	11,72	11,93	11,95	10,62	2 10,1	15	11,91	
F-Gases	4,26	4,47	4,93	4,82	5,11	5,26	5,04	5,68	6,5	0	7,21	
Other	4,73	5,45	5,01	4,65	4,73	5,61	5,68	5,22	5,15	5	5,52	

The main legislation, policy and strategy documents related to the industrial sector in Turkey are presented in Table 11 and Table 12. in place.

Table 11 - Basic Legislation Related to the Industrial Sector

Basic Legislation	Purpose and Scope
	The purpose of the Law is to increase efficiency in the use of energy resources and energy in order to use energy effectively, prevent waste, alleviate the burden of energy costs on the economy and protect the environment.
Energy Efficiency Law (Law No 5627)	The Law aims to increase and support energy efficiency in the production, transmission, distribution and consumption stages of energy, in industrial enterprises, buildings, electric power generation facilities, transmission and distribution networks and transportation, agriculture and service sectors, to energy awareness throughout the society, to promote renewable energy includes practices for the utilization of resources
	The purpose of the Regulation is to set out the principles and procedures for monitoring, reporting and verification of greenhouse gas emissions from covered activities. The Regulation covers activity groups such as fossil fuel combustion, petroleum refining, iron and steel, ferrous and non-ferrous metal production, primary aluminum production, mining industry, pulp and paper production, chemical industry and acid production.
Regulation on Monitoring of Greenhouse Gas Emissions	Since 2015, greenhouse gas emissions from more than 700 industrial facilities have been monitored under this Regulation, which corresponds to approximately half of Turkey's total greenhouse gas emissions.
	The IRD system in Turkey is based on the European Union Emissions Trading System, the largest international emissions trading system implemented since 2005.

Basic Legislation	Purpose and Scope
	The aim of the Regulation is to enable customers to choose more efficient products to reduce energy consumption by establishing a framework for energy-related products placed on the market or put into service, through the labeling of these products and the provision of standard product information on energy efficiency, consumption of energy and other resources during use and complementary information on these products.
Energy Labeling Framework Regulation	The Regulation covers the obligations of suppliers, sellers and authorized bodies in relation to energy-related products placed on the market or put into service, market surveillance, inspection and control of products, the procedure for intervention at national level for products that pose a risk, the procedure for protection measures, the introduction and reclassification of labels and other works and transactions related to harmonization standards.
	The purpose of the Regulation is to establish a voluntary environmental labeling system in order to promote products or services with reduced environmental impacts throughout the life cycle in line with sustainable environmental objectives, to provide consumers with accurate and scientifically based information, and to regulate the administrative and technical issues and the implementation of the system.
Environmental Labeling Regulation	The environmental labeling system established by the Regulation aims to prevent the degradation of ecosystems and reduce the negative impacts on the environment, human, health, climate and natural life in the consumption of natural resources in all processes of the life cycle of products or services, starting from the use of natural resources and raw materials to the final disposal stage, including phases such as production, use, consumption, recycling.

1 11 1 1 1	70
value-added production	/3

Aims and Objectives

The main objective is to ensure transition to a high value-added production structure by increasing competitiveness and productivity in all sectors, especially priority sectors in the manufacturing industry, on the axis of green and digital transformation. The Plan includes the following measures:

Green transformation will be supported in the manufacturing industry and

circular and sustainable production practices will be increased. R&D activities

and technology transfer will be supported for the adoption, development and

dissemination of sustainable production and green transformation technologies.

Clean energy production and utilization will be encouraged. SMEs' awareness on green transformation will be raised and sectoral transformation profiles will be created. Support for energy efficiency practices of enterprises will be increased, and technological investments with high energy efficiency and savings potential that contribute to facility and optimization will be supported. Standardized national practices in carbon and water footprint calculation and verification will be developed. Within the scope of green transformation, the

transformation of industry. ne institutional capacity of the sector will be improved and awareness will be

development and commercialization of components, equipment and systems

related to the production, storage, transportation and industrial use processes

in the hydrogen value chain with domestic and national capabilities will be supported. Public and private sector will be supported in the green

The Strategy sets out national mitigation, adaptation, technology, financing and capacity building policies within the framework of short and long term objectives covering the years 2010-2023 in order to contribute to the reduction of greenhouse gas emissions and combating climate change within the framework of our country's specific conditions and opportunities.

Climate Change Strategy (2010-2023)

The focus is on targets such as substituting the resources used in industry with resources for cleaner production and using alternative materials, encouraging heat recovery, industrial cogeneration systems; encouraging R&D activities and technology transfer; incentive mechanisms to ensure that cleaner production technologies, climate-friendly and innovative technologies are preferred; and effectively implementing audit and sanction mechanisms.

Basic Legislation Purpose and Scope The purpose of the Regulation is to make arrangements for the management of fluorinated greenhouse gases and other fluorinated substances in order to control the emission of fluorinated greenhouse gases within the scope of the Montreal Protocol on Substances that Deplete the Ozone Layer, Kigali Amendment, to which Turkey is a party. With this amendment, the consumption of fluorinated greenhouse gases in Turkey has been committed to gradually reduce by a total of 80% CO2-equivalent starting from 2024 until 2045. Regulation on Fluorinated

Greenhouse Gases

The Regulation sets out principles on the labeling, data collection, leakage controls, reporting, placing on the market, import, export and use, quota distribution, recovery and disposal of fluorinated greenhouse gases and other fluorinated substances, including those in products and equipment, and on the training and certification of natural and legal persons who intervene in equipment containing fluorinated greenhouse gases or whose operation relies on these gases.

and regulations.

substances controlled by the Montreal Protocol on Substances that Deplete the Ozone Laver, to which Turkey is a party.

Regulation on Substances that Deplete the Ozone Laver

The Regulation requires the reporting of all information on the production, foreign trade, use, placing on the market, recovery, recycling, reclamation and disposal of controlled substances, new substances, products and equipment containing or working with these substances; and

public information.

Regulation on Design of Energy Related **Products**

Voluntary Carbon Market

Project Registration Communiqué

The purpose of the Regulation is to establish an environmentally sound design requirements for the placing on the market or putting into service of energyrelated products in order to contribute to sustainable development by increasing energy efficiency, environmental protection level and security of energy supply.

ramework to determine the requirements that must be complied with

The purpose of the Communiqué is to regulate the registration of projects that provide greenhouse gas emission reductions and are developed to obtain carbon certificates.

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Table 12 - Key Policy Documents Related to the Industry Sector

Policy Documents

12th Development Plan (2024-2028)

The purpose of the Regulation is to regulate the use and termination of

Environmentally Responsible

Policy Documents	Aims and Objectives
NDC 2023	In the NDC document, Turkey's main mitigation policies in the industrial sector for 2030 are; increasing the use of biofuels, waste-derived fuels (WDF), alternative fuels and raw materials in industrial facilities; reducing the carbon footprint of industrial products and increasing the use of renewable energy, resource and energy efficiency in the industrial sector; preparation of a National Cooling Action Plan (in draft stage) covering sustainable and natural cooling technologies as well as innovative financing solutions and more energy efficient cooling gases; Conducting Green Growth Technology Roadmap studies for the iron and steel, aluminum, cement, chemicals, plastics and fertilizer sectors, which are critical for the Turkish economy and cause high carbon emissions; prioritizing the certification of industrial facilities using "Best Available Techniques" as an indicator of clean and green industrial production Supporting "Green Transformation in Industry".
National Energy Efficiency Action Plan (2017-2023)	Within the scope of the National Energy Efficiency Action Plan implemented between 2017 and 2023, with 55 actions defined in 6 categories: buildings and services, energy, transportation, industry and technology, agriculture and horizontal issues, Turkey's primary energy consumption in 2023 was targeted to be reduced by 14% compared to the baseline scenario; it was envisaged to achieve a cumulative savings of 23.9 Mtoe by 2023 and to invest USD 10.9 billion for this savings. According to the progress report prepared for the years 2017-2020, work has been carried out in areas such as process efficiency, energy management, industrial symbiosis and the establishment of green Organized Industrial Zones through national and international cooperation. Within the scope of the Efficiency Improvement Project Support Program, TL 122 million was provided to 517 projects between 2011 and 2023, resulting in

financial savings of TL 803 million and 117 thousand TOE energy savings.

Policy Documents	Aims and Objectives
2023 Industry and Technology Strategy	The strategy was prepared with the vision of "National Technology, Strong Industry" targeting the year 2023 and is divided into five main components and 23 sub-policies: (1) High Technology and Innovation, (2) Digital Transformation and Industrial Move, (3) Entrepreneurship, (4) Human Capital and (5) Infrastructure. The Strategy Document aims to increase the number of software engineers in Turkey from 140,000 to 500,000 by 2023 and to make Turkey a world leader by creating at least 23 smart products or services based on world-scale disruptive technologies. In addition, the Document aims to 1 billion dollars and above localizes the concept of "unicorn" startups. In this perspective, the number of Turcorn-Turkish technology firms with a valuation of over USD 1 billion will reach at least 10 by 2023, and technology-based firms will attract investment.
Green Deal Action Plan (2021)	The Action Plan has also been prepared to align Turkey with the EU Green Deal and the Border Carbon Deregulation Mechanism (BCDRM) and to drive green transformation in specific sectors, and includes 32 targets and 81 actions in 9 categories to support a circular and greener economy. In order to achieve the relevant targets, the main topics under the Action Plan are carbon regulations at the border, a green and circular economy, green finance, clean, affordable and secure energy supply, sustainable agriculture, sustainable transportcombating climate changediplomacy and the European Green Deal information and awareness raising activities.

Policy Documents	Aims and Objectives
	The document focuses on five areas of vulnerability to climate change in Turkey: water resources management; agriculture and food security; ecosystem services, biodiversity and forestry; natural disaster risk management; and human health. Although the industrial sector is not included in these five priority areas in terms of vulnerability, it is envisaged as a stakeholder for many efficiency-oriented activities in the actions determined according to the vulnerable sectors and themes.
National Climate Change Adaptation Strategy and Action Plan (2011-2023)	Within the scope of the Joint Program on Enhancing Turkey's Capacity to Adapt to Climate Change, assessments were made on climate risks for the industrial sector and the Eco-Efficiency (Cleaner Production) Program was implemented as the industry-related component of the Joint Program. Seyhan Basin Eco-Efficiency and Cleaner Production Pilot Studies were carried out under the responsibility of the United Nations Industrial Development Organization Eco-Efficiency (Cleaner Production) Program and capacity building activities were carried out in the fields of cleaner production and eco-efficiency in industry.
	The document aims to mitigate the impacts of climate change on water supply in all sectors, particularly urban, agricultural and industrial water uses.
Water Efficiency Strategy Document and Action Plan in the Framework of Adaptation to a Changing Climate (2023-2033)	The Plan includes strengthening the legal, administrative and technical infrastructure to increase water efficiency in the industrial sector, raising awareness on water efficiency practices in industry, disseminating good practices and ensuring cooperation between public institutions, universities, NGOs related to the industrial sector and the private sector, institutional structure of basin water management and organized industrial zones administrations, chambers of industry, The strategies include the development of an institutional linkage and cooperation structure among industry NGOs for the supervision of efficient use of water, establishing a legal regulation on pricing to encourage efficiency in industrial water use, calculating the size of the blue and gray water footprint in agriculture and industry, determining measures to reduce it, and establishing incentives and support mechanisms.

Policy Documents	Aims and Objectives
Climate Council (2022)	Within the framework of the 2053 net zero emission target, the Council will determine the long-term shares of the manufacturing industry and its subsectors and make projections; create low-carbon road maps in manufacturing sectors; increase the use of renewable energy and energy efficiency in industry; carry out studies to determine the mandatory use rates of products obtained by reusing waste, using waste as by-products, alternative raw materials and recycling / recovery, and develop support mechanisms; Establishing the infrastructure for the Green Organized Industrial Zone (OIZ) and Green Industrial Zone certification system; disseminating other alternative emission reduction methods such as green hydrogen and its derivatives, carbon capture, use and storage in all sectors, especially in carbon-intensive
	sectors, and developing support mechanisms.



2.2.2 Strategy and Actions

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In the industrial sector, which has one of the largest shares in Turkey's greenhouse gas emissions, eight mitigation-oriented strategies have been identified. These strategies include ensuring energy efficiency, increasing the use of renewable energy, reducing carbon footprint and carbon intensity, expanding corporate sustainability reporting, promoting circular economy and resource efficiency, developing new technology through R&D and innovation with national resources, providing financing resources and capacity building.

Strategy S-S.1

Utilizing the energy efficiency potential of the manufacturing industry at the highest level

The manufacturing industry sector has a significant share in energy consumption and consequently in greenhouse gas emissions. Therefore, energy efficiency is an important application area for the manufacturing industry in combating climate change. On a global scale, the industrial sector is the second sector with the largest emissions after the energy production sector. The global fight against climate change, rising energy prices and limited resources make it imperative to widely implement energy efficiency programs to reduce energy consumption in energy-intensive manufacturing sectors.

Energy efficiency addressed under two complementary main headings: reducing final energy demand by using less energy and using energy more efficiently by optimizing production. To reduce final energy demand, technical solutions and employee awareness-raising activities stand out.

Energy efficiency investments can be improved by identifying subsidies to reduce investment costs in terms of financial support, return on investment and total cost of ownership. In this context, studies and benchmarking studies on energy efficiency in emission and energy-intensive manufacturing industry sectors will be conducted. In addition, on a sub-sector basis, by considering normalization, many factors other than operating practices that affect energy efficiency independently of the operator should be taken into account.

Studies and benchmarking studies for energy efficiency in emission and energy-intensive manufacturing industry sectors, as a result of the implementation of efficiency improvement projects, and the amounts presented in the project

performance evaluation based on realized values, and heat and air conditioning in the manufacturing industry sector. Investigating the domestic production and utilization potential of pumps is among the targets under this strategy.

S-S.1.1	Conducting mandatory energy efficiency audit reports and benchmarking studies within the scope of energy efficiency legislation and updating savings potentials
S-S.1.2	Increasing the amount of support by removing the cost limit for efficiency-enhancing projects with a legislative amendment, determining performance criteria taking into account climate change, and supporting projects with relatively high savings potential
S-S.1.3	Incentivize verified energy efficiency performance improvements through carbon pricing instruments
S-S.1.4	Providing support for the dissemination of heat pumps in manufacturing industry sectors and preparing guidance documents by conducting awareness raising activities
S-S.1.5	Promote the creation of digitalization systems for energy efficiency measurement, monitoring and reporting activities in SMEs

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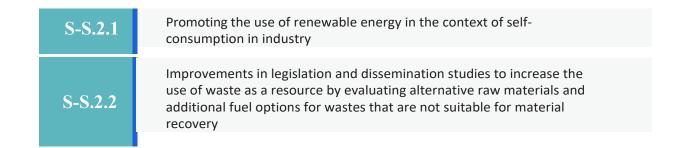
Increasing the use of renewable energy for the manufacturing industry

The majority of the emissions caused by the manufacturing industry sector are due to energy use. In order to reduce fossil energy use, the sector is evaluating different options for transitioning from renewable energy sources to alternative energy production methods. The development and implementation of renewable energy options as an alternative to fossil fuels is important for achieving more and more innovation, growth and competitiveness in clean energy production worldwide.

While to renewable energy in manufacturing industry production requires significant investment, it will ensure long-term energy security and resilience to climate risks. Diversification of energy sources can reduce exposure to supply disruptions while ensuring financial sustainability against fossil fuel price fluctuations.

There is a growing number of commercial organizations that are demanding their suppliers to disclose their targets and strategies for renewable energy use. Expanding the use of renewable energy will also contribute significantly to reducing supply chain emissions. Therefore, a diversified energy portfolio will be one of the key determinants of sustainable development for manufacturers in the coming period. In addition, the use of existing renewable energy sources such as solar and wind will advance the potential to utilize new technologies such as green hydrogen in the near future.

This strategy aims to reduce greenhouse gases by increasing incentives for the production and use of renewable energy for industrial sector organizations, providing the heat needed by industrial processes from renewable energy sources and increasing the use of electricity generated from certified renewable energy by industrial facilities.



Strategy S-S.3

Reducing the carbon footprint and CO2-ecd intensity per GDP in the manufacturing industry

Product demands, including those of the manufacturing industry, are linked to the production and consumption of goods and services that enable sustainable development and carbon footprint reduction.

Combating climate change requires both carbon neutral operations within the boundaries of manufacturing organizations and the transition to carbon neutral value chains. An important step towards reducing the carbon footprint of the manufacturing industry is to conduct product carbon footprint studies to calculate the total greenhouse gas emissions produced by a product.

Preparation of a roadmap that includes mitigation strategies and implementation schedule to cover all industrial sub-sectors, particularly energy and carbon-intensive sectors, will be an important starting point for the work to be carried out until 2030.

In order to reduce the carbon footprint on a product basis; reducing the clinker ratio of cement used in public construction and infrastructure investments, carrying out infrastructure work to introduce low carbon density criteria for iron and steel, determining new technical and innovative applications developed as financial support criteria, ensuring green transformation throughout the supply chain and planning the necessary activities to analyze SMEs that are critical in reducing greenhouse gas emissions and monitoring their performance with the approach of leaving no one behind are the prominent action areas under this strategy.

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S-S.3.1	Preparation of a roadmap for reducing carbon footprint in sub-sectors
S-S.3.2	Carrying out studies to reduce the clinker ratio of cement to be used in public construction and infrastructure investments in order to reduce the carbon footprint on a product basis
S-S.3.3	Technical support for the commercialization of new technological solutions for reducing the carbon footprint in industrial sectors and establish mechanisms to support them financially
S-S.3.4	Reviewing policies to ensure the supply of scrap metal required for low carbon emission steel production
S-S.3.5	Identifying SMEs that are critical in greenhouse gas emission reduction and establishing a monitoring system for their climate performance in order to contribute to green transformation

Strategy S-S.4

Mainstreaming sustainability reporting

The emergence and transformation of new sustainability reporting frameworks and standards has accelerated recently, and voluntary reporting is soon to be transformed into mandatory legislation. In this context, organizations that prepare early for these new regulations and embrace the legislative changes will reap far-reaching benefits, starting with competitive advantage and reputation management.

Today, the global sustainability reporting landscape is predominantly voluntary, consisting of a growing number of voluntary reporting frameworks and standards, in addition to sector-specific initiatives, certification bodies and sustainability rating agencies. However, there have been many changes in recent years with the transition to mandatory reporting.

The relationship between climate criteria and EU taxonomy is still evolving. Currently, the EU is working on a taxonomy for climate change, sustainability and sustainability reporting.

requirements are progressing rapidly. The EU is committed to addressing broader sustainability material issues

The UK is currently focusing more on integrating climate-related issues through the adoption of mandatory Task Force on Climate-Related Financial Disclosures reporting in annual reports. At the end of 2022, the EU adopted the Corporate Sustainability Reporting Directive, which requires businesses to report on sustainability in a phased-in manner, starting in 2024, according to the mandatory EU Corporate Sustainability Reporting Directive No. 537/2014, published at the end of 2024.

Turkey closely follows all these developments and establishes an institutional and technical infrastructure for them. The Public Oversight, Accounting and Auditing Standards Authority was authorized to determine and publish the Turkish Sustainability Reporting Standards with the amendment to the Turkish Commercial Code No. 6102 published in the Official Gazette dated June 4, 2022 and numbered 31856.

The Agency has published drafts in accordance with the Sustainability Reporting Standards published by the International Sustainability Standards Board (ISSB) and work is underway to publish the Turkish Sustainability Reporting Standards in line with international standards. In light of all these advances, the establishment of a platform with public and private sector members to disseminate sustainability reporting will be beneficial in terms of ensuring compliance with global developments. Within the sustainability working group established with the participation of relevant institutions, the scope of the enterprises that will make mandatory reporting was determined by considering the cost-benefit relationship.

Under this strategy heading, it is also aimed to evaluate and implement a third-party assurance or verification system to increase the international credibility of sustainability reports and to prepare and implement a gradual transition schedule for Turkey within the framework of the detailed transition schedule that will extend to sustainability reporting and SMEs, which has become mandatory in the EU.

86	S-S.4.1	Disseminating Corporate Sustainability Reporting and establishing a platform where public and private sectors are members
	S-S.4.2	Publishing Turkish Sustainability Reporting Standards in line with international standards and establishing a third party assurance and verification system for sustainability reporting
	S-S.4.3	Preparation of a gradual transition schedule for mandatory sustainability reporting on a scale basis in line with the European Union
		Reviewing the CMB Sustainability Principles Compliance Framework in

S-S.4.4

Capacity building of manufacturing industry stakeholders

Reviewing the institutional capacity building needs for achieving the targets and planning the next steps is important for the success of the Action Plan. in many sectors, behavioural change in tackling climate change is key for decarbonization of the industrial sector.

the context of international standards and developments

How industrial enterprises, particularly small and medium-sized enterprises (SMEsmanage their mitigation and adaptation activities in light of current developments is directly related to their institutional capacity.

SMEs becoming more open to sharing and reusing climate change mitigation and adaptation activities will be decisive in the process of sustainability management and decarbonization of SMEs in a more knowledge-intensive environment.

For strengthening technical information capacity for climate change mitigation and adaptation; identification of priority stakeholder groups, consultation meetings organizing information and experience sharing platforms, examining examples of good practices is one of the activities within the scope of this strategy.

In addition, the assessment of the consequences of the just transition and transformation of employment in terms of women employment and the envisioning of measures to increase women's employment will be observed in all these activities.

S-S.5.1	Strengthening the technical knowledge capacity of industrial enterprises, in particular SMEs, for climate change mitigation and adaptation
S-S.5.2	Capacity building and roadmap for just transition and employment transformation

Strategy S-S.6

Promote circular economy and resource efficiency for all manufacturing industry sectors

Along with environmental, economic and social benefits, the transition to a more resource efficient and circular economy is also an important area for combating climate change. In the national strategies developed and planned for sustainable materials management, resource efficiency and circular economy, organizing awareness-raising activities and supporting pilot applications and investments in the context of climate change are among the objectives within the scope of the strategy.

At the macroeconomic level, the transition to a circular economy can be an opportunity for sectors that are more resilient to pressures on ecosystem services, in addition to economic benefits in terms of resource efficiency, competitiveness, new business opportunities and innovation. Within the scope of circular economy practices; organizing information, training and other activities for industrial sector representatives, including resource efficiency, reuse, recovery and alternative raw materials, encouraging pilot applications and investments, developing policies for the dissemination of circular economy are among the implementation areas of this strategy.

It is also aimed to identify critical raw materials for green transformation and develop policies to ensure security of supply.

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S-S.6.1	Organizing awareness-raising activities on circular economy and resource efficiency on the basis of sub-sectors
S-S.6.2	Investments for the green transformation of the manufacturing industryincluding circular economy and resource efficiency practices Green Transformation Support Program, which aims to support execution
S-S.6.3	Developing legislation for the sustainable product initiative and digital product passport system in line with the European Union for the implementation and dissemination of the circular economy model
S-S.6.4	Developing policies for the dissemination of circular economy models
S-S.6.5	Identifying critical raw materials for green transformation and developing policies to ensure supply security

Developing new technology options through R&D and innovation with national resources

Technological development has a key role in combating climate change. The ability to drive change and manage the transition to climate-friendly technologies is crucial at national and sectoral scales in the decarbonization process.

Without R&D and innovation, it will not be possible to meet net zero targets. On the road to net zero in the industrial sector, technological innovations for renewable energy generation and storage capacities, electrification of appropriate processes, capture, utilization and storage of CO2, and the use of hydrogen and hydrogen-based fuels are seen as the main areas of development.

It is aimed to support R&D and innovation activities targeting greenhouse gas mitigation through capacity building activities and pilot applications.

However, it is also important to conduct studies and pilot projects for the use of hydrogen technologies in industry. level, supporting projects on carbon capture, utilization and storage are the action areas within the scope of this strategy.

S-S.7.1	Supporting R&D and innovation activities targeting greenhouse gas mitigation
S-S.7.2	Developing patented pilot applications and technological solutions
S-S.7.3	Conducting studies on the use of hydrogen technologies in industry and implementing them at pilot level, developing incentive mechanisms for their use in industry
S-S.7.4	Supporting projects on carbon capture, utilization and storage (CCSR)
S-S.7.5	Development of R&D and application projects on electrification of low and medium thermal processes in industrial sectors

Developing sustainable investment instruments and providing investors with appropr creation of sources of financing

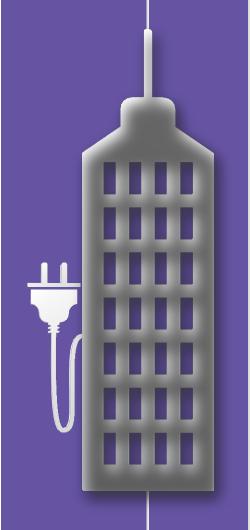
Despite the rapid increase in private sector investment in recent years, the need for climate finance remains. Financial resources and sound investments are needed to reduce emissions and promote adaptation to impacts that have already occurred. However, the benefits from these investments worth significantly more than any initial costs.

It is aimed to increase public investments in infrastructure, R&D and renewable energy technologies that will support and encourage the flow of climate finance to the private sector, to review and improve data gaps and reporting standards for sustainable finance, and to effectively utilize sustainable finance sources.

It is also aimed to adapt the taxonomy and reporting framework and to plan efforts to provide technical and financial support for the decarbonization of the production and supply chain of SMEs.

S-S.8.1	Effective utilization of sustainable financing sources in the transformation process of the industrial sector and harmonization of the required classification and reporting framework
S-S.8.2	Providing technical and financial support to SMEs for decarbonization of their production and supply chain
S-S.8.3	Develop incentives and support mechanisms for the replacement of existing electric motors with efficient motors especially for SMEs
S-S.8.4	Supporting the issuance of green/sustainability-labeled debt instruments through regulations to support green transformation, energy efficiency and technology development projects







BUILDING S

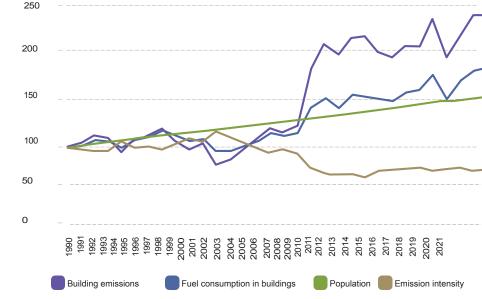
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2.3.1 Current Status

The increase in Turkey's population and urbanization rate, as well as rising prosperity, are the driving forces behind the increase in the number and floor area of buildings in Turkey. According to the Turkish Statistical Institute (TurkStat) statistics on building licenses and occupancy permits, and an estimate based on the depreciation rate of the building stock for Turkey, there are approximately 9.5 million buildings (residential and non-residential) and 3.6 billion m2 of total floor area in Turkey. According to the energy balance table prepared by the Ministry of Energy and Natural Resources, buildings (residential, commercial and services) used approximately 38.3 Mtonnes of oil equivalent (TOE) energy (directly used primary energy sources and electricity) in 2021. Between 1990 and 2021, energy use increased by 82% and building emissions by 136%, while the emission intensity of buildings decreased by 33% (Figure 15).

Buildings are divided into two main groups according to energy use: "residential" and "commercial and services" non-residential. In 2021, 53% of the total energy used in residential buildings will come from natural gas,

20% from electricity, 14% from coal, 11% from renewable energy and 2% from petroleum products (Figure 16a). When non-residential energy use is analyzed electricity has the highest share with 53%. This is by natural gas with 32%, coal with 7%, renewable energy sources with 4% and petroleum products with 4%. (Figure 16b) [2]. Since the Energy Balance Tables do not include the sub-detail of energy statistics of commercial enterprises and services before 2015, it is not possible to analyze the change in the resource distribution in 1990. However, when the data for 2021 are analyzed, the fact that more than half of the energy used is through electricity shows that the mitigation potential may be high.



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Figure 15 - Changes in key indicators related to buildings [1] [2] [7]

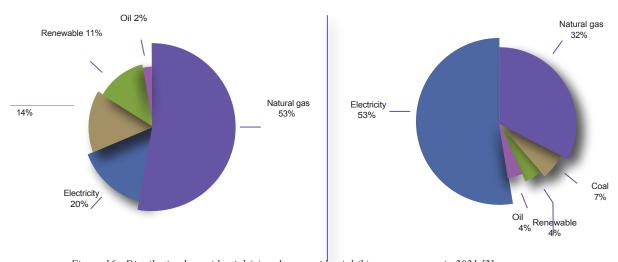


Figure 16 - Distribution by residential (a) and non-residential (b) energy sources in 2021 [2]

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Table 13 the distribution in terms of greenhouse gas emissions. the change in emissions between 1990 and 2021, it can be seen that until 2015, residential and commercial

services handled together and reported separately after 2015. This includes

Accordingly, emissions increased by 93% from 27.3 Mton CO2eqd. in 1990 to 52.7 Mton 2014. On the other hand, the emissions of only the residential sector increased from 32 Mton to 50 Mton between 2015-2021. The increase in emissions in this short period approximately 56%.

Table 13 - Greenhouse Gas Emissions of Residential Buildings (Mton) [1]

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
CO2 equivalent	27.2	28.4	30.6	29.8	25.7	29.5	30.0	32.5	28.8	26.6	28.2	22.3	23.7	26.8	29.5	32.5
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
CO2 equivalent	31.3	33.4	49.3	56.2	53.3	57.7	58.2	53.8	52.7	32.2	33.4	42.6	38.8	43.7	50.3	50.3

Table 14 presents the GHG emission information of commercial establishments and services. According to the Turkey Greenhouse Gas Emission Inventory Report, greenhouse gas emissions in trade and services are decreasing. Emissions of 23.4 MT in 2015 by 40.5% to 13,949 MT in 2021.

Table 14 - Greenhouse Gas Emissions of Commercial Houses and Services (thousand tons) [1]

Year	CO2 equivalent.
2015	23.353
2016	22.139
2017	20.647
2018	13.539
2019	14.678
2020	13.637
2021	13.949

The main legislation, policy and strategy documents related to the buildings sector in Turkey are presented in Table 15 and Table 16.

Table 15 - Basic Legislation on Buildings

Basic Legislation	Purpose and Scope
Energy Efficiency Law (Law No 5627)	It is aimed to increase efficiency in the use of energy resources and energy in order to use energy effectively, prevent waste, alleviate the burden of energy costs on the economy and protect the environment.
Regulation on Energy Performance in Buildings	It is aimed to regulate the procedures and principles regarding the effective and efficient use of energy and energy resources in buildings, prevention of energy waste and protection of the environment.
Green Certification Regulation for Buildings and Settlements	It is aimed to establish evaluation and certification systems for buildings and settlements to reduce their negative impacts on the environment by using natural resources and energy efficiently; to determine the procedures and principles regarding the qualifications of green certification experts, green certification evaluation experts and training institutions and the evaluation criteria of green buildings and green settlements.
Regulation on Environmentally Responsible Design of Energy Related Products	establishing a framework for environmentally sound design requirements for placing energy-related products on the market or putting them into service to contribute to sustainable development by increasing energy efficiency, environmental protection and security of energy supply determine the requirements that must be complied with.
Zoning Law (Law No 3194)	It is aimed to ensure the formation of settlements and their constructions in accordance with the plan, science, health and environmental conditions.
Spatial Plans Construction Regulation	It is aimed to determine the procedures and principles regarding the making and implementation of spatial plans, which are prepared to support sustainable development at the spatial level, to create healthy and safe environments with high quality of life, and to make land use and settlement decisions.

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Basic Legislation	Purpose and Scope
Planned Areas Zoning Regulation	It is aimed to determine the procedures and principles regarding building and construction in accordance with the plan, science, health and sustainable environmental conditions, project design and supervision.
Presidential Decree No. 2023/15 on Energy Savings in Public Buildings Circular	The energy efficiency target for public buildings that are obliged to appoint an energy manager has been updated to increase from 15% to 30% by 2030.

Table 16. Main Policy Documents Related to Buildings

Policy Documents	Aims and Objectives
	The plan the following measures:
	In order to accelerate the energy transition of buildings, energy efficient buildings supported by renewable energy will be made widespread and regulations will be developed for this purpose.
12th Development Plan (2024 -2028)	Alternative methods in the field of energy efficiency, particularly in buildings, such as energy performance contracts, energy service companies model and the use of Treasury-backed guarantee system will be expanded. Work on the legislation on the heat market will be completed, the use of district heating/cooling systems and heat pumps will be expanded in technically and economically feasible places, and efforts will be made to increase geothermal-based heating. The potential for increasing the use of renewable energy resources in residential buildings will be identified, a road map will be prepared to determine the steps to be taken, including cost-benefit effectiveness, and put into practice.

Policy Documents	Aims and Objectives
NDC 2023	In the National Contribution Statement; renovate existing buildings, construct more energy efficient buildings; use district heating solutions in densely populated areas; use new techniques and technologies; conduct integrated building design using the best available techniques throughout the entire planning, construction and life cycle of buildings to increase resource and energy efficiency and reduce environmental impacts and carbon emissions; develop and promote BIM and modular construction technologies; provide incentives for the use of gray water and rainwater, establish zero waste systems; increase self-consumption of renewable energy; implement building performance codes and standards for residential and non-residential buildings; implement renewable portfolio targets, energy efficiency labeling, retrofitting of existing buildings, smart grid systems and district energy systems; increase the use of energy efficient white goods and electrical appliances.
National Energy Efficiency Action Plan (2017-2023)	In the action plan, it is stated that a database including energy consumption data for buildings will be established; rehabilitation of existing buildings and improvement of energy efficiency; encouraging the use of central and district heating/cooling systems; increasing the rate of energy identity certificate ownership of existing buildings, encouraging the certification of sustainable green buildings and settlements; encouraging energy efficiency in new buildings; improving energy performance in existing public buildings; expanding the use of renewable energy and cogeneration systems in buildings: intended.
Energy Efficiency Strategy Document (2012-2023)	The strategy document includes the following strategies: introducing maximum energy demand and maximum emission limits for buildings; imposing administrative sanctions on those whose CO2 emission amounts are above the minimum values defined in the relevant legislation as of 2017; limiting the sale of products that use energy inefficiently and making market supervision more effective; reducing annual energy consumption in buildings and facilities of public institutions by 20% by 2023; and implementing efficiency-enhancing practices in public sector buildings and facilities through Energy Performance Contracts.

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Policy Documents	Aims and Objectives
National Climate Change Strategy Document (2010-2020)	In the strategy document, it is stated that the implementation of EPC in new buildings will be initiated; the initial investment cost of renewable energy systems in new buildings, taking into account the energy economy, will be recovered in 10 years for buildings with a construction area up to 20,000 m2 and in 15 years for buildings with a construction area of 20,000 m2 or more: 20,000 m2 and larger buildings in 15 years; supporting systems with solar energy collectors in central heating and sanitary hot water systems in newly constructed non-residential buildings for accommodation purposes such as hotels, hospitals, dormitories and similar non-residential buildings with a usage area of over 1,000 m2 and sports centers.
Climate Change Action (2011- 2023)	In the Action Plan, at least 1 million dwellings and commercial and public buildings with a total area of over 10,000 m2 will thermal insulation and energy efficient systems that meet the standards by 2023; at least 20% of the annual energy needs of new buildings be met from renewable energy sources by 2017; greenhouse gas emissions at settlement scale in new settlements by 2023 t is aimed to be reduced by at least 10% compared to existing settlements.
Climate Council (2022)	Among the decisions of the Council; establishing incentive/support mechanisms for existing buildings and credit/tax support mechanisms and necessary financial infrastructure for new buildings based on carbon pricing in order to increase energy efficiency and renewable energy use in buildings; improving the legislative infrastructure related to green certification for green building/settlement and Nearly Zero Energy Building (NSEB) order to limit the energy need of buildings and to meet this limited need from renewable energy; developing and promoting the use of integrated building design and building information modeling (BIM) and modular construction technologies; developing legislation on water efficiency in buildings; establishing a building database; developing infrastructure, awareness and consciousness to increase the share of environmentally friendly building materials, energy-saving and environmentally friendly products in building construction.

2.3.2 Strategy and Actions

In the buildings sector, strategies and actions supporting the implementation of these strategies are given for improving energy efficiency for existing and new buildings, increasing the energy efficiency of electrical appliances, equipment and devices used in buildings, expanding the use of district heating and cooling systems, expanding the use of environmentally friendly design and building materials, and ensuring digital transformation in the construction ecosystem.

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Strategy B-S.1

| Improving energy efficiency in existing buildings

The preparation of a comprehensive set of indicators by researching existing data on buildings from institutions is targeted to be completed by 2025. There are many bases for the target of improving the energy efficiency of existing buildings (residential and non-residential) and developing sanctions for obtaining Energy Performance Certificate (EPC). Law No. 5627 on Energy Efficiency, Regulation on Energy Performance in Buildings, Climate Change Action Plan, National Climate Change Strategy Document, National Climate Change Action Plan, National Energy Efficiency Action Plan and Climate Council decisions can be given as examples. First of all, completing the purchase of EPCs for existing buildings is a necessary policy for the transparent and accurate calculation of the building energy inventory. Considering that approximately one third of the final energy consumption takes place in buildings, the EPC will close the most important gap in the building inventory and bottom-up monitoring of on-site energy efficiency and renewable energy use practices. Increasing the EPC class towards good in order to reduce the total final energy consumption will enable the energy sector to control the total failure to meet the demand in buildings. Law No. 5627 on Energy Efficiency envisages that EPC certification for existing buildings, which is mandatory, will be completed by 2030.

With the Presidential Circular No. 2023/15 dated 04/10/2023, the energy efficiency target for public buildings obliged to appoint energy managers was updated and increased from 15% to 30% by 2030. It is estimated that public buildings (including education and hospitals) constitute 1.5% of the total building stock. Improving energy efficiency in public buildings will be closely monitored to set an example for improvement in existing buildings.

Incentive and support mechanisms for energy efficiency improvements in existing buildings be effectively implemented. With the amendment to the Energy Efficiency Law

The building sector also included in efficiency-enhancing project supports. Low-interest heat insulation loan has been launched and it is important to continue activities to increase the level of promotion and awareness. In order to carry out awareness-raising activities to increase the level of awareness on energy efficiency in buildings, awareness-raising activities on buildings included in the energy efficiency strategic communication plan will continue. The objective of developing and disseminating Energy Performance Contracts (EPC) for Existing Buildings stands as a financing mechanism based on the repayment of the initial investment costs of energy efficiency or renewable energy projects with the savings to be achieved in the following years.

B-S.1.1	Preparation of indicator sets by matching existing databases on buildings in institutions
B-S.1.2	Including the prepared building indicator sets in the Official Statistics Program
B-S.1.3	Improving the energy efficiency of existing buildings and developing sanctions for obtaining Energy Performance Certificate (EPC)
B-S.1.4	Monitoring the increase in energy efficiency in public buildings obliged to appoint an energy manager
B-S.1.5	Establishing and sustainably operating incentive and support mechanisms for energy efficiency improvements in existing buildings
B-S.1.6	Conducting awareness raising activities to increase the level of awareness on energy efficiency in buildings
B-S.1.7	Dissemination of Energy Performance Contracts (EPC) for existing public buildings

Strategy B-S.2

Improving the energy efficiency of new buildings

In order to establish standards for the activities and qualifications of the workforce required for the dissemination of renewable energy and energy efficiency systems in buildings, it is aimed to develop standards and certification system for the missing workforce within the scope of vocational qualifications. In addition, it is necessary to train architects, engineers and technicians in the building construction and use processes for the Nearly Zero Energy Buildings (NZEB) approach with the aim of creating the necessary workforce and capacity building for the widespread use of on-site renewable energy resources and energy efficiency systems in buildings.

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In 2022, with the amendment in the BEP Regulation, the NSEB approach was adopted and targets were set for a holistic energy management in buildings. A building with high energy performance and a certain amount of renewable energy use is defined as NSEB in the BEP Regulation. Accordingly, buildings with a total building construction area of 5,000 m2 should use 5% renewable energy from 2023 to 2025 and buildings with a total building construction area of 2,000 m2 should 10% renewable energy after 2025. In addition, greater use of renewable energy sources will reduce greenhouse gas emissions, particularly CO2. In addition, by reducing the use of fossil fuels, it will be possible for buildings to contribute to energy supply by meeting their own energy instead of being energy consumers and being direct producers. In addition to primary energy sources such as solar, wind, geothermal as renewable energy, heat pumps that provide heat transfer and transfer the energy available in nature to the areas or points of need, and cogeneration technologies that allow the use of waste or waste heat will also be evaluated within this scope. It is aimed to develop a legal regulation for all new buildings to be constructed in accordance with the NSEB concept. Thus, the adoption of the NSEB approach and the EPC classification, which shows that less energy is used, will be complementary to each other. Households, businesses and the services sector will face lower operating costs and will be able to contribute more to emission reductions. The main assumption of such a policy is that the NSEB building approach can be applied to all new buildings after 2026 without any m2 limitation.

With the aim of improving the energy limits in the TS 825 Standard and updating it by considering national/international energy efficiency approaches, the relevant standard should be updated to take into account the cooling need as well as the net heating energy and the energy limits should be improved to bring them to the EU level.

B-S.2.1

Preparation and updating of national occupational standards and national qualifications for the labor force lacking in the scope of vocational qualifications, and conducting and disseminating examination and certification activities according to the prepared national qualifications

Developing a legal regulation for all new buildings to be constructed in accordance with the Nearly Zero Energy Buildings (NZEB) concept

Improving the energy limits in the TS 825 Standard and updating them in line with national/international energy efficiency approaches

Strategy B-S.3

Improving energy efficiency in the use of electrical appliances, equipment and devices in buildings

It is aimed to encourage the use of the most energy efficient technologies in terms of energy use of lighting devices, electrical appliances, white goods and other similar devices used in residential and non-residential areas. In addition, it is aimed to determine and improve the energy efficiency of electrical household appliances and equipment by harmonizing the regulations on energy efficiency and environmentally sensitive design of white goods products to be implemented simultaneously with the EU. These activities are carried out within the scope of Energy Efficiency Law No. 5627, Energy Efficiency Strategy Document 2012-2023, Regulation on Environmentally Responsible Design of Energy Related Products, National Energy Efficiency Action Plan and Energy Labeling Framework Regulation.

B-S.3.1	Raising awareness of end-users on the use of tools, equipment and devices with high energy efficiency
B-S.3.2	Harmonization of regulations on energy efficiency and environmentally friendly design of white goods products to be implemented simultaneously with the EU

Strategy B-S.4

Expansion of the Use of District Heating and Cooling Systems and Supporting

As a requirement of this strategy, awareness raising and incentives for the dissemination of district heating and cooling systems in collective settlements and indoor areas will ensure the improvement of energy efficiency by using the scale effect. By utilizing renewable energy resources and technologies in district energy use, both the dissemination of the NSEB approach and the economic use of energy (reduction of energy intensity) will be ensured.

In order to implement district heating and cooling systems more efficiently, mapping of heat pump potential, waste heat resources and renewable energy resources to match energy demand in buildings is needed.

B-S.4.1	Conducting studies on awareness raising and incentives for the widespread use of district heating and cooling systems
B-S.4.2	Conducting a mapping study to match heat pump potential, waste heat resources and renewable energy resources with energy demand in buildings
B-S.4.2	resources and renewable energy resources with energy demand in buildings

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Environmentally friendly with the National Green Certification System (YeS-TR) application

design and popularization of the use of building materials

"Green Certificate Regulation for Buildings and Settlements" provides a legal basis for environmentally friendly materials and building design to be applied while improving the energy performance of new and existing buildings for emission reduction in the buildings sector within the scope of combating climate change in Turkey. The Regulation covers the assessment and certification of sustainable environmental, social and economic performance of existing and new buildings and settlements. Within this framework, green certification of buildings and the use of environmentally friendly materials can be encouraged. In particular, energy efficiency and the use of environmentally friendly materials can be documented through the green certification system, which can mobilize the emission reduction potential for buildings. The National Green Certification System (YeS-TR) implementation will be made widespread by encouraging certified new buildings and settlement projects to be constructed and by introducing an obligation to obtain YeS-TR certification for new public buildings.

B-S.5.1 Expanding the implementation of the National Green Certification System (YeS-TR) and encouraging certified new building and settlement projects

B-S.5.2 Introducing an obligation to obtain YeS-TR certification for new public buildings

Strategy B-S.6

Yapı Yapı in ensuring digital transformation in the construction ecosystem

Ensuring, disseminating and promoting the use of Information Modeling (BIM) tools

With Building Information Modeling (BIM), an infrastructure for greenhouse gas emission control and mitigation will be created by creating comprehensive inventory, design and material information during the design, construction, use and demolition phases of buildings. With BIM processes, it will be possible to identify the energy, raw material and material inputs of the building while the building is still in the design phase and alternative building materials can be preferred for emission reduction. Strategies can be developed for the dissemination and promotion of building information modeling from building license to occupancy permit processes. For this purpose, it is aimed to provide trainings on the use of digital tools based on Building Information Modeling (BIM) in the life cycle of buildings, especially in the design, construction and use phases.

B-S.6.1

Expanding the use of Building Information Modeling (BIM) tools in the design, construction and operation processes of sustainable, energy efficient and low carbon emission buildings, developing and promoting domestic BIM software

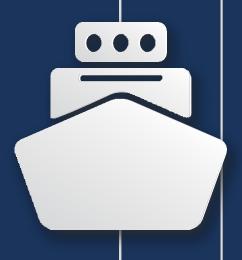
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B-S.6.2

Enabling and promoting the production, use and adaptation of smart objects loaded with information about building materials to the global BIM ecosystem in the construction of sustainable and performance-oriented built environment







TRANSPORT

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2.4.1 Current Status

The transportation sector is one of the sectors that contribute significantly to greenhouse gas emissions, mainly due to its energy-intensive structure and fossil fuel dependency. Moreover, the existence of a positive relationship between travel demand and economic development leads to increased mobility with development.

The increasing dominance of road transport emissions in Turkey is rooted in the increase in vehicle ownership, mobility growth as measured by vehicle-km traveled (VKT) and investments in road network infrastructure over the last two decades, and the fossil fuel dependency of road transport motor vehicles.

Economic development since the 1990s has almost tripled the number of motor vehicles from 8.66 million in 2002 to 26.48 million in 2022. [8]

In Turkey, where the total number of private vehicles is 14.27 million, these vehicles have reached an average share of 55.5% in the national motor vehicle park. Considering that the population of Turkey is 85.28 million [7] (2022), the current automobile (private vehicle) ownership rate is around 161 automobiles per 1000 inhabitants, which is far below the rates in developed countries. It is expected to increase further in the future in parallel with economic developments. There has also been a sharp increase of 388% in the number of pickup trucks in the last two decades, reaching 4.28 million. [8]

Table 17 - National Road Transport VKT value based on Vehicle Registration System Data [10]

		2020			2021	
Vehicle type	Number of vehicles	Vehicle- km (million)	Average year-km	Number of vehicles	Vehicle- km (million)	Average year-km
Total	22 115 821	300 615	13 593	23 145 631	329 591	14 240
Automobile	13 099 041	163 402	12 474	13 706 065	178 832	13 048
Gasoline	3 201 894	29 661	9 264	3 495 172	34 218	9 790
Diesel	5 087 129	80 577	15 839	5 287 618	89 362	16 900
LPG	4 810 018	53 164	11 053	4 923 275	55 252	11 223
Minibus	493 395	11 223	22 747	484 806	13 643	28 142
Bus	212 407	8 767	41 272	208 882	10 749	51 459
Pickup Truck	3 938 732	63 540	16 132	4 115 205	70 621	17 161
Truck	859 670	40 748	47 400	886 303	41 340	46 643
Motorcycle	3 512 576	12 934	3 682	3 744 370	14 406	3 847

Looking at intercity mobility based on statistics from the Turkish General Directorate of Highways, a high rate of increase in mobility has been observed after the 1990s [9]. In 2022, total intercity travel was measured as 140.53 billion-vehicle km (BVKm), of which 92.46 BVKm (65.8%) on state roads and 28.74 BVKm (19.7%) on highways. In 2004, intercity VKT was 57.77 BVKm, representing a total increase of 143%. The 270% increase in highway VMT over the same period is partly due to the increase in the length of the highway network, but mainly due to the combined effect of increases in vehicle ownership, economic development and associated mobility [8].

Statistics on national VKT values based on the vehicle registration system in 2021 showed a total of 329.59 BVKm traveled, the majority of which was by private car users (178.83 BVKm). Vans and trucks contributed 70.62 BVKm and 41.34 BVKm respectively. In the same year, the total VKT on the intercity road network 142.48 BVKm;

which indicates that demand for non-intercity short-distance (urban and suburban) travel accounts for 56.8% of total mobility on roads [10] (Table 17). Diesel vehicle trips 89.36

BVKm, while LPG-registered vehicles traveled 55.25 BVKm and gasoline-powered vehicles traveled 34.22 BVKm.

[10].

After 2003, air transportation, which has been significantly supported by deregulations in the sector and reductions in taxes and fees, has shown a rapid increase, especially in domestic transportation. 33.78 million passengers in 2002 (8.7 million domestic passengers) 182.23 million passengers in 2022; 78.32 million of this demand was realized on domestic flights [11]. Compared to 2002 values, an increase of over 439% in the total number of airline passengers, but the increase in domestic travel was about 797%. In addition, air freight transportation has also increased continuously during this period. The main reason for this increase is the continuous support for the development of air transportation in Turkey. In 2006, the number of active airports increased from 26 to 57. [11]

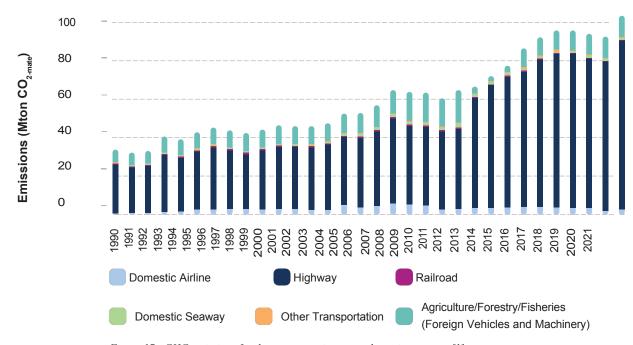


Figure 17 - GHG emissions for the transportation sector by major systems [1]

Since rail transportation is considered a more sustainable transportation compared to road and air transportation, especially High Speed Train (HSR) services in Turkey have received a great deal of attention in the last two decades.

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investments have been made with budgets. Currently, 11,668 km of conventional lines, 2,251 km of HSR and HT network

railway network of 13,919 km. However, the share of rail transport in total mobility is low, with only 27 million intercity rail passengers in 2022. However, journeys by High Speed Rail (HSR) have increased since its inception in 2009, reaching 9.4 million in 2022, shifting demand away from the conventional trains, intercity buses and air travel that it replaces. In 2022, the total number of passengers on intercity rail lines reaches 27 million passengers (9.36 million high-speed rail passengers) [12]. In 2022, the number of passengers carried by suburban trains is recorded as 209.7 million passengers, while the short travel distances of these services make a much smaller contribution to the VKT. Rail freight transportation mainly serves bulk cargo types (i.e. minerals, coal, iron, etc.) between production and consumption points. On the other hand, the progress in electrification of railway lines and further increase in this level creates a clean fuel advantage for this system.

Maritime passenger transportation is mostly carried out by the private sector, and the private sector looks at such transportation activities within the supply and demand balance in free market conditions and evaluates them within the framework of operating costs. In our country, passenger and vehicle transportation is carried out by ferries the cities of Istanbul-Bursa, Istanbul-Yalova, Istanbul-Çanakkale, Tekirdağ-Balıkesir, Yalova-Izmit in the Marmara Sea. In urban passenger transportation, maritime passenger transportation is used in Istanbul, Izmir and Çanakkale provinces. In order to regulate and encourage such transportation, SCT-free fuel application and Regulation on Regular Voyages by Ships were issued. In addition, within the scope of the Regulation on the Incentive for the Construction of New Ships to Replace Turkish Flagged Ships that are Scrapped, incentives were provided for the renewal of ships engaged in urban and intercity freight and passenger transportation.

In shipping, alternative fuels are one of the most important measures to ensure that the greenhouse gas emission reduction rates set by the International Maritime Organization (IMO) are realistic. A carbon-free maritime future depends on the availability of newbuildings or green-converted ships that can operate on zero-emission fuels or other zero-emission energy sources.

The General Directorate of Maritime Affairs of the Ministry of Transport and Infrastructure aims to reduce and rejuvenate Turkey's average ship age through incentives and supports within the scope of the "Regulation on the Incentives for the Construction of New Ships to Replace Turkish Flagged Ships that are Scrapped"

contribute to the shipbuilding industry in shipyards in the fields of innovation, investment and employment amalgamated. Initially designed to benefit vessels between 1000 GT and 5000 GT, the project was expanded to include vessels larger than 50 GT by 2022.

Table 18 - Greenhouse Gas Emissions for the Transportation Sector by Major Systems (MTon $CO_{(2-ead)}$) [1]

Machinery)

Machinery)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	20 10
Domestic Airline	3,36	2,50	2,71	4,86	4,09	4,51	6,02	5,22	5,15	2,86
Highway	31,51	32,08	33,35	35,09	35,53	38,37	43,67	40,56	40.20	39 ,94
Railroad	0,59	0,61	0,63	0,63	0,76	0,76	0,47	0,50	0,48	0,52
Domestic Seaway	0,80	0,82	0,89	1,23	1,30	1,46	1,60	1,54	1,63	1,68
Other Transportation	0,20	0,21	0,25	0,24	0,36	0,32	0,34	0,35	0,44	0,39
Agriculture/Forestry/F ishing (Off-road Vehicles and Other Machinery)	9,11	9,25	9,39	10,09	10,18	10,93	11,91	15,09	14,79	14,49

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Domestic Airline	3,34	3,73	3,75	4,09	4,21	4,28	3,84	3,69	3,51	2,16	2,86
Highway	40,90	56,31	62,89	66,97	69,31	75,59	78,71	78,91	76,72	76,60	86,50
Railroad	0,53	0,49	0,50	0,56	0,48	0,37	0,41	0,43	0,40	0,32	0,36
Domestic Seaway	2,24	1,61	1,15	1,35	1,15	0,97	0,94	0,93	1,22	1,26	1,13
Other Transportation	0,37	0,38	0,56	0,59	0,66	0,62	0,76	0,54	0,58	0,33	0,36
Agriculture/Forestry/F ishing (Off-road Vehicles and Other	16,86	3,33	2,50	3,13	9,56	9,50	9,95	10,10	10,49	11,05	11,11

In addition, the number of vessels to benefit from the incentive was increased from 5 to 10 per year. However, the number of scrapped

The amount of support to be provided for new conventional ships to be built in place of the ship, per ton of scrap from 1 times to 1.5 times the price of LNG and hybrid systems an increase of 50 percent. In addition, LNG and hybrid systems

In the event that an alternative environmentally friendly energy source is used in a new-build ship, the amount of support has been increased to 2.5 times the scrap cost per ton. Ship owners who will convert the main engines of existing ships from fossil fuel to an alternative environmentally friendly energy source will be provided with a grant of 25 percent of the conversion cost.

Since the 1990s, total emissions have almost tripled to 102.3 Mt CO2 equivalent. The largest contributor to these emissions was the road transport sector with 86.5 Mt CO2 equivalent (84.5% share). The second largest share comes from vehicles used in agriculture, forestry and fishing, as well as land activities and machinery. However, these activities are often carried out in an "off-network" manner without exposure to other transport modes/systems and are therefore separately without being included in the integrated transport sector framework. [1] Greenhouse gas emissions of the transportation sector are shown in Figure 17, Table 18. [1]



The main legislation and policy documents related to the transportation sector are in Table 19 and Table 20, respectively.

Table 19 - Basic Legislation Related to the Transportation Sector

Basic Legislation	Purpose and Scope
Regulation on Principles and Procedures for Increasing Energy Efficiency in Transportation	In order to increase energy efficiency in transportation, the Regulation aims to reduce the unit fuel consumption of motor vehicles, increase efficiency standards in vehicles, encourage the use of environmentally friendly alternative fuels, reduce air pollutants and greenhouse gas emissions, expand public transportation, effectively implement intelligent transportation systems, improve transportation infrastructures in a sustainable manner and improve urban transportation plans. :he preparation of the new legislation.
Regulation on the Environmental Impacts of Gasoline and Diesel Types	The purpose of the Regulation is to make regulations to limit the effects of gasoline and diesel fuel types used in motor vehicles on the environment and human health. The Regulation sets out environmental requirements for fuels used in positive ignition and compression ignition internal combustion engine vehicles, including inland watercraft, non-road mobile machinery, agricultural and forestry tractors, in order to protect the environment and human health. the issues.
Combined Transportation Regulation	The purpose of the Regulation to establish, expand and promote an integrated, balanced and environmentally friendly transportation system by determining the principles, principles and conditions regarding combined freight transportation and green logistics activities.

Basic Legislation	Purpose and Scope
	The purpose of the Regulation is to set out the principles and procedures for the monitoring, reporting and verification of greenhouse gas emissions from national and international aviation activities.
Regulation on Monitoring of Greenhouse Gas Emissions from Aviation Activities	The Regulation sets out the procedures and principles regarding the monitoring, reporting and verification of greenhouse gas emissions arising from national and international aviation activities and the determination of the obligations of verification bodies and aircraft operators.700 kg, aircraft operators that generate more than 10,000 tons of carbon dioxide emissions annually on international flights, aircraft operators that generate more than 5,000 tons of carbon dioxide emissions annually on national flights due to the use of aircraft with a maximum certified take-off weight of more than 5,700 kg overs.
Regulation on Bicycle Lanes	The Regulation covers the planning, design and construction of bicycle paths and bicycle parking stations to enable the use of bicycles for transportation, recreation and sports purposes. The different types of bicycle paths to be constructed must be compatible with each other, vehicle roads, pedestrian sidewalks and transportation rinciples integration with systems.
Electric Scooter Regulation	The Regulation aims to regulate shared electric scooter (e-scooter) operation activities as required by the national economy, to ensure order and safety in these activities, and to protect environmental values by reducing the negative effects of transportation on the environment such as exhaust emissions and carbon emissions, It determines the market entry conditions for these activities and the rights, obligations and responsibilities of service providers and service beneficiaries in order to ensure the development of shared e-scooters within a sustainable transportation system integrated with other modes of transportation by increasing mobility and expanding the use of shared e-scooters instead of using personal vehicles for short-distance travel.

Basic Legislation	Purpose and Scope
Regulation on Supporting the Transfer of Road Freight by Sea	Within the scope of the Regulation, increasing regular voyage frequencies between Turkish ports and ports of other countries, increasing the exports realized by sea by increasing the utilization rate of ports with more competitive prices, reducing the density at the road border gates of our country and reducing long waiting times, thus reducing the emission issions are also aimed to be reduced.
Regulation the Incentive for the Construction of New Ships to Replace Scrapped Turkish Flag Ships	The incentives and supports under the Regulation aim to reduce and rejuvenate Turkey's average age of ships, while contributing to the shipbuilding industry in Turkish shipyards in the fields of innovation, investment and employment.

Table 20 - Key Policy Documents Related to the Transportation Sector

Policy Documents	Aims and Objectives
	Within the framework of the evolving global mobility vision, the main objective is to realize domestic procurement and technological development at all stages from design to production, increase added value and increase the share of branding in international markets by adapting to the green and digital transformation process. The Plan the following measures related to the transportation sector:
12th Development Plan (2024-2028)	New generation production technologies that affect the competitiveness of the automotive main and supply industry will be developed. Green transformation will be realized in the automotive sector by transition to circular economy and transformation of the market. Increasing domestic supply and value added at all stages from design to production in the automotive industry supply chain will be supported. Labor force quality for the automotive industry will be increased. Public procurement be used to support domestic production in rail systems more effectively, and design and R&D activities will be encouraged.

Policy Documents Aims and Objectives The main objective is to develop inter-modal and multimodal transportation practices; to establish a safe, accessible, integrated, environmentally friendly and cost-effective transportation system; and to make maximum use of our potential to become a regional hub in transportation and logistics by creating infrastructure that supports competitive production and exports. The Plan includes the following measures related to the logistics and transportation sector: In order to minimize environmental impacts and costs and increase energy efficiency in the transport and logistics sector, priority will be given to rail and maritime transport, alternative financing methods will be developed, safe, uninterrupted, efficient, integrated and sustainable transport network and logistics centers will be established. Ongoing investments in the transportation sector will be reviewed with a focus on feasibility, sustainability, effectiveness, accessibility, safety and efficiency, and the efficiency of the existing infrastructure will be increased. In order to increase the share of railways in freight and passenger transportation and to improve combined transportation opportunities, ongoing railway projects will be completed and railway connections 12th Development Plan will be provided to important freight centers such as OIZs, ports and mines. In order to ensure that Turkey becomes a regional and continental transshipment (2024-2028) center in maritime transport, coastal facilities in Turkey will be developed and the Turkish maritime trade fleet will be improved. Green port practices will continue to be supported by encouraging the use of low emission/non-emission producing machinery and equipment to increase energy efficiency in port operations and minimize environmental impacts. The reclaimed areas of coastal facilities will be developed, ports will be realized in accordance with holistic coastal planning in a way to take full advantage of economies of scale, and their connections with international inter-modal

transportation corridors will be strengthened.

Policy Documents	Aims and Objectives
Energy Efficiency Strategy Document (2012-2023)	The strategy document includes strategic objective of "Reducing the unit fossil fuel consumption of motor vehicles, increasing the share of public transport by road, maritime and rail, and preventing unnecessary fuel consumption in urban areas". In this context, ensuring the provisions of secondary legislation to be produced in line with the EU legislation on carbon dioxide emissions; preparing and implementing transportation master plans in major cities; encouraging environmentally friendly vehicles with low emission (in accordance with the compulsory type approval legislation) small-sized engines, fuel cell or electric-powered hybrid vehicles, and ensuring the gradual withdrawal from traffic for vehicles that have completed their economic life; Reducing the share of road transport in total transportation, adequately developing the infrastructure of alternative modes of transportation to road transport, increasing the share of sea and railways in freight and passenger transportation, ensuring network efficiency in transportation and promoting smart transportation systems and smart traffic management applications using information and communication technologies to increase energy efficiency; shifting the burden of road transport to rail or maritime transport in long-distance public transports by making arrangements especially in freight transport in line with the "Combined Transport Strategy" based on the use of transport modes in the most technically and economically efficient places; making effective connections to the starting and end points in rail and maritime transport; encouraging multimodal transport especially in freight and passenger transport; promoting biofuels or synthetic fuels obtained from biomass resources actions to encourage its use in transportation are included
	The Plan includes targets for the transportation sector in the following

National Climate Change Action (2011-2023) specific 5 main areas. These are development of intermodal transportation system and balanced use of transport modes in freight and passenger transportation; preparation and implementation of Transportation Master Plan; restructuring of urban transportation in line with sustainable transportation principles, increasing efficiency in energy consumption of the transportation sector for the use of alternative fuels and clean vehicles; development of information infrastructure in the transportation sector.

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Aims and Objectives

The Plan refers to the transport sector, including ensuring a sustainable spatial development by creating an environmentally sensitive living space, establishing a sustainable urban transportation system, and ensuring the integration of open and green spaces.

The plan includes implementation details to be built by 2035, such as the development of a total of 13,951 km of road widening and 95 km of new divided road network by 2053 and a total of 5,839 km of additional highway network by 2035.2053 A total of 8,554 km of railway routes, including 6,425 km of highspeed train routes (operating at slightly lower speeds than HSR), 1,474 km of conventional routes, 393 km of high-speed trains and 262 km of very high-speed train routes connecting Ankara and Istanbul at a speed of 400 km/h, are planned to be constructed by the year 2020.

76 km of additional HSR network construction is included, while a 262 km "Very High Speed Train" corridor connecting Ankara and Istanbul at 400 km/h is proposed.

The current maritime transportation volume of 254.34 million tons is targeted to reach 420.98 million tons in 2053. While the number of ports is currently 217, it will be increased to 255 in 2053. In 2053, 344.39 million air passengers are envisaged. Under this master plan, the major shift to rail is expected to be from intercity buses. In 2053, the largest market share is expected to be consistently in road transportation.

Policy Documents	Aims and Objectives
	The main objective of the Plan is to "develop cycling as a safer, cheaper and sustainable mode of transportation for various purposes in areas outside settlements, which are mostly outside the jurisdiction and responsibility of municipalities."
Turkey Bikeway Network Master Plan	In this context, this plan focuses mainly on the needs and routes of long-distance cyclists who travel around Europe on vacation or cycle for recreation or sport. Also known as the EuroVelo network, these cycle routes for long-distance cycling activities are designed through several European countries, including Bulgaria and Greece, which are neighboring Turkey. For those who may want to visit Turkey for vacation purposes is the capacity to connect European cyclists.

National Intelligent Transportation Systems Strategy Document and 2020-2023 Action Plan The Strategy Document and 2020-2023 Action Plan have been prepared with the vision of "Human and transportation system in Turkey with advanced information technologiesand the mission of "Creating an efficientsafeeffectiveinnovativedynamic, environment-friendly, value-added and sustainable smart transportation network in our country is integrated to all modes of transportation, uses up-to-date technologies, utilizes domestic and national resources". Within the framework of this vision and mission, five main strategic objectives have been identified: developing ITS infrastructure, ensuring sustainable smart mobility, ensuring road and driving safety, creating a livable environment and conscious society, and ensuring data sharing and security.

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2.4.2 Strategy and Actions

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All transportation systems (rail, maritime, air and road) serve different transportation demand segments with different characteristics (transport times, capacities, costs, etc.). It has been seen throughout the historical development that it is not possible for one transportation system to completely replace the others. Therefore, especially from the perspective of reducing transport emissions, it is important to create an optimized use by ensuring that different systems are used more in the demand segments where they are advantageous. On the other hand, increasing the efficiency of the systems that are currently used and will be used at different rates in the future will indirectly reduce emissions. In addition, the provision of energy resources used in transportation services from cleaner sources also creates a potential for emission reduction. There a total of four strategies for the transportation sector, including three main strategies that address all these issues in a holistic manner and one cross-sectoral support.

Strategy U-S.1

The most fundamental policy for reducing transport sector emissions is to ensure a shift towards maritime and rail transport, which are more efficient in terms of both energy use and emissions per unit of mobility (ton-km and passenger-km). The objective here is to ensure that some of those who would prefer road and air transport maritime and rail transport without changing the total amount of mobility. In order to achieve this modal shift, it is important to provide services that compete with road and/or air transportation services in both rail and maritime transportation services. This is because rail/marine services are designed as stop-to-stop systems and usually have to take first-km and last-km connection services with highways, which will lead to longer transportation times and reduced preferability.

In order to ensure a shift to rail freight and passenger transportation, in line with the 2053 Transport and Logistics Master Plan, it is aimed to provide support for the expansion of the High Speed Train and High Speed Train line network and the development of rail freight transportation, the development of rail passenger transportation with urban rail systems and increasing the integration.

With the investments to be made in urban rail systems, public transportation systems, especially suburban transportation and urban rail systems (metro, light rail system and tram), will be integrated and uninterrupted. create a public transportation system.

Maritime transportation is a prominent option for our coastal cities. In this context, the actions addressed at two levels are the development of intercity maritime passenger transportation and the development of urban maritime passenger transportation and infrastructure in coastal cities. In addition, the development of maritime freight transportation and infrastructure has been addressed as a separate action.

Maritime and railways will create modal shift as alternative options, and will additionally cause modal shift within "intermodal" services with intermodal transfers. For this reason, the development of connections of railways to ports, organized industrial zones, logistics centers, factories and mining sites and the promotion of rail and maritime intermodal and combined transportation in freight transportation will be planned in corridors where they can be effective. In order to carry out and realize these activities in an integrated manner, it will be ensured that holistic plans will be made in the national transportation and logistics sectors, a digital inventory will be created, and monitoring and evaluation will be subject to monitoring and evaluation by taking into account emission values.

Providing m	odal shift to rail
U-S.1.1	Expansion of High Speed Train and High Speed Train network in line with the Transportation and Logistics Master Plan
U-S.1.2	Development of rail freight transportation in line with the Transportation and Logistics Master Plan
U-S.1.3	Development of rail passenger transportation with urban rail systems
U-S.1.4	Providing support for increasing inter-modal integration in Urban Rail System transportation

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Ensuring modal shift to seaway							
U-S.1.5	Supporting intercity maritime passenger transportation						
U-S.1.6	Development of urban maritime passenger transportation and infrastructure in coastal cities						
U-S.1.7	Supporting maritime freight transportation and infrastructure						
Strengthening intermodal freight transportation							
U-S.1.8	Improving the connections of railways with freight centers such as ports, organized industrial zones, logistics centers, factories and mining sites						

Increasing Efficiency in the Transportation Sector

Increasing efficiency in transportation systems reduces both the energy used and emissions. One of the key actions is the development of a planning system to increase the attractiveness and desirability of public transport systems in order to reduce private car use. Modal shift is not easy to achieve, as public transport services are designed from stop to stop, whereas access by private car is door-to-door. Therefore, there is always a public transport accessibility and time cost issue.

In order to make public transport with lower resource use per passenger-km and lower emission emissions attractive, it is planned to expand public transport-oriented practices in urban planning in urban transportation systems, increase the share of public transport with rubber wheels, and plan public transport services according to transportation demand and accessibility standards in a holistic manner.

The speed and capacity of urban rail systems on the main spines of large cities will make public transportation attractive. However, due to the high costs of rail systems, low population density and where it is not economically feasible to extend the service to demand regions

It is also important to encourage the use of other rubber-tired public transport systems. Therefore, in order to increase the attractiveness of public transport as a system, it will be realized through the actions of expanding smart card systems that enable fare collection/charging to encourage the use of public transport, integrating public transport systems with each other and with other urban wheeled transport modes.

Walking, cycling, e-scooters, etc., which are generally zero or low emission modes, are considered under the heading of "micromobility" and increasing safe micromobility in urban transportation is an action that should be considered in its own right. In addition, another important contribution of micromobility modes is their use as connecting services at the beginning and end of public transportation services. Strengthening micromobility options around public transport stops, promoting wheeled shared/demand-driven transport for urban areas or low-density rural areas where public transport cannot be considered as a strong alternative, will allow for the creation of strong alternatives to reduce private car use.

In addition to modal shifts, reducing private transportation emissions due to traffic flow and congestion considered as a separate activity in order to prevent inefficiency in engine technologies during the time spent in traffic jams. In order to increase technological efficiency, low/zero emission vehicles will be encouraged in public vehicle fleets, work will be carried out to recycle materials after the end-of-life vehicles are withdrawn from traffic, and the use of low/zero emission vehicles will be encouraged in city centers and attraction points. Preparation of a national road freight transport emission reduction road map is also included in order to address the related activities with a general framework.

Promoting public transportation systems and increasing efficiency								
U-S.2.1	Promoting public transportation-oriented practices in urban planning							
U-S.2.2	Introducing smart card systems that allow fare collection/charging to encourage the use of public transportation							

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U-S.2.3	Integrating public transport systems with each other and with other urban wheeled transport modes						
U-S.2.4	Strengthening micromobility/walking options around public transport stops						
U-S.2.5	Increasing the transition from private vehicle use to public transport with rubber tires						
U-S.2.6	Planning public transportation services according to transportation demand and accessibility standards						
Making private and shared transportation efficient							
U-S.2.7	Increasing safe micromobility in urban transport						
U-S.2.8	Encouraging shared/demand-driven transport on wheeled tires						
U-S.2.9	Reducing emissions caused by traffic flow and congestion caused by private vehicle use						
Promote the u	se of new generation, low or zero emission vehicles						
U-S.2.10	Promoting low/zero emission vehicles in public vehicle fleets						
U-S.2.11	Promote the use of low/zero emission vehicles in city centers and attraction points						
Efficient freight transportation							
U-S.2.12	Preparation of a national road freight transport emission reduction roadmap						

|| Use of sustainable/clean energy sources in transportation systems

Today, transportation technologies are generally fossil fuel based and diesel, gasoline, LPG are frequently used fuels. Electricity, which is used as an energy source in rail transportation, is also an alternative energy source for road transportation. Electrification, which has the power to zero exhaust emissions, creates a significant potential for reducing transportation emissions. For this reason, increasing electrification of vehicles used in rail/marine transportation and airline ground handling services, supporting research on electrification of existing vehicles, supporting research on electric vehicle battery systems and increasing their lifetime are important activities. Planning and developing charging station infrastructure in the required number and location on the road network for the widespread use of electric vehicles, and encouraging the use of renewable energy sources at charging stations is an activity that can have a bidirectional impact on reducing national emissions.

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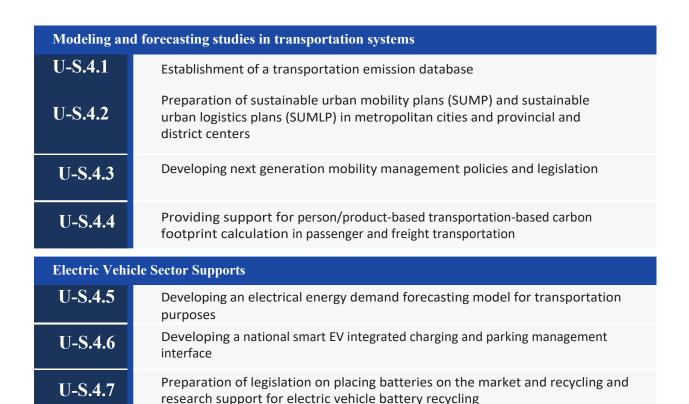
It is aimed to increase the use of alternative fuels such as CNG, biofuels, etc., which are among the alternative fuels and are still in use, to increase the use of CORSIA-compliant sustainable aviation fuels in airline transportation and alternative fuels in urban / rural bus transportation, and to support research for alternative fuel vehicles (LNG / Hydrogen, etc.) as an investment for the future and to follow international developments.

Expansion of electrification in transportation systems							
U-S.3.1	Supporting electrification of vehicles used in rail/marine transport and airline ground handling services						
U-S.3.2	Supporting research on electrification of existing vehicles						
U-S.3.3	Supporting research on electric vehicle battery systems and increasing their lifespan						

Carrying out the necessary infrastructure activities for decarbonization of the sector

Considering the transportation demand and mobility that is expected to increase in parallel with the developing economy and the transportation technologies that are undergoing a major change at the same time, establishing a transportation emission database is one of the supporting activities that should be progressed rapidly in our country. Preparation of sustainable urban mobility plans (SUMPs) and sustainable urban logistics plans (SUMLPs) in metropolitan cities and provincial and district centers with large population and mobility demand are critical actions in terms of reducing transportation emissions. Developing next-generation mobility management policies and legislation and preparing the necessary legislation to promote the use of next-generation light vehicles are important support activities, as these are areas of increasing interest worldwide.

In the transportation sector, where electrification will be important, activities such as developing a national smart electric vehicle integrated charging and parking management interface, preparing the legislation on the placing of batteries on the market and recycling, providing research support for electric vehicle battery recycling, and providing person/product-based transportation-based carbon footprint calculation support in passenger and freight transportation will be implemented.





WAS TE

2.5.1 Current Status

With population growth, industrialization and changes in consumption habits, the amount of waste generated is increasing day by day. While waste policies used to aim for a healthy urban life and protection of the environment, over time the use of waste as a secondary raw material and energy source has come to the fore. Nowadays, it is essential to prevent or reduce waste and, where this is not possible, to recycle it into the economy. This new approach is also an important support in achieving the net zero greenhouse gas emission targets adopted by Turkey and many other countries around the world. In Turkey, municipalities report data to TurkStat on the waste they are responsible for collecting. These wastes generally include similar wastes from residences, commercial establishments, offices, public institutions and schools. According to the most recently published TurkStat data for 2020, the amount of waste collected by municipalities has reached 32.3 million tons [13]. This amount corresponds to 1.13 kg of waste per person per day, which is clearly above the world average of 0.74 kg/person/day [14] and below the EU-28 average of 1.38 kg/person/day [15] for the same year.

Within the scope of the National Waste Management and Action Plan (2023-2035), waste characterization studies were carried out on a provincial basis and average values were obtained. Updated waste characterization for the whole of Turkey is shown in Figure 18.

Turkey still relies heavily on landfills for waste management. The transition from irregular landfilling to sanitary landfilling has accelerated in recent years and sanitary landfills have been put into service in almost all provinces. In 1994, there were only 2 sanitary landfills across the country and municipal waste management was largely provided by wild landfills. 2007

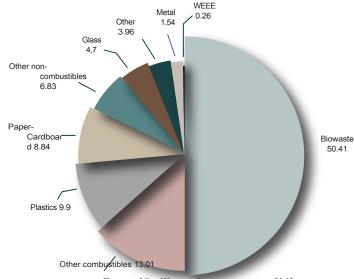


Figure 18 - Waste characterization [16]
* WEEE: Waste Electrical and Electronic Equipment

By the end of 2011, the number of sanitary landfills had increased to 32 and today there are 93 sanitary landfills. Significant progress has also been made in waste utilization. Biomethanization and composting facilities have been established and biodegradable wastes have been used as energy and agricultural products without landfilling. The material recycling sector has developed very rapidly and recyclable waste has been brought into the economy. According to the studies conducted within the scope of the National Waste Management and Action Plan prepared by the Ministry of Environment, Urbanization and Climate Change, 59.6% of the 38.1 million tons of municipal waste generated in 2021 was disposed of in sanitary landfills13.2% in irregular landfills27.2% was recovered in waste processing facilities (biomethanization, composting, incineration, recycling facilities) [16]. Remarkably, the recovery rate reached 30.13% in 2022.

"Water and Wastewater Statistics, 2020" published in 2021, including the results of the 2020 "Municipal Wastewater Statistics Survey" conducted by TurkStat every two years for all municipalities According to the News Bulletin [17], 1,362 out of 1,389 municipalities were served by sewerage networks. Of the 5 billion m3 of wastewater collected through sewerage network, 49.2% discharged to rivers, 38.5% to the sea, 3.1% to dams, 1.3% to lakes-ponds, 0.4% to land and 7.5% to other receiving environments. Sewerage

4.4 billion m3 of the 5 billion m3 wastewater discharged from the network was treated in wastewater treatment plants.

Advanced treatment for 50.7%, biological treatment for 27.1%, physical treatment for 21.9% and natural treatment for 0.3% of treated wastewater applied. 1.6% of the wastewater treated by municipalities is used for industry, agricultural irrigation, etc. reused [17].

On the other hand, protecting and improving the quality of water resources, one of the most important components of environmental sustainability, one of the essential elements of the environment and one of our limited resources, and utilizing them in the short, medium and long term by considering the protection-utilization balance of great importance for the sustainable management of these resources. According to data from Environment, Urbanization and Climate Changeurban wastewater treatment plants in Turkey reached 1209 by Of these facilities, 320 are advanced biological treatment, 833 are biological treatment, 4 are chemical treatment and 52 are deep sea discharge facilities after pre-treatment.

However, within the framework of the principle of "Sustainability" in wastewater management, policies and strategies are determined with the assumption that treated wastewater is an alternative water source, and

From the economical use of water in both industry and industry, to the treatment of wastewater by considering the highest level of benefit-cost ratio, to increasing the reuse area and alternatives of treated wastewater, to the improvement of lands by using treated wastewater and treatment sludge in areas that have lost soil qualities, to the recovery of organic matter (nitrogen, phosphorus, etc.) from wastewater and treatment sludge and its use as fertilizer in agricultural activities, to the protection of soil and water resources by ensuring that wastewater treatment plants are operated as biorefinery facilities.) from wastewater and treatment sludge and using them as fertilizer in agricultural activities, and protecting soil and water resources by ensuring that wastewater treatment plants are operated as bioretreatment plants, wastewater management is approached in an integrated manner.

With this approach, the reuse of treated wastewater will not only result in significant savings in clean water resources, but also prevent pollution of surface and groundwater by protecting water bodies from wastewater discharge, and contribute to the national economy by operating wastewater treatment plants like a factory by generating energy and recovering organic matter from treatment sludge. To this end, it is aimed to increase the reuse rate of treated wastewater, which is currently 5.20% in Turkey, to 15% by 2030.

TurkStat Waste statistics and Water and Wastewater statistics data are used when preparing the waste section of GHG inventories. According to the last published greenhouse gas inventory for 2021, waste sector emission is calculated as 14.7 Mton CO2eşd. This to 2.6% of total emissions. Although the waste sector is seen as a sector that produces small emissions, it actually contributes indirectly to the reduction of emissions from the industrial sector, especially with the increase in material recovery.

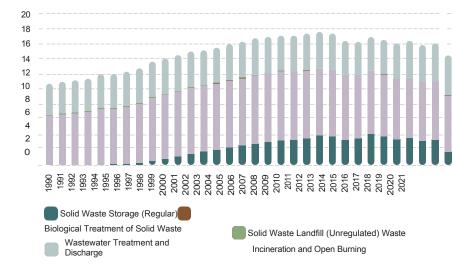


Figure 19 - Waste sector greenhouse gas emissions by years [1]

emissions reductions within energy sector. In addition, emissions from waste transportation or waste incineration to generate energy are reported in the energy sector. According to IPCC 2006 guidelines, waste sector emissions are reported under 4 main headings.

Solid Waste Disposal

Emissions (Mton CO₂

- Biological Treatment of Solid Wastes
- Waste Incineration and Open Burning
- Wastewater Treatment and Discharge

According to the 2021 Turkey emission inventory, the disposal of solid waste in regular and irregular landfills 63.5% of all waste sector emissions (12.5% regular, 51% irregular landfilling). The second largest emission is wastewater treatment and discharge, which causes 36.3% of waste emissions [1]. Emissions from biological treatment of solid waste and waste incineration and open burning are negligibly low. Waste sector GHG emissions by years are shown in Figure 19 and Table 21.

Table 21 - Waste Sector Greenhouse Gas Emissions by Years (Mton CO_{2-eqd}) [1]

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	1990 1	991 1	992 1993	3	1994	1995 <i>^</i>	1996	1997 1	1998 1999	2000	2001
Solid Waste Storage (Regular)				0,06	0,10	0,14	0,22	0,36	0,59 0,8	5 1,15	1,49
Solid Waste Storage (Irregular)	6,73	6,89	7,06	7,19	7,34	7,49	7,71	7,93	8,13 8,3	2 8,43	8,53
Biological Treatment of Solid Waste	0,02	0,02	0,02	0,02	0,02	0,01	0,01	0,02	0,01 0,0	2 0,02	0,02
Waste Incineration and Open Burning	0,11	0,11	0,11	0,11	0,11	0,10	0,11	0,16	0,10 0,0	9 0,09	0,09
Wastewater Treatment and Discharge	4,23	4,29	4,34	4,37	4,45	4,60	4,60	4,69	4,64 4,6	5 4,66	4,67
	2002	2003	2004	200	5 2006	5 200	7 200	08 200	09 2010	2011	2012
Solid Waste Storage (Regular)	1,82	2,08	2,38	2,64	2,86	3,14	3,34	4 3,39	9 3,58	4,01	3,84
Solid Waste Storage (Irregular)	8,61	8,72	8,84	8,92	9,05	9,06	9,0	8 9,0	2 8,98	8,88	8,82
Solid Waste	0.03	0.04	0.03	0,03	0.03	0.03	3 0,0	3 0.0	2 0,03	0.03	0.03
Biological Brooksging	0,00	0,04	0,03	0,03	0,00	0,00	0,0	0,0	2 0,03	0,03	0,03
Waistevation of Waste Treatment and Discharge	Д , 9 6	49 ,7 06	.p, , @3	49 ,7 85	<u> p,</u> 996	Q, 9 7	49,66	6 ₽, P (\$ 49 4 4	4,834	4 ⁹ ,99 ³
	2013	2014	2015	2016	2017	2018	2019	2020	2021		
Solid Waste Storage (Regular)	3,41	3,57	4,21	3,85	3,49	3,66	3,29	3,42	1,84		
Solid Waste Storage (Irregular)	8,60	8,46	8,35	8,25	8,03	7,94	7,75	7,69	7,50		
Biological Treatment of Solid Waste	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02		
Waste Incineration and Open Burning	0,02	0,00	0,00	0,00	0,00	0,00	0,00	0,01	0,01		
Wastewater Treatment and Discharge	4,61	4,45	4,54	4,59	4,71	5,00	5,06	5,17	5,33		

1994 1995 1996 1997 1998 1999 2000

2001

According to the IPCC Guidelines, biogenic CO2 emission from waste disposal is the national GHG

emissions are not accounted for in the total. However, emissions from the decomposition of biodegradable waste methane is largest contributor to the waste sector's greenhouse gas emissions. Methane (CH4) has a much higher short-term global warming potential than CO2. Emissions from the waste sector included in

(CH4) has a much higher short-term global warming potential than CO2. Emissions from the waste sector included in the reporting in tons of carbon dioxide equivalent

83.9% is methane [1].

In Turkey, electricity generation from renewable energy sources is supported by YEKDEM [18]. Both storage facilities producing landfill gas and biomethanization facilities producing biogas are eligible for feed-in tariffs for the first 10 years. The number of these facilities supported by YEKDEM is increasing rapidly. According to 2021 YEKDEM data, the annual production amount included in the license of 85 energy production facilities (landfill gas + biogas) in 55 provinces is 4,124,452 MWh in total. These facilities have a total installed capacity of 378 MWh.

and to greenhouse gas mitigation and renewable energy production through methane utilization. In particular, the proportion of biodegradable waste in municipal waste composition is high.

In Turkey, investments in biological treatment of solid waste have gained importance. Relevant incentives mechanism has also been revised to ensure that waste sent to landfill is reduced and recovered efficiently in processing facilities.

In 2021, 470 ktons of methane gas was generated in landfills and 396 ktons of this amount was generated in landfills. part was renevared and policy have recovery was very low and 300 ktons of methane was emitted [1].

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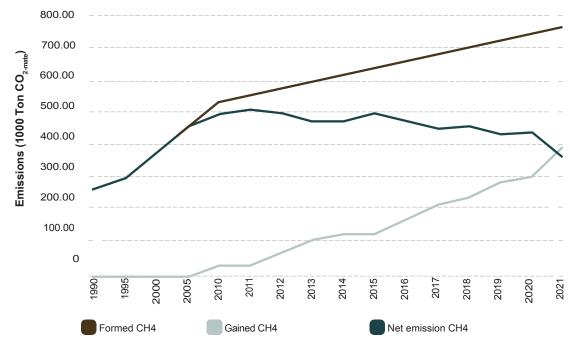


Figure 20 - Amount of methane generated and recovered from landfills by year [1]



Basic Legislation	Purpose and Scope
Environmental Law (Law No 2872)	The purpose of this Law is to ensure the protection of the environment, which is the common asset of all living beings, in line with the principles of sustainable environment and sustainable development. The Law provides for waste management activities related to minimization of waste at source, sorting, collection, transportation, temporary storage, recovery, disposal, reuse of waste, conversion of waste into energy, treatment of wastewater and reuse of treated wastewater. provisions.
Zero Waste Regulation	The Regulation includes the principles and procedures for zero waste management system as well as the deadlines for all institutions and organizations to complete their transition to zero waste management system. The main issues within the scope of the Regulation are prevention of waste at the source before it is generated, recovery and/or recycling of the part that cannot be prevented, establishment of a separate collection system with at least dual collection, reduction of the amount of waste going to disposal by at least 15% in order to obtain a qualified certificate, separate collection and recovery of biodegradable wastes, recording of data, conducting awareness raising activities, deposit return of sales points system.
Zero Waste Implementation Guidelines	Eleven "Zero Waste Management System Implementation Guidelines" have been prepared to guide the target groups that need to establish the Zero Waste Management System and include measures to prevent food waste and reduce food waste, especially in hotels, restaurants and cafeterias, institutions/organizations, businesses, educational institutions and dormitories, etc.

Basic Legislation	Purpose and Scope
Compost Communiqué and Mechanical Separation, Biodigestion and Biomethanization Plants and Fermented Products Management Communiqué	If it is not possible to prevent or reduce biodegradable wastes, the wastes are not taken to landfills and are subjected to pre-treatments such as composting, biomethanization and biodrying for recovery. This legislation sets out the principles for determining the technical criteria for these facilities.
Renewable Energy Resources Support Mechanism (YEKDEM)	In Turkey, electricity generation from renewable energy sources is supported by YEKDEM. Both storage facilities that produce landfill gas and biomethanization facilities are eligible for feed-in tariffs for the first 10 years. The number of these plants supported by YEKDEM is increasing rapidly. The methane utilization in these facilities will contribute to the reduction of greenhouse gas emission and ontributes to renewable energy production.
Circular on Cleaner Production Practices in the Textile Sector	Circular on Cleaner Production Practices in the Textile Sector No. 2022/20 was published in order to the negative impacts of textile sector activities on the environment, prevent air and water pollution, and implement cleaner production technologies to reduce water and energy consumption. With the Circular, mandatory provisions have been introduced in order to reduce energy consumption and air pollutant emissions, reduce water consumption and reduce the pollutant load in wastewater in all textile facilities engaged in the production of textile materials (fiber, yarn, yarn, fabric (including non-woven fabrics), carpet production, etc.), textile pretreatment (washing (including fleece washing), bleaching/bleaching, mercerization, etc.), printing and dyeing processes and all textile facilities engaged in fabric mercerization, without any capacity limit.

1	4	(

Basic Legislation	Purpose and Scope
Communiqué on Technical Procedures for Wastewater Treatment Plants	The purpose of the Communiqué is to regulate the basic technical procedures and practices to be used for technology selection, design criteria, disinfection, reuse and deep sea discharge of treated wastewater and of sludge generated during treatment activities of wastewater treatment plants for the treatment of wastewater from settlements. By revising Annex-7 of the Communiqué, regulations on the reuse of treated wastewater in environmental (creation of wetlands, feeding wetlands, feeding surface and groundwater), industrial (process water, cooling water, boiler feed water) and other (general cleaning, fire water, dust control / field irrigation water, urinal and flush water, etc.) areas other than reuse as irrigation water
Regulation on Urban Wastewater Treatment	The purpose of the By-Law is to protect the environment against the adverse effects of collection, treatment and discharge of urban wastewater and wastewater discharge from certain industrial sectors. and issues related to disposal are regulated.
Water Pollution Control Regulation	The purpose of the By-Law is to determine the legal and technical principles necessary for the prevention of water pollution in a manner compatible with sustainable development objectives in order to protect the country's groundwater and surface water resources potential and to ensure their optimum utilization. The By-Law on Water Pollution Control standards for all kinds of wastewater discharges to receiving environments, monitors and inspects discharges, and carries out all kinds of permits and approvals in this regard. In addition, in regions where irrigation water is scarce and of economic value, the use of treated wastewater that meets the irrigation water quality criteria specified in the Communiqué on Technical Procedures of the By-Law on Water Pollution Control is encouraged as irrigation water. In addition, in order to promote the reuse of treated wastewater, metropolitan municipalities and provincial municipalities are required to ensure that at least 10% of the total wastewater treated in urban wastewater treatment plants is reused in agricultural irrigation and recreational purposes, as well as in industrial, environmental and other areas.

Table 23 - Key Policy Documents Related to Waste Sector

Policy Documents	Aims and Objectives
12th Development Plan (2024-2028)	The Plan the following measures related to the waste sector: Industrial utilization of waste and circular economy practices will be popularized. Waste management process will be improved in a way to prevent waste starting from sorting at source. Infrastructure will be supported and developed to ensure that animal wastes are stored under appropriate conditions and processed in biogas plants. Efforts will be accelerated to eliminate existing obstacles such as lack of supervision, technical knowledge and capacity in the construction and operation of wastewater treatment plants, support mechanisms for their operation in accordance with the standards and alternative systems for the disposal of wastewater treatment plant sludge will be developed. Solid waste management will be made more efficient by considering circular economy principles. Zero waste practices will be made widespread and public awareness will be raised on waste recycling. Training and awareness-raising activities will be carried out within the scope of the "Zero Waste Project" and all
NDC 2023	In the National Contribution Declaration, it is stated that waste generation should be prevented and the amount of waste generated should be reduced in line with circular economy principles; and that the recovery rate of municipal waste should be increased until 2035. Increasing the recovery rate of methane gas from biodegradable wastes to 60%, increasing the recovery rate of methane gas from biodegradable wastes, ending the landfilling of non-pre-treated municipal wastes by 2053, increasing the production of FDI from municipal wastes, converting wastewater treatment plants into biorfinery plants, increasing the percentage of reuse and of treated wastewater expand their areas of use.
Green Deal Action Plan (2021)	The action plan covers a wide range of actions to tackle climate change, green finance, EU border carbon regulation, a green and circular economy, clean, affordable and secure energy supply, sustainable agriculture, smart transport and diplomacy.

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Aims and Objectives Policy Documents The preparation of the National Waste Management Plan (2023-2035) is at the finalization stage. In the NWMP, determination of the issues that need National Waste Management to be improved or developed in the field of waste management by and Action Plan (NWMP) (2023considering the current situation data, periodic waste management by 2035) making population and waste projections required for 2035 nodels are aimed to be put forward. "Turkey's National Strategy Document and Action PreventionReduction and Management of Food Losses and Waste" was shared with the public on May 20, 2020. Thus, for the first time in Turkey, a National Strategy Document on the prevention, reduction and management of food loss and waste and an action plan to implement this strategy have Turkey's National Strategy been prepared. The National Strategy Document and Action Plan, which is Document and Action Plan on structured according to the "Food Utilization Hierarchy", has close to 100 Prevention, Reduction and activities aiming to achieve the strategic objectives of preventing and reducing Management of Food Losses food loss and waste, recovering and redistributing food for direct human and Waste consumption, utilizing formerly foodstuffs that are no longer used as food as

Wastewater Treatment Action Plan (2017-2023)

It is aimed to develop a management system that will ensure the protection, development and sustainable use of the quantity and quality of water resources. In order to harmonize with the EU Acquis, in order to examine both the quantity and quality parameters of groundwater and surface water resources in the basins and the status of wastewater infrastructure systems, the status of sewerage, storm water and wastewater treatment plants of the provinces in the basins were evaluated and the needs, strategic priorities and targets in the wastewater sector and the required investment and financing needs were determined.

animal feed, and recycling waste food.

contains an action item.

2.5.2 Strategy and Actions

Policies, measures, targets, related actions and indicators that will contribute to emission mitigation in the waste sector can be examined under different sub-headings considering the national GHG inventory report. Below, firstly, strategies () that have the potential to provide direct mitigation in the waste sector section of the reporting according to IPCC 2006 guidelines are explained. This is followed by strategies (3) that cannot be calculated for GHG mitigation potential in the waste sector but support mitigation. Lastly, strategies (2) that are related to the waste sector, but provide or support GHG emission reductions in the national inventory reporting of other sectors are listed.

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Strategies that provide direct GHG emission reductions in waste sector reporting

The strategies in this section are listed in the order appropriate to the waste hierarchy. A strategy for wastewater management has also been identified.

Strategy A-S.1

Prevention and reduction of waste and wastewater before they occur

According to the waste hierarchy, preventing or reducing waste before it occurs is the most preferred method. Preparation of a National Waste Prevention Plan and issuance of qualified zero waste certificates within the scope of zero waste practices are the most prominent policies.

The most important share of greenhouse gas emissions from the waste sector in Turkey belongs to the uncontrolled release of methane gas from landfills. Food wastes are also among biodegradable wastes and it is possible to prevent and reduce the generation of these wastes by taking measures from production to consumption and raising awareness of all stakeholders, and this is the most important policy for the waste sector.

In addition, the reuse of waste within the framework of circular economy principles is also a form of waste reduction and prevention strategy. Actions in this regard can directly reduce greenhouse gas emissions. will contribute to mitigation.

Greenhouse gas emissions from wastewater will also be reduced through studies on the efficient use of industrial and urban water.

A-S.1.1	Preparation of the National Waste Prevention Plan
A-S.1.2	Conducting good practice studies with different stakeholders (farmers, producers, hotels, food service industry, wholesalers, retail, workplaces, consumers, etc.) to prevent and reduce food waste and other biodegradable wastes before they are generated and determining a roadmap in this regard
A-S.1.3	Carrying out good practice studies, including extended producer responsibility, in order to increase the rate of reuse of waste within the framework of circular economy principles
A-S.1.4	Issuance of a qualified zero waste certificate
A-S.1.5	Carrying out studies for the efficient use of water in order to reduce the wastewater sent for treatment and discharge

Strategy A-S.2

Increasing the rate of recycling and recovery of waste

Preventing the generation of waste is the most effective way to avoid the waste of both energy and raw material resources and is a key factor in the protection of the environment and the sustainable use of natural resources. Waste minimization involves reducing the amount and hazardousness of waste. For this reason, waste prevention and waste minimization have been identified as a top priority in all regulations on waste management, particularly the Environmental Law.

waste management, recognizing waste as a valuable resource, and ensuring processes that protect the environment from the most appropriate to the least appropriate

waste management hierarchy is used as a tool to evaluate waste management. Reducing waste conserving resources A pyramid-shaped schematic for protecting and managing waste a preference ranking for the actions to be chosen. According to the ideal waste management hierarchy, prevention and minimization of waste where it is generated, and reuse of waste where its generation cannot be prevented are the priority steps of the waste management hierarchy. Wastes that cannot be reused should be recycled, recovered as material or recycled as energy in order to bring them into the economy. However, in the absence of a suitable recovery method, final disposal of waste should be preferred. Therefore, effective implementation of the waste management hierarchy with prevention and reduction at source, reuse, recovery through waste processing in the nearest and most appropriate facility ensures that environmental pollution is minimized.

Sending waste to the relevant recovery facility by collecting it cleanly with at least dual collection systems according to its type, or with deposit return systems for some wastes (e.g. beverage packaging), constitutes the indispensable first stage of material recycling.

Within the framework of the Zero Waste Regulation, which was prepared in order to adopt, implement and disseminate the zero waste approach throughout the country by determining the general principles and implementation principles regarding the establishment of the "Zero Waste Management System" within the scope of the Zero Waste Project, "Zero Waste Certificate" was started to be given to local administrations that established the Zero Waste Management System as of January 12, 2020. With the Law on the Establishment of the Turkish Environment Agency and Amendments to Certain Laws No. 7261 dated 24/12/2020 and numbered 7261, the Turkish Environment Agency (TUÇA) was established to prevent environmental pollution and to ensure the protection, improvement and development of green areas and to carry out activities for the establishment, operation, monitoring and supervision of a deposit management system on a national scale. In line with all these developments, an acceleration has been achieved in the recovery rate of municipal waste. On the way to the 2053 zero emission target, the municipal waste recovery rate target for 2035 has been set as 60%. In order to achieve these targets, it is aimed to increase the number and capacity of biological processing facilities and the amount of biodegradable waste sent to these facilities, to increase the production of solid-liquid fermented products and compost suitable for use in agriculture, and to reduce the amount of waste disposed in landfills.

A-S.2.1 A-S.2.2 Updating the National Waste Management and Action Plan by taking into account greenhouse gas emission reduction policies

Expanding separate collection of wastes at source according to their types (biodegradable and other recyclable)

A-9	S.2.3	Expanding the deposit return system for collecting high quality materials
A -3	S.2.4	Increasing the number and capacity of biological processing facilities for the recovery of biodegradable waste and the amount of biodegradable waste sent to these facilities
A-9	S.2.5	Increasing the amount of solid-liquid fermented products and compost produced from biodegradable wastes with criteria suitable for use in agriculture
A-9	S.2.6	Processing of wastes not suitable for material recovery using thermal technologies suitable for energy recovery

Strategy A-S.3

Reducing the proportion of waste sent to sanitary landfills without pretreatment

The number of sanitary landfills increased significantly since 1991 in line with the activities carried out for the management of municipal wastes. The number of sanitary landfills increased from 2 in 1994 to 93 as of today. These facilities currently sanitary landfill services to 1,241 municipalities and 89% of the municipal population.

By 2053, it is aimed to end the regular storage of municipal wastes that are not subject to pre-treatment.

A-S.3.1	Updating and implementing Provincial Zero Waste Management System Plans
A-S.3.2	Increasing the number and production capacity of waste-derived fuel (WDF) preparation facilities for municipal wastes that are not suitable for recycling/recovery
A-S.3.3	Termination of waste acceptance to unregulated dumping sites

Strategy A-S.4

Improving wastewater management and treatment infrastructure

In 2020, 87.9% of the wastewater discharged by municipalities was treated, and the ratio of advanced biological treatment process among the processes used in wastewater treatment has been increasing in recent years. In 2018, 48% of the wastewater generated within municipal areas was treated with advanced biological treatment, while this rate approached 51% in 2020 [17]. This trend is expected to contribute to the reduction of greenhouse gas emissions. In addition, the increase in the number of anaerobic digester units in wastewater treatment plants leads to the widespread use of methane recovery applications. With the studies carried out by the Ministry of Environment, Urbanization and Climate Change, 46% of the treatment sludge generated in 2020 is used as additional fuel and alternative raw material as well as energy recovery while 39% is disposed of through landfill.

By 2053, it is envisaged to ensure fully sustainable management of sewage sludge generated in Turkey and to establish wastewater treatment infrastructure in line with circular economy principles.

A-S.4.1	Increasing methane recovery rate in wastewater treatment plants
A-S.4.2	Increasing the number of wastewater treatment plants with sustainable treatment sludge management that prioritizes the beneficial use of treatment sludge within the scope of circular economy principles
A-S.4.3	Establishing sustainable wastewater management within the framework of circular economy principles

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Greenhouse gas emission reduction in waste sector reporting supporting strategies

Strategy A-S.5

Developing human resources and raising social awareness within the scope of zero waste practices and greenhouse gas emission reduction

In the Climate Council, it was recommended that "In order to increase social awareness within the scope of zero waste practices and greenhouse gas emission reduction, capacity should be increased by creating applied training modules for educational institutions and all stakeholders". Training of stakeholders and raising social awareness is very important for a sustainable waste management and efforts will be made in this direction. In addition, it is aimed to take measures to improve working conditions in the waste sector and to meet the need for skills and qualified labor force.

A-S.5.1	Inclusion and mainstreaming of climate change, zero waste, water use, circular economy, green skills and green jobs in formal education curricula
A-S.5.2	Capacity building of relevant stakeholders and trainers on zero waste, water use, circular economy and greenhouse gas emission reduction
A-S.5.3	Increasing written, audio, visual and social media activities (promotional videos, website, etc.) to raise awareness on zero waste, water use, circular economy and greenhouse gas emission reduction for all stakeholders
A-S.5.4	Identifying the skills and qualifications required by circular economy principles in the waste sector and conducting studies to train the labor force with these qualifications and improve employment conditions

Strategy A-S.6

Waste management, circular economy principles and greenhouse gas emissions

developing incentives and financing mechanisms for its improvement, taking into account mitigation

At the Climate Council, it was recommended that "Incentive mechanisms should be developed to improve effective waste management for greenhouse gas emission reduction in the industry and service sector". Incentive and financing mechanisms need to be developed for the development of the waste sector in line with climate change mitigation targets and circular economy principles.

The relevant legislation on national waste and wastewater management will be revised taking into account EU harmonization processes, greenhouse gas emission impact and targets. These revisions will pave the way for advantageous financing mechanisms.

A-S.6.1	Updating the national waste and wastewater management legislation through a participatory process, taking into account circular economy principles, zero waste and greenhouse gas emission reduction targets
A-S.6.2	Developing advantageous financing mechanisms to support projects and investments that will ensure the prevention, separate collection at source, reduction, reuse, recycling and recovery of waste, reduce the amount of waste disposed in landfills, and increase the recovery and reuse of treated wastewater
A-S.6.3	Working on the relevant specification formats in line with the principles of Green Public Procurement (GPP) within the framework of circular economy requirements.

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Strategy A-S.7

Waste management, circular economy principles and greenhouse gas emissions

R&D activities to be improved by taking mitigation into account increasing and improving technological infrastructure

In the recommendation decision of the Climate Council, it was recommended that "It should be ensured that necessary studies are carried out to establish tools to support value chain and life cycle assessment and to determine the greenhouse gas mitigation impact". In this context, material-based life cycle assessment studies will be conducted and greenhouse gas emission mitigation impacts will be determined.

It is aimed to transform the biogas obtained from biodegradable wastes into high value-added products and bring them into the economy. R&D studies are envisaged in this field.

In addition, within the framework of the greenhouse gas emission reduction target and circular economy principles, it is aimed to carry out R&D studies on reuse of treated wastewater, material recovery from wastewater and treatment sludge, reduction of the amount of treatment sludge produced in the plant, beneficial use of treatment sludge and reduction of greenhouse gas emissions from wastewater treatment plants.

It is planned to develop digital technology applications such as advanced sensor technologies, artificial intelligence and remote sensing for optimization of waste and wastewater management processes and energy efficiency.

A-S.7.1	Establishing a legal framework for monitoring the circular economy and setting indicators for monitoring, and including the necessary indicators in the official statistics program
A-S.7.2	Development of technologies that enable the conversion of biogas from biodegradable wastes into biomethane or biobutanol or hydrogen that can be used as biofuel at standards equivalent to natural gas
A-S.7.3	Conducting material-based life cycle assessment studies to determine the GHG emission reduction potential of wastes

Conducting R&D studies to support sustainable management of wastewater treatment plants in line with circular economy principles and greenhouse gas emission reduction targets

Development of digital technology applications such as advanced sensor technologies, artificial intelligence and remote sensing to ensure process optimization and energy efficiency in waste and wastewater management

Strategies that enable or support GHG emission reductions in the reporting of other sectors, although relevant to the waste sector

Strategy A-S.8

A-S.7.4

A-S.7.5

Increasing the use of waste as raw material/resource in production

At the Climate Council, recommendations were made as follows: "It should be ensured that relevant ministries, municipalities and industrial facilities work jointly to increase the production of WEEE for emission reduction" and "Within the framework of circular economy targets, it should be ensured that studies are carried out to determine the mandatory utilization rates of products obtained through reuse, use of wastes as by-products, alternative raw materials and recycling/recovery and support mechanisms should be developed for this". It is aimed to realize the implementation of these decisions, which will have an impact on greenhouse gas emission reporting under the industrial sector, in coordination with waste sector stakeholders.

A strategy and action plan document containing a roadmap for Turkey in line with the EU Circular Economy Action Plan and its annexes (taking into account the principles of the EU Green Deal) is also under preparation. The "National Circular Economy Strategy and Action Plan" is a national strategy and will focus on the entire life cycle of products, including product design, production and manufacturing processes, consumption, waste management and use of secondary raw materials. The plan will also cover horizontal activities related to innovation, investments and monitoring, as well as sectoral actions related to materials such as plastics, critical raw materials, construction, biomass.

To promote products/services with reduced environmental impacts from raw material procurement to disposal and to provide consumers with accurate, non-misleading, science-based information

environmental label, which is a voluntary rewarding system established for different products and services and disseminate its implementation.

Industrial symbiosis represents the coming together of two or more economic enterprises, preferably physically close to each other and normally operating independently of each other, to form long-term partnerships and work in solidarity to improve both environmental performance and competitiveness. In other words, industrial symbiosis brings together independent businesses around a more sustainable and innovative approach to resource utilization. This network of cooperation the sharing or joint use of all kinds of facilities, logistics, plant and expertise resources, including the physical exchange of materials, energy, water and/or by-products. Within the scope of this strategy, it is aimed to establish the legislative infrastructure for industrial symbiosis practices by 2030.

A-S.8.1	Preparation of the National Circular Economy Strategy and Action Plan
A-S.8.2	Determination of environmental labeling criteria for different products and services and dissemination of applications
A-S.8.3	Establishing the legislative infrastructure for the dissemination of industrial symbiosis practices

Strategy A-S.9

A-S.9.2

Greenhouse gases from vehicles used in waste management reducing emissions

Waste needs to be collected separately at source and transferred to waste treatment facilities. In this operation, vehicles that cause significant greenhouse gas emissions are used. It is aimed to reduce these emissions through applications such as route optimization, reverse logistics and the widespread use of electric vehicles and alternative fuels.

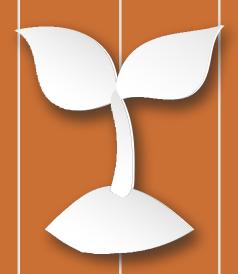
With these initiatives to be implemented by waste sector decision makers, GHG emissions reported under the transportation sub-heading of the energy sector are expected to decrease.

Ensuring less fuel consumption by providing standardization and route optimization for waste collection and transportation vehicles in accordance with spatial planning or by using reverse logistics options

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Promote the use of low-emission, alternative fuel, electric vehicles and, where appropriate, rail transport in waste collection and transportation by supporting them with relevant incentive mechanisms





AGRIC ULTUR E

2.6.1 Current Status

Turkey has a unique diversity of geography, climate and natural resources. While this richness enables the cultivation of a wide variety of agricultural products in Turkey's seven geographical regions, climate change brings with it many different risks, options and scenarios in terms of adaptation and mitigation. Emissions from agriculture arise from agricultural soils, paddy cultivation, stubble burning, urea use, including chemical fertilizer use in crop production, and enteric fermentation and animal manure management due to feed consumption in animal husbandry.

Table 24 - Agricultural Areas in Turkey (2022) [19]

	Thousand Hectares	%	%
Cereals and other vegetable products	19470	81,6	
Planted area	16510		
Fallow	2960		
Fruits, beverage and spice crops area	3671	15,4	
Vegetable Gardens area	718	3,0	
Ornamental Plants Area	6	0,0	
Total cultivated agricultural land	23864	100,0	62,0
Meadow and Pasture Area	14617		38,0
Total Agricultural Area	38482		100,0

In Turkey, the agricultural sector is an important sector, meeting the food needs of 85 million people, accounting for 6% of GDP and exports and 16% of employment [6]. In addition, input suppliers, farmers, traders,

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from production, such as processors, exporters, importers, warehouses, transporters, wholesalers, retailers It has an important role in providing income to all actors in the agricultural system, extending to consumption. On the other hand, Turkey is an important producer and exporter of agricultural products in world markets. According to TurkStat data, Turkey has a total of 38 mha of agricultural land in 2022of which 23.9 mha is cultivated agricultural land and 14.6 mha is meadow and pasture land. Of the cultivated agricultural land, 81.6% was used for field crops, 15.4% for fruits and 3.0% for vegetables. Of the land cultivated for field crops, 3 mha is fallow land [19] (Table 24). According to the most recent agricultural census data, there are approximately 3 million agricultural holdings in Turkey an average of 6 ha of agricultural land, the majority of which are family-owned and operated.

Field crops are cultivated on 19 mha of cultivated agricultural land in Turkey, with wheat (34.1%), barley (16.4%) and maize (4.7%) having the largest share the cereal group. Sunflower among oil crops, sugar beet and cotton among cultivated crops, chickpea, bean, lentil among legumes, alfalfa, vetch and sainfoin among fodder crops are the most grown crops [19] (Table 25).

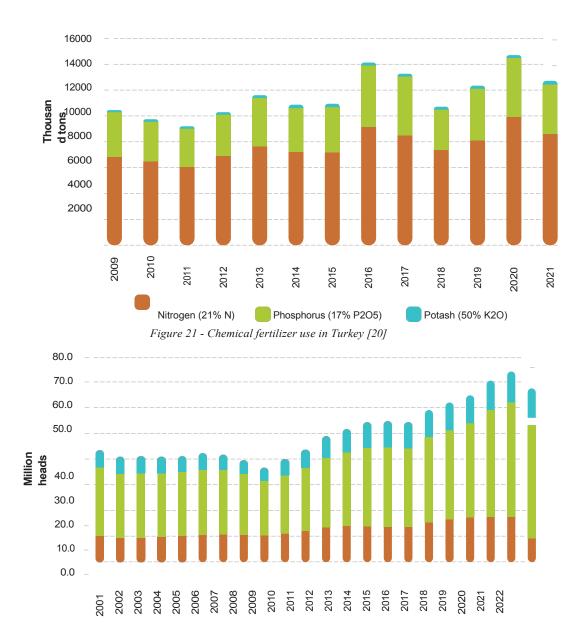
The production of these products is largely carried out by traditional methods. Approximately 45 thousand farmers engaged in organic crop production on an area of 311 thousand ha and 10 thousand farmers engaged in Good Agricultural Practices (GAP) on an area of 207 thousand ha. Organic agriculture is practiced on 1.5% of the total cultivated agricultural area, and Good Agricultural Practices (GAP) on 1.1%.

According to the "Chemical Fertilizer Usedata published by TurkStat and Agriculture and Forestry, nitrogen fertilizers have the largest in chemical fertilizer use in Turkey. As of 2022, 5.9 million tons of physical fertilizer consumption and 2.3 million tons of fertilizer consumption was realized on the basis of plant nutrients, of which 1,579 thousand tons were nitrogen fertilizers, 263 thousand tons were phosphorus fertilizers and 108 thousand tons were potash fertilizers (Figure 22). Average fertilizer use per hectare in 2022 is 97 kg/ha on the basis of plant nutrients. As of 2022, 7.5 MT of 11.3 MT fertilizer consumption is nitrogen fertilizer, 3.5 MT is phosphorus fertilizer, 261 thousand tons is potash fertilizer (Figure 21).

The number of livestock in Turkey is increasing due to the support provided to meet the animal protein needs of the growing population. In 2022, Turkey will have 17 million head of cattle, 45 million head of sheep and 12 million head of goats, producing 22 MT milk and 2 MT red meat (Figure 22). Poultry farming is developed. In 2022, 2.4 MT of chicken meat and 20 billion chicken eggs were produced [21].

Table 25 - Crop Area, Production and Yield of Major Field Crops Grown in Turkey (2022) [19]

Products	Processed Agricultural Land I		Production Quantity	Yield	
	Thousand Hectares	%	Tone	kg/ha	
Wheat	6629	34,0	19750000	2979	
Barley	3199	16,4	8500000	2657	
Egypt	912	4,7	8500000	9321	
Sunflower	981	5,0	2550000	2599	
Cotton	573	2,9	2750000	4798	
Sugar beet	298	1,5	19253962	64717	
Chickpea	457	2,3	580000	1270	
Beans	97	0,5	270000	2782	
Lentil	343	1,8	445000	1299	
Clover	644	3,3	19064213	29622	
Vetch	342	1,8	4020433	11750	
Sainfoin	162	0,8	1786207	11038	
Other	1873	9,6			
Fallow	2960	15,2			
Total land under field crops	19470	100,0			



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Figure 22 - Number of live animals in Turkey [21]

Sheep

Goat

Emissions from the agriculture sector increased from 46 Mton CO2-eqd in 1990 to 72 Mton CO2-eqd by 2021 [1] (Table 26, Figure 23).

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Table 26 - Agriculture Sector Greenhouse Gas Emissions in Turkey (Mton CO

J				•	,		2-Ashd				
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Enteric Fermentation	22,40	23,22	23,02	22,64	22,34	21,82	21,79	20,31	19,89	19,96	19,23
Fertilizer Management	5,44	5,66	5,53	5,60	5,79	5,52	5,57	5,17	5,35	5,45	5,14
Paddy Agriculture	0,10	0,10	0,09	0,10	0,09	0,11	0,13	0,12	0,14	0,15	0,13
Agricultural Land	17,31	17,15	17,53	18,08	15,93	15,87	16,39	16,02	17,31	17,64	16,87
Stubble Burning	0,35	0,36	0,34	0,37	0,32	0,33	0,34	0,35	0,38	0,34	0,34
Urea	0,46	0,44	0,46	0,63	0,45	0,43	0,53	0,53	0,66	0,73	0,62
	2001	2002	2003	2004	2005	2006	2007	2008	2009	201	0
Enteric Fermentation	18,71	16,97	18,87	18,97	19,68	20,35	20,58	20,08	19,61	20,9	95
Fertilizer Management	5,10	4,54	4,60	4,59	4,78	5,03	5,08	4,93	4,86	5,39)
Paddy Agriculture	0,13	0,13	0,14	0,16	0,18	0,21	0,20	0,22	0,21	0,20)
Agricultural Land	15,11	15,10	16,05	16,59	16,88	17,42	16,74	15,25	16,47	17,0	1
Stubble Burning	0,32	0,33	0,33	0,36	0,30	0,29	0,26	0,26	0,29	0,22	2
Urea	0,53	0,53	0,57	0,63	0,61	0,59	0,57	0,56	0,59	0,64	ŀ
	2011	2012	2013	2014	2015	2016	2017	2018	2019	202	2021
Enteric Fermentation	22,85	25,79	26,91	27,15	26,95	26,98	30,11	32,14	33,37	34,6	1 34,95
Fertilizer Management	5,64	6,43	6,77	7,07	6,96	7,06	7,70	8,51	8,60	9,06	9,14
Paddy Agriculture	0,20	0,25	0,23	0,23	0,24	0,24	0,23	0,25	0,26	0,26	0,27
Agricultural Land	17,42	19,33	20,90	20,76	21,01	23,15	23,61	23,02	24,34	27,3	9 26,25
Stubble Burning	0,23	0,22	0,24	0,22	0,17	0,16	0,17	0,16	0,16	0,17	0,16
Urea	0,56	0,64	0,81	0,79	0,81	1,30	1,45	1,26	1,29	1,66	1,30

Greenhouse gas emissions from the agriculture sector in Turkey are given in Figure 23. Due to the increase in the number of animals and the use of chemical fertilizers, greenhouse gas emissions from agriculture have also increased over the years. is on the rise.

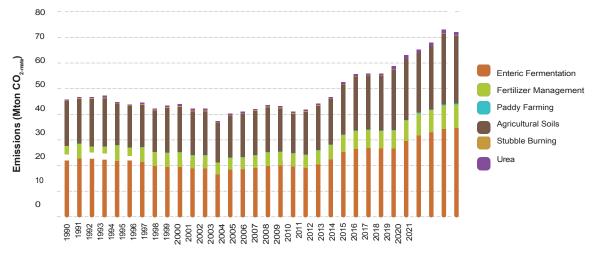


Figure 23 - Agriculture sector greenhouse gas emissions in Turkey [1]

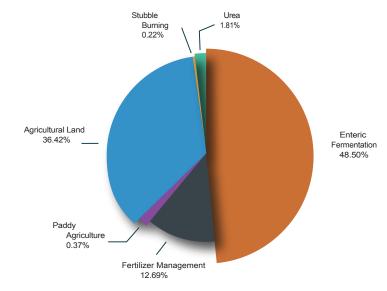


Figure 24 - Shares of agriculture sector GHG emissions by source in Turkey (2021) [1]

The main legislation, policy and strategy documents related to the agriculture sector in Turkey are presented in Table 27 and Table 28.

Table 27 - Basic Legislation Related to Agriculture Sector

Basic Legislation	Purpose and Scope
	The purpose of the Law is to protect and develop the soil, to classify agricultural lands, to determine minimum agricultural land and sufficient income agricultural land sizes, to prevent their division, and to ensure the planned use of agricultural land and sufficient income agricultural land in accordance with the principle of environment-first sustainable development.
Soil Conservation and Land Use Law (Law No 5403)	The Law provides for the classification of land and soil resources in accordance with scientific principles, determination of the minimum size of agricultural lands and agricultural lands with sufficient income and prevention of their division, preparation of land use plans, evaluation of social, economic and environmental dimensions in the process of protection and development with participatory methods, prevention of misuse and misuse, establishment of methods to ensure protection, as well as duties, powers and responsibilities.
Agricultural Reform Law on Land Regularization in Irrigation Areas (3083)	The purpose of the Law is to ensure that in irrigation areas and in areas deemed necessary by the Presidency of the Republic; the soil is operated efficiently, its operation is protected, maximum economic efficiency is obtained from the unit area, agricultural production is continuously increased, evaluated and employment opportunities are increased in these areas; landless and landless farmers who do not have enough land are landed with lands owned by the state in order to establish agricultural family businesses, they are supported, trained; to ensure the consolidation of agricultural lands that are fragmented in a way that does not allow economic production by expanding them when necessary and to the extent possible, to prevent the fragmentation and shrinkage of agricultural land to the extent that it is not sufficient to ensure the family's livelihood and to utilize the family workforce; to regulate the allocation of agricultural land for other purposes in case of necessity; to determine the way of utilization of undistributed agricultural land; to make arrangements in the ownership and disposition of real estates and their settlements in other regions deemed necessary by the President of the Republic due to national security.

Basic Legislation	Purpose and Scope
Regulation on Control of Water Use and Reduction of Water Losses in Irrigation Systems	According to the Regulation irrigation efficiency should be increased to 55% by 2024. The Regulation aims to ensure efficient use of irrigation water, reduce losses and prevent unauthorized use, reduce the costs of irrigation water supply, distribution and use, and strengthen the coordination of institutions regarding agricultural water use.

Table 28 - Agriculture Sector Related Key Policy Documents

able 28 - Agriculture Sector Related I	
Policy Documents	Aims and Objectives
	The Plan presents a long-term perspective of Turkey for the period 2024-2028 based on the vision of "a stable, strong and prosperous Turkey in the Turkish Century that is environmentally sensitive, resilient to disasters, produces high added value based on advanced technology, shares income fairly". The main objective is to create an agricultural sector that addresses the economic, social and environmental dimensions of production in a holistic manner, has a high level of technology use and productivity, is organized, competitive, has planned production within the framework of supply-demand balance, uses natural resources effectively and sustainably, and ensures adequate and balanced nutrition of the society. The following measures are included in the Plan:
12th Development Plan (2024-2028)	Smart agricultural practices will be expanded through digitalization, artificial intelligence and data-driven business models. Protection, sustainable use and effective management of agricultural lands will be ensured. Planned production will be adopted in crop production, production will be increased by increasing yields through the use of qualified genetic material and developing greenhouse cultivation, especially in metropolitan areas with high population. Investments to improve the infrastructure to ensure food safety will be continued, food inspection and services to combat plant and animal diseases and pests will be made more effective. To ensure food safety, infrastructure and practices for preventing waste, effective stock management and marketing be improved. Within the scope of protecting the environment and combating climate change, environmentally friendly agricultural practices will be supported and disseminated to reduce

greenhouse gas emissions in the agricultural sector.

Policy Documents	Aims and Objectives
Medium Term Program 2024-2026	In the Medium Term Program, the following items are included: ensuring more efficient use of soil and water resources by disseminating agricultural practices and new technologies that are resilient to climate change; continuing training, capacity building, R&D projects and early warning system studies to combat agricultural drought; increasing arable and irrigable areas by implementing coercive and incentive regulations for the protection of agricultural lands, preventing their misuse and effective use. in place.
	The vision of the Strategic Plan is "A model ecological resource management on a global scale" and the mission is "To mobilize the ecological resources in our country in an effective, efficient and sustainable manner with a development model perspective and to ensure economic security, food supply security and human health through ecological, plant and animal added value". There are 7 objectives in the plan and the objectives related to climate change in the 2019-2023 Strategic Plan of the Ministry of Agriculture and Forestry are listed below: - Increasing capacity to combat climate change, erosion and desertification - Identify and prevent land degradation and erosion
Ministry of Agriculture and Forestry Strategic Plan 2019-2023	- Measuring the possible impacts of climate change on agriculture and
,	developing recommendations for taking measures
	Within the scope of these objectives; adaptation and measures against the effects of climate change on agriculture and R&D projects for determining agricultural drought and mitigating its effects, "Measurement, monitoring and mitigation of greenhouse gas emissions from agricultural activities (crop and livestock) and dissemination of R&D projects for low carbon agriculture, development of measures to prevent land degradation and erosion caused by climate change in agricultural lands and pastures, land use and land use in our country

Policy Documents	Aims and Objectives
Ministry of Agriculture and Forestry Strategic Plan 2019-2023	greenhouse gas emissions and sink calculations and reporting due to change in use, updating the Turkish Agricultural Drought Mitigation Strategy and Action Plan for 2023-2027, increasing institutional capacity on climate change, raising awareness on adaptation to climate change ctions and strategies such as.
NDC 2023	In Turkey's National Contribution Declaration on agriculture; controlling methane emissions by regulating animal feed rations; ensuring optimum nitrogen fertilizer use in crop production; increasing the fertilization process in biogas plants; reducing nitrogen fertilizer use by rotation with legumes in crop production; improving the number of animals and rational feeding arrangement practices in cattle breeding; using agricultural biomass and animal manure for energy production; reducing methane emissions by developing underground irrigation system technology in paddy production; reduce risks to natural disasters for food security by improving application methods and standards of mineral and organic fertilizers; training farmers in new methods and technologies; reducing risks to natural disasters for food security through practices such as crop rotation, using agrotechnical methods in forecasting, improving soil and water conservation practices, forecasting to reduce drought and wind erosion, and soil conservation; assessing the volume of water available in each basin and assessing the sectoral use (e.g. irrigation, industry, energy production) and use of available water for ecosystem sustainability. irrigation, industry, energy production) and distributing available water through water allocation plans.

Policy Documents	Aims and Objectives
Turkey Climate Change Strategy (2010-2023)	Short-, medium- and long-term targets for mitigation in the agriculture sector are listed as follows: Ensuring the conscious use of fertilizers; limiting emissions by using modern techniques in irrigation, tillage and pesticides; supporting and expanding the production and use of organic agriculture, drought-resistant plant species and certified seeds. Techniques to increase carbon sequestration in the soil will be developed and adopted by agricultural producers. In order to reduce methane emissions from agricultural activities, selection of appropriate feeding methods in animal husbandry, fertilizer management and good drainage conditions in paddy cultivation will be promoted. Mitigation and adaptation in agriculture are mutually reinforcing strategies. Mitigation technologies strengthen farmers' resilience to climate change. Therefore, the synergy created by effective planning and implementation of mitigation and adaptation strategies in agriculture will increase production and reduce poverty. vill result in a of mitigation and adaptation in agriculture.
Turkey Climate Change Action Plan (2011-2023)	Within the scope of the target of "reducing the rate of increase in greenhouse gas emissions from crop and animal production", preparation of the fertilizer consumption inventory of Turkey, dissemination of the use of analysis-based fertilizers, increasing the use of animal fertilizers and training farmers on this issue, establishing the necessary support program for the dissemination of pasture farming; determining feed ratios and training farmers to reduce methane gas production from enteric fermentation; determining measures to ensure animal production with high genetic performance in meat and milk production; preparing training programs for the management and use of animal manure and the establishment of biogas production facilities.

Policy Documents	Aims and Objectives
Turkey Climate Change	The Strategy and Action Plan defines cross-cutting provisions for data collection, reporting, monitoring and verification, focusing on five priority areas of importance for Turkey in establishing reporting requirements arising from international obligations.
Adaptation Strategy and Action Plan (2011-2023)	These include water resources management; agriculture and food security; natural disaster risk management; ecosystem services, biodiversity and forests
	and public health. Agricultural issues to impact and adaptation.
Green Deal Action Plan (2021)	In the Action Plan, issues related to greenhouse gas mitigation in agriculture, development of organic agriculture, reduction of chemical fertilizer use, development of waste and residue management in agricultural production, land consolidation activities and use of renewable energy in agriculture defined as increasing.
	The Action Plan aims to mitigate the impacts of climate change on water supply in all sectors, particularly urban, agricultural and industrial water uses.
	Within the scope of the document, with the dissemination of cleaner production techniques in industry and the implementation of water efficiency measures In line with this goal, a national target was set, priority strategies were identified
	and a 10-year Industrial Water Efficiency Action Plan covering the period 2023-2033 was prepared.
Water Efficiency Strategy Document and Action Plan in the Framework of Adaptation to a Changing Climate (2023-2033)	The Plan includes the strategies of developing measurement and monitoring systems and creating up-to-date inventories, developing legal regulations and incentive mechanisms for the dissemination of alternative (non-traditional) water resources, calculating the size of the blue and gray water footprint in agriculture and industry, determining measures to reduce it, creating incentives and support mechanisms, and working towards taking virtual water content into account in international product trade.

1	7	6

Policy Documents	Aims and Objectives
Climate Council (2022)	In the Climate Council, short, medium and long-term national strategies and actions for combating climate change and greenhouse gas mitigation for the agriculture sector should be determined, implemented and monitored with a focus on farmers; "Climate Friendly Agricultural Support Model" should be created and implemented; the agriculture-food value chain should be made sustainable and circular by creating an ecosystem-oriented food production model with an integrated approach; resource-efficient consumption of chemical fertilizers and plant protection products in agricultural production should be ensured and monitored; efforts should be to increase production areas and quantities in order to develop organic agriculture in our country; to carry out necessary studies within the scope of management and evaluation of methane emissions from agriculture and waste sectors; to develop new generation effective fertilizer production technologies and fertilization systems based on the Internet of Things (IoT), artificial intelligence and sensor technologies in order to reduce the use of chemical fertilizers in agricultural production; to develop green and environmentally friendly technologies for the production of biofertilizers (compost, organomineral, microbial), protein, nutritional fiber and bioactive substances with high economic value from residues in the agriculture and food sector in line with the zero waste target.
National Energy Efficiency Action Plan	With regard to GHG mitigation in the agriculture sector, these include encouraging the replacement of tractors and harvesters with energy efficient ones, switching to energy efficient irrigation methods, supporting energy efficiency projects in the agriculture sector, encouraging the use of renewable energy sources in agricultural production, identifying and encouraging the use of agricultural by-products and waste potential to obtain biomass, and supporting energy efficiency in the aquaculture sector.

Aima and Ohioativa

.6.2 Strategy and Actions

Under the agriculture sector, the activities that contribute the most to greenhouse gas emissions, in particular There are seven strategies and actions to achieve these strategy objectives, including reducing emissions, increasing efficiency, enabling loss, waste and residue and land management, providing financing opportunities for the realization of actions, training and capacity building activities.

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Strategy T-S.1

Reducing methane emissions from livestock

Livestock emissions have the highest share in GHG emissions from agriculture. Therefore, regulations on livestock breeding are more prioritized in Turkey's agriculture-related emission mitigation.

Emission mitigation options in livestock production in the world focus on increasing efficiency in production and resource use. Improvements in animal genetic breeding, feeding, health, management, etc., reuse of animal manure, directing it to renewable energy (biogas), ensuring that intensive production is sustainable, arrangements in animal management on pasture (alternate grazing, regenerative grazing) are recommended as practical practices that reduce emissions in cattle and sheep and goat farming. At the same time, as part of the strategy to ensure healthy, sustainable food and feed production and to develop alternative sources, it is recommended to move towards low-emission foods such as poultry meat and eggs and alternative plant-based protein sources, and to investigate cellular agriculture (animal proteins and whole cells are produced in bioreactors), The search for alternative protein sources in animal feed, development of synthetic amino acids, algae, fungi, microbial proteins and insects instead of high-protein feeds such as soy, reduction of enteric methane emissions with feed additives (vegetable oils, seaweed, etc.) are options for emission reduction from livestock.

Research, identification, approval and use of feed additives that suppress methane emissions in animal feed rations in order to reduce emissions in enteric fermentation and manure management, which have the largest share in agricultural emissions in Turkey

pilot system will be developed, methane emission suppressing additives in feed rations

will be identified and training of trainers programs will be organized on these issues. In addition, studies on genetic-based animal breeding that takes into account methane emission and research on alternative feed resources will be increased, animal species, breeds and system proposal reports that may be suitable for each geographical region will be prepared and pilot implementations will be carried out. Implementation projects will be developed and disseminated to improve the collection system and utilization methods of animal manure, and pasture identification, restriction and improvement activities will be accelerated and continued.

T-S.1.1	Carrying out R&D studies on the research, identification, approval and use of feed additives that suppress methane emission in animal feed rations and ensuring the use of approved ones
T-S.1.2	Increasing studies on genetic-based animal breeding that takes into account methane emissions
T-S.1.3	Increasing the number of studies on alternative feed resources and conducting pilot applications
T-S.1.4	Developing the collection system of animal manure and methods of utilization of manure and disseminating the developed methods
T-S.1.5	Ensuring sustainable management of pasture livestock by improving pastures

Strategy T-S.2

Ensuring efficiency in the use of chemical fertilizers

In order to reduce emissions from agricultural soils, excessive use of chemical fertilizers, especially nitrogen fertilizers, should be prevented and fertilizers should be given as much as the plant needs. Effective fertilizer use and improved fertilizer management both increase food production and reduce emissions. Using the right fertilizer, at the right rate, at the right time and in the right place provides optimum plant nutrient uptake and protects soil and water resources. Therefore, conscious chemical fertilization and rotation with legumes are the most widely used mitigation options in crop production.

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For this purpose, fertilizer consumption inventories will be improved and farmer trainings will be increased to promote conscious fertilizer use. Economic and environmental impact analyses of organic and organomineral fertilizer subsidies will be carried out, the possibilities of using solid-liquid fertilizers from biogas plants, vegetable and domestic organic wastes as green manure and compost fertilizer will be investigated, and research and evaluation reports will be prepared.

In order to reduce the use of nitrogen fertilizers, support be expanded to promote the alternation of legumes. Awareness-raising activities will be increased to promote Good Agricultural Practices (GAP) and organic agriculture. In order to disseminate practices and R&D studies for climate-friendly, sustainable and digital agriculture, lists of climate-friendly, sustainable crop production and animal husbandry practices will be preparedpilot implementations will be carried out trainings will be organized in each of the seven geographical regions.

T-S.2.1	Preparation of fertilizer consumption inventories
T-S.2.2	Increasing research, training and extension activities carried out to promote conscious fertilizer use
T-S.2.3	R&D projects on the use of organic, organomineral, compost, green fertilizers etc. as alternatives to chemical fertilizers, and disseminating the results of the projects

T-S.2.4

Increasing the training and extension activities carried out to increase the alternation and cultivation areas of legumes in crop production

T-S.2.5

Increasing awareness raising activities for the dissemination of Good Agricultural Practices (GAP) and organic agriculture

Accelerating R&D activities for climate-friendlysustainable and digital agriculture and increasing extension activities to disseminate the results of the studies

Strategy T-S.3

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Reducing the use of pesticides and anti-microbials

It is aimed to support R&D activities to develop alternative products to pesticides and anti-microbials and to accelerate the registration procedures of the products developed. By supporting research on alternative agricultural control methods, it is aimed to expand the use of the developed products through registration.

T-S.3.1	Supporting R&D activities to develop alternative products to pesticides and anti-microbials and accelerating the registration process of the products developed
T-S.3.2	Reducing the use of pesticides and anti-microbials, increasing the extension activities carried out for the use of alternative products registered and licensed

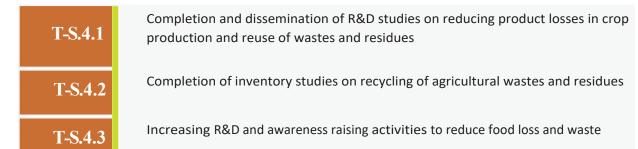
Strategy T-S.4

Improving loss, waste and residue management in agricultural production

Loss and waste in agricultural production is the reduction in the quantity and quality of agricultural products that can be used at all stages from production to consumption. Agricultural residues are the parts of agricultural products that are not normally used. For example, the stubble left in the field after wheat harvest is residue. Wheat that is spilled in the field during wheat harvest and cannot be used is a loss, and bread in the last link of the chain is waste if it is not consumed.

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Inventory studies on recycling of agricultural wastes and residues will be completed, and R&D and awareness raising activities to reduce food loss and waste will be increased.



Strategy T-S.5

Enabling land and soil management

The aim of this strategy is to prevent agricultural lands from being taken out of agriculture, fragmentation, destruction and misuse, and to establish the infrastructure for planning agricultural production. This objective will be achieved through completion of land consolidation registration activities, preparation of up-to-date detailed soil maps in international standards and making them accessible, expanding, monitoring and increasing R&D activities to offset land degradation, planning agricultural production on the basis of agricultural basins or enterprises, and revising agricultural supports to achieve the targets in these plans. In addition, direct sowing methods and reduced tillage methods, agroforestry and living windbreaks will be expanded.

T-S.5.1	Completion of land consolidation registration activities
T-S.5.2	Preparation of up-to-date detailed soil maps in international standards and making them accessible
T-S.5.3	Stabilization of land degradation, dissemination and monitoring of R&D activities
T-S.5.4	Planning agricultural production on the basis of agricultural basins or enterprises and revising agricultural supports to achieve the targets in these plans
T-S.5.5	Increasing extension activities carried out for the dissemination of direct sowing methods and reduced tillage methods
T-S.5.6	Scaling up agroforestry and living windbreaks in agricultural areas

Strategy T-S.6

Ensuring access of farmers to appropriate financing opportunities

For emission mitigation in the agricultural sector, additional financing will be required, especially for farmer-level practices. The environmental impacts of agricultural supports and incentives will be analyzed within the framework of GHG mitigation policy, and legislative arrangements will be made to update agricultural supports and incentives within the framework of GHG mitigation policy. The data needed to facilitate farmers' working with banks and women farmers' access to credit will be identified. It is also aimed to design and implement programs to strengthen economic diversification in rural areas. For this purpose, it is planned to prepare a rural green transformation analysis report and a green transformation strategy document and to develop support programs.

T-S.6.1	Establishing financing and support models for mitigation activities
T-S.6.2	Identifying and sharing the data needed to facilitate farmers' work with banks and women farmers' access to credit
T-S.6.3	Design and implementation of programs to strengthen economic diversification in rural areas

Strategy T-S.7

T-S.7.2

Training for stakeholders operating in the agriculture sector, mainstreaming awareness-raising and capacity-building activities in a gender-balanced manner

Training is important for the adoption and implementation of all activities to be carried out to reduce emissions from agriculture by agricultural sector stakeholders. It is aimed to identify the target group to be trained for transition to low-carbon production in the agriculture sector in line with sustainable development goals. It is aimed to carry out the just transition process with a program in which the social dialogue mechanism is effectively operated, no one is left behind and decent green job opportunities are increased. It is planned to provide trainings for all stakeholders in the agricultural sector, especially disadvantaged groups in the agricultural sector, farmers and technical staff.

T-S.7.1 Determining the target group to be trained in line with sustainable development goals

Increasing and disseminating training and capacity building activities for agriculture sector stakeholders





AKAKDO

2.7.1 Current Status

Turkey has experienced positive developments in terms of forest cover in the last 40 years. According to forestry statisticsforest area increased from 20.19 million hectares to 23.11 million hectares in the 1972-2021 period. The main strategy in the LULUCF sector "proactive sustainable forest management", as the focus should be on strengthening the productivity of ecosystems and forest cover in order to utilize the full mitigation and adaptation capacity of forests, and to protect forests from the harmful effects of climate change and pressure from other land uses.

Our country is in an ecologically fragile geographical region, and sinks, especially forests, are seen as the most important basis for combating climate change, erosion and desertification.

Current data from the General Directorate of Forestry (GDoF) [22] the forest area reached 23,245,000 ha by 2022; within this area, the size of productive forest areas (productive forest: above 10% coverage) reached 13,707,843 ha and the size of degraded forest areas (hollow closed: below 10% coverage) reached 9,537,157 ha. It can be said that most of these degraded forest areas are not suitable for conversion to productive forests, and some of them should be preserved as they are in terms of biodiversity. In line with the EU Copernicus program, the forest area subject to the national GHG inventory is 22.9 million ha in 2021, of which 19.7 million ha is forest cover and 3.2 million ha is closed woodland with gaps (degraded forest).

Table 29 - Changes in Forest Area in Turkey According to the Food and Agriculture Organization Global Forest Resources Assessments Report [22]

	1990-2000	2000-2010	2010-2015	2015-2020	
		100	0 ha/y		
Forest area expansion (a)	38.71	94.85	110.47	119.18	
Afforestation	22.65	62.91	75.36	80.20	
Naturally	16.06	31.94	35.11	38.98	
Deforestation (b)	2.22	1.38	1.03	1.17	
Net area change (a-b)	36.49	93.47	109.44	118.01	

According to the current greenhouse gas inventory data, while total emissions increased by 157% in 2021 compared to 1990, the LULUCF sector sinks covered approximately 30.2% of emissions in 1990, while this rate decreased to 8.3% in 2021. The reason for this decrease is that the rate of increase in emissions is higher than the rate of increase in sinks and factors such as forest fires, drought, etc. threatening the LULUCF sector due to climate change.

With a new system established in 2019 in the General Directorate of Forestry and General Directorate of Agricultural Reform, which are the responsible institutions for LULUCF GHG inventory and reporting NIR Turkey, 2023), Turkey used anforest to ensure international comparability in UNFCCC reporting. The calculation differences resulting from this definition are explained in the NIR report. The new system sensitive spatial baselines that enable the monitoring of land and land use changes. According to the new system, the country's lands are divided into 8 ecozones.

The data sent by OGM to the Food and Agriculture Organization and published in the Global Forest Resources Assessments (2020) report show that the forest area in our country is increasing rapidly (Table 29).

Turkey's LULUCF (Land Use, Land Use Change and Forestry) sector is a net sink based on the growth of wood biomass and expansion of forests, where the key sector is forest areas and processed wood products. From 66.5 Mton CO2 equivalent in 1990, annual GHG sequestration reached 77 Mton CO2 equivalent in 2014, but decreased over time, reaching 77 Mton CO2 equivalent in the last inventory.

carbon sequestration in 2021 is higher than in previous years due to drought-related and high wood production. Compared to 1990, it was quite low, remaining approximately 20 Mton CO2 equivalent below the 1990 attitude level. Approximately half of this decrease is due to the fires of 2021, and the other half is due to increased wood production due to the decrease in yield caused by climate change and the utilization of the wood of trees damaged by forest fires and the increasing demands of the wood sector to use domestic materials due to felling in burned areas. [1] (Table 30, Figure 25).

Table 30 - Turkey's Total Greenhouse Gas Emissions and LULUCF Sequestration (Mton CO_{2-ead}) [1]

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Total Emissions	219,5	226,8	233,1	240,8	234,4	248,3	267,6	278,8	280,3	277,8	298,9
AKAKDO Suspensions	-66,5	-67,4	-67,5	-66,6	-68,0	-67,8	-67,1	-70,5	-70,6	-71,2	-68,1
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Total Emissions	279,7	285,6	304,8	314,4	337,6	358,0	391,7	388,5	395,2	398,8	428,6
AKAKDO Suspensions	-70,8	-69,3	-71,2	-69,7	-71,8	-71,5	-71,8	-67,9	-70,9	-71,9	-75,6
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
Total Emissions	448,2	440,2	459,5	474,9	501,1	528,6	523,1	508,7	523,9	564,4	
AKAKDO Suspensions	-73,4	-76,5	-76,9	-72,8	-73,1	-74,9	-69,8	-62,7	-56,9	-47,2	

When LULUCF sector attitudes are analyzed in detail, it is noteworthy that there has been a decline from the forest category after 2017 (Table 31, Figure 26).

Table 31 - Breakdown of LULUCF Sector Attitudes by Category (Mton CO_{2-paulvalen}) [1]

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Forest	-63,60	-65,08	-64,72	-64,85	-66,61	-65,33	-65,33	3 -67,73	-68,22	-68,69	-64,38
Agriculture	0,00	0,08	0,15	0,14	0,22	0,15	0,14	0,08	0,15	0,11	0,04
Mera	0,00	0,08	0,19	0,25	0,38	0,29	0,42	0,23	0,41	0,42	0,10
Wetland	0,00	0,04	0,09	0,25	0,22	0,16	0,12	0,15	0,37	0,26	0,18
Settlement		0,03	0,07	0,10	0,10	0,13	0,14	0,13	0,16	0,16	0,14
Other Fields		0,04	0,13	0,14	0,17	0,18	0,25	0,17	0,29	0,26	0,19
Wood Products (HWP)	-2,91	-2,57	-3,38	-2,62	-2,51	-3,36	-2,88	-3,49	-3,77	-3,73	-4,34
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Forest	-67,31	-65,54	-66,81	-65,61	-66,60	-66,93	-66,14	-62,38	-65,08	-65,87	-67,51
Agriculture	0,09	0,31	0,18	0,43	0,21	0,44	0,29	0,47	0,21	0,45	0,20
Pasture	0,12	0,29	0,18	0,41	0,26	0,55	0,42	0,61	0,49	0,64	0,40
Wetland	0,01	0,15	0,03	0,08	0,03	0,11	0,05	0,14	0,10	0,41	0,17
Settlement	0,15	0,20	0,19	0,27	0,27	0,35	0,35	0,38	0,36	0,43	0,39
Other Fields	0,18	0,28	0,22	0,39	0,31	0,49	0,46	0,54	0,43	0,60	0,44
Wood Products (HWP)	-4,04	-5,00	-5,18	-5,70	-6,28	-6,50	-7,25	-7,70	-7,41	-8,59	-9,74
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
Forest	-65,70	-67,47	-67,11	-62,94	-62,37	-65,32	-60,19	-54,00	-48,22	-33,95	
Agriculture	0,42	0,22	0,31	0,46	0,34	0,37	0,35	0,38	0,39	0,39	
Pasture	0,64	0,47	0,75	0,98	0,66	0,71	0,71	0,77	0,78	0,72	
Wetland	0,61	0,38	0,17	-0,02	0,27	0,29	0,22	0,19	0,19	0,23	
Settlement	0,44	0,40	0,42	0,42	0,41	0,41	0,41	0,41	0,42	0,42	
Other Fields	0,65	0,54	0,56	0,76	0,62	0,65	0,65	0,67	0,70	0,69	
Wood Products (HWP)	-10,51	-11,08	-12,05	-12,54	-13,10	-12,13	-11,97	-11,22	-11,28	-15,73	

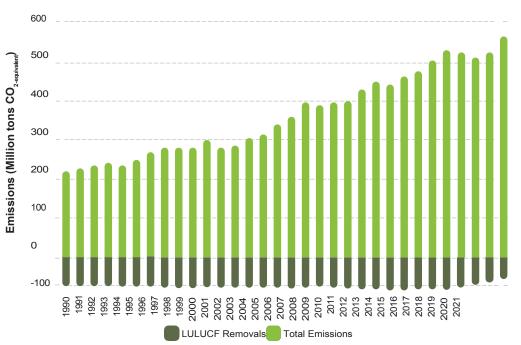


Figure 25 - Turkey's total greenhouse gas emissions and akakdo attitudes [1]



Figure 26 - Distribution of LULUCF sector attitudes by categories. [1]

According to the latest GHG national inventory reporting (NIR, 2023), the mitigation capacity of the LULUCF sector is largely on forest management and secondly on the Processed Wood Products subcategory.

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The contribution of land converted to forest (LCFL) limited. All other five land categories

According to the latest inventory data (1990-2021), conversion to forested areas (LCFL) and Wood Products (HWP) together with forested areas have reduced close to 47.15 Mton CO2 equivalent. However, the share of Afforestation/Reforestation is a small fraction of the total mitigation.

less than 1%. As a result, wood products (HWP) and Forest Management (FLRFL) accounted for close to 96 percent of the sector's emissions and behavior. Moreover, these two categories (FLRFL and HWP) are the key categories of the sector in Turkey's GHG inventory (ranking in the top 95% of the overall emissions total). On the other hand, the HWP pool should not be seen as a true hold. Carbon sequestered in the HWP category has a half-life depending on the product type. Therefore, according to the IPCC 2006 guidelines, at the end of the half-life, all of the sequestered carbon is released into the atmosphere. In other words, it is a carbon reserve that is assumed to be mixed into the atmosphere over time instead of the sudden oxidation (emission) of the wood raw material produced, and it is actually the spread of emission over time. As long-lived wood products are produced, the release of this reserve into the atmosphere will slow down. From another perspective, the use of these processed wood products instead of products with high carbon footprint will contribute to mitigation due to the substitution of products with low carbon footprint [1] (Table 32).

Table 32 - Greenhouse Gas Emissions / Emissions of LULUCF Categories in 2021 [1]

-47145,76	NET
-33.605,74	Forests (including +10,000 Forest fires emissions) (FL)
-339,71	Areas converted to forest (LCFL)
387,48	Agricultural land (CL)
722,48	Pastures (GL)
229,99	Wetlands (WL)
420,85	Settlements (SL)
685,80	Other areas (OL)
-15.700	Wood products (HWP)
-49.670,49	Attitudes
2.446,59	Emissions (excluding forest fires)

The main legislation, policy and strategy documents related to the LULUCF sector in Turkey are presented in Table 33 and Table 34.

Table 33 - Main Legislation Related to the LULUCF Sector

Basic Legislation	Purpose and Scope
Forest Law (Law No 6831)	The Forest Law basically provides for the protection, management and development of forests, as well as ownership by the state. The law orders the state to fight against all kinds of damages to forests (forest fires, humaninduced damages such as forest fires, logging, clearing, exploitation, grazing, occupation, etc., abiotic damages such as snow, storms, and snow fall and breakage, as well as biotic damages such as insect, fungus and animal damages). Again, utilization of forests, management and all kinds of permits and easements are carried out by the state. The state has been entrusted with the task of carrying out works to increase forests (afforestation, combating erosion, soil conservation works against disasters such as floods, landslides, avalanches, etc., reconstruction, rehabilitation works, integrated and holistic basin projects to combat desertification and improve the socio-economic status of those living in forest villages). In addition, the follow-up and penal provisions of forest crimes are clearly set out in the law. is being put in place.
Pasture Law (Law No 4342)	The purpose of the Law is to identify and demarcate pastures, pastures, winter pastures and public grasslands and meadows that have been allocated by various laws or have been in use since ancient times, to allocate them on behalf of village or municipal legal entities, to use them in accordance with the rules to be determined, to increase and maintain their productivity by maintaining and rehabilitating them, to continuously monitor their use, to protect them and to change their intended use when necessary. is to ensure that it is replaced.
Soil Conservation and Land Use Law (Law No 5403)	The purpose of the Law is to determine the procedures and principles for the protection and development of soil, classification of agricultural lands, determination of minimum agricultural land and sufficient income agricultural land sizes and prevention of their division, and planned use of agricultural land and sufficient income agricultural land in accordance with the principle of sustainable development with environmental priority.

Policy Documents	Aims and Objectives
12th Development Plan (2024-2028)	Forests resilient to climate change will be established and management plans will be developed to increase the sink functions of forests. The contribution of forests to combating disasters, drought and desertification protecting biodiversity and water resources, improving ecosystem services and balancing land degradation, as well as to health, food, tourism and energy sectors will be increased. The use of forest products for the longest possible period within the framework of circular economy will be encouraged and their reuse and recycling will be increased. Voluntary carbon market and green certification practices related to forestry will be developed. Turkey's companies will be supported to operate internationally in the forestry sector Forestry statistics will be harmonized with international standards. Forest based products and services will be diversified with a focus on exports within the framework of sustainable forest management principles, and the sector's share in the economy will be increased. Measures to prevent forest fires fire response capacity will be strengthened.
National Climate Change Strategy	Turkey's Climate Change Strategy covering the period 2010-2023 includes short, medium and long term strategic objectives. These objectives include assessing the state of Turkey's forestry with a focus on deforestation and forest degradation, which are critical for combating climate change, and developing strategies to solve the problems; afforesting and rehabilitating 2.3 mha of land within the scope of the National Afforestation Campaign

(2010-2023)

establishing a centralized geographic information system for all land use classes in Turkey and developing a monitoring model based on maps and satellite data to calculate changes between land use classes; the increase of open green space systems in urban areas and improving urban forestry.

Policy Documents	Aims and Objectives
National Climate Change Action (2011-2023)	The action plan includes; within the scope of the objective of increasing the amount of carbon sequestered in forests, preparation and implementation of a new action plan for 2013 and beyond in terms of carbon sequestration of the Afforestation Action Plan; within the scope of the objective of integrating the climate change factor into land use and land use change management strategies until 2015; promoting energy forestry on lands that are ecologically and economically unsuitable for agricultural use; strengthening the protection status of peatlands in Turkey taking into account their high carbon sequestration properties; determining the carbon sequestered in settlements. Actions within the scope of the objective of strengthening institutional capacity include the establishment of the Climate Change and Bio-Energy he restructuring of the Group includes.
National Action Plan for Combating Desertification (2015-2023)	Improvement of degraded forest areas with appropriate types and methods in order to increase forest cover; protection protection of natural resources and development within the framework of sustainable land management principles with a holistic and participatory approach rgets included.
National Basin Management Strategy (2014-2023)	The Strategy includes the following targets in relation to climate change: to carry out erosion control, afforestation and in-forest pasture improvement works on 1,620,000 hectares of land by 2023; to increase normal/efficient forest areas, which currently constitute 50% of the forests in the basins, to 75% by 2023, to be realized in degraded forest areas through improvement and afforestation works; to increase the amount of carbon sinks, which is currently 15.5 Mton per year, to 16.7 Mton in 2015 and 20 Mton in 2023.

Policy Documents	Aims and Objectives
	The vision of the Strategic Plan is "A model ecological resource management on a global scale" and the mission is "To mobilize the ecological resources in our country in an effective, efficient and sustainable manner with a development model perspective and to ensure economic security, food supply security and human health through ecological, plant and animal added value".
	There are 7 objectives in the plan and the objectives related to climate change in the 2019-2023 Strategic Plan of the Ministry of Agriculture and Forestry are listed below:
	 Increasing capacity to combat climate change, erosion and desertification Identify and prevent land degradation and erosion Measuring the possible impacts of climate change on agriculture and developing recommendations for taking measures
Ministry of Agriculture and Forestry Strategic Plan (2019-2023)	Within the scope of these objectives; adaptation and measures against the effects of climate change on agriculture and R&D projects for determining agricultural drought and mitigating its effects, "Measurement, monitoring and mitigation of greenhouse gas emissions from agricultural activities (crop and livestock) and dissemination of R&D projects for low carbon agriculture, development of measures to prevent land degradation and erosion caused by climate change in agricultural lands and pastures, actions and strategies such as calculating and reporting greenhouse gas emissions and sinks resulting from land use and land use change in Turkey, updating Turkey's Agricultural Drought Mitigation Strategy and Action Plan to cover the years 2023-2027, increasing institutional capacity on climate change, and raising awareness on adaptation to climate change.

Policy Documents	Aims and Objectives
General Directorate of Forestry Strategic Plan (2019-2023)	OGM Strategic Plan presents objectives under four goals: (G1): Protecting Forests and Forest Resources against Biotic and Abiotic Pests, (G2): Developing Forests, Increasing Productivity and Expanding Areas, (G3): Ensure Optimum Social Benefit from Goods and Services Produced by Forests, (G4): Increasing Institutional Capacity. The objectives under G1 are to increase preventive measures and strengthen response capacity in the fight against forest fires; to monitor the health of forest ecosystems, and to protect forest existence and health primarily through natural and nature-friendly preventive measures. The objectives under G2 are to increase the productive forest area to 14,000,000 hectares; increase the ratio of implementation in the total area of 330,000 hectares potential designated as industrial forest area from 9% 100%; increasing forest cover to 30% of the country's surface area; erosion to reduce soil loss; and improving pasture improvement efforts. Within the scope of G4, information systems and technology infrastructure will be completed; forest information system is to be developed and disseminated.
Climate Council 2022	Outputs and decisions of the Climate Council related to the Land sector include promotion of sustainable land use, prevention of erosion and degradation, nature-based solutions, protection of wetlandsrestoration and protection of ecosystems (forestrangelandswetlands, etc.). Carbon stocks will be protected through protective land use policies. The report on land use also the need to harmonize EU policies and global initiatives on forestry and land use. Another of the decisions of the sthe need for a strong wildfire management system.
NDC 2023	In the NDC, combating desertification is prioritized in the LULUCF sector for the period 2023-2030. Under combating desertification, objectives improved/sustainable forest management; promoting nature and/or technology-based solutions that increase sink capacity, such as reforestation,

degradation.

rural and agricultural land protection and pasture improvement; and preventing, controlling and mitigating desertification and land

2.7.2 Strategy and Actions

The LULUCF sector six carbon pools (above- and below-ground biomass, soil, litter, deadwood and wood products) in six land use categories (forest, agriculture, pasture, wetland, settlement, other). All of forestry except energy use, carbon dioxide emissions and sequestration from the agricultural sector, carbon cycles in pastures and wetlands, and greenhouse gases sequestered and emitted in settlements are included in the sector. Therefore, the LULUCF action plan is related to multiple sub-sectors. However, since the main sink area is forests and the agriculture sector is addressed separately in the Action Plan, the weight of the LULUCF sector in the Plan is on forests. Five main policies are included within the scope of the sector. Sectoral framework transition projects are proposed to operationalize and strengthen these strategies in the coming years.

Strategy L-S.1

Regularly increasing greenhouse gas sequestration on an annual basis by protecting and sustainably managing ecosystems and increasing sinks, and reducing ecosystem-based emissions

This strategy forms the backbone of LULUCF policies. The sector is based continuously increasing the sink capacity in carbon pools on an annual basis. As the sink capacity increases, annual carbon sequestration also increases. Sink capacity can be increased primarily through proper use of land and good management of the ecosystems on it. Increasing the sink capacity in forests is generally possible in two ways: first, carbon-oriented forest management and second, conservation of ecosystems. With the correct application of this conservation-utilization balance in the forestry category, carbon will be sequestered in ecosystems and long-lived wood products, and substitution benefits will be provided by reducing the use of fossil fuel alternative products.

The aim of this action group is to increase the living biomass per unit area in all ecosystems, especially forests, over time, to conserve it and partly to store it in long-lived wood products. Balanced forest management and carbon-positive conversion of all activities are necessary for maximum carbon sequestration. This is called "carbon-oriented forest management" or "advanced forest management" and constitutes the basic component of climate-friendly forestry.

Two approaches have been proposed for afforestation. The first is basin-based planning of afforestation. This will facilitate the integrated management of mitigation and adaptation in the LULUCF sector. For example, mitigation conflicts such as afforestation, forest management, pasture rehabilitation, floods, droughts, etc. can have a risk reduction effect against disasters. The other approach is proactive afforestation. Proactive forest management can also be added to this. What is important here is to consider a management approach where all activities are planned, especially afforestation and restoration, taking into account the possible effects of climate change by looking at the medium and long term.

L-S.1.1	Developing and monitoring sector-wide strategies, action plans, macro- planning and targets, particularly in forestry and agriculture, in a way to increase sink capacity
L-S.1.2	Transitioning to a proactive, result-oriented and basin-scale approach in afforestation/rehabilitation/restoration, taking into account the integrity of ecosystems, and creating a basin-based afforestation roadmap
L-S.1.3	Identifying potential areas suitable for afforestation/plantation by supporting geographic information systems and remote sensing methods in addition to field measurements
L-S.1.4	Protecting the soil carbon sink by strengthening the fight against land degradation, erosion, sedimentation and desertification caused by land misuse
L-S.1.5	Expanding digitalization across the sector to cover all land types (wetlands, rangelands, etc.), especially forestry and agriculture
L-S.1.6	Initiating technical and legal arrangements to prevent emissions from all practices that may harm forests and other land uses
L-S.1.7	Technical development and dissemination of carbon, water and biodiversity objective functions in forest planning and management

L-S.1.8	Increasing the technical capacities of institutions by conducting applied pilot studies with Climate Change Focused Framework Transition Projects
L-S.1.9	Increasing the effectiveness of regulations to limit human activities that may harm natural life and ecosystems in and around forests and wetlands close to urban areas
L-S.1.10	Establishing a technical and legal mechanism in cooperation with municipalities and relevant ministries to determine, monitor and increase the proportion of woody green areas in urban areas
L-S.1.11	Encouraging projects and studies for the restoration and rehabilitation of river corridors and ecosystems in agricultural, pasture, wetlands and settlement areas
L-S.1.12	Supporting poplar, fruit growing, olive growing and climate-friendly agricultural practices in agricultural areas, especially women and young entrepreneurs, technically and financially with new incentives
L-S.1.13	Strengthening and expanding incentives for afforestation of fast-growing and income-generating species on idle agricultural lands, if it is not possible to bring these lands back into agriculture
L-S.1.14	Emphasizing nature-based solutions (NBSS) that will increase green carbon sink capacity instead of gray solutions to prioritize upstream basin management in all land planning scales and processes
L-S.1.15	Preparation and implementation of an action plan for the rehabilitation of pasture areas in a way to increase the soil carbon stock every year in the period 2025-2038
L-S.1.16	Implementing and promoting climate-friendly agricultural practices in agricultural areas in a way to increase soil carbon stock every year in the period 2025-2038

L-S.1.17	Promote good practices (nature-based solutions, biochar, reduced ploughing, etc.) that promote soil fertility and carbon stock increase in all land uses
L-S.1.18	Identifying desertified areas subject to erosion and land degradation, monitoring these areas with various indicators, especially soil carbon stocks, and developing and disseminating watershed management practices and tools to find solutions
L-S.1.19	Increasing the total amount of protected areas and developing site-specific management strategies to strengthen their mitigation and adaptation capacities
L-S.1.20	Reducing pressures on wetlands, protecting them from harmful impacts, especially drainage and pollution, and rehabilitating damaged wetlands
L-S.1.21	Strengthening the process for prevention of forest fires, early detection of fires and early and effective response to fires
L-S.1.22	Expanding the use of technology in the fight against forest fires, increasing the efficiency of resource use with artificial intelligence-supported decision support systems
L-S.1.23	Increasing the proportion of terrestrial and marine protected areas to 30% in line with the targets of the Kunming-Montreal Global Biodiversity Framework adopted by the 15th Conference of the Parties to the Convention on Biological Diversity and the EU Biodiversity Strategy
L-S.1.24	of Ecosystem-Based National Management Strategy for Protected Areas, Ecosystem-Based Climate Change Action Plan and ensuring integration into management plans
L-S.1.25	Preparation of an Ecosystem-Based National Spatial Planning Strategy and its integration into Spatial Plans

Strategy L-S.2

High value-added circularization of forestry and agribusiness ensuring the transition to a bioeconomy

This action set aims to contribute to value addition, sustainability and circular economy, and includes actions to ensure efficient use of wood raw material and mitigate the increase in demand.

The action set actions to enable all small, medium and large enterprises to gain a larger share of global markets.

L-S.2.1	Continuation of supports for family and small/medium and large-scale enterprises with high production and marketing capacity that can reach international markets in the non-wood forest products sector by increasing and expanding, supporting social projects to reduce wood consumption in forest villages and supporting economic income-increasing activities to prevent rural migration
L-S.2.2	Continuing and increasing support for familysmall/medium and large-scale enterprises with high production-marketing capacity can reach markets within the scope of climate-friendly agriculture and supporting the sector, especially women entrepreneurs, technically and financially with new incentives
L-S.2.3	Expand and increase incentives for forest industry companies to increase added value, efficiency and recycling

Strategy L-S.3

Project to strengthen the sector in terms of R&D and innovation doubling the 2020 level of support by 2030

Increased support for R&D and innovation is needed to improve value added and circularity in the land use sector. Supports will both increase the added value of production in the sector, thereby improving the efficient use of raw materials, and increase the use of technology in combating climate change, particularly in forestry and agriculture.

The strategy aims to expand R&D and innovation across the sector, from greenhouse gas inventory reporting to the use of new technologies in combating climate-related external factors and disasters.

Precision forestry, digitalization and efficiency gains from the use of artificial intelligence also included in this strategy. In the sector, these two approaches can create a positive impact, especially in decision support processes, and can lead to efficiency increases and related emission reductions over time. In addition, the use of technology and innovation have an important role in identifying and mitigating negative climate-related impacts. In this context, strengthening ecosystem monitoring systems is also important for understanding the impacts of climate change. In parallel with international studies on carbon sequestration by plants growing in aquatic environments, which is called blue carbon, the issue of increasing R&D support was also included.

Another issue where R&D and innovation should be increased is drought. There is a serious risk of drought in our country. It can lead to decreased production in agriculture and reduced yields, diseases and deaths in forestry and pastures. In this context, it is aimed to increase support for integrated innovative solutions to mitigate drought impacts.

L-S.3.1	Strengthening the fight against disaster and climate change-induced forest damages that may damage the sink areas through technological, preventive and educational projects and increasing R&D support on the effects of these damages on carbon stocks
L-S.3.2	Strengthening technical infrastructure for greenhouse gas emission and sequestration calculations
L-S.3.3	Supporting research on the technology-based needs of the Land Use and Forestry sector and developing a project incentive mechanism specific to this sector
L-S.3.4	Increasing the use of digitalization, remote sensing methods (such as satellite-based, drone use) and robotic technologies to improve productivity in forestry and land use
L-S.3.5	Supporting projects for the realization of climate projections and vulnerability analyses for forestry and land use using projection outputs
L-S.3.6	Promote scientific studies and technologies for integrated drought solutions, including the development of drought-tolerant species, taking into account biodiversity in afforestation and planting
L-S.3.7	Incorporating data-driven artificial intelligence into decision-making processes
L-S.3.8	Ensuring more effective participation in ecosystem monitoring networks such as Long Term Ecological Monitoring NetworkICP ForestsIntegrated Carbon Observation System and similar ecosystem monitoring networksencouraging long-term experimental basin and ecosystem monitoring studies for and precise monitoring and analysis of precipitation-runoff processes disseminating them in eco zones of our country
L-S.3.9	Supporting research to develop underwater ecosystems in coasts and seas and to create blue carbon sinks

Strategy L-S.4

Technical staff trained in carbon management in the sector and Increasing the number of professionals

This strategy aims to improve scientific, institutional and human capacity across the sector. Emphasis has been placed on building the capacity of the public and private sectors. Emphasis is placed on building the capacity of the public and private sectors. Emphasis is also placed on supporting local governments to increase and manage green areas.

Actions on increasing technical and human capacity in many sub-issues such as forest pests, erosion, desertification, climate-friendly agriculture, wetlands, risks under climate change, greenhouse gas calculations are also included.

L-S4.1	Improving scientific, institutional and human capacity in combating forest losses and damages (fire, disease, etc.)
L-S4.2	Raising awareness in combating forest losses and damages (fire, disease, etc.)
L-S4.3	Increasing scientificinstitutional and human capacity and awareness on the impacts of climate change on desertification and erosion
L-S4.4	Improving scientific, institutional and human capacity and raising awareness in combating wetland losses and damages (drought, drying, misuse of wetlands, etc.)
L-S4.5	Providing climate-friendly and low-carbon agriculture trainings for researchers, technical staff and farmers
L-S4.6	Providing trainings on wetland conservation and climate-friendly fishing practices to technical staff and those engaged in agriculture, animal husbandry and fishing in wetlands using traditional methods
L-S4.7	Providing trainings for technical staff within the scope of climate-friendly forestry, especially on mitigation and management of climate change-induced risks

L-S4.8	Preparation and implementation of a training program for municipalities on river corridor restoration
L-S4.9	Training technical personnel for greenhouse gas emission and sequestration calculations and international reporting obligations in the LULUCF sector
L-S4.10	Establishing climate change units in institutions directly related to the management and reporting of sink areas, improving institutional capacity on the basis of experts and authority

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Strategy L-S.5

Development of technology infrastructure for the LULUCF sector

This strategy 2 actions. The first action aims to develop early systems and support R&D and innovation investments in this field. The second action is on remote sensing technologies and modeling in greenhouse gas forecasting and monitoring. With this action, it is aimed to support technology-oriented private-public cooperation projects and start-up companies established by young entrepreneurs and to continuously increase the level of technology in the sector.

L-S5.1	Developing and operationalizing forecasting and early warning systems for drought, floods, forest fires and landslides
L-S5.2	Increasing R&D capacity for the estimation and verification of emissions and attitudes on land use with remote sensing and atmospheric models, especially the development of satellite-based observation and analysis systems









Fair Transition

2.8.1 Fair Transition

While implementing mitigation and adaptation policies within the scope of combating climate change, it is important to achieve a just transition by ensuring justice and employment in all segments of society without further deepening social inequalities. In this framework, the principle of gender equality and women's empowerment is becoming increasingly important in the main principles that determine development efforts. This approach, which has evolved along with adevelopment emphasizes women's empowerment and is based on the effective participation of women and men in development processes. Steps are being taken at different levels to develop a gender-sensitive approach and create an inclusive content in climate change policies and mitigation strategies. These are listed below;

- Based on an inclusive approach that takes care to leave no one behind (e.g. identifying barriers to the participation of different segments of society in education planning and taking measures to overcome them),
- For an approach that avoids reproducing inequality so that everyone benefits equally from any activity,
- For a corrective approach to ensure equality, identify and measures to address issues that may lead to the reproduction of inequality in existing activities.

In order to implement a transformative approach to ensure equality, it is necessary to identify how the social segments that need to be supported/empowered, including women, affect climate change and mitigation, how they are affected and how they will be affected by the steps to be taken in this regard, and to act with an inclusive participation approach in all processes.

However, social differences such as age, disability, educational attainment, socio-economic status, age, disability status, education status, socio-economic status, including gender, may affect the impacts of the mitigation strategy and actions and the results that can be achieved.

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may differ in terms of their targeted outputs and outcomes. This is why mitigation actions It is important to take the following precautions during implementation.

<u>Analytical Steps:</u> Analytical studies will be conducted to take into account differentiated needs on the basis of gender, age, disability and socioeconomic status.

<u>Steps for Participation and Inclusion:</u> Participation is seen as the most important tool of inclusion as a fundamental principle that ensures that different experiences are included in the steps to be taken and that different needs are visible. In order to ensure the effective participation of women and men from different sectors, interest groups, socio-economic levels, individuals with different types of disabilities, different age ranges in climate change-related processes, it is important to use methods such as analyzing the interests and priority areas of stakeholders and providing enabling conditions for appropriate participation for all.

<u>Disability Inclusion Approach:</u> In June 2019, the United Nations launched the Disability Inclusion Strategy. In 2020, to advance the inclusion of persons with disabilities, it aimed to make disability part of the climate change solution process by ensuring the participation of individuals and organizations of persons with disabilities in meetings of the Conference of the Parties, other United Nations climate change meetings and organizations, and identifying relevant capacity building tools.

<u>Educational and Informative Steps:</u> An inclusive approach that includes different subject positions such as gender, age, disability and socioeconomic status will be developed during training and capacity building activities, information processes and identification of the target audience. All materials to be used in training and capacity building activities will be presented in accessible formats.

Sustainable lifestyles and sustainable consumption and production patterns are essential to reduce greenhouse gas emissions and increase resilience to the inevitable impacts of climate change. Success requires broad cooperation between the public and private sectors, civil society and the general public.

Encouraging all members of society to participate in climate action through education, training, public awareness, public participation, public access to information and international and national cooperation on these issues climate

is important for the success of their actions. In this context, it is important to ensure that young people are included in the process.

planning of great importance.

<u>Steps for Adoption of New Technologies:</u> Since the development and diffusion of new technologies is central to mitigation goals, gender, disability and age should be taken into account in identifying the target group for adoption of technological innovations

<u>Steps for Green Jobs and Research and Development Activities:</u> In all sectors covered by the action plan, it is important to move forward on an equitable basis in the development of new jobs, new research areas and new sectors that come to the agenda within the framework of the green economy.

<u>Steps Related to Incentives, Employment and Entrepreneurship:</u> The action plan includes actions on entrepreneurial support, incentives for enterprises and creation of employment opportunities. During the implementation of these actions, an inclusive and egalitarian approach will be applied by not creating new inequalities, not perpetuating inequalities, promoting equality and taking transformative steps.

Within the framework of all these factors, the fair transition issue attention especially in the context of the European Green Deal. On December 11, 2019, the European Union announced the European Green Deal in line with the goal of making Europe the first climate-neutral continent by , and Turkey's Green Deal Action Plan was published on July 16, 2021. On the other hand, with our becoming a party to the Paris Agreement in 2021, the process of transformation to a green economy with a net zero emission target has accelerated in Turkey. With the Presidential Circular No. 2021/15, 20 specialized working groups, including the Specialized Working Group on Just Transition Policies, for which the Ministry of Labor and Social Security is responsible, were established to monitor the implementation of the Green Deal Action Plan, to guide the work in line with global policy developments and to ensure the necessary coordination. In this context, efforts have been initiated to minimize the negative impacts of the direct effects of climate change and the changes that will be brought about by the green economy transformation efforts to combat it, on labor markets and all segments of society, especially women and vulnerable groups, with the necessity of managing the green economy transformation process with a fair transition process and leaving no one behind.

As stated in the Climate Council, it is not possible to consider the fight against climate change from its economic and social components. Without hindering Turkey's right to economic and social development, Turkey will be able to adapt to the low-carbon transformation in the energy sector in a way that will provide employment and

gender, disability and age-based disparities, including macro-economic and social impacts at national and regional scales, including energy poverty, and impact analyses of these disparities

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"It is aimed to prepare a holistic just transition strategy. In particular in the energy sector

education and employment policies and programs need to be coordinated to manage just transition in all sectors. The fair transition process is aimed to be carried out with a program in which the social dialogue mechanism is effectively operated, no one is left behind and decent green jobs are increased. Transformation in the energy sector must be achieved without causing energy poverty. In this context, with the approach of leaving no one behind in energy and technology transformation, it is aimed to ensure the effective utilization of vocational training and skills development programs and job opportunities in a way to ensure the participation of vulnerable groups, with priority to women, in decision-making processes.

Strategy AG-S.1

|| Capacity building for just transition and employment transformation

AG-S1.1	Preparation of a national just transition strategy to ensure green transformation in labor markets and fair transition conditions			
AG-S1.2	Promoting just transition and social dialogue			
AG-S1.3	Determining the new qualifications and skill requirements that the green transformation process will create in labor demand, and conducting studies train the labor force with new qualifications in line with sectoral and regional needs			
AG-S1.4	Establishing standards for professions that will change or emerge in the green transformation process			
AG-S1.5	Preparation and implementation of training programs meet the labor force need that will arise with the transformation process by conducting studies to harmonize the education curriculum and higher education programs with the new skills framework determined			

<u>218</u>	AG-S1.6	With the approach of leaving no one behind in the green transformation proces of the sectors, ensuring the participation of groups requiring special policies, with priority given to women, in decision-making processes and working to ensure that they benefit effectively from vocational training, skill acquisition/development programs and job opportunities
	AG-S1.7	Preventing the transformation of the energy sector causing energy poverty and working to protect vulnerable groups in this context



2.8.2 Carbon Pricing Mechanisms

Carbon pricing instruments encourage emission reductions by setting a price for greenhouse gas emissions. The price signal changes consumption and investment patterns, aligning economic development with the fight against climate change.

There are two most common applications of carbon pricing instruments in the world. One is the Emissions Trading System (ETS), which is a market-based approach, and the other is the carbon tax. The ETS is a mechanism used to achieve mitigation targets by setting an upper limit on greenhouse gas emissions that cause climate change. In this system, which enables the internalization of a negative externality, the cheapest mitigation options are realized, and in sectors and production methods where mitigation cannot be realized, allowances (emission permits) purchased from the market; allowance prices are determined by market dynamics. Furthermore, with the Emissions Trading System, companies that have completed their green transformation can utilize their excess allowances in the market and cover their investment costs to a certain extent.

Strategy K-S.1

|| Establishment of Emissions Trading System (ETS) in Turkey

Measures for the establishment of ETS in Turkey are included in the Medium Term Program (2024-2026) and it is aimed to establish ETS in line with Turkey's 2053 Net Zero Emission target and National Contribution Declaration.

The main design element of the ETS is to determine which sectors will be covered by the system. Accordingly, determining the scope of the ETS in line with current infrastructure needs and projections is among the actions of the first strategy. In addition, harmonization with the European Union in environmental policies is a key consideration for Turkey and in this respect, it is aimed to expand the scope of the ETS in line with both the current national contribution declaration and the European Union legislation.

The determination of the ETS scope is followed by the determination of an emission cap for that scope. At this stage, the total amount of emissions (upper limit) that enterprises within the scope of the determined scope can emit during a certain period will be determined in the context of the current situation of emission-intensive sectors, mitigation targets, international agreements and national conditions.

Carbon pricing to meet climate targets may increase the production costs of plants in the short term. In regions where this increase is observed at a high level and in facilities with high international competition, there be a shift of production to countries where carbon pricing does not exist or is relatively less stringent. Accordingly, economic, financial, social and technical impact analyses will be conducted for energy-intensive sectors, taking into account the 2053 Net Zero Emission Target, assumed, current and projected carbon prices and carbon leakage risk.

The market phase starts with the allocation of allowances within the upper limit set in the ETS. Here, allocation prices are determined by supply and demand dynamics, while supply and demand are shaped within the framework of mitigation targets and mitigation costs. When the ETS examples in the world are analyzed, it is seen as a design option to include financial actors as well as the sectors covered by the ETS in these markets. In order to evaluate this issue, evaluation studies will be carried out for the inclusion of financial actors in the ETS market and legislation on financial actors will be prepared.

two main methods of allocation: free allocation and auctioning. It is possible to generate revenues from the ETS through the auction method. Accordingly, the revenues to be generated under the ETS,

In line with the green development goal of a low-carbon economy and equitable

It is envisaged that planning studies will be carried out and the necessary legislative and implementation infrastructure will be prepared for its utilization in a way that will also ensure transit.

Before the implementation period of the Emissions Trading System, a pilot period will be implemented to test methodologies, institutions and policies and to provide a learning period for participants. In this period, it is aimed to identify the problems related to data collection, database management, as well as the problems that may be encountered in the implementation of the existing legislation and the need for new legislation. In this context, defining a pilot period to facilitate the entry of covered facilities into the system before the ETS implementation period has been identified as an action activity.

Offsetting is a mechanism that allows for the creation and sale of carbon credits for reducing emissions or removing emissions from the atmosphere that are not covered by the ETS. Allowing offsets to be used in the ETS increases the abatement options in the market and allows facilities covered by the ETS to reduce their abatement costs. Accordingly, the offset mechanism options and conditions that can be used to fulfill the obligations will be defined.

It is aimed to evaluate the needs arising from international conditions in the design of the EU-ETS by considering the Border Carbon Regulation Mechanism (BCRM) or similar practices created to prevent the production in the EU from shifting to countries without carbon pricing due to cost increases due to carbon fees under the European Union Emissions Trading System and to design accordingly.

In the ETS design, the free allocation of allowances can be based on the historical emissions of facilities or on a sector-specific benchmark. Accordingly, sectoral benchmarking / grandfathering studies are expected to be conducted to determine the distribution of free allowances and the implementation period.

Due to the fact that ETS will be implemented for the first time in Turkey, information and visibility on ETS practices in order to ensure active participation of stakeholders in this process and to inform stakeholders studies will be carried out.

K-S1.1	Determining the scope and functioning of the ETS in line with existing infrastructure, needs and projections
K-S1.2	In line with the current National Contribution Declaration targets, the scope of the ETS should be expanded in line with the EU legislation in order to ensure structural harmonization. expanding and ensuring the necessary legislative harmonization
K-\$1.3	Determination of the emission upper limit by considering the current situation of emission-intensive sectors, reduction targets, economic and social impacts, sectoral potential and technological possibilities in the context of international agreements and national conditions
K-S1.4	2053 Net Zero Emission Target, assumed, current and projected carbon prices, international adaptation and mitigation policies, and economic, financial, social and technical impact analyses for energy-intensive sectors taking into account the risk of carbon leakage
K-S1.5	Conducting assessment studies for the inclusion of financial actors in the ETS market and preparing legislation on financial actors
K-S1.6	Carrying out planning studies, preparing the necessary legislation and implementation infrastructure for the use of the revenues to be obtained within the scope of the ETS in a way to ensure a low-carbon economy and a just transition in line with the green development goal, taking into account the National Contribution Declaration
K-S1.7	Defining a pilot period to facilitate the entry of covered facilities into the system before the ETS implementation period
K-S1.8	Defining national and international offsetting mechanisms and conditions that can be used in fulfillment of obligations
K-S1.9	Evaluating the needs arising from international conditions in ETS design and making appropriate designs

K-S1.10	Conducting sectoral benchmarking/historical grandfathering studies to determine the distribution and implementation period of free allocations Conducting information and visibility studies on ETS applications on sector
K-S1.11	basis

Strategy K-S.2

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Conducting infrastructure studies on other Carbon Pricing Instruments

the second strategy of carbon pricing mechanisms is to build infrastructure for other carbon pricing instruments.

By implementing a complementary carbon pricing mechanism within or outside the ETS, emission reductions can be incentivized through carbon pricing in specified sectors. In this context, analysis studies will be carried out on the role of a carbon pricing mechanism complementary to the ETS planned to be established in our country.

In Turkey, there is an indirect carbon pricing method over fuels. Transforming indirect pricing under SCT into explicit pricing is a method that can contribute to the reduction of emissions and there are international examples. In this context, it is aimed to carry out studies to add carbon content to the tariffs of the list (I) annexed to the Special Consumption Tax (SCT) Law within the Turkish Tax System in order to design a complementary carbon tax mechanism to establish a national carbon price when necessary.

K-S2.1	Analyzing role of a carbon pricing mechanism complementary to the Emission Trading System in the carbon pricing process
	Carrying out studies to add carbon content to the tariffs of the list
K-S2.2	numbered (I) attached to the Special Consumption Tax Law within the Turkish Tax System

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Strategy K-S.3

Building Infrastructure for Voluntary Carbon Market and National Offsetting

The voluntary carbon market is a decentralized market where private actors voluntarily buy and sell certified carbon credits representing the removal or reduction of greenhouse gases from the atmosphere.

The Communiqué on Voluntary Carbon Market Registration published in the Official Gazette dated 09.10.2013 regulates the procedures and principles regarding the registration of projects developed to reduce greenhouse gas emissions and obtain carbon certificates in Turkey. Under the Communiqué, project owners, international voluntary carbon standard organizations and independent auditors are obliged to register through the registration system. As a component of this strategy, it is aimed to update the existing voluntary carbon market registration system.

In addition, it is aimed to establish a national carbon crediting system due to the possibility of allowing offsetting transactions in the targeted ETS and the importance of the reductions realized within the country for the National Contribution Declaration in line with Article 6 of the Paris Agreement. Within the scope of this objective, assessment studies will be carried out for the establishment of a national carbon offset system. In this direction, it is aimed to determine the sectoral foci of the national system in line with international systems and to develop national standards and methodologies in line with international standards for selected sectors, as well as to carry out the necessary authorization and accreditation studies for the verification system.

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Efforts for the effective promotion of the voluntary carbon market in order to ensure stakeholder participation and information about the national offset system and the activities in the voluntary carbon market will be carried out.

K-S3.1	Updating the existing voluntary carbon market registration system
K-S3.2	Conducting assessment studies for the establishment of a national carbon offset system
K-S3.3	Identifying the sectoral foci of the national system and developing national standards and methodologies for selected sectors in line with international standards and establishing the infrastructure
K-S3.4	Carrying out the necessary authorization and accreditation studies for the verification system within the scope of the national system in line with international systems
K-S3.5	Conducting studies for the effective promotion of the voluntary carbon market

Strategy K-S.4

For the assessment of accession to Article 6 of the Paris Agreement

conducting studies

Article 6 of the Paris Agreement includes market-based mechanisms and non-market-based approaches that the Parties to the Agreement can use to achieve their NDC targets. Market-based mechanisms are included under Articles 6.2 and 6.4, and Article 6.2 includes the transfer of internationally transferable mitigation outputs (ITMO) through bilateral intergovernmental agreements. In addition, Article 6.4 of the Agreement refers to the central market established under the UNFCCC in which the private sector can also participate. Article 6.8 of the Agreement covers support for all other actions that are not market-based, do not involve any transfer of mitigation outputs and are necessary to achieve the climate goals of the parties.

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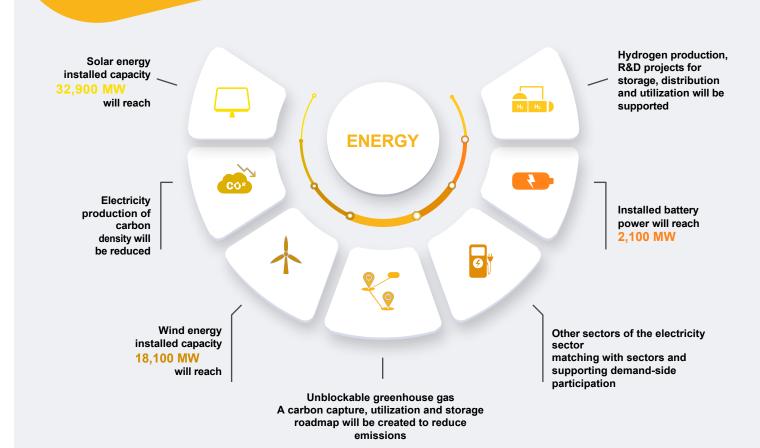
The last strategy is to carry out studies to evaluate Turkey's participation in the collaborative approach practices under Article 6 of the Paris Agreement. As part of the activities planned within the scope of the evaluation studies, it is aimed to carry out studies to determine Turkey's role in the implementations related to Article 6 of the Paris Agreement within the scope of the National Contribution Declaration and to carry out sectoral evaluation studies on participation in the pilot applications initiated by various countries for these applications.

K-S4.1

Carrying out studies to determine Turkey's role in the implementation of Article 6 of the Paris Agreement within the scope of the National Contribution Declaration

Carrying out sectoral assessment studies on participation in pilot implementations initiated by various countries in the implementation of Article 6 of the Paris Agreement

CLIMATE CHANGE STRATEGY AND ACTION PLAN



Strategy E-S.1 Carbon Intensity of Electricity Generation Reduction

E-S.1.1 *Increasing the installed capacity of solar energy*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MENR	EPDK, TEİAŞ TEDAŞ	2024-2030	Installed capacity reaches 32,900 MW

Description

According to Turkey's National Energy Plan, it is aimed to increase the amount of installed capacity for solar energy, which is one of the renewable energy sources in electricity supply.

E-S.1.2 Increasing the installed capacity of wind energy

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MENR	EMRA, TEİAŞ	2024-2030	Installed capacity to reach 18,100 MW

Description

It is aimed to increase the installed capacity of wind energy in line with Turkey's National Energy Plan. It is aimed to focus on practices that will increase the lifetime of wind and solar power plants through innovative maintenance and repair techniques and to establish standards for the disposal of facilities at the end of their service period (decommissioning) without harming the environment.

E-S.1.3 *Increasing Hydroelectricity Installed Capacity*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
DSI MOE U	ETKB, EPDK EÜAŞ, TEİAŞ TEMSAN	2024-2030	Installed capacity to reach 35,100 MW

Description

It is recommended that the economic potential of hydroelectricity should continue to be evaluated and pumped storage HEPP applications should also be included, taking into account economic, social and environmental factors.

E-S.1.4 Increasing the total installed capacity based on geothermal and biomass energy

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
ETKB, TOB	EMRA, TEİAŞ	2024-2030	 Geothermal and biomass installed capacity to
ÇŞİDB	Municipalities		reach 5,100 MW in total

Description

In line with Turkey's National Energy Plan, it is aimed to increase the total installed capacity based on geothermal and biomass energy, which are considered among renewable energy sources.

E-S.1.5 *Increasing the use of hydrogen in electricity generation and increasing and optimizing the installed capacity of electrolyzers during the plan period*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MENR	TENMAK EPDK, TEİAŞ BOTAŞ	2024-2030	 Electrolyzer installed capacity reaches 2,000 MW Prepared Electrolyzer Techniques Roadmap

Description

As required by Turkey's Hydrogen Technologies Strategy and Roadmap and Turkey's National Energy Plan, it is aimed to increase the installed capacity. It is also aimed to increase the use of green hydrogen as a means of energy storage and flexibility in electricity generation using renewable energy sources. It is aimed to observe the principle of meeting the renewable electricity generation required for hydrogen production from the additional resource allocated for hydrogen production proposed in the EU 4th Energy Package.

E-S.1.6 Developing a biomass roadmap

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOAF MENR MOEU MOEU	EMRA Universities Private sector organizations	2024-2025	Prepared Roadmap

Description

It is aimed to increase the installed capacity of biomass, which is listed among other renewable energy sources in Turkey's National Energy Plan, and to update the legislation in line with EU legislation.

E-S.1.7 Supporting R&D activities to reduce carbon intensity per electricity generation

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TENMAK	STB, ETKB, HMB, TOB, TUBUTAK, Universities	2024-2030	Number of projects supported (number)

Description

It is aimed to support projects for R&D activities, especially in areas such as carbon capture, storage and hydrogen technologies in the energy sector.

E-S.1.8 *Increasing the use of Renewable Energy Resource Guarantee System (YEK-G) and green tariffs*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
EMRA	CISDBEPIAS, EIB	2024-2025	YEK-G utilization/utilization rate

Description

Renewable energy support mechanisms aim to develop both supply and demand side instruments.

E-S.1.9 Scaling up distributed renewable energy applications for small-scale grid users, especially for households

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
EMRA	ETKB, TB, STB, TOB, HMB, ÇSGB, SBB, KOSGEB	2024-2025	 Rooftop solar power plant installed capacity for residential users (kW) Rooftop solar power plant installed capacity for commercial scale users (kW)

Description

It is aimed to spread the use of renewable energy sources to the general public.

E-S.1.10 Increasing the implementation of Renewable Energy Resource Area (YEKA) and identifying potential YEKA areas

Responsibl Institution	Related Institutions	Implementation Period	Monitoring Indicators
MENR	EMRA, TEİAŞ	2024-2030	Installed capacity through YEKA (MW)

Description

With renewable energy support mechanisms, it is aimed to create project lists for large-scale applications that will be potential YEKA on the generation side.

E-S.1.11 Determining a road map on wind, solar and wave energy technologies

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TENMAK	UAB, HMB, ETKB, DSI, EPDK, TEİAŞ, EÜAŞ, Universities, TUBITAK, Private Sector organizations	2024-2030	Prepared road map

Description

It is aimed to prepare a strategy for the use of open and innovative renewable energy sources.

E-S.1.12 Developing and supporting R&D activities on technologies to generate electricity from wave energy

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TENMAK	STB, ETKB, HMB, UAB, TUBUTAK, EPDK, TEİAŞ, Universities, Private Sector Organizations	2024-2030	Number of projects supported (number)

Description

It is aimed to support R&D studies for the use of renewable energy sources that are open to development.

E-S.1.13 *Reducing carbon intensity in electricity by increasing low carbon energy investments*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MENR	EPDK, EÜAŞ, TEİAŞTEDAŞ	2024-2030	Reducing CO2 emissions per electricity generation by 20%

Description

It is aimed to reduce the grid emission factor from 0.437 kg CO2/kWh as of 2020 to 0.352 kg CO2/kWh with the new renewable energy installed capacity.

E-S.1.14 *Increasing the installed capacity of nuclear power plants*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MENR	EPDK, EUAŞ, TENMAK, TENAŞ, NDK	2024-2030	Installed capacity to reach 4,800 MW

Description

According to Turkey's National Energy Plan, it is aimed to increase the amount of nuclear power installed capacity in electricity supply.

Strategy E-S.2 Electricity sector and other sectors matching and demand response Supporting

E-S.2.1 Increasing battery capacity

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MENR	EPDK, TEİAŞ, TENMAKEÜAŞ	2024-2030	Battery capacity reaches 2,100 MW

Description

It is aimed to increase storage capacity to ensure security of electricity supply.

E-S.2.2 Increase integration of renewable energy systems into charging infrastructures

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
EMRA	ETKB, STB, ÇŞİDBUAB, HMBTEİAŞ, EPİAŞ	2024-2025	Number of green charging stations (number)

Description

It is aimed to increase the number of Green Charging Stations defined under the Charging Service Regulation.

E-S.2.3 Raising awareness on energy efficiency in electricity use

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MENR	TB, STB, EPDK, TEİAŞ, EÜAŞ, YÖK, MEB, NGOS	2024-2025	 Number of training, promotion and awareness activities (number) Number of mass media used (number)

Description

It is aimed to carry out training and awareness-raising activities by considering gender balance in order to keep social awareness constantly high for the efficient use of electricity.

E-S.2.4 Encouraging R&D studies on the use of solar energy in agriculture

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TENMAK	TOB, ETKB, ÇŞİDBSTB, , EPDK	2024-2025	Number of R&D projects supported (number)

Description

It is aimed to carry out R&D studies for the use of renewable energy in agriculture in a way that will not negatively affect agricultural lands.

E-S.2.5 Providing trainings on distributed systems and low-carbon energy technologies in line with green transformation

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MENR	BOTAŞ, ÇSGB, MEB, MEB, MYK, EPDK, TEİAŞ, EÜAŞ, TENMAK, NGOS, Electricity Distribution Companies HHE, Universities	2024-2030	 Vocational training provided to at least 5,000 personnel Updated and developed training programs (number)

Description

It is aimed to increase qualified labor force and green jobs for energy transformation. Gender balance and equal opportunity will be considered in the trainings provided.

E-S.2.6 Developing a white certificate system and market in energy efficiency

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MENR	HMB, EPDK, EPİAŞ	2024-2027	Established white certificate system and market

Description

The objective is to develop a market based on a certification system between energy producers and users so that financial instruments can be used significantly for energy efficiency and savings. Within a regulatory framework, standards for white certification will be established and verification processes will be defined. These processes will be monitored and evaluated in a transparent manner.

E-S.2.7 *Certification of sustainable biogas and green hydrogen, establishment of biogas legislation and standards, injection studies into natural gas networks*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MENR, EPİAŞ	TOB, EPDK, ÇŞİDB, TENMAK, BOTAŞ	2024-2030	Established certification system

Description

In sustainable biogas and green hydrogen certification studies, it is aimed to establish biogas legislation standards and to carry out studies for injection into natural gas networks.

Strategy E-S.3

Strengthening electricity infrastructure, increasing efficiency technical losses in transmission and distribution by increasing Reducing the rate of

E-S.3.1 Reducing the level of technical losses across the country

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
EMRA	MENR, TEIAS, Electricity Distribution Companies	2024-2030	Technical loss levels determined for distribution regions (%)

Description

It is aimed to reduce the level of technical losses, which is currently around 12%.

E-S.3.2 Disseminating smart meters and encouraging R&D activities

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
EMRA	TEDAŞ, MENR, Electricity Distribution Companies, TUBITAK	2024-2030	 Ratio of smart meters used (%) Number of projects supported (number) Rate of conversion of existing meters to smart meters every year starting from 2026 (%)

Description

It aims to integrate digital systems with energy technologies.

E-S.3.3 Raising awareness for the energy sector to benefit more from efficiency-enhancing projects

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MENR	EMRA	2024-2030	Number of trainings organized (number)

Description

It is aimed to continue training activities in order to manage the ever-increasing energy demand.

E-S.3.4 Strengthening transmission and distribution lines to ensure effective integration of renewable energy resources into the system and taking supportive measures for smart grid and microgrid applications

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
ETKB, TEİAŞ, TEDAŞ	EMRA, Electricity Distribution Companies	2024-2030	 Reduction of technical loss ratio (%) Number of microgrids installed (number) Number of smart grids installed (number)

Description

It aims to integrate digital systems with energy technologies through smart grid and distributed systems.

E-S.3.5 Rehabilitation of distribution networks including transformers

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TEDAŞ, Electricity Distribution Companies	ETKB, STB, EPDK, EUAŞ, Electricity Generation Companies	2024-2025	Number of rehabilitation works carried out (number)

Description

It is aimed to renew the network and transformers regularly in order to use energy more efficiently in the distribution system.

E-S.3.6 Preparation of digital transformation roadmap in energy

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TENMAK	ETKB, STB, EPDK, EUAŞ, Electricity Generation Companies	2024-2025	Published "Turkey Digital Transformation Technologies Roadmap in Energy"

Description

Integration of digital systems with energy technologies is aimed.

Strategy E-S.4

exploring potential sites

Low-carbon electricity generation the widespread use of technologies and strengthening alternatives

E-S.4.1 Conducting technical and commercial feasibility studies for the use of small modular reactors and

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MENR	SBB, HMB, EPDK, TENMAK, TÜNAŞ, Turkish Electricity Industry Association, EÜAŞ, NDK	2024-2030	Feasibility report prepared

Description

Small modular reactors with an installed capacity of less than 300 MW are intended to be expanded.

E-S.4.2 Implementing education and training programs at different levels to rapidly develop competent human resources related to nuclear energy and security

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MENR, MONE, YÖK	ÇSGB, EPDK, NDK, TÜNAŞ, İŞKUR, YÖK, MYK, TENMAK, Universities	2024-2025	 Number of secondary education, vocational high school, associate degree, undergraduate, graduate education programs (number) Number of nuclear energy experts, engineers/technicians (number)

Description

It is aimed to improve vocational and technical education capacity in the field of nuclear energy technologies. Gender balance will be considered in the trainings provided.

E-S.4.3 Supporting R&D projects for hydrogen production, storage, distribution and utilization

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TENMAK	ETKB, EPDK, BOTAŞ, TKİ, TÜBİTAK	2024-2030	Number of R&D projects supported (number)

Description

As a requirement of Turkey's Hydrogen Technologies Strategy, hydrogen is intended to be handled within the integrity of an energy system.

E-S.4.4 Mapping the storage areas of green and pink hydrogen, conducting the necessary feasibility studies for the transmission and distribution of green and pink hydrogen through existing natural gas pipelines, creating infrastructure, implementing training programs at different levels to rapidly develop competent human resources, and carrying out legislative studies to determine the appropriate ratio of hydrogen mixture to be made into existing natural gas transmission and distribution lines

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
ETKB, TENMAK, BOTAS	EMRA, GAZBIR	2024-2030	 Increasing the volume of green and pink hydrogen in the natural gas distribution network to 2% Published legislation Technical report prepared

Description

As a requirement of the hydrogen strategy and energy strategy, it is aimed to increase the installed capacity and ensure hydrogen distribution by utilizing the existing natural gas infrastructure.

E-S.4.5 Determining the supply potential and utilization areas for resources such as synthetic methane, syngas, sodium borohydride, ammonia, methanol and fuel cells

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TENMAK	ETKB, BOTAS, STB, ETİ MADEN	2024-2030	Technical feasibility report prepared

Description

It is aimed to disseminate and use alternative energy sources.

E-S.4.6 Establishing an incentive mechanism for hybrid systems where small modular reactors and innovative clean energy technologies (hydrogen, power-to-fuel, power-to-x, power-to-storage, etc.) can be used together

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MENR	STB, EPDK, TENMAK, TUBUTAK	2024-2030	Incentive mechanism created

Description

With medium-sized installed capacity, small modular reactors could become widespread with lower total costs and faster construction processes.

Strategy E-S.5 Unavoidable greenhouse gas emissions carbon capture, utilization and Creation of a roadmap for storage

E-S.5.1 Investigate emission mitigation technologies such as carbon capture, utilization and storage for fossil fuel based power plants, their economic potential, appropriate supply chain infrastructure and processes, and identify targets

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Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MENR	STB, UAB, TENMAK, EPDK, EÜAŞ, Electricity Generation Companies, MTA, TENMAK	2024-2025	Technical feasibility reports prepared (number)

Description

By monitoring developments in carbon capture, utilization and storage technologies and conducting cost analysis, it is aimed to establish clean coal technologies for power plants that have not completed their operational life.

E-S.5.2 Developing a carbon storage atlas for Turkey

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TENMAK	ETKB, STB, EPDK, EUAŞ, MTA, Electricity Generation Companies, TUBITAKTPAOBOTA Ş, Private Sector Organizations	2024-2025	Number of regions for which a carbon storage atlas has been created (number)

Description

It is aimed to determine the carbon storage potential in Turkey.

E-S.5.3 Preparation of a roadmap on carbon capture, utilization and storage

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TENMAK	TUBÜTAKSTB, ETKBMTA, EÜAŞTENMAK	2024-2025	Prepared road map

Description

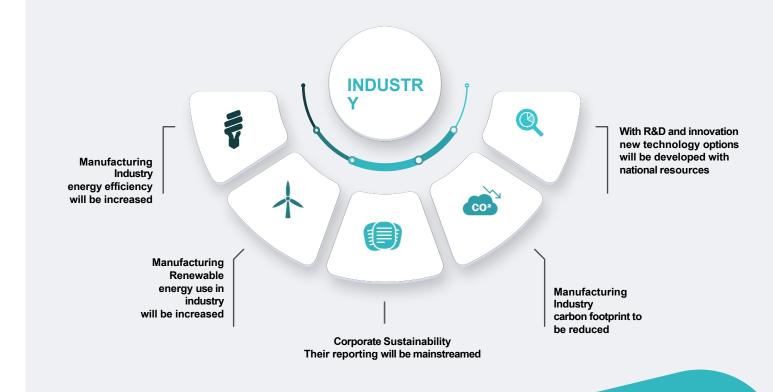
It is aimed to determine the carbon storage potential in Turkey.

E-S.5.4 Supporting R&D activities on carbon capture, utilization and storage, realizing pilot plants and creating incentive mechanisms

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TENMAK	HMB, SBB, ETKB, EÜAŞ, EPDK, TUBUTAK	2024-2030	 Number of pilot plants established (number) Amount of incentives granted (TL) Number of R&D projects supported (number)

Description

It is aimed to support sectoral initiatives that can capture, use and store carbon.



Strategy S-S.1 Energy efficiency for the manufacturing industry maximizing the utilization of its potential

S-S.1.1 Conducting mandatory energy efficiency audit reports and benchmarking studies within the scope of energy efficiency legislation and updating savings potentials

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MENR	STB, MOEU, TOBB, Sector Associations	2024-2026	 Prepared mandatory energy efficiency audit report and benchmarking report Benchmarking reports prepared with indicators for energy efficiency in selected energy-intensive sectors

Description

It is aimed to carry out surveys and benchmarking studies on energy efficiency in emission and energy-intensive manufacturing industry sectors and to determine the energy efficiency and savings potential by sector (iron-steel, cement, glass, etc.). On a sub-sector basis, by considering normalization, many factors other than operating practices that affect energy efficiency independently of the operator (such as furnace age, product type, product color, the proportion of broken glass used depending on the supply) will be taken into account.

S-S.1.2 Increasing the amount of support by removing the cost limit for efficiency-enhancing projects through legislative amendments, determining performance criteria by taking climate change into account, and supporting projects with relatively high savings potential

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MENR	STB, SBB, ÇŞİDB TOBB, Sector Associations, HMB KOSGEB	2024-2025	 Number of projects supported by sectors (number) Amount of energy savings achieved (toe) Amount of CO2 emissions avoided (tons CO2-equivalent)

Description

Facilities will be categorized according to their energy intensity (high-medium-low according to quantities to be determined) or sub-sectors (e.g. iron and steel, cement, etc.).

As a result of the implementation of productivity enhancement projects, it is planned to evaluate performance based on the amounts presented in the project and the actual values.

S-S.1.3 *Incentivize verified energy efficiency performance improvements through carbon pricing instruments*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
IDBMENR	STB, TB, HMB, TSE	2024-2028	 Total GHG emission reduction achieved through verified energy efficiency performance improvement (tons CO2-equivalent) Incentive mechanism created

Description

Verified energy efficiency performance improvements are intended to be used for offsetting activities in the carbon pricing system.

S-S.1.4 Providing support for the dissemination of heat pumps in manufacturing industry sectors and preparing guidance documents by conducting awareness raising activities

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MENR	STB	2024-2030	 Number of heat pump projects supported (number) Guideline-document prepared for practitioners

Description

Technical analysis and mapping studies will be carried out on the potential for the use of pumps in the manufacturing industry sector, and it will be ensured that efficiency-enhancing project support program will be utilized to expand their use.

S-S.1.5 Encourage the establishment of digitalization systems for energy efficiency measurementmonitoring and reporting activities in SMEs

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
STB, KOSGEB	MENR	2024-2025	 Implemented monitoring and verification system

Description

It aims to expand measurement, monitoring and verification systems to monitor energy efficiency performance and set accurate targets.

Strategy S-S.2 Renewable energy for manufacturing industry Increasing the use of

S-S.2.1 *Promote the use of renewable energy in the context of self-consumption in industry*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MENR	ÇŞİDBSTB, EPDK	2024-2030	 Amount of avoided emissions (tons CO2-equivalent) Amount of renewable energy used by self-consumption in industry (MWh) Amount of YEKG certificate utilization in industry (number)

Description

It is aimed to increase the use of renewable energy in the context of energy use of industrial facilities (use of electricity generated from certified renewable energy).

S-S.2.2 Implementing legislative improvements and dissemination studies to increase the use of waste as a resource by evaluating alternative raw materials and additional fuel options for wastes that are not suitable for material recovery

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOEUU	STB, MENR, TB, TOBB, Sector Associations	2024-2026	Updated legislation

Description

It is aimed to revise the legislation on the use of additional fuel and alternative raw materials in a way to expand the use of waste as a resource.

Strategy S-S.3 Reducing carbon footprint in the manufacturing industry and Reducing CO2-equivalent intensity per GSH

S-S.3.1 Preparation of a road map for reducing carbon footprint in sub-sectors

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
STB	ETKB, TB, ÇŞİDB, TÜTAK, TOBB, , MÜSİAD, Sector Associations, TSE	2024-2026	 Sectoral emission reduction roadmap published (number)

Description

It is aimed to prepare a roadmap including mitigation strategies and implementation timetable to cover all industrial subsectors, particularly energy and carbon-intensive sectors. The participation of women experts in relevant processes will be encouraged.

S-S.3.2 Carrying out studies to reduce the clinker ratio of cement to be used in public construction and infrastructure investments in order to reduce the carbon footprint on a product basis

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
YFK	ÇŞİDB, KİK, STB, ETKB, TOB (DSİ), UAB (), HMB, TOKİ, TOBB, TÜSİAD, MUSIADSector Associations, TURKÇİMENTO	2024-2027	Number of tender specifications made by public institutions that clinker criteria in their technical specifications (number)

Description

In public procurement of cement, this article will be implemented by amending the technical specifications included in the tender documents.

S-S.3.3 Establishing mechanisms to technically and financially support new technological solutions for reducing the carbon footprint in industrial sectors at the commercialization stage

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TUBITAK	HMB, ÇŞİDB, ETKBTENMAK, TOBBTÜSİAD, MÜSİADSector Associations, KOSGEB, Universities	2024-2025	 Number of projects carried out in partnership between universities/research centers and industry targeting technological transformation (number) Number of financially supported projects targeting technological transformation (number) Amount of greenhouse gas reduction targeted within the scope of supported projects (tons CO2-eqd)

Description

New techniques and innovative practices developed to reduce product carbon footprint will be supported. Gender balance will be considered in project teams.

S-S.3.4 Review policies to ensure the supply of scrap metal required for low carbon emission steel production

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOEUU	STB, TB	2024-2025	Amount of scrap metal collected domestically (tons)

Description

It is aimed to review the policies regarding the demand management of scrap metal, which is a critical input of the steel production sector, especially for arc furnace plants, from the perspective of greenhouse gas mitigation.

S-S.3.5 Identifying SMEs that are critical in greenhouse gas emission reduction in order to contribute to green transformation and establishing a monitoring system for their climate performance

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
STB, KOSGEB	ÇŞİDBTOBB, ETKBÇSGB	2024-2026	Monitoring system established for SMEs

Description

It covers the necessary activities to analyze and monitor the performance of SMEs that are critical in reducing greenhouse gas emissions with the approach of ensuring green transformation throughout the supply chain and leaving no one behind. Activities will be planned to cover the SMEs and industrial enterprises in this scope, especially innovative companies characterized as startln addition, identifying start-ups working on issues such as adaptation to the effects of climate change, reducing carbon emissions and integrating digital transformation and green transformation, and creating platforms where they can share experiences with industrial enterprises are among the implementation issues within the action.

Strategy S-S.4 *Mainstreaming sustainability reporting*

S-S.4.1 *Mainstreaming Corporate Sustainability Reporting and establishing a platform where public and private sectors are members*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
KGK, CMB	Public institutions, Private sector organizations	2024-2025	 Number of industrial organizations reporting on sustainability (number) Platform created

Description

The platform will aim to develop/harmonize the necessary standards and ensure international acceptability of verifications.

It includes the establishment of a platform consisting of relevant public and private sector institutions and organizations in order to follow the global agenda on sustainability reporting, to to the sustainable growth and competitiveness of organizations in our country, to inform and share experiences on expanding and more detailed reporting frameworks.

S-S.4.2 Publishing Turkish Sustainability Reporting Standards in line with international standards and establishing a third party assurance and verification system for sustainability reporting

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
KGK, CMB	MOEUTURKAK	2024-2025	Published standardThird party assurance and verification system established

Description

It is aimed to evaluate and implement a third-party assurance or verification system for the international recognition of sustainability reports.

S-S.4.3 Preparation of a gradual transition schedule for mandatory sustainability reporting on a scale basis in line with the European Union

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
KGK, CMB	MOEUTURKAK	2024-2025	Scale-based transition schedule for mandatory sustainability reporting

Description

It covers the preparation and implementation of a transition timetable for our country within the framework of sustainability reporting, which becomes mandatory in the EU in November 2022, and the detailed transition timetable that will extend to SMEs in 2027.

S-S.4.4 Reviewing the CMB Sustainability Principles Compliance Framework in line with standards and developments

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
СМВ	KGK	2024-2025	Updated CMB Sustainability Principles Compliance Framework

Description

In order to report the impact of sustainability risks and opportunities enterprise value and stakeholders in listed companies, it is aimed to update the CMB Sustainability Principles Compliance Framework within the framework of ISSB Standards and GRI (Global Reporting Initiative

Strategy S-S.5 Capacity building of manufacturing stakeholders development of

S-S.5.1 Strengthening the technical knowledge capacity of industrial enterprises, particularly SMEs, on climate change mitigation and adaptation

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
STB, ETKB, KOSGEB	SBB, ÇŞİDB, TOB, HMBÇSGBYÖK, TOBB, TÜSİAD, MUSIAD, Sector Associations	2024-2026	 Guidelines prepared for good practice examples within the scope of greenhouse gas mitigation (quantity) Training provided to at least 2000 SME representatives to increase technical capacity in mitigation and adaptation efforts

Description

It includes information, trainings and workshops on how to assess and manage climate risksmitigation and adaptation together.

In addition, it is aimed to include women's business platforms such as KAGIDER and TOBB women entrepreneurs boards in the planning of training and workshop participants and to ensure gender balance among participants in trainings and workshops. Activities will be planned to include SMEs and industrial enterprises, especially innovative companies characterized as startups within this scope.

S-S.5.2 Capacity building and roadmap for just transition and employment transformation

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOFLSSU	MEU, MoEU, MoNE, MoET, MENR, ASHB, TOBB, YÖK, İŞKUR VQA Private Sector Organizations	2024-2026	Number of capacity building activities (number)

Description

The roadmap should include all vulnerable groups (young unemployed, vocational high school graduates, workers who may become unemployed after the green and digital transformation, disabled people and women). Assessing the consequences of the just transition and employment transformation for women's employment and foreseeing measures to protect and increase women's employment in the roadmap (upskilling, up-skilling, reskilling, etc.). Measurement and evaluation criteria for capacity building trainings will be determined.

Strategy S-S.6 Circular economy for all manufacturing industry sectors and promoting resource efficiency

S-S.6.1 Organizing awareness-raising activities on the basis of sub-sectors for circular economy and resource efficiency

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOEUU	MENR, NGOs, STB, MoAF	2024-2026	 Number of trainings organized for industry sector stakeholders (number) Providing training to at least 500 sector representatives

Description

Within the scope of circular economy practices; it covers information, training and other activities for industrial sector representatives, including resource efficiency, reuse, recovery and alternative raw materials. Gender balance will be considered in the organized activities.

S-S.6.2 Implementing the Green Transformation Support Program, which aims to support investments for the green transformation of the manufacturing industryincluding circular economy and resource efficiency practices

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
STB	ETKB, ÇŞİDB, , TSE, Universities Private sector organizations	2024-2030	Number of projects supported (50/year)

Description

The Investment Incentive System aims to support investments that are compatible with the circular economy approach, conserve natural resources, to climate and sustainability goals, and aim for resource-efficient and low-carbon production in Turkey.

S-S.6.3 Developing legislation for the sustainable product initiative and digital product passport system in line with the European Union in order to implement and disseminate the circular economy model

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
ТВ	ÇŞİDBSTB, ETKBTOBB	2024-2030	Established digital product passport systemPublished legislation

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Description

It is aimed to make evaluations and develop legislation for the sustainable product initiative and digital product passport system, including the harmonization of the sector. In this framework, the traceability standard will be established, made mandatory and its international validity will be ensured.

S-S.6.4 *Developing policies for the dissemination of circular economy models*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
ТВ	STB, TOB, ÇŞİDB, ETKBTOBB	2024-2026	Updated legislation

Description

order to keep materials in the loop, the aim is to develop and manage reuse, recycling, second-hand and repair options.

S-S.6.5 *Identifying critical raw materials for green transformation and developing policies to ensure supply security*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TENMAK	ÇŞİDBTBETKB, MADEN, , TÜBİTAK	2024-2026	 Published Legislation Policies and roadmap developed for critical raw materials

Description

It is aimed to ensure the sustainability of the industrial sector in terms of supply and costs by identifying critical raw materials. A critical minerals roadmap will be prepared by TENMAK in order to bring our underground resources to the economy in a way to provide high added value, to meet the demand for energy and industrial raw materials safely and economically, to diversify and develop supply resources, and to process the raw materials produced domestically and transform them into final products. The Rare Earth Elements Technologies Roadmap will also be prepared in this context. In addition, green and digital transformation, also known as the "twin transformation" process, investment, production, foreign trade, competition and employment

policies. There are many risks to ensuring sustainable and secure supply of raw materials, which are at the center of the twin transformation process, at competitive prices. The development of a National Strategic/Critical Raw Materials Strategy is of great importance in this regard.

Strategy S-S.7 R&D and innovation and new technology options development with national resources

S-S.7.1 Supporting R&D and innovation activities targeting greenhouse gas mitigation

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TUBITAK	CCSIBEFFB, TENMAK, Universities	2024-2030	 Number of supported researches (number) Budget and/or actual amount of support allocated for these activities (TL)

Description

Support be provided for capacity building and pilot implementations.

S-S.7.2 Developing patented pilot applications and technological solutions

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TUBITAK	CCSIDEIB, TENMAK	2024-2030	Number of projects supported (number)

Description

After the R&D phase, it is aimed to support the development of value-added energy sources, products, applications and technologies.

S-S.7.3 Conducting studies on the use of hydrogen technologies in industry and implementing them at pilot level, developing incentive mechanisms for their use in industry

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TENMAK, TUBUTAK	MOEUSTB, MENR, Private Sector Organizations	2024-2026	 Number of studies on the use of hydrogen technologies in industry (number) At least 3 pilots implemented

Description

In 2023, the action will be implemented by taking into account the "Turkey Hydrogen Technologies Strategy and Roadmap" published by TENMAK.

S-S.7.4 *Supporting projects on carbon capture, utilization and storage (CCSR)*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TENMAK, TUBUTAK	MOEUSTB, MENR, Private Sector Organizations	2024-2030	 Number of studies conducted for the use of BRI technologies in industry (number) Prepared Turkey CO2 Capture, Utilization and Storage Technologies Roadmap

Description

It is aimed to support efforts within the scope of the LULUCF for non-avoidable emissions. Targets and policies will be determined by creating conditions to encourage private sector investments, developing industrial centers with common CO₂ infrastructure, promoting CO₂ storage technologies and increasing R&D and innovation to reduce CO₂ capture costs in emission-intensive sectors. Thanks to this map to be prepared, it is envisaged that the number of studies and projects implemented for the use of LULUCF technologies in industry will increase.

S-S.7.5 Development of R&D and application projects on electrification of low and medium thermal processes in industrial sectors

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TUBITAK	ETKB, STB, ÇŞİDB, TÜSİAD, , TOBB, Sector Associations	2024-2030	Number of projects implemented (number)

Description

With the aim of reducing direct greenhouse gas emissions in the sector, it is aimed to carry out studies for the electrification of low and medium heat treatment processes.

Strategy S-S.8 Developing sustainable investment instruments and to provide investors with appropriate sources of financing creation of

S-S.8.1 Effectively utilize sustainable financing sources in the transformation process of the industrial sector and harmonize the required classification and reporting framework

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
STB, MOEU	HMB, TUBUTAK, KOSGEBETKB, TOBB	2024-2030	Number of projects and applications supported by sustainable financing sources (#)

Description

It is aimed for the industrial sector to benefit more effectively from international funding options under the overarching heading of combating climate change.

S-S.8.2 Providing technical and financial support to SMEs decarbonization of production and supply chain

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
KOSGEB	ÇŞİDBSTBHMB, ETKBÇSGB, , TOBB	2024-2030	 Number of training and information activities carried out (number) Amount of financial support provided (TL)

Description

For SMEs that may have more difficulties in technical capacity building and access to finance, activities including information and training, workshops, international and national financing support are envisaged.

On the other hand, in case of need, support for large-scale companies will also be put on the agenda.

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S-S.8.3 Develop incentives and support mechanisms for the replacement of existing electric motors with efficient motors especially for SMEs

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
KOSGEB	MENR, TOBB, Private Sector Organizations	2024-2030	 Incentive and support mechanism established Number of energy audit reports issued (number) Amount of avoided emissions (tons CO2-equivalent) Amount of financial support provided (TL)

Description

It is planned to make an evaluation according to the efficiency classes of electric motors, operating times, operating loads, and whether "inverter" is used in variable speed applications.

S-S.8.4 Support the issuance of green/sustainability-labeled debt instruments through regulations to support green transformation, energy efficiency and technology development projects

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
СМВ	HMB, STB, ETKB, ÇŞİDBTB	2024-2030	Prepared Regulatory framework to diversify Green/Sustainability labeled debt instruments

Description

Regulations on the issuance of green/sustainability-labeled debt instruments aim to support this ecosystem.

Energy efficiency of at least half of existing buildings performance will be upgraded to class C or above By 2030
all existing buildings
will receive an Energy
Performance Certificate In the construction ecosystem
digital transformation
will be ensured **BUILDING** District heating and cooling systems will be made widespread National Green Certification System (YeS-TR) The application will promote the use of environmentally friendly design and building materials

Strategy B-S.1 Improving energy efficiency in existing buildings

B-S.1.1 Preparation of indicator sets by matching existing databases on buildings in institutions

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MODTKGM	MOEUMENR, Municipalities, Special Provincial Administrations, TurkStat	2024-2025	Prepared indicator set

Description

It is aimed to match the Spatial Address Registration System (MAKS), Land Registry and Cadastre Information System (TAKBIS) and related databases regarding the existing buildings in the institutions and to create an indicator set.

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TUIK	IB, TKGMÇŞİDB, MENR, Municipalities Special provincial administrations	2026-2030	Building statistics published under the Official Statistics

Description

Building statistics on indicator sets prepared based on databases on existing buildings in institutions should be published and regularly updated.

B-S.1.3 *Improving the energy efficiency of existing buildings and developing sanctions for obtaining Energy Performance Certificate (EPC)*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOEUU	HMB, MENR	2024-2030	 By 2030, all existing buildings will have EPCs EPCs for existing buildings must be at least 50% have C class or higher energy performance

Description

In Turkey, there approximately 9.5 million buildings and 1.4 million EPC buildings. The amendment to Law No. 5627 on Energy Efficiency aims to introduce sanctions for existing buildings that have not obtained EPCs and for improving their energy performance.

B-S.1.4 *Monitoring the increase in energy efficiency in public buildings obliged to appoint an energy manager*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MENR	Public institutions	2024-2030	 Rate of increase in energy efficiency in public buildings obliged to appoint an energy manager (%)

Description

As a requirement of the Circular on Energy Savings in Public Buildings No. 2023/15, it is aimed to improve and monitor the energy efficiency of public buildings with a construction area of 10,000 m2 or more according to the reference consumption until 2030.

B-S.1.5 *Establishing and sustainably operating incentive and support mechanisms for energy efficiency improvements in existing buildings*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOEUU	MENR, HMB	2024-2030	Number of buildings improved in energy efficiency (number)

Description

With the amendment to the Energy Efficiency Law, the building sector included in efficiency-enhancing project supports. However, incentives for the buildings sector need to be put in place. Low-interest thermal insulation loans were introduced for residential buildings. Energy unit price based on energy consumption for buildings with energy performance class is planned to be implemented.

B-S.1.6 Conducting awareness raising activities to increase the level of awareness on energy efficiency in buildings

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MENR	MONE, MOEU, Municipalities, NGOs	2024-2030	 Training provided to at least 100,000 people At least 2 awareness-raising and awareness-raising activities per year on different communication platforms across the country Increasing the Energy Efficiency Awareness Index to high-low (168-184) level

Description

Awareness-raising activities for buildings will continue within the scope of the Energy Efficiency Strategic Communication Plan. In 2021, the energy efficiency awareness index was measured as 163.8 (0-200). It is aimed to increase this value, which is at the medium-high level, to the high-low level. Awareness raising activities will continue by considering gender balance in trainings.

B-S.1.7 Scaling up Energy Performance Contracts (EPS) for existing public buildings

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MENR	МОЕИНМВ	2024-2025	EPS signed (number)

Description

Energy Performance Contracting (EPC) is a financing mechanism based on the repayment of the initial investment costs of energy efficiency or renewable energy projects through savings to be achieved in the following years.

B-S.2.1 Preparing and updating national occupational standards and national qualifications for the labor force lacking in the scope of vocational qualifications, and conducting and disseminating examination and certification activities according to the prepared national qualifications

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
МҮК	ÇŞİDBMEB, ETKB, ÇSGB, YÖK, Universities, NGOs	2025-2030	 Number of occupational standards prepared (number) Number of updated occupational standards (number) Number of VQA Vocational Qualification Certificates issued (number)

Description

It is aimed to establish standards for the activities and qualifications of the workforce required for the dissemination of renewable energy and energy efficiency systems in buildings.

B-S.2.2 Develop a legal regulation to ensure that all new buildings are constructed in accordance with the Nearly Zero Energy Buildings (NZEB) concept

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOEUU	MENR	2024-2026	Amendment to the published Regulation on Energy Performance in Buildings

Description

It is aimed to construct new buildings according to the energy efficient building approach.

B-S.2.3 *Improving the energy limits in TS 825 Standard and updating them by considering national/international energy efficiency approaches*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TSE	MOEUMENR	2024-2025	Updated TS 825 standard

Description

TS 825 Thermal Insulation Rules for Buildings standard and the current legislation will be revised taking into account EU practices. In this context, TS 825 Thermal Insulation Rules Standard should be updated to take into account the cooling need as well as the net heating energy and the energy limits should be improved to bring them to the EU level. It is aimed to update the energy limits of the standard according to energy policies and changing climatic conditions.

Strategy B-S.3 Electrical appliances, equipment and devices in buildings Increasing energy efficiency in energy use

B-S.3.1 Raising awareness of end users on the use of tools, equipment and devices with high energy efficiency

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MENR	MOEUTBSTB	2024-2030	 At least 1 communication campaign every year Increasing the Energy Efficiency Awareness Index to high-low (168-184) level

Description

Awareness raising activities will be carried out on the use of tools, equipment and devices with high energy efficiency.

B-S.3.2 *Harmonization of regulations on energy efficiency and environmentally friendly design of white goods products to be implemented simultaneously with the EU*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
STB	MOEUMENR, TB, White Goods, Industrialists' Association	2024-2030	Revised legislation published

Description

It is aimed to determine and improve the energy efficiency status of household electrical appliances and equipment.

Strategy B-S.4 District Heating and Cooling Systems Expanding and Supporting its Use

B-S.4.1 Conducting studies on awareness raising and incentives the widespread use of district heating and cooling systems

Responsible Institution	Related Institutions	Implementation Period	Mon	itoring Indicators
MENR	MOEUILBANK, Municipalities	2024-2025		Pre-feasibility report prepared Awareness raising activities (number)

Description

It is aimed to expand district heating and cooling systems, especially in public housing areas.

B-S.4.2 Conducting a mapping study to match heat pump potential, waste heat resources and renewable energy resources with energy demand in buildings

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MENR	CISDBIB, , ILBANK, Municipalities, Universities, NGOs	2024-2025	GIS-based maps created

Description

It is aimed to reduce greenhouse gas emissions and save energy by meeting the energy demand in buildings from energy efficient and renewable energy sources. It is aimed to produce GIS-based maps by determining the potential of ground source heat pumps and to integrate renewable energy and waste heat sources into the map.

Strategy B-S.5 National Green Certification System (YeS-TR) Implementation with environmentally friendly design and building materials popularization of the use of

B-S.5.1 Expanding the implementation of the National Green Certification System (YeS-TR) and encouraging certified new buildings and settlement projects

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOEUU	TUCA	2024-2025	Number of buildings receiving YeS-TR certificate (number)

Description

In the 2022 Regulation on Green Certification for Buildings and Settlements, green certification is determined as optional. This action aims to support buildings that will receive YeS-TR.

B-S.5.2 Requiring new public buildings to obtain YeS-TR certificate

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOEUU	TUCA	2024-2030	Published legislationNumber of public buildings that receive YeS- TR certification each year (number)

Description

The YeS-TR certification of new public buildings is an opportunity to both set an example and share experiences.

Strategy B-S.6 Digital transformation in the construction ecosystem Building Information Modeling (BIM) Ensuring and expanding the use of tools and promoting

B-S.6.1 Promote the use of Building Information Modeling (BIM) tools in the design, construction and operation processes of sustainable, energy efficient and low carbon emission buildings, develop and promote domestic BIM software

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOEUU	ETKB, ÇSGB, ÇSGB,ŞKURMY K, Universities, Municipalities, TOBB, Private sector organizations, NGOs	2024-2028	 Published legislation Training provided to at least 1000 professionals Number of seminars and workshops organized (number) Domestic BIM software developed (number)

Description

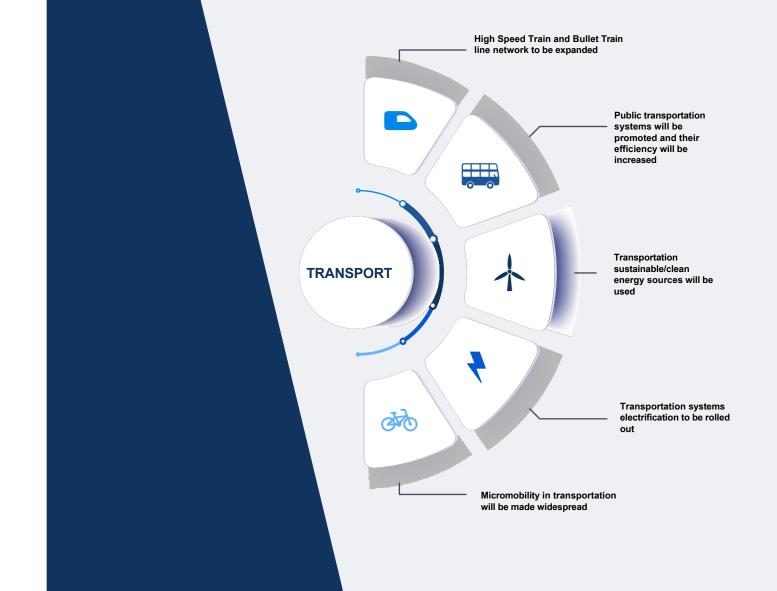
It is aimed to develop the technological infrastructure for the use of digital tools based on Building Information Modeling (BIM) in the life cycle of buildings, especially in the design, construction and operation phases, to harmonize national legislation with BIM methodologies, to provide trainings for technical personnel with gender balance in participation and to support the digital transformation of the construction sector.

B-S.6.2 Ensure and promote the production, use and adaptation of smart objects loaded with information on building materials to the global BIM ecosystem in the construction of sustainable and performance-oriented built environment

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOEUU	STB, NGOs, Private Sector Organizations	2024-2028	Number of smart objects produced (number) Established National BIM Library

Description

It is aimed to produce BIM-based projects in which information-laden digital building materials are integrated, thus providing the necessary environment for the construction of sustainable and performance-oriented structures, dissemination and global integration.



Strategy U-S.1 Strategy U-S.1 Modal shift to Sea/Rail Ensuring

Providing modal shift to rail

U-S.1.1 Expansion of High Speed Train and High Speed Train network in line with the Transportation and Logistics Master Plan

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
UAB, TCDD	UHDGM, DGOII, TCDD Tasimacilik A.S., DHMI, DGCA, Logistics Coordination Board	2024-2030	 Increase in High Speed Train line utilization (passenger and passenger-km) Increase in High Speed Train line utilization (passenger and passenger-km) Increase in the share of rail passenger transportation in total road+rail passenger transportation (%) Increase in the share of rail passenger transportation in total air+rail passenger transportation (%) Increase in High Speed Train Line lengths (km) Increase in High Speed Train Line lengths (km)

Description

It is aimed to ensure a shift from road and air to rail.

U-S.1.2 Development of rail freight transportation in line with the Transportation and Logistics Master *Plan*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
UAB	TCDD, TCDD Transportation Inc., Rail Transportation Private Sector Organizations	2024-2030	 Increase in line lengths (km) Amount of increase in freight transportation on High Speed Train lines (tons and ton-km) Increase in freight transportation on all railway lines (tons and ton-km) Increase in the share of railroad freight transportation in total railroad-road transportation (%)

Description

It is aimed to ensure a shift from road and air to rail.

U-S.1.3 Development of rail passenger transportation with urban rail systems

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
UAB, Municipalities	TCDD, TCDD Tasimacilik A.S., GDoII	2024-2030	 Rate of shift from rubber wheeled transport (private vehicles and public transport) to urban rail passenger transport (vehicle-km) Increase in Urban Rail System line lengths (km), Increase in the number of lines with connection between urban rail system and suburban operation on main railway (number) Increase in Urban Rail System utilization (passenger and passenger-km) Number of transfers from suburban lines to urban public transportation systems (number of passengers)

Description

It is aimed to provide a shift in passenger transportation to urban rail systems. Suburban transportation and urban rail systems considered within the Urban Rail System.

U-S.1.4 Providing support increasing inter-modal integration in Urban Rail System transportation

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
UAB	ÇŞİDBTCDD, İLBANK, Municipalities	2024-2030	 Increase in the amount of resources allocated (TL) Number of Urban Rail System connection/transfer feasibility projects prepared (number) Number of new Urban Rail System connection/transfer projects (number)

Description

Support can include grants, financing, credit facilities, etc. for both feasibility studies and implementation projects.

Ensuring modal shift to seaway

U-S.1.5 Supporting intercity maritime passenger transportation

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
UAB	Municipalities	2024-2030	Annual amount of support and incentives provided (TL)

Description

Municipalities that operate intercity ferries will also be stakeholders.

U-S.1.6 Development of urban maritime passenger transportation and infrastructure in coastal cities

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
UAB, Municipalities	-	2024-2030	 Increase in the number of urban maritime services (number of trips) Increase in the number of urban maritime users (passengers, passenger-km)

Description

It is aimed to support and develop passenger transportation by maritime transport within coastal cities.

U-S.1.7 Supporting maritime freight transportation and infrastructure

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
UAB	HMB, Municipalities	2024-2030	 Increase in maritime freight transport (tons and ton-miles) Increase in the amount of incentives given for cabotage transportation (TL)

Description

It is aimed to support and develop maritime freight transportation.

Strengthening intermodal freight transportation

U-S.1.8 Improving connections of railways with freight centers such as ports, organized industrial zones, logistics centers, factories and mining sites

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
UAB	TCDD, STB	2024-2030	 Increase in the number of railway lines serving Organized Industrial Zones, ports, etc. (number); increase in transportation on these lines (tons and ton-km); Increase rate of facilities, logistics centers and OIZs with railway connection (%) Increase in the share of railroad freight transportation in total railroad-road transportation (%)

Description

In coordination with the Transport and Logistics Master Plan, it is aimed to improve the service network of railways to ports, organized industrial zones, logistics centers, factories and mining sites.

U-S.1.9 Promoting rail and maritime intermodal and combined transportation in freight transportation

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
UAB	-	2024-2030	 Increase in the amount of containers transported (TEU) Increase in the number of vehicles transported (number)

Description

It is aimed to promote intermodal and combined freight transportation by rail and sea.

Strategy U-S.2 *Increasing Efficiency in the Transportation Sector*

Promoting public transportation systems and increasing efficiency

U-S.2.1 Promoting public transportation-oriented practices in urban planning Responsible **Related Institutions Implementation Period** Monitoring Indicators Institution Municipalities **MOEUUAB** 2024-2030 Published public transport-oriented urban planning legislation and roadmap; Published legislation/guidelines on the design, operation and promotion of park-and-ride systems Published micromobility and pedestrian level of service legislation/policy documents Number of Urban Transportation Demand Analysis Zone (UTAIZ) maps prepared (number) Increase in commercial, educational, etc. units depending on the density and diversity of land use around the main stops of Urban

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Description

Public Transport Oriented Urban Planning can be summarized as the establishment of "urban Transportation Demand Analysis Zones" (UTAZs) where basic needs (education, health, work, etc.) are served within a 15-20 minute access distance by public transport.

Transportation Demand Analysis Zones (units)

U-S.2.2 Introduce smart card systems that allow fare collection/charging to encourage the use of public transportation

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
Municipalities, MoU	MOEUASHB, PTT, Intelligent Transportation Systems (ITS) related institutions and organizations	2024-2030	 National smart card and/or mobile system that can be used in public transportation implemented on a national scale Increase in smart card usage in public and intermediate public transportation (passengers)

Description

Support will be created on gender, age, disability and social equality/justice. Coordination with the Turkey Card project will be ensured.

U-S.2.3 Integrate public transport systems with each other and with other urban wheeled transport modes

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
Municipalities	ÇŞİDBUAB, TCDDTCDD Transportation Inc., UDHAM	2024-2030	 Increase in the number of stops for transfer between public transportation and other modes (number) Increase in transportation services/modes included in smart card systems (number) Increase in the number of interspecies transfers (number) Increase in the capacity and utilization of parkand-ride systems around public transportation stops (number of vehicles) Amount of shift from private car use to public transportation (passenger and vehicle-km) Increase in secure bicycle parking capacity (number of parking spaces)

Description

Coordination will be ensured with developments in the field of smart cards. The central government will provide technical and training support to municipalities for implementation.

U-S.2.4 Strengthen micromobility/walking options around public transport stops

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
Municipalities	MOEUUAB	2024-2030	 Increase in the use of shared micromobility systems interchanged with public transport (passengers, passenger-km) Increase in the length (km) and use of bicycle lanes around public transport stops (passenger-km) Increase in pedestrian service level (number of pedestrians) Urban micromobility roadmap prepared

Description

In order to strengthen access to public transportation (in terms of first- and last-km), stops will be ensured to comply with accessibility standards, bicycle lanes will be built, and infrastructure and sharing systems for micromobility vehicles such as bicycles and e-scooters will be supported.

U-S.2.5 Increasing the transition from private vehicle use to public transport with rubber wheels

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
Municipalities	MOEUUAB	2024-2030	 Increase in urban rubber tire public transport lines and frequencies (number); Increase in wheeled public transport line utilization (passengers and passenger-km), Amount of shift from private vehicle use to public transport with rubber tires (passenger, passenger-km)

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Description

Support will be created for gender, age and social equality/justice; Public transportation system components (vehicles, stops, etc.) will be ensured to comply with accessibility standards for people with mobility restrictions (disabled, elderly, pregnant, with children, etc.).

U-S.2.6 Planning public transportation services according to transportation demand and accessibility standards

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
Municipalities	UAB, ÇŞİDB, ASHB, Universities	2024-2030	 Published public transport service planning guide Increase in public transportation occupancy rates (%), Reduction in emissions per passenger-km (tCO2-eqd/passenger-km)

Description

Implementation of accessibility standards is a must to ensure the inclusiveness of public transportation services. Intelligent Transportation Systems for optimized public transport will be developed through TUBITAK-led projects and research centers will be supported in universities.

Making private and shared transportation efficient

U-S.2.7 Increasing safe micromobility in urban transportation

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
UAB, MOEU, Municipalities	ILBANKTUCA	2024-2027	 Published integrated micromobility mobility plan preparation legislation Number of awareness-raising activities for micromobility transportation modes such as bicycles, e-scooters (number, number of campaigns, number of people reached) Length of cycle paths separated from traffic (km)

Description

Micromobility modes should be defined; legislation on their priorities and integration in urban plans will be developed. Bicycle lanes on existing and new roads be addressed with different road maps.

U-S.2.8 Encourage wheeled shared/demand-driven transport

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
Municipalities	UAB, HMB, ÇŞİDB, ASHB	2024-2030	 Published legislation and roadmap for shared vehicle/demand-driven transportation Increase in the number of organizations providing shared transportation services (#)
			 Increase in the use of shared transport (passengers, passenger-km)

Description

Support will be created for gender, age, disability and social equality/justice; Public transportation line elements (vehicles, stops, etc.) will be ensured to comply with accessibility standards for people with mobility restrictions (disabled, elderly, pregnant, with children, etc.).

U-S.2.9 Reducing emissions caused by traffic flow and congestion due to private vehicle use

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOEUU	HMB, UAB, KGM, Municipalities, ITS Turkey Association	2024-2030	 Published urban traffic management legislation and roadmap for emission reduction Intelligent Transportation systems for Road Transport Emission Reduction legislation published Amount of congestion reduction (delay times) in intelligent transportation systems corridors Amount of congestion reduction in urban centers (delay times) Increase in 30 km/h speed limit enforcement corridors in urban centers and pedestrian priority areas (km) Reduction in emissions from roads operated above 50 km/h in urban areas (t CO2/km) Reduction in emissions on intercity roads operated above 90 km/h (t CO2-ecd /km)

Description

The definition and criteria of traffic congestion should be developed; emission reduction can be achieved through Intelligent Transportation Systems applications that will ensure fluidity in congested areas. Congestion pricing will be introduced in city centers/attraction points. Since emission production increases at speeds other than the speed range (30 km/h-80 km/h) in which current engine technologies have the lowest emission, exceeding 50 km/h for private in urban transportation creates a great time gain against public transportation. However, motor vehicle speeds above 50 km/h negatively affect micromobility for traffic safety reasons.

Promote use of new generation, low or zero emission vehicles

U-S.2.10 Promoting low/zero emission vehicles in public vehicle fleets

esponsible estitution	Related Institutions	Implementation Period	Monitoring Indicators
ll Public estitutions	НМВ	2024-2030	 Increase in the number of low or zero emission vehicles (units); increase in their use (vehicle-km)

Description

Since the vehicle-km values of public (municipal buses, institutional vehicles, etc.) fleets are much higher than private vehicles, the priority is to replace these vehicles with low/zero emission vehicles.

U-S.2.11 Promote the use of low/zero emission vehicles in city centers and attraction points

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
Municipalities	ÇŞİDBSTB, ETKBUABEPDK	2024-2030	 Published "Urban Centers Low Emission Zones" roadmap Increase in the capacity of parking spaces allocated/prioritized for low/zero emission vehicles in urban centers (units) Increase in the number of Electric Vehicle charging stations in city centers (number)

Description

It is aimed to expand the use of low/zero emission vehicles for health gains in city centers and pedestrian priority areas.

Efficient freight transportation

U-S.2.12 Preparation of national road freight transport emission reduction roadmap

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
UAB	STB, MENR	2024-2030	 Published National Roadmap for Road Freight Emission Reduction Published ITS Strategy and Action Plan for Emission Reduction in Road Freight Transport

Description

In coordination with the Transport and Logistics Master Plan, it is aimed to carry out studies to reduce road freight transport emissions.

Strategy U-S.3 Sustainable/clean energy in transportation systems use of resources

Expansion of electrification in transportation systems

U-S.3.1 Supporting electrification of vehicles used in rail/marine transportation and airline ground handling services

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
UAB	HMB, ETKB, EPDK, ÇŞİDB, Municipalities, STB, TCDD, TCDD Transportation Inc., UDHAM, Railway train operators	2024-2030	 Increasing the length of electrified railway lines (km) Increase in the number of electric marine vehicles (units) Increase in electricity supply infrastructure capacity at coastal facilities (kwh) Increase in the number of electric rolling stock (pcs)

Description

The transition to electric vehicles in marine and rail vehicles will be supported.

U-S.3.2 Supporting research on electrification of existing vehicles

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TUBITAK	STB, TENMAK, Universities	2024-2030	 Amount of research incentives provided (TL) Number of patents/research on electrification (number)

Description

Making existing vehicles capable of operating with electric motors/batteries will facilitate the financing of electric vehicle conversion.

U-S.3.3 Supporting research on electric vehicle battery systems and increasing their lifespan

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TUBITAK	STB, TENMAK,	2024-2030	Amount of research incentives provided (TL)
	Universities		

Description

It aims to support the development of domestic and long-range battery technologies needed for the transition to electric vehicles.

Increasing the use of alternative sustainable fuels

U-S.3.4 Increasing the use of CORSIA compliant sustainable aviation fuels in airline transportation

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
UAB, DGCA	ETKB, EPDK, TOBB	2024-2030	 Increase in CORSIA compliant sustainable aviation fuel production (tons) and usage (tons)

Description

While the use of CORSIA-compliant sustainable aviation fuel is mandatory for international flights, it is aimed to expand its use on domestic flights to reduce national emissions.

U-S.3.5 Increasing the rate of alternative fuel use in urban/rural bus transportation

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
Municipalities	UAB, ÇŞİDBSTB, EPDK, İLBANK	2024-2030	 Number of alternative fuel buses (units) and increase in usage (vehicle-km) Increase in the number of hybrid/new generation public transportation buses (units) Conversion rate from diesel buses to alternative fuel buses (%)

Description

It is aimed to be planned in coordination with the developments in the electric bus sector.

U-S.3.6 Encourage the use of renewable energy sources in electric vehicle charging stations

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MENR	ÇŞİDBHMB, EPDK	2024-2030	 Renewable energy sources roadmap and guide for Electric Vehicle charging points/stations published Increase in the rate of renewable energy use in transportation (%)

Description

Renewable energy investment support for domestic charging points and commercial charging stations will be planned separately.

U-S.3.7 Planning and development of charging station infrastructure in the required number and location on the highway network for the spread of electric vehicles

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
UAB, STB	MENR, EMRA	2024-2030	Number of vehicle charging stations (number)Amount of incentives granted (TL)

Description

It is aimed to develop charging infrastructure for electric vehicles.

U-S.3.8 Supporting research for alternative fuel vehicles (LNG/Hydrogen, Bio-CNG, Bio-LNG, etc.)

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TUBITAK	STB, UAB, TÜRASAS, TURKISH PATENT, TENMAK	-	Amount of support provided (TL)

Description

Apart from Electric Vehicles, LNG, hydrogen, methanol, etc. as alternative fuels are aimed to be supported by research.

Strategy U-S.4 Carrying out the necessary infrastructure activities for decarbonization of the sector

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Modeling and forecasting studies in transportation systems

U-S.4.1 Establishment of transportation emission database

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
UAB	MOEU Municipalities, TurkStat	2025-2030	 Prepared province-based, vehicle and fuel technology-based national transportation and mobility database

Description

It is aimed to create a database on transportation-related greenhouse gas emissions based on distance (urban, suburban, intercity), transportation system and type, and vehicle technology.

U-S.4.2 Preparation of sustainable urban mobility plans (SUMP) and sustainable urban logistics plans (SUMLP) in metropolitan cities and provincial and district centers

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
Municipalities	CBUABTB, İLBANK	2024-2027	 Sustainable Urban Mobility Plan (SUMP) legislation published Number of metropolitan municipalities, provincial municipalities and district municipalities with Sustainable Urban Mobility Plans (number) Sustainable Urban Logistics Plan (SKLP)

Description

Within the scope of the Sustainable Urban Mobility Plan, it is aimed to make emission calculations and calculate the emission reduction potentials of the scenarios and to ensure complementarity between the Sustainable Urban Mobility Plan / Sustainable Urban Logistics Plans and local climate action plans.

U-S.4.3 Developing next generation mobility management policies and legislation

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
UAB	MOEUUDHAM, STB, Municipalities	2024-2030	 Published "Mobility Service" legislation and policy Published "shared mobility (ridesharing) legislation and policy documents Published "Sustainable and Smart Mobility Strategy and Action Plan"

Description

It is aimed to develop Sustainable and Smart Mobility Strategy and Action Plan, Shared Mobility and Mobility Service legislation and Next Generation Mobility Management policies.

U-S.4.4 Providing support for person/product based transportation carbon footprint calculation in passenger and freight transportation

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
UAB	TSE	2024-2027	 Developed carbon footprint calculation application tool for passenger/freight transportation according to routes and modes Number of users of carbon footprint tool (number) Number and use of total emission calculation interface and Intelligent Transportation Systems reporting applications for commercial vehicle fleets (number)

Description

It is aimed to support EU harmonization efforts.

Electric Vehicle Sector Supports

U-S.4.5 Developing an electrical energy demand forecasting model for transportation purposes

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MENR	SBB, ÇŞİDBUAB, EPDKSTBTÜİK	2024-2025	Developed National Transportation Electricity Forecasting Model

Description

This action will be implemented in coordination with the energy sector.

U-S.4.6 Develop a national smart EV integrated charging and parking management interface

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOEUU	MENR, EMRA, Municipalities	2024-2027	 Published national roadside EV charging and parking legislation Number of management interfaces and users developed (number)

Description

In cities with multi-storey building stock and insufficient parking facilities in each parcel, it will be necessary to establish slow charging stations in public spaces (parking lots, roadsides, etc.) and operate them together with the parking demand. Coordination with the services provided by EMRA will be ensured.

U-S.4.7 Preparation of legislation on placing batteries on the market and recycling and providing research support for electric vehicle battery recycling

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Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
ÇŞİDB, , STB	ETKB, YÖK, TENMAK, TÜRKPATENT	2024-2027	 EU harmonized legislation on batteries and battery recycling Project support budget for Electric Vehicle battery recycling focused project (TL)

Description

It is aimed to plan the end-to-end management of battery production, secondary use and recycling together with the Energy and Waste sectors.

a		WAS		Landfill The proportic sent to faciliti pre-treatment reduced	ies without
		water sent for treatm Efforts will be made	ge		

efficiently in order to reduce

Strategy A-S.1 Prevention of wastes and wastewater before they occur and

Reduction of

A-S.1.1 Preparation of the National Waste Prevention Plan					
Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators		
MOEUU	-	2024-2028	National Waste Prevention Plan prepared		
Description A plan including national and regional actions on waste prevention and reduction will be prepared.					

A-S.1.2 Conducting good practice studies with different stakeholders (farmers, producers, hotels, food service industry, wholesalers, retail, workplaces, consumers, etc.) to prevent and reduce food waste and other biodegradable wastes before they are generated and determining a road map on this issue

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOEUMOAF, Municipalities	MoNE, MoLSS, TOBB, NGOs, Private sector organizations, STB	2024-2030	 Roadmap on prevention and/or reduction of food waste and other biodegradable wastes At least 10 studies/projects completed involving all stakeholders

Description

Good practices such as data collection and inventorying, agricultural production planning in line with demand, information on production technologies used to utilize production surpluses and by-products, dissemination of packaging solutions to reduce food loss and waste, increasing food literacy will be carried out. Gender and age balance will be considered in studies, trainings, meetings and workshops, and the needs of qualified labor force, skill sets and occupational needs will be determined.

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A-S.1.3 Carrying out good practice studies, including extended producer responsibility, in order to increase the rate of reuse of waste within the framework of circular economy principles

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOEUU	STB, ÇSGB, HMB, TB, MEB, Municipalities, TOBB, NGOs, Private Sector Organizations	2024-2027	At least 10 studies/projects completed in the field of reuse

Description

Efforts to popularize the reuse of waste will be carried out. Gender and age balance will be taken into account in trainings, meetings and workshops, and the needs of qualified labor force, skill sets and occupations will be determined.

A-S.1.4 Issuing qualified zero waste certificate

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOEUU	-	2024-2030	Number of qualified zero waste certificates issued (number)

Description

The criteria and scoring for silver, gold and platinum zero waste certificates, which also measure waste prevention and reduction, will be determined by the procedures and principles to be published.

A-S.1.5 Carrying out studies for efficient use of water in order to reduce wastewater sent for treatment and discharge

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOEU Municipalities	MoAF, STB, MoLSS, MoNE, NGOs	2024-2030	 At least 5 clean production studies/projects completed in the field of reducing industrial water consumption and efficient use of water At least 5 studies/projects completed in the field of reducing urban water consumption and efficient use of water The average amount of water withdrawn from the drinking and potable water network by municipalities per person per day should be at most 120 liters

Description

Exemplary good practice studies such as the establishment and reuse of stormwater collection systems in urban areas and reduction of leakages in water transmission will be carried out. Gender and age balance will be taken into account in the studies, trainings, meetings and workshops, and qualified labor force, skill sets and occupational needs will be determined.

Strategy A-S.2 Rate of recycling and recovery of waste Increasing

A-S.2.1 Updating the National Waste Management and Action Plan by taking into account greenhouse gas emission reduction policies

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOEUU	-	2024	 Updated National Waste Management and Action Plan

Description

The National Waste Management and Action Plan will be updated to cover the period between 2023-2035.

A-S.2.2 Promote separate collection of wastes at source according to their types (biodegradable and other recyclable)

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOEUTUFA	MoNE, Municipalities, Buildings and campuses	2024-2030	 Number of local governments, buildings and campuses that have established and certified a zero waste management system that includes separate collection at source (#) Ratio of the amount of waste collected separately at source to total waste amount (%)

Description

Within the scope of the activities to be carried out within the scope of the Zero Waste Regulation, it is aimed to popularize the separate collection of wastes at source according to their types.

A-S.2.3 Expand the deposit return system for collecting high quality materials

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TUCA	NGOs, Private Sector Organizations	2024-2030	The ratio of the amount of beverage packaging collected through the deposit return system to the amount of beverage packaging placed on the market reaches 90%.

Description

The collection rate target with the deposit return system is planned to reach 90% in 2030.

A-S.2.4 *Increasing the number and capacity of biological processing facilities for the recovery of biodegradable wastes and the amount of biodegradable waste sent to these facilities*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
Municipalities , Private Sector Organizations	MOEUU	2024-2030	 Number (number) and capacity (tons) of biological processing plants Amount of biodegradable waste collected separately at source and sent directly to biological processing facilities (tons)

307

Description

Biodegradable wastes generated in food production facilities and sales points (retail, restaurant, catering) will be sent to biological processing facilities without mixing with other wastes.

A-S.2.5 Increasing the amount of solid-liquid fermented products and compost produced from biodegradable wastes with criteria suitable for use in agriculture

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
Municipalities	MOAF, MOEU	2024-2030	 Amount of compost from biodegradable waste used in agriculture (tons) Amount of solid-liquid fermented products produced from biodegradable wastes (tons) Number and capacity of facilities producing compost and solid-liquid fermented products with appropriate criteria (number, tons)

Description

Compost and fermented product production efficiency from biodegradable wastes will be increased by expanding separate collection activities at source.

A-S.2.6 Processing of wastes not suitable for material recovery using thermal technologies suitable for energy recovery

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
Municipalities	MOEUU	2024-2030	 Proportion/amount of municipal waste not suitable for material recovery processed in thermal facilities (%, tons)

Description

The use of thermal technologies will be evaluated within the framework of the National Waste Management and Action Plan and relevant legislation.

Strategy A-S.3 Pre-treatment of landfills Reducing the rate of waste sent without being retained

A-S.3.1 Updating and implementing Provincial Zero Waste Management System Plans

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MoEULocal Environmental Committees	Municipalities	2024-2025	 Number of provinces with completed waste management plans (number)

Description

Provincial Zero Waste Management System Plan: Plans containing the principles of the zero waste management system to be implemented by local administrations within the provincial borders will be prepared by the Local Environment Board the format of which is determined by the MoEU.

A-S.3.2 *Increasing the number and production capacity of waste-derived fuel (WDF) preparation facilities for municipal wastes that are not suitable for recycling/recovery*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOEU Municipalities	NGOs, Private Sector Organizations	2024-2030	 Amount of HLW produced from municipal waste (tons) Number of facilities producing HLW from municipal wastes (number) and total production capacity (tons)

Description

Within the framework of circular economy principles, wastes that cannot be recovered in material form will be processed in WEEE preparation facilities by setting standards.

A-S.3.3 Termination of waste acceptance to irregular dumping sites

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
Municipalities	MOEUU	2024-2025	 Reduction in the amount of municipal waste sent to unregulated landfills (%, tons)

Description

Necessary investments will be made to ensure that wastes are processed in waste processing facilities and waste intake will be terminated through monitoring and inspection activities in irregular dumping sites.

Strategy A-S.4 Wastewater management and treatment infrastructure Improvement

S.4.1 Increasing methane recovery rate in wastewater treatment plants

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
Municipalities, Wastewater infrastructure administrations	MOEUU	2024-2030	 Number of anaerobic digesters in wastewater treatment plants operated by municipalities in Turkey (number)

309

Description

It is planned to increase the efficiency and capacity of existing anaerobic digesters in wastewater treatment plants or to establish new plants.

In Turkey, 29 of the wastewater treatment plants operated by municipalities have anaerobic digesters, and it is aimed to increase this number.

A-S.4.2 Increasing the number of wastewater treatment plants with sustainable sludge management that prioritizes the beneficial use of treatment sludge within the scope of circular economy principles

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
Municipalities, Wastewater infrastructure administrations	MOEUU	2024-2030	 Number of treatment plants with sludge management Rate of reduction in the amount of treatment sludge sent to landfills (%)

Description

With this action, it is aimed to ensure the use of stabilized treatment sludge rich in organic matter generated in wastewater treatment plants as raw material, fuel/additional fuel and to operate the plants with a circular economy perspective and at the same time to reduce the amount of treatment sludge sent to landfill.

A-S.4.3 Establishing sustainable wastewater management within the framework of circular economy principles

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MoEU, Waste water infrastructure administration s, Municipalities	тов, ѕтв	2024-2030	Re-use rate of treated wastewater reaches 15%

Description

With this action, it is aimed to ensure resource and energy efficient operation of wastewater treatment plants that contribute to climate change and sustainability targets in line with the circular economy approach, to protect water resources and save water by reducing the amount of wastewater discharged to receiving environments.

Strategies supporting GHG emission reduction in waste sector reporting

311

Strategy A-S.5 Zero waste practices and greenhouse gas emission reduction development of human resources within the scope of raising social awareness

A-S.5.1 *Incorporate and mainstream climate change, zero waste, water use, circular economy, green skills and green jobs in formal education curricula*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MONE	MOEUU	2024-2025	Number of schools with elective courses (number)

Description

Currently, environment, climate change and energy efficiency issues have begun to be included in teaching materials, and it is on the agenda to include these issues in the curriculum as elective courses. For example, the 'Environmental Education and Climate Changecourse, which has been approved by the Board of Education and Discipline, will be taught as an elective course in 6th7th or 8th grades of secondary school a total of 72 hours, 2 hours per week.

A-S.5.2 Capacity building of relevant stakeholders and trainers on zero waste, water use, circular economy and greenhouse gas emission reduction

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOEUU	MEB, Universities, Municipalities, İŞKUR	2024-2025	Providing training to at least 10,000 people within the scope of training and awareness-raising activities

Description

Trainings will be widely implemented, including distance education, documented, monitored, evaluated and training contents will be regularly updated. In order to ensure accessibility for persons with disabilities, content will be created in formats such as audio description, sign language, visual description, voice-over, etc. Age and gender balance will be observed in trainings.

A-S.5.3 Increasing written, audio, visual and social media activities (promotional videos, website, etc.) to raise awareness on zero waste, water use, circular economy and greenhouse gas emission reduction for all stakeholders

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOEUU	KTB (RTÜK)	2024-2025	 Number of news and announcements in print, audio, visual and social media (number)

Description

It is aimed to raise awareness and consciousness in society on circular economy and climate change.

A-S.5.4 Determining the skills and qualifications required by the circular economy principles in the waste sector and conducting studies to train the labor force with these qualifications and improve employment conditions

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOFLSSU	ÇŞİDB, MEBYÖK, Universities, İŞKURVQA, NGOs, Private Sector Organizations	2024-2030	 Number of news and announcements in print, audio, visual and social media (number)

Description

It is aimed to take measures to improve working conditions in the waste sector and to meet the need for skills and qualified labor force.

Strategy A-S.6

Incentives and financing to improve waste management, taking into account circular economy principles and greenhouse gas emission reduction mechanisms to be developed

313

A-S.6.1 Updating the national waste and wastewater management legislation through a participatory process, taking into account circular economy principles, zero waste and greenhouse gas emission reduction targets

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOEUU	-	2024-2030	Updated legislation for national waste and wastewater management

Description

National waste and wastewater management legislation will be revised under the coordination of the Ministry of Environment, Urbanization and Climate.

A-S.6.2 Developing advantageous financing mechanisms to support projects and investments that will ensure prevention, separate collection at source, reduction, reuse, recycling and recovery of wastes, reduce the amount of waste disposed in landfills, increase the recovery and reuse of treated wastewater

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOEUU	STB, HMB, Municipalities, NGOs, Private Sector Organizations, TSKB, National banks	2024-2030	 Number of incentives and financing mechanisms developed (number) Amount of incentives granted (TL)

Description

Incentives and financing mechanisms will be developed under the coordination of MoEU to develop the waste sector in line with climate change mitigation targets and circular economy principles.

A-S.6.3 *Work on the relevant specification formats in line with the principles of Green Public Procurement (GPP) within the framework of circular economy requirements.*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
GCC	НМВ, МОЕИТВ	2024-2030	Updated tender formats

Description

It is aimed to include circular economy requirements in the relevant specification formats.

Strategy A-S.7 Waste management, circular economy principles and taking into account greenhouse gas emission reduction Increasing R&D activities for improvement and development of technological infrastructure

A-S.7.1 Establishing a legal framework for monitoring the circular economy and setting indicators for monitoring, and including the necessary indicators in the official statistics program

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators	
MOEUU	TUIK	2024-2026	The legal framework for monitoring and setting indicators for monitoring	

Description

Within the framework of circular economy principles, a monitoring and tracking system will be developed.

A-S.7.2 Developing technologies to convert biogas from biodegradable wastes into biomethane or biobutanol or hydrogen that can be used as biofuel at standards equivalent to natural gas

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TUBITAK	STB, MEB, EPDK, Universities, Private Sector Organizations	2024-2030	Amount of support provided (TL)Number of projects supported (number)

Description

It is aimed to transform biogas into high value-added products and bring it into the economy.

A-S.7.3 Conducting material-based life cycle assessment studies to determine the greenhouse gas emission reduction potential of wastes

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOEU, TUBITAK	MONE, STB, Universities, NGOs, Private Sector Organizations	2024-2030	Number of material-based life cycle assessment studies conducted (number)

315

Description

It is aimed to identify, report and manage the greenhouse gas impact at different stages of the life cycle, starting from the acquisition of raw materials, including all relevant production, shipment, use by the consumer and disposal as waste after use, and to determine the greenhouse gas emission reduction potential.

A-S.7.4 Conducting R&D studies to support sustainable management of wastewater treatment plants in line with circular economy principles and greenhouse gas emission reduction targets

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
ÇŞİDBSTB, TUBÜTAK	Universities, NGOs, Private Sector Organizations	2024-2030	Number of R&D studies conducted (number)

Description

Within the framework of the greenhouse gas reduction target and circular economy principles, it is aimed to carry out R&D studies on the reuse of treated wastewater, material recovery from wastewater and treatment sludge, reduction of the amount of treatment sludge produced in the plant, beneficial use of treatment sludge and reduction of greenhouse gases from wastewater treatment plants.

A-S.7.5 Development of digital technology applications such as advanced sensor technologies, artificial intelligence and remote sensing to ensure process optimization and energy efficiency in waste and wastewater management

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
STB	ÇŞİDBETKB, TÜBİTAK, Universities, Private Sector Organizations	2024-2030	Number of patented technologies developed (number)

Description

It is aimed to expand the use of domestic technologies in waste and wastewater management.

Strategies that enable or support GHG emission reductions in the reporting of other sectors, although relevant to the waste sector

Strategy A-S.8 Waste as raw material/resource in production increasing the use of

A-S.8.1 Preparation of National Circular Economy Strategy and Action Plan Responsible Institution Related Institutions Implementation Period Monitoring Indicators MOEUU SBB 2024 • Prepared National Circular Economy Strategy and Action Plan

Description

National Circular Economy Strategy and Action Plan will be prepared under the coordination of MoEU.

A-S.8.2 Determination of environmental labeling criteria for different products and services and dissemination of applications

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOEUU	TB, Private sector organizations	2024-2027	 Number of products and services for which environmental labeling criteria are determined (number) Number of products and services with environmental label (number)

Description

The environmental label is a sign that represents a voluntary rewarding system created to promote products/services with reduced environmental impact from raw material procurement to disposal and to provide consumers with accurate, non-misleading, science-based information.

A-S.8.3 Establishing the legislative infrastructure for the dissemination of industrial symbiosis practices

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOEUU	STB, ETBK, TOB, TB, OIZs, Private sector organizations, Municipalities, TOBB	2024-2030	 Number of training and awareness-raising activities on industrial symbiosis practices

Description

It is aimed to establish the legislative infrastructure for industrial symbiosis practices.

Strategy A-S.9 Vehicles used in waste management reducing greenhouse gas emissions

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A-S.9.1 Ensuring less fuel consumption by providing standardization and route optimization for waste collection and transportation vehicles in accordance spatial planning or by using reverse logistics options

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
Municipalities, Relevant private	MOEUU	2024-2030	Greenhouse gas emissions from waste collection and transportation vehicles (tons
sector			CO2-equivalent)
organizations			

Description

This action aims to reduce the number of vehicle trips and total travel distances in the high-cost waste collection process.

A-S.9.2 Promote the use of low-emission, alternative fuel, electric vehicles and, where appropriate, rail transport in waste collection and transportation by supporting them with relevant incentive mechanisms

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
Municipalities, Union of Municipalities of Turkey, Relevant private sector organizations	UAB, ÇŞİDB, TCDD	2024-2030	 Greenhouse gas emissions from waste collection and transportation vehicles (tons CO2-equivalent) Number of low emission, alternative fuel and electric vehicles used in waste collection and transportation (number) Amount of fossil fuel saved (tons)

Description

It is aimed to reduce the use of fossil fuels from transportation in waste collection and transportation.

		0		
Livestock methane emissions will be reduced		AGRIC ULTUR E		Agricultural loss, waste and residuals management in production will b
			, , , , , , , , , , , , , , , , , , ,	1
Farmers' mitigation suitable for their				
activities				Land and soil
access to financing				management will
opportunities				be enabled
will be provided				
		/		
Clima	te-friendlysustainable		Use of chemical fertilize	rs
	R&D studies for digital		efficiency will be ensure	ed, R&D projects
	agriculture will be		on the use of organic ar	
accel	erated and results will		fertilizers as an alternati	ive will be
	be disseminated		accelerated	

Strategy T-P.1 Methane emissions from livestock Reduction of

T-S.1.1 Conducting R&D studies on the research, identification, approval and use of feed additives that suppress methane emission in animal feed rations and ensuring the use of approved ones

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (TAGEM, GKGM)	NGOs, (TÜRKİYEMBİR, TDSYMB, TÜYEKAD etc.), TÜBİTAK, Universities, Private Sector Organizations	2024-2030	 At least 3 studies on the effects of using feed additives in animal feed rations Pilot system to record feed rations used in enterprises with 100 heads or more Number of enterprises using methane emission suppressing additives in feed rations (#) Training of trainers program organized for the use of additives in feed ration (number)

Description

Additives and usage rate will be determined according to the species, breed and live weight of the animal. Improvement of the microbial flora in the digestive system of animals will also be evaluated. For each training, it will be ensured that at least 20 people participate and gender balance will be observed.

T-S.1.2 *Increasing studies on genetic-based animal breeding that takes into account methane emissions*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (TAGEM, TIGEM)	TUBITAK, Universities, NGOs, (TÜRKİYEMBİR, TDSYMB, TÜDKİYEB, Cooperatives)	2024-2030	 At least 5 studies on the identification of methane emission in the breeding evaluation index At least 5 animal breeding studies conducted Animal species, breed and system proposal report prepared in accordance with each geographical region

Description

Methane emission be taken into account in animal breeding.

T-S.1.3 *Increasing the number of studies on alternative feed resources and conducting pilot applications*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (TAGEM)	TUBITAK, Universities, Private Sector Organizations	2024-2030	 At least 10 studies on feed production from domestic resources At least 10 pilot applications that reflect the results of research on feed production from domestic resources to the field

Description

In order to reduce feed imports and feed costs in cattle, ovine, poultry and fisheries, pasture, water, roughage, different geographical regions and different feed types will be determined.

T-S.1.4 *Improving the collection system of animal manure and methods of utilization of manure and disseminating the developed methods*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (TAGEM, EYDB, TRGM)	MOEUMENR, Municipalities, Producer organizations, NGOs, Regional Development Administrations, IPARD Management Authority, IPARD Agency, Agriculture Based, Specialized Organized, Industrial Zones, Universities, TÜBİTAK	2024-2030	 At least 7 implementation projects, 1 in each geographical region, for systems for the collection of animal manure Number and capacity of biogas plants (number, MW) Amount of manure-derived waste collected for biogas plants in Agriculture Based Specialized Organized Industrial Zones for Animal Production (ton) At least 3 R&D studies implemented as pilots Training organized for animal manure management (number) Number of livestock enterprises with improved waste collection infrastructures (number) Number of machine parks established with animal manure application and climate friendly machinery and equipment (number)

Description

Innovative approaches will be explored to minimize the loss of organic matter in the manure collection system and manure utilization. Gender balance will be ensured in trainings.

T-S.1.5 Ensuring sustainable management of pasture animal husbandry by improving pastures

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (BÜGEM, TAGEM)	Municipalities, TUBITAK, Universities, Producer organizations, NGOs	2024-2030	 Increasing the 13.14 mha pasture area identified in 2022 to 14.6 mha Increasing 12.67 mha pasture area to 14.6 mha in 2022 At least 0.2 Mha of pasture area rehabilitated every year Increasing the number of grazing plans from 1773 to 100% in 2020 2 scientific researches and pilots in at least 2 regions for grazing plan monitoring, supervision and feedback Number of pilot applications for the use of solid-liquid fertilizers from biogas plants in pasture improvement (number)

Description

Efforts will be increased for the supply of quality roughage.

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (BÜGEM)	Producer organizations, NGOs, Universities	2024-2030	 Fertilizer consumption inventory created for the crops with the most cultivated area and the most fertilizer used in each province

Description

The amount of fertilizer used according to plant type will be determined and monitored.

T-S.2.2 *Increasing research, training and extension activities carried out to promote conscious fertilizer use*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (TAGEM, EYDB)	Ministry of Agriculture and Forestry (BÜGEM, DGMM), Producer organizations, NGOs Universities, TUBITAK	2024-2030	 Research studies conducting and disseminating soil and leaf analyses and developing practical analysis methods for these analyses under farmer conditions (pcs) Farmer training and extension activities organized for optimum fertilizer use (number)

Description

Organizing training and extension activities in the provinces and districts where these products are produced the most as a result of determining the products with intensive fertilizer use throughout the country, It is aimed to ensure optimum fertilizer use by giving the amount of fertilizer needed by the plant in line with fertilizer use recommendations.

For this purpose, the importance of soil analyses and the preparation of fertilization programs based on soil analyses and the activation and dissemination of Correct Fertilizer Use (4D - 4 Correct Precision Nutrient Management - applying the right nutrient source, at the right dose, at the right time, in the right place) strategies will be ensured.

T-S.2.3 Accelerating R&D projects on the use of organic, organomineral, compost, green fertilizers, etc. as alternatives to chemical fertilizers, and disseminating project results

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (BÜGEM, TAGEM, EYDB)	TOB (TRGM, Universities, TUBITAK, Municipalities, Producer organizations, NGOs	2024-2030	 Number of economic and environmental impact analysis studies of organic and organonomineral fertilizer subsidies (number) Number of R&D projects carried out on the use of agricultural production wastes and residues by enriching them with different methods (compost, biochar, etc.) (number) Plant and household organic wastes as green manure and compost fertilizer researching the possibilities of evaluation and the research and evaluation reports prepared as a result (number)

Descriptio

R&D projects will be carried out on the use of agricultural production wastes by enriching them with different methods (compost, biochar, etc.).

T-S.2.4 *Increasing the number of training and extension activities carried out to expand the alternation and cultivation areas of legumes in crop production*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (EYDB, BÜGEM)	TOB (TRGM), Universities, Municipalities, Producer organizations, Legume Industrialists, National Legume Council, NGOs	2024-2030	 Number of training and extension activities organized for the cultivation of legumes (number) Number of publications made (number) Increasing the cultivation area of legumes by 10% Reducing fallow areas by 10% Establishment of monitoringauditing and reporting mechanism Public service announcement prepared to increase legume consumption Number of trainings organized for training of trainers (number) Meal programs with legumes prepared and maintained (number)

Description

Legume cultivation will be increased to prevent overlapping crops, to reduce fallow areas and increase soil nitrogen content naturally, and to increase the inclusion of plant-based protein in diets. A gender-sensitive approach will be observed in the content and methodology of trainings.

T-S.2.5 Increasing awareness raising activities for the dissemination of Good Agricultural Practices (GAP) and organic agriculture

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (BÜGEM, TAGEM, EYDB)	TÜRKAK, TSE, Municipalities, Producer organizations, NGOs, Regional Development Administrations, IPARD Management Authority, IPARD Agency, Universities	2024-2030	 2 needs analysis prepared within the scope of ITU and Organic agriculture Impact analysis report on ITU and Organic agriculture supports prepared The amount of ITU and organic agriculture production Increasing the products with ITU by 20% (In 2022; increasing 6 million tons of products and 1.5 million tons of organic products by 20%) At least 1000 trainings conducted, at least one in each region (7 geographical regions)

Description

Obstacles difficulties in front of ITU and Organic agriculture will be identified targets and actions will be determined to eliminatedifficulties in order to popularize nature-friendly agricultural techniques, whose cultivation area and production are increasing in the world. A gender-sensitive approach will be considered in the content and methodology of trainings.

T-S.2.6 Accelerating R&D activities for climate-friendly sustainable and digital agriculture and increasing extension activities to disseminate the results of the studies

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (TRGM, EYDB, TAGEM)	STB, TUBITAK, Universities	2024-2030	 Lists of climate-friendly, sustainable crop production and animal husbandry practices prepared in at least 2 provinces in each region (7 geographical regions) At least 5 pilots implemented Number of trainings organized (number) At least 1 R&D project on climate-friendly digital agriculture supported in each region (7 geographical regions) to develop domestic technology for greenhouse gas emission reduction

Description

It will be ensured that emission-reducing practices are identified in each region and for each product and that these are transformed into lists of recommendations.

One of the important tools used in mitigation is digitalization (e.g. UAVs using sensorschipsrobots, software, etc. and lower input use).

Domestic technologies to be developed especially for small family businesses will make significant contributions. A gendersensitive approach will be taken in the content and methodology of trainings.

Strategy T-S.3 Use of pesticides and anti-microbials Reduction of

T-S.3.1 Supporting R&D activities for the development of alternative products to pesticides and anti-microbials and accelerating the registration process of developed products

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (TAGEM)	STB, TUBITAK, Municipalities, Regional Development Administrations, Universities	2024-2030	 At least 10 studies supported on alternative agricultural control methods At least 2 products registered and licensed

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Description

Alternative products will be developed from domestic resources in order to prevent excessive use of pesticides, which are harmful for the environment, human health, biodiversity, etc., to reduce costs and reduce imports.

T-S.3.2 Reducing the use of pesticides and anti-microbials and increasing extension activities for the use of registered and licensed alternative products

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (EYDB, GKGM, BÜGEM)	Municipalities, Producer organizations, NGOs, Regional Development Administrations	2024-2030	 At least 7 trainings of trainers organized on alternative control methods Number of farmer training programs organized (number) Number of publications made (number) Application area identified for the use of alternative crops (Ha) Amount of support for the use of alternative crops (TL)

Description

The use of alternative products developed will be made widespread. A gender-sensitive approach will be observed in the content and methodology of trainings.

Management of losses, waste and residues in agricultural product. T-S.4.2 Completion of inventory studies on recycling of agricultural wastes and residues Strategy T-S.4 development of

T-S.4.1 Completion and dissemination of R&D studies on reducing crop losses in crop production and reuse of wastes and residues

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (TAGEM, EYDB)	ÇŞİDBIB, TÜBİTAK, Municipalities, Regional Development Administrations, Producer organizationsNGOs	2024-2030	 At least 3 research and training programs in each product group Implementation of at least 1 selected research study in 7 geographical regions of Turkey Number of trainings on reducing harvest and post-harvest crop loss (number) Appropriate educational content (videos, manuals, posters, illustrations, etc.) created and disseminated for women and men producers (#) At least 5 public service announcements, social media campaigns, public opinion information and awareness activities

Description

Plant waste will be used with a circular approach. A gender-sensitive approach will be observed in the content and methodology of trainings.

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
ТОВ	CISDB, TURKSTAT, Municipalities, Producer organizations, NGOs, Development Agencies, Regional Development Administrations, Universities	2024-2030	 Adding agricultural waste and residue recycling to the official statistics program Completed Inventory

Description

The inventory prepared for waste and residue recycling aims to provide information collection and monitoring.

T-S.4.3 *Increasing R&D and awareness raising activities to reduce food loss and waste*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (TAGEM, ABDGM)	MOEUMOF, Municipalities, Regional Development Administrations, Producer organizationsConsu mer organizations NGOs	2024-2030	 At least 3 studies conducted At least 1 research implemented Number of awareness-raising activities conducted (number) Number of trainings provided (number)

Description

Existing studies will be expanded to include gender analysis and/or gender-sensitive content and methodology.

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOAF (DSI)	Municipalities, Producer organizations, NGOs	2024-2030	Consolidated 14.3 mha area

Description

Ongoing work will be accelerated.

T-S.5.2 Preparation of up-to-date detailed soil maps in international standards and making them accessible

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (TRGM)	TOB (OGM),	2024-2027	Improved and National Soil Information System
	Universities		

Description

Current mapping to determine the quality of agricultural soils will be prepared according to international standards. The existing National Soil Information System will be improved.

T-S.5.3 Stabilization of land degradation, dissemination and monitoring of R&D activities

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
ÇŞİDB (ÇEMGM), (TRGM, TAGEM, EYDB)	TOB (OGM, TUBUTAK, Universities, Municipalities, Regional Development Administrations, Producer organizationsNGOs	2024-2030	 Decrease in the amount of degraded (destroyed) area (ha) Amount of area recovered in the agriculture sector (ha) Number of researches conducted (number) Trainings organized for dissemination of research results (number) Amount of area where practices for stabilization of land degradation are carried out (ha) At least 1 R&D project on stabilization of land degradation in each region (7 Geographical Regions)

Description

Work on the protection of agricultural land will be expanded.

T-S.5.4 Planning agricultural production on the basis of agricultural basins or enterprises and revising agricultural supports to achieve the targets in these plans

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (BÜGEM, HAYGEM)	TOB (TRGM), HMB, TÜBİTAK, Universities, Municipalities, Regional Development Administrations, Producer organizationsNGOs	2024-2030	 Action plan prepared for each province (or pilot provinces) Amount of area (ha) Amount of support provided in accordance with the action plan (TL)

333

Description

Action plans will be prepared on a provincial basis to ensure the cultivation of products suitable for the soilwater ecosystem in the provinces. It will be integrated with the support system.

T-S.5.5 *Increasing the extension activities carried out for the dissemination of direct sowing methods and reduced tillage methods*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (TRGM, EYDB)	Universities, Municipalities, Regional Development Administrations, Producer organizationsNGOs	2024-2030	 Increase in the amount of area under direct cultivation (%) Increase in area under reduced tillage (%) Monitoring, auditing and reporting mechanism established Number of trainings given to farmers (number) Number of publications made (number)

Description

It is aimed to increase the amount of area under direct seeding and reduced tillage and to establish a monitoring, auditing and reporting mechanism for these systems. A gender-sensitive approach will be considered in the content and methodology of trainings.

T-S.5.6 Scaling up agroforestry and living windbreak activities in agricultural areas

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (TRGM, EYDB, OGM)	Universities, Municipalities, Regional Development Administrations, Producer organizationsNGOs	2024-2030	 At least 5 pilots on agroforestry and living windbreaks Number of trainings of trainers organized in each region (7 geographical regions) for agroforestry (number) Number of trainings of trainers organized in each region (7 geographical regions) for live wind screen (number) Public service announcement on agroforestry and living wind screens, Number of social media campaigns, public information, training, awareness raising activities (number)

Description

Among nature-based solutions, it is aimed to implement agroforestry and windbreak practices that can serve mitigation. A gender-sensitive approach will be considered in the content and methodology of the trainings.

Strategy T-S.6 Improving farmers' access to appropriate financing opportunities Ensuring

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (TRGM, BÜGEM, HAYGEM, BSGM, SGB)	SBB, HMB, BDDK, UMT, Banks, Agricultural Credit Cooperatives, Producer Organizations	2024-2030	 Report prepared within the scope of analyzing the environmental and economic impacts of existing agricultural supports and incentives within the framework of greenhouse gas mitigation policy Agricultural support and incentives within the framework of greenhouse gas mitigation policy legislation enacted for updating

Description

It is aimed to update agricultural support and incentives provided by banks in line with mitigation strategies and to expand lending opportunities.

T-S.6.2 *Identify and share the data needed to facilitate farmers' work with banks and women farmers' access to credit*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (BÜGEM, HAYGEM, BSGM, SGB, EYDB)	SBB, TOB (TRGM), BDDK, UMT, Banks, Agricultural Credit Cooperatives, Producer Organizations	2024-2030	 Report on data needed by financing institutions prepared Pilot system established to share the needed data with financing institutions Pilot system established to identify the credit needs of women farmers and increase their utilization

Description

Livestock producers are obliged to declare the Business Registration Certificate, which contains the registered business information (animal ear tag number) and is obtained through the Livestock Information System, in accordance with the LPPD. This document can be obtained from Provincial and District Directorates of Agriculture and e-government.

Women farmers who are registered in the Farm Accounting Data Network system and whose economic and physical data are recorded will be given priority in credit utilization if they share these data.

T-S.6.3 Design and implement programs to strengthen economic diversification in rural areas

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (TRGM, OGM)	TOB (TKDK, CSGB, SGK, Development Agencies, Universities, TZOB, Cooperatives, Women's cooperatives, Producer Associations, Provincial directorates, Regional directorates, Municipalities, International institutionsNGOs	2024-2030	 Prepared Rural green transformation and impact analysis report Prepared Rural green transformation strategy document Support programs prepared/realized (number) Number of projects supported under the Rural Development Investments Support Program (KKYDP) (number)

Description

Regarding the green transformation process, there is a need to prepare and operationalize inclusive and accessible support programs to increase economic diversification in rural areas.

Strategy T-P.7

Stakeholders operating in the agriculture sector training, awareness raising and capacity building activities are carried out in a gender-balanced manner mainstreaming

T-S.7.1 Identifying the target group to be trained in line with sustainable development goals

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (TAGEM, PERGEM)	TZOB Cooperatives, Producer Associations, Municipalities, International organizations, NGOs	2024-2025	One guide for identifying the target audience

Description

It is aimed to develop and publish guidelines for determining the target audience in a gender-balanced manner.

T-S.7.2 *Increasing and disseminating training and capacity building activities for agriculture sector stakeholders*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (PERGEM, TAGEM)	TOB (OGM), Universities, TZOB, Cooperatives, Women's cooperatives, Producer Associations, Municipalities, International, Organizations, NGOs	2024-2025	 Training provided to at least 500 technical personnel working in public sector Training provided to at least 20 private sector, NGOs, producer organizations At least 3 project preparation trainings for international funding sources

Description

Trainings for all technical personnel, especially producer organizations, agricultural engineers, veterinarians, food engineers and technicians, will be increased. A gender-sensitive approach will be considered in the content and methodology of trainings.

Ecosystems In our cities protection **AKAKDO** sustainable land GHG will be use sequestration will be promoted steadily increased on an annual basis by managing and expanding Wrong land soil carbon sink to combat land AKAKDO sector degradation, erosion-sedimentation and desertification by land (t) technology infrastructure will be developed will be protected Forestry and agriculture R&D and innovation in the sector enterprises' transition project support will be doubled to 2020 levels by 2030 strengthen to a high value-added circular bioeconomy will be provided

Strategy L-P.1

Protection of ecosystems, sustainable management and increasing sinks and greenhouse gas regularly an annual basis, reducing emissions from ecosystem sources

L-S.1.1 Develop and monitor sector-wide strategies, action plans, macro-planning and targets, particularly in forestry and agriculture, to increase sink capacity

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (OGM, TRGM, TAGEM, BÜGEM, DKMPGM)	IDB	2025-2030	 In the period 2025-2030, the annual net savings (gains - losses) in the forest category (forest management) increased each year compared to the previous year In the period 2025-2030, average annual increment (m3/ha/year) above the average of the previous 5 years for all forest types (coniferous, leafy, mixed and hollow closed) Negative net emissions in agricultural land and pasture categories (tons CO2-equivalent attitude)

Description

In particular, it is aimed to strengthen the planted volume, which refers to the living biomass in forest ecosystems, and the increment, which determines the annual carbon sequestration.

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (OGM)	TOB (TRGM, BÜGEM), ÇŞİDB (ÇEMGM)	2024-2025	 Amount of afforestation/rehabilitation/restoration areas (forest, pasture, wetland, etc.) (ha/year) Prioritization of investments based on a scientific approach at the river sub-basin scale

Description

Mitigation and adaptation in the LULUCF sector should be planned and monitored at the basin scale in order to see the interaction between mitigation and adaptation and to manage them more effectively. It is aimed to carry out the studies in line with the relevant strategy documents, especially the National Basin Rehabilitation Strategy (NBRS), and to establish legislation on basin-based management by establishing NBRS regulations and instructions for the results according to parameters such as prioritization, where, which species, for what purpose and what kind of forest structure.

L-S.1.3 *Identifying potential areas suitable for afforestation/plantation by supporting geographic information systems and remote sensing methods in addition to field measurements*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (OGM), ÇŞİDB (ÇEMGM)	TOB (TRGM, TAGEM, BÜGEM), (CBSGM), Municipalities	2024-2030	Total amount of area suitable for afforestation/plantation identified on Treasury lands (ha)

Description

Studies on areas suitable for afforestation have been carried out in Turkey. It is aimed to update and elaborate these studies to include planting, to identify the potential and to enable prioritization.

L-S.1.4 Protecting the soil carbon sink by strengthening the fight against land degradation, erosion-sedimentation and desertification caused by land misuse

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (OGM, TRGM), ÇŞİDB (ÇEMGM)	TOB (TAGEM), ÇŞİDB (CBSGM)TÜİK, Universities	2024-2030	 Amount of change in land cover monitored spatially in certain periods with the help of the National Land Cover Classification and Monitoring System (UASIS) (Ha/year) Change in soil carbon stock (tons C/ha/year) Net increase in soil carbon stock measured at fixed sampling points as a result of preventing land misuse (tons C/ha) The amount of desertification, erosion and sedimentation, temporally and spatially determined and reported every two years

Description

Land use planning should be strengthened through integrated plans and practices in main basins and sub-basins, taking into account the ability classes.

L-S.1.5 Expand digitalization across the sector to cover all land types (wetlands, rangelands, etc.), especially forestry and agriculture

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (TRGM, BÜGEM, DKMPGM, OGM), ÇŞİDB (ÇEMGM)	MOEUU	2024-2025	 Number of digitized data (number) Number of digitalized applications (production, afforestation, etc.) (number) Decision Support System Platform for Balancing Land Destruction

Description

Intra- and inter-institutional data flows will be enabled through digitalization.

L-S.1.6 Initiate technical and legal arrangements to prevent emissions from all practices that may harm forests and other land uses

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (OGM, TRGM)	IDB, EBB (MPIGM)	2024-2025	 Number of technical and legal arrangements put into practice (number) Amendments to national forestry legislation, in particular the Forestry Law and the National Parks Law Land use change baselines published (number)

Description

It is aimed to minimize emissions through technical and legal arrangements.

L-S.1.7 Developing and mainstreaming technical carbon, water and biodiversity objective functions in forest planning and management

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (OGM)	Universities and research institutes	2024-2030	 Amount of forest area managed for carbon, water and biodiversity purposes (ha) Relevant legal and technical regulation updates Communiqués 295, 298, 299, 302 and 308) Number of Forest Management Plans integrating forest ecosystem services in forest areas (number) Forest ecosystem services map prepared Number of Forest Management Directorates with Ecotourism Management Plans Number of ecosystem-based functional integrated forest management plans (number) Number of Fire Management Plans published (number)

Description

The functions in ecosystem-based planning, especially carbon sequestration, biodiversity and water production, need to be continuously improved with technical and scientific data. It would also be appropriate to extend these functions to all forests to strengthen mitigation and adaptation.

L-S.1.8 *Increasing technical capacities of institutions by conducting applied pilot studies through Climate Change Focused Framework Projects*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (TRGM, TAGEM, OGM)	TOB (DKMPGM), (ÇEMGM)	2025-2030	 At least 100 experts trained in carbon management (managing land use mitigation), climate change adaptation, disaster risk reduction and disaster management Number of research and pilot projects developed and implemented (number) Practical training given to at least 1000 people on sustainable land management, especially desertification and erosion

Description

The sub-sectors of LULUCF need to be strengthened and transformed in order to contribute more to the fight against climate change and to be minimally affected by its negative impacts. The capacities of all institutions involved in this process need to be continuously increased in order to follow and internalize technical and technological developments. Gender balance will be taken into account in capacity building processes.

L-S.1.9 Increasing the effectiveness of regulations to limit human activities that may harm natural life and ecosystems in forests, wetlands and their surroundings close to urban areas

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (OGM, DKMPGM), Municipalities	MOAF, (SYGM), Universities, Public Institutions, Private sector organizations	2024-2025	 New legal and technical regulations published Rate of recovery in wildlife population (number, diversity). Rate of decrease in the number of fires in urban forests (%) Rate of improvement in wetland water quality (%)

Description

Ecotourism movements and ecotourism management plans under the control of relevant institutions in forests close to urban areas can reduce the potential negative impacts of human activities.

L-S.1.10 Establishing a technical and legal mechanism in cooperation with municipalities and relevant ministries to determine, monitor and increase the proportion of woody green areas in urban areas

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
DDSDTOB (OGM), Municipalities	ÇŞİDB(ÇEMGM), NGOs	2024-2025	 By the end of 2024, the calculation of forest area per capita for each province and city center has been made, published on the Ministry's website and notified to the relevant municipalities By the end of 2025, the amount and target of forest area per capita for each province and city center has been published on the Ministry's website and notified to municipalities Amount, ratio and annual change of forest area per capita in urban and province-wide (for each year from 2000 onwards) (ha/person) Number of legal regulations published (number) Number of projects developed and/or incentives provided by municipalities to increase the amount of forest and green areas (#)

Description

The forest area per capita for each province and city center will be calculated by the MoEU, announced to municipalities, and municipalities will be ensured to set and monitor targets in light of these values. In this context, municipalities will also be encouraged to develop incentives to increase urban forest areas in order to increase green areas.

L-S.1.11 Encourage projects and studies for the restoration and rehabilitation of river corridors and ecosystems in agricultural, pasture, wetlands and settlement areas

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (DKMPGM, TRGM), ÇŞİDB	TOB (OGM), Municipalities	2024-2030	 Length (km) and area (ha) of restored/rehabilitated river corridor Number of incentivized (supported) projects (number) Rate of improvement in water quality values of our rivers, dams and lakes (%)

Description

It is aimed to increase biomass and soil carbon sinks through the restoration of river corridors passing through settlements, agriculture, pastures and wetlands.

L-S.1.12 Supporting poplar, fruit growing, olive growing and climate-friendly agriculture practices in agricultural areas, especially women and young entrepreneurs, technically and financially through new incentives

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (TRGM, TAGEM)	TOB (OGM)	2024-2030	 Rate of increase in the amount of poplar, olive and fruit growing areas and climate-friendly agriculture areas (ha) At least 500 new entrepreneurs supported in the agriculture sector and gender balance in support Number of projects receiving support

Description

It is aimed to promote all woody agricultural products and to pay attention to the distribution of the number of women/young entrepreneurs within them.

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L-S.1.13 Strengthen and expand incentives for afforestation of fast-growing and incomegenerating species on idle agricultural lands, if it is not possible to bring these lands back into agriculture

Responsible Institution	Related Institutions	Implementation Period	Mo	nitoring Indicators
TOB (TRGM, OGM)	-	2024-2030	•	Amount of area subject to incentives (ha)
			•	Amount of incentives granted (TL)
			•	Amount of afforestation (ha)

Description

It is aimed to use non-productive agricultural land primarily as agricultural land, to alleviate the pressure of wood raw material production in natural forests by including fast-growing species afforestation, and to reduce the production pressure in natural forests by supporting the forest industry to turn to industrial plantations in order to meet their own raw materials.

L-S.1.14 Emphasize nature-based solutions (NBSS) that will increase green carbon sink capacity instead of gray solutions in all land planning scales and processes in a way to prioritize upstream basin management

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (OGM), ÇŞİDB (ÇEMGM)	TOB (DSI, DKMPGM)	2024-2030	 Number of projects to implement nature-based solutions (e.g. integrated watershed projects) Amount of projected area (ha)

Description

It is aimed to strengthen mitigation and adaptation capabilities by scaling up projects to basin scale.

L-S.1.15 Preparing and putting into effect an action plan for the rehabilitation of pasture areas in a way to increase the soil carbon stock every year in the period 2025-2038

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (BÜGEM)	TOB (TRGM, TAGEM, OGM)	2025-2030	 At least 0.2 Mha of new pasture area rehabilitated each year Annual carbon stock increase of 0.16% per hectare in pasture areas Amount of pasture area in and near forests rehabilitated (ha)

Description

It is aimed to develop and implement management plans for pastures by increasing soil carbon stocks and strengthening livestock husbandry through correct implementation in large areas. This action a target of close to 2% per hectare increase in soil carbon stocks by 2038 in about 2-3 Mha of pasture area through multiple restoration projects.

L-S.1.16 *Implement and promote climate-friendly agricultural practices in agricultural areas in a way to increase soil carbon stock every year in the period 2025-2038*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB, (TRGM)	TOB (TAGEM, OGM, BÜGEM), TZOB	2025-2030	0.2 Mha of new areas with climate-friendly agricultural practices each year and an annual carbon stock increase of 0.16% per hectare in these areas Amount of incentives granted (TL)

Description

A significant increase in soil carbon stocks is targeted through a wide range of climate-friendly agricultural practices. This implies a target of close to 2% per hectare increase in soil carbon stocks by 2038 on approximately 2-3 Mha of agricultural land.

L-S.1.17 Promote good practices (nature-based solutions, biochar, reduced ploughing, etc.) that encourage soil fertility and carbon stock increase in all land uses

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (OGM, TRGM), ÇŞİDB (ÇEMGM)	TOB (TIGEM, BÜGEM)	2025-2030	At least 10 good practices each yearAmount of area treated (ha)

Description

It is aimed to protect and increase soil carbon stocks by developing good practices to prevent or mitigate erosion/sedimentation, increasing and disseminating good practices.

L-S.1.18 Identifying desertified areas subject to erosion and land degradation, monitoring these areas with various indicators, especially soil carbon stocks, and developing and disseminating basin management practices and tools to find solutions

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
ÇŞİDB (ÇEMGM)TOB (TAGEM)	TOB (OGM)	2024-2030	 Amount of area subject to various levels of erosion and at risk (ha) Change in soil carbon stocks (t C/ha/year) Number of projects, applications and tools (application, model, etc.) for combating erosion and desertification (number) Sediment load transported in rivers

Description

It is aimed to establish integrated approaches that are related to desertification and erosion, water quality, rural development, agricultural productivity, sedimentation, etc. at the basin scale.

L-S.1.19 *Increasing the total amount of protected areas and developing site-specific management strategies to strengthen their mitigation and adaptation capacities*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
DGDEU, TOB (DKMPGM), OGM	-	2024-2030	 The amount of protected areas reaches 14% of the country's surface area. Area of natural old-growth forest under protection (ha)

Description

It is aimed to increase the number of protected areas with focus on natural ecosystems, taking into account natural old-growth forests.

L-S.1.20 Reducing pressures on wetlands, protecting them from harmful impacts, especially drainage and pollution, and rehabilitating damaged wetlands

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (DKMPGM)	MoAF (OGM, BÜGEM and TRGM, DSI), Municipalities	2024-2030	 Increased amount of registered wetlands (ha) Amount of rehabilitated wetlands (ha) Monitoring system established for wetlands and protected areas

Description

It is aimed to rehabilitate wetlands damaged due to climate change and drought and bring them back into the wetland system. It is aimed to ensure the harmony and coordination of agricultural and water policies with the policy of wetland conservation and to prevent the pressure of construction and industrialization on wetlands. It is aimed to reduce the pressure on the wetland ecosystem by providing alternative livelihoods.

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (OGM)	(AFAD)MEB, TOB (DSI)KGM, Municipalities	2024-2030	 Reduced number of fires and amount of burned area (ha) Number of fire prevention studies and awareness raising activities meetings for local people, brochure-poster studies, public service announcements, etc.) (number) Increased number of fire fighting vehicles, equipment and personnel (number)

Description

It is aimed to continuously improve our fire management system to reduce the number of fires and the amount of burnt area.

L-S.1.22 Expanding the use of technology in combating forest fires, increasing the efficiency of resource utilization with artificial intelligence supported decision support systems

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (OGM)	Universities, Municipalities, Private and public technology companies	2024-2030	 Number of projects realized increase the use of artificial intelligence (number) Reduced amount of burned area (ha) Reduction in fire response time (min)

Description

Artificial intelligence methods such as machine learning aim to use resources more effectively in fire management.

L-S.1.23 Increase the proportion of terrestrial and marine protected areas to in line with the targets of the Kunming-Montreal Global Biodiversity Framework adopted by the 15th Conference of the Parties to the Convention on Biological Diversity and the EU Biodiversity Strategy

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
DIRECTORATE GENERAL OF ENVIRONMENT AND URBANIZATION (TVKGM)	ТОВ (ОGM)	2024-2030	Proportion of protected area (%)

Description

It is aimed to increase terrestrial and marine protected areas in line with international conventions and EU strategies.

L-S.1.24 Ecosystem-Based National Management Strategy for Protected Areas, Ecosystem-Based Climate Change Action Plan and ensuring integration into management plans

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
DIRECTORATE GENERAL OF ENVIRONMENT AND URBANIZATION (TVKGM)	-	2025-2030	 Strategy and action plan prepared Number of management plans integrated (number)

Description

It is aimed to prepare an Ecosystem-Based National Management Strategy and an Ecosystem-Based Climate Change Action Plan and ensure their integration into management plans.

Institution	Kelated Institutions	ттриетептации гетии	Monitoring indicators
DIRECTORATE GENERAL OF ENVIRONMENT AND URBANIZATION (TVKGM)	-	2025-2030	 Prepared strategy Number of spatial plans integrated (number)

Description

It is aimed to prepare the National Spatial Planning Strategy as ecosystem-based and integrate it into spatial plans.

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (OGM)	Cooperatives, Municipalities, NGOs, SMEs	2024-2025	 At least 500 new businesses established per year (50% of which will be women or young investors) Number of enterprises supported. (number) Providing information and support trainings to 200 people for the establishment of new businesses (50% will be women and young investors) Amount of support given to enterprises, cooperatives and unions for production and sales (TL)

Description

Supports are prioritized to ensure rural development and stronger inclusion of rural youth and women in production.

L-S.2.2 Within the scope of climate-friendly agriculture, continue and increase support for familysmall/medium and large-scale enterprises with high production-marketing capacity that can reach marketsand support the sector, especially women entrepreneurs, technically and financially with new incentives

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (TRGM)	OGM, TB, Cooperatives, Municipalities	2024-2025	 Number of new enterprises established (number) Number of families supported (number)

Description

It is aimed to establish companies with higher capacity in marketing, logistics and advertising processes, taking into account gender balance for entrepreneurs.

L-S.2.3 Expand and increase incentives for forest industry companies to increase value added, productivity and recycling

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (OGM)	TB, HMB, Chambers of Commerce	2024-2025	 Number of companies supported (number) Amount of incentives granted (TL)Number of recycling facilities established with incentives (number) Amount of material recovered (tons)

Description

It is aimed to increase design, technology, i.e. added value in the wood products sector.

Strategy L-S.3

In terms of R&D and innovation in the sector project support for strengthening project support in 2030 doubling the 2020 level by 2020

L-S.3.1 Strengthening the fight against disaster and climate change-induced forest damages that may damage the sink areas through technological, preventive and educational projects and increasing R&D support on the effects of these damages on carbon stocks

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (OGM, TAGEM, BSGM), ÇŞİDB (ÇEMGM), Universities	TOB (DKMPGM), TÜSİAD, TUBUTAK	2024-2030	 Number of projects carried out and completed (number) At least 15 projects prepared for mitigation of damages caused by floods, floods, landslides

Description

It is aimed to support R&D studies to mitigate the negative impacts of climate disasters and damages on sink

L-S.3.2 Strengthening the technical infrastructure for greenhouse gas emission and sequestration calculations

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (OGM, TAGEM, TRGM)	MOEU (GISGM), Universities, TUBITAK	2024-2030	 Developed, updated and newly created new GIS and land use sub-datasets Number of R&D projects carried out and completed (number)

Description

It is aimed to continue research and development activities to improve the level and accuracy of LULUCF sector reporting based on emission factors based on remote sensing, geographical information systems and scientific studies.

L-S.3.3 Supporting research on technology-based needs of the Land Use and Forestry sector and developing a project incentive mechanism specific to this sector

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB, TUBITAK	MOEU (DGMMU), Universities, TUSIAD	2024-2025	 The incentive mechanism established Amount of incentives granted (TL) Number of research projects carried out (number)

Description

It is aimed to establish a sector-specific funding mechanism to improve the current national level of technology and innovation in the LULUCF sector.

L-S.3.4 *Increasing the use of digitalization, remote sensing methods (such as satellite-based, drone use) and robotic technologies to improve productivity in forestry and land use*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB, TUBITAK	MOEU (DGMMU), Universities, TUSIAD	2024-2030	Number of projects realized (number)

Description

Supporting the development of technologies such as digitalization, precision monitoring, use of robots, etc. in forestry. It is aimed to increase the precision and accuracy of carbon stock and emission calculations by supporting the development of technologies.

L-S.3.5 Supporting projects for the realization of climate projections and vulnerability analyses for forestry and land use using projection outputs

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (TAGEM), ÇŞİDB (ÇEMGMİDB), TÜBİTAK, Universities	TOB (OGM, TRGM)	2024-2030	 Updating climate projections in line with SSP scenarios At least 5 research projects on climate projections and land use supported in the period 2023-2030 Number of vulnerability analyses performed Amount of support provided (TL)

Description

It is aimed to update climate projections in line with SSP scenarios and to contribute to the development of the land use sector as a result of sectoral vulnerability analyses.

L-S.3.6 Promote scientific studies and technologies for integrated drought solutions, including the development of drought tolerant species, taking into account biodiversity in afforestation and planting

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (TAGEM, OGM), MOEU (DGMMU)	TOB (DKMPGM), TUBUTAK, Universities, TUSIAD	2024-2030	 Supporting at least 5 research projects on drought on an annual basis Implementation of 5 R&D projects to increase the success of afforestation and plantation in drylands for the period in question

Description

It is aimed to support drought-resistant origins and technological solutions against the risk of increasing drought severity and frequency, as well as to tolerate water shortages caused by increasing temperatures.

L-S.3.7 *Incorporate data-driven artificial intelligence into decision-making processes*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
ТОВ	TUBITAK, Universities, Private sector organizations	2024-2030	 At least 2 supported projects on big data, data analysis and artificial intelligence Rate of use of artificial intelligence in internal decision-making and forecasting processes

Description

It is aimed to review the data collection, storage and analysis activities of the institutions in the sector; to strengthen the technological infrastructure for reporting, analysis, data cockpit display (dashboarding), forward-looking forecasting and big data management.

L-S.3.8 Ensuring more effective participation in ecosystem monitoring networks such as Long Term Ecological Monitoring Network, ICP Forests, Integrated Carbon Observation System and similar ecosystem monitoring networks, encouraging long-term experimental basin and ecosystem monitoring studies for detailed and precise monitoring and analysis of precipitation-runoff processes, and disseminating them in different eco zones of our country

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
ТОВ	TOB (DKMPGM, OGM), ÇŞİDB (ÇEMGMMGM), TÜBİTAK, Universities	2024-2030	 Number of Long-Term Ecological Monitoring Network monitoring sites established (number) Number of ICP Level 2 monitoring sites (number) Experimental co-basin monitoring system established and operated to cover all components of the ecosystem Number of long-term experimental projects supported (number)

Description

With the help of these networks, it is aimed to monitor the effects of climate change on forests and to understand the effects of climate change through more effective participation.

L-S.3.9 Supporting research on the development of underwater ecosystems in coasts and seas and creating blue carbon sinks

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TUBITAK	TOB (BSGM), DD, Universities	2024-2030	Number of blue carbon projects (number) and area covered (ha)

Description

With the blue carbon mitigation potential, it is aimed to obtain information about the blue carbon potential and feasibility by conducting scientific and technical studies in the Mediterranean geography.

Strategy L-S.4 Trained in carbon management in the sector Increasing the number of technical staff and professionals

L-S.4.1 *Improving scientific, institutional and human capacity in combating forest losses and damages (fire, disease, etc.)*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (OGM)	TUBITAK, Universities, NGOs, Municipalities	2025-2030	 At least 2 national and international projects produced each year Providing training to at least 100 people every year and ensuring gender balance in trainings At least 10 trainings given every year Number of scientific publications prepared (number)

Description

It is aimed to improve technical capacity for the management, monitoring and reporting of emissions resulting from losses and damages in ecosystems due to changing climate conditions.

L-S.4.2 Raising awareness in combating forest losses and damages (fire, disease, etc.)

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (OGM)	MoNE, NGOs	2025-2030	 At least 10 awareness activities (e.g. public service announcements, documentaries, etc.) each year Number of posts on social media platforms to raise awareness on this issue (number) Number of projects implemented to raise awareness of forest villagers on fire fighting (number)

Description

It is aimed to carry out awareness-raising activities based on an approach that will not produce gender inequality and will support equality and participation.

L-S.4.3 Increasing scientific, institutional and human capacity and awareness on the impacts of climate change on desertification and erosion and combating climate change

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Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
ÇŞİDB (ÇEMGM), (TAGEM)	TOB (OGM)	2025-2030	 At least 2 national and international projects produced each year Providing trainings every year and ensuring gender balance in trainings At least 10 trainings given every year Number of R&D projects and scientific publications (number) Technical trainings on climate change, desertification, erosion control given to at least 100 technical personnel every year (number) Awareness activities (e.g. public service announcements, documentaries, etc.) on climate change, desertification, erosion control (number)

Description

It is aimed to improve the capacity for desertification and erosion prevention activities.

L-S.4.4 Improving scientific, institutional and human capacity and raising awareness in combating wetland losses and damages (drought, drying, misuse of wetlands, etc.)

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (DKMPGM)	TOB (OGM), ÇŞİDBTÜTAK, Universities	2024-2030	 At least 2 national and international projects produced each year Training provided to at least 100 people every year At least 5 trainings given every year At least 5 international and 10 national scientific publications prepared every year At least 5 awareness activities (e.g. public service announcements, documentaries, etc.) each year

Descriptio

It is aimed to carry out awareness-raising activities based on an approach that will not produce gender inequality and will support equality and participation.

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOAF, MOEU, Municipalities	TOB (OGM), Chamber of Forest Engineers, Chamber of Agricultural Engineers, NGOs	2024-2027	 At least one capacity building project for the establishment of a training program by 2025 At least one training program covering at least 100 municipalities

Description

It is aimed to train relevant units in municipalities gain technical knowledge, skills and experience in river corridor restoration.

L-S.4.9 Training technical staff for greenhouse gas emission and sequestration calculations and international reporting obligations in LULUCF sector

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (OGM, TRGM) Universities	IDBTOB (TAGEM)	2024-2030	 Providing at least 2 trainings every year on LULUCF sector greenhouse gas and BTR, NC reporting Number of courses, master's and doctoral programs on Climate Change opened in universities Providing at least 10 trainings on GHG emission and sequestration calculations and data supply for calculations Training 100 experts as certified experts At least one of the technical personnel working in the relevant units within the responsible institutions Providing 50 people with both technical and foreign language training within the scope of training of trainers in cooperation with universities and establishing a certification system

Description

By the end of 2024, it is aimed to train LULUCF sector experts on the UNFCCC new reporting system that will enter into force.

L-S.4.5 Providing trainings on climate-friendly and low-carbon agriculture for researchers, technical staff and farmers

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (TRGM, PERGEM, EYDB)	(ÇEMGM), (OGM), Chamber of Agricultural Engineers, Universities, NGOs	2024-2030	 At least 10 trainings given every year Training provided to at least 100 people every year

Description

In order to increase the sink capacity of agriculture for emission mitigation, it is aimed to increase climate-friendly agriculture trainings by considering gender balance.

L-S.4.6 Providing trainings on wetland conservation and climate-friendly fishing practices to technical staff and those engaged in agriculture, animal husbandry and fishing in wetlands using traditional methods

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
DB (DKMPGM, GGM)	Universities	2024-2030	 At least 5 trainings given every year Training provided to at least 200 people every year and ensuring gender balance in trainings

Description

It is aimed to increase trainings on wetland conservation and climate-friendly fisheries.

L-S.4.7 Providing trainings for technical staff on climate-friendly forestry, especially on mitigation and management of risks arising from climate change

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (OGM), Chamber of Forest Engineers	MOEU (DGMMU), NGOs	2024-2025	 Training provided to at least 500 Forest Engineers every year At least 10 trainings given every year

Description

It is aimed to increase various trainings on climate-friendly forestry in a gender-balanced manner.

L-S.4.10 Establishment of climate change units in institutions directly related to the management and reporting of sink areas, and development of institutional capacity on the basis of experts and authority

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (OGM, TRGM, TAGEM, BSGM), MOEU (DGMMU)	IDB	2024-2030	 New units created in relevant institutions Number of technical and research staff in relevant institutions

Description

It is aimed that the structuring of the institutions related to the development, monitoring and reporting of the LULUCF sector will include units that will carry out the activities of establishing ecosystem-based climate change policies and strategies, ensuring carbon management in ecosystems, conducting studies on carbon credits, fulfilling UNFCCC obligations and mitigation commitments, determining the impact of climate change on ecosystems and the framework for effective combating these impacts, and increasing the capacity of technical staff and researchers to provide data for reports.

Strategy L-S.5 Development of technology infrastructure for the LULUCF Sector to develop

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L-S.5.1 Developing and operationalizing forecasting and early warning systems for drought, floods, forest fires and landslides

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TOB (OGM, TAGEM, SYGM, DSI)	AFAD	2023-2027	Number of forecasting and early warning systems developed (feasibility, design, operational) (pcs)

Description

It is aimed to support and implement R&D and innovation in order to develop, implement and disseminate early warning systems in combating disasters to other countries and to export technology.

L-S.5.2 Increasing R&D capacity for the estimation and verification of emissions and attitudes on land use with remote sensing and atmospheric models, especially developing satellite-based observation and analysis systems

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
TUBUTAKTOB (OGMTRGM, TAGEM), ÇŞİDB (CBSGM, ÇEMGM)	Universities, Private sector organizations	2024-2030	 Utilization rate of satellite-based systems (%) Number of models started to be used in greenhouse gas inventory verification (number) Number of R&D projects developed (number)

Description

It is aimed to support initiatives and projects on remote sensing technologies and modeling in the LULUCF sector.

Fair transition and employment capacity building for transformation

In labor markets
to ensure green transformation
and to ensure that the transition
takes place on fair terms
"National Just Transition
Strategy" to be prepared

Fair transition and social dialogue will be improved

FAIR TRANSITION

Strategy AG-P.1

For just transition and employment transformation capacity building

AG-S.1.1 Preparation of a national just transition strategy to green transformation in labor markets	
and fair transition conditions	

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOFLSSU	SBB, ÇŞİDBSTB, ETKB, ASHB, MEB, YÖK	2024-2026	Fair transition strategy document published (number)

Description

In line with sectoral and regional analyses, MoLSS will prepare a National Just Transition Strategy to manage the employment and social impacts of climate change and green transformation process with a just transition perspective, covering different policy areas including labor force training, employment, social protection, social assistance, occupational health and safety and migration.

AG-S.1.2 Promoting just transition and social dialogue

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MINISTRY OF LABOR AND SOCIAL SECURITY	Labor and Employer Unions and Confederations, TOBB, Turkish Exporters Assembly	2024-2026	 Number of awareness raising activities for social partners (number) Number of stakeholder meetings held (number) Number of reports prepared (number)

Description

In order to protect the jobs and employment of priority employee groups that will be affected by the transformation during the just transition process, awareness raising and empowerment activities will be carried out in sectors and workplaces that require action to ensure the effective participation of social partners in the process.

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOFLSSU	SBB, ÇŞİDB, STB, ETKB, TB, TOB, UAB, YÖK, İŞKUR, MYK, TOBB	2024-2027	Number of reports prepared (number) Number of coordination studies conducted between institutions (number)

Description

One of the requirements for achieving green transformation in sectors is to train the labor force suitable for transformation. Within the scope of the action, research, policy development and coordination activities will be carried out to train the labor force in question.

AG-S.1.4 Establishing standards for professions that will change or emerge in the green transformation process

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
МҮК	ÇŞİDBSTB, ETKBÇSGB	2024-2030	 Number of professions whose standards are changed/updated (number) Number of updated / published occupational standards (number)

Description

One of the requirements for green transformation in sectors is to train the labor force suitable for transformation. Within the scope of the action, it is aimed to establish standards for professions that will change or emerge.

AG-S.1.5 Preparation and implementation of training programs to meet the labor force need that will arise with the transformation process by conducting studies to harmonize the education curriculum and higher education programs with the new skills framework determined

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Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MONE, YÖK, TOBB	ÇŞİDB, STBTOBUABETKB, ÇSGB, ISŞKUR, MYK	2024-2028	 Number of updated programs (number) Number of new programs prepared (number)

Description

One of the requirements for green transformation in sectors is to train the labor force suitable for transformation. Within the scope of the action, it is aimed to prepare and implement training programs to meet the workforce need.

AG-S.1.6 With the approach of leaving no one behind in the green transformation process of the sectors, ensuring the participation of groups requiring special policies, with priority given to women, in decision-making processes and ensuring their effective use of vocational training, skill acquisition/development programs and job opportunities

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MOFLSSU	ÇŞİDBSTB, ETKBSBBASHB	2024-2028	Number of decision-making processes in which groups requiring special policies participate (#)

Description

Efforts will be made to improve the inclusiveness of employment in the transformation process by improving the access of groups requiring special policies to decision-making mechanisms, education and employment.

AG-S.1.7 Preventing the transformation of the energy sector from causing energy poverty and working to protect vulnerable groups in this context

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
MENR, ASHB	ÇŞİDBSTB, ÇSGB	2024-2030	Number of reports prepared (number)Number of workshops organized (number)

Description

As a result of the energy policies to be implemented, it is aimed to work for the protection of vulnerable groups within the framework of the principle of leaving no one behind.

Emissions Trading System (ETS) to be established in Turkey

Infrastructure studies will be carried out on other carbon pricing instruments

CARBON PRICING

Voluntary Carbon Market and National Infrastructure will be created on equalization

Paris Agreement
6. Activities to assess
participation in Article
6
will be made

Strategy K-P.1 Emissions Trading System (ETS) in Turkey Establishment

K-S.1.1 Determining the scope and functioning of the ETS in line with existing infrastructure, needs and projections

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
IDB	IDUKK Members, MoLSS, TOBB, Labor World Representation Organizations	2024-2025	 Legislative provisions related to the scope of the prepared ETS

Description

Sectoral scope and emission threshold determination studies will be carried out for the establishment of the ETS, which is identified as a mitigation tool in Turkey's Updated National Contribution Declaration (NDC). While determining the sectors to be included in the system in the ETS to be established, sectoral competitiveness will be taken into consideration; a fair transition system will be established by taking into account sectoral differences and facility sizes.

K-S.1.2 Expanding the scope of the ETS and ensuring the necessary legislative harmonization by taking into account the EU legislation in order to ensure structural alignment in line with the current National Contribution Statement targets

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
IDB	IDUKK Members, TOBB, Business World Representative Organizations	2024-2027	Published legislation

Description

the ETS design is realized, harmonization studies will be carried out by taking into account the regulations made or to be made by the EU.

K-S.1.3 Determining the emission upper limit in the context of the current situation of emission-intensive sectors, reduction targets, international agreements and national conditions, taking into account economic and social impacts, sectoral potential and technological possibilities

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
IDB	IDUKK Members, TOBB, Business World Representative Organizations	2024-2025	Prepared emission upper limit technical study report

Description

In the design of the ETS, the current situation and mitigation targets of the sectors, international agreements and national conditions will be taken into account when setting the emission cap.

K-S.1.4 Conducting economic, financial, social and technical impact analyses for energy-intensive sectors, taking into account the 2053 Net Zero Emission Target, assumed, current and projected carbon prices, international adaptation and mitigation policies and carbon leakage risk

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
IDB	IDUKK Members, MoLSS, TOBB, Labor World Representation Organizations	2024-2025	Analysis report prepared for the sectors in scope

Description

The impacts of the ETS on energy-intensive sectors will be examined by taking into account the long-term climate goals of Turkey, the projected and actual carbon prices, allocation scenarios and the risk of carbon leakage in the establishment of the ETS.

K-S.1.5 Conducting assessment studies for the inclusion of financial actors in the ETS market and preparing legislation on financial actors

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
CAO, HMB	CMB, Borsa Istanbul, EPİAŞ, EMRA, TOBB İŞ World Representation Organizations	2024-2026	Prepared Evaluation report and relevant legislation

Description

One of the alternatives in ETS design is to include financial actors in the market. In this regard, it is planned to make relevant assessments and prepare legislation where necessary.

K-S.1.6 Carrying out planning studies, preparing the necessary legislation and implementation infrastructure in order to use the revenues to be obtained within the scope of the ETS in a way to ensure a low-carbon economy and fair transition in line with the green development goal, taking into account the National Contribution Declaration

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
CAO, HMB	TOBB, TOB (OGM), STB, ETKB, TB, ÇSGB, Representation Organizations	2024-2025	Prepared Technical report on revenue reutilization and relevant ETS legislation provisions

Description

It is possible to generate revenues from the ETS if the sales method is used to distribute allowances in the ETS. Looking at international examples, the use of revenues from the ETS has generally been carried out in a way to ensure a low-carbon economy and a just transition. Necessary planning and legislative work will be carried out for the possibility of taking decisions in line with this objective.

3/

K-S.1.7 *Define a pilot period to facilitate the entry of covered facilities into the system before the ETS implementation period*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
IDB	CMB, Borsa IstanbulTOBB, MENR, EMRA, EMRA, EPİAŞ, TOBB, İş World Representation Organizations	2024-2025	Report on ETS Pilot Period design parameters prepared

Description

Prior to the implementation period of the ETS, a pilot period will be defined for covered installations, which will be both instructive and facilitate adaptation.

K-S.1.8 *Identify national and international offsetting mechanisms and conditions that can be used in fulfillment of obligations*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
IDB	CMB, Borsa IstanbulTSE, MENR EMRA, EPİAŞBusiness Representation Organizations	2024-2025	Published equalization mechanism technical working paper

Description

One of the design elements of the ETS is to allow offsets in the system. With this mechanism, covered facilities can fulfill their obligations more cost-effectively.

K-S.1.9 Evaluating the needs arising from international conditions in ETS design and making appropriate designs

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
IDB	TB, Ministry of Foreign Affairs, STB, MENR, EMRA, TOBB, Business Representation Organizations	2024-2026	Report on ETS design parameters prepared

Description

Design elements will be updated to respond to the needs in the context of developments regarding the EU Border Carbon Regulation Mechanism and other similar applications.

K-S.1.10 Conducting sectoral benchmarking/historical grandfathering studies to determine the distribution and implementation period of free allocations

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
IDB	ETKB, STB, TOBB, Representation Organizations	2024-2026	Sectoral benchmarking and historical emission reports prepared (quantity)

Description

In case sectoral benchmarking and/or historical emission data are used in the free allocation of allowances in the ETS design, relevant technical studies are planned to be carried out.

K-S.1.11 Conducting information and visibility studies on ETS applications on sector basis

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
IDB	TOBB, ETKB, STB, EMRA, Business Representation Organizations	2024-2028	 At least 10 trainings organized every year Reaching at least 500 people within the scope of the prepared Visibility Action Plan and visibility activities

Description

Information activities will be carried out to facilitate the establishment of an emission trading system for the first time in Turkey and to facilitate the entry of stakeholders into this system and to ensure their effective participation.

Strategy K-P.2

On Other Carbon Pricing Instruments infrastructure works to be carried out

K-S.2.1 Conducting analysis studies on the role of a carbon pricing mechanism complementary to the Emission Trading System in the carbon pricing process

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
IDB	IDUKK Members, RA, EMRA, İş World Representation Organizations	2024-2025	Prepared Carbon Pricing Instruments Analysis Report

Description

In the context of Turkey's mitigation commitment and international developments, analysis studies on other carbon pricing instruments will be carried out to establish stable carbon prices in line with Turkey's targets.

K-S.2.2 Carrying out studies to add carbon content to the tariffs of the list numbered (1) attached to the Special Consumption Tax Law within the Turkish Tax System

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
Revenue Administratio n	IDBSBBHMB, Representation OrganizationsMEN R	2024-2030	Evaluation study for the inclusion of carbon content within the scope of the list numbered (I) attached to the Special Consumption Tax Law

Description

Evaluation studies will be carried out for the addition of carbon content to the tariffs of the list numbered (I) annexed to the SCT Law within the Turkish Tax System.

Strategy K-P.3

Voluntary Carbon Market and National Offsetting Creating Infrastructure on the Subject

S-S.3.1	Updating	the e	xisting	voluntar	y carbon	market	regi.	stration	ı system	

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
IDB	IDUKK Members, TSE, TOBB, Business World Representation Organizations	2024-2025	Updated and active registration system

Description

09.10.2013 dated Official Gazette, the registration system created within the scope of the Voluntary Carbon Market Registration Communiqué will be updated.

K-S.3.2 Conducting assessment studies for the establishment of a national carbon offset system

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
IDB	ETKB, TSE, TOBB, MENR, Business Representation Organizations	2024-2025	Published guidance document

Description

It is aimed to establish a national carbon crediting system due to the possibility of allowing offsetting transactions in the Emissions Trading System and the importance of the reductions realized within the country for our National Contribution Declaration in line with Article 6 of the Paris Agreement.

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K-S.3.3 *Identifying the sectoral foci of the national system and developing national standards and methodologies for selected sectors in line with international standards and establishing the infrastructure*

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
IDB	TOB, ÇŞİDB, STB, ETKBTSETOBB, Representation Organizations	2024-2026	Legislation and guidance documents published (number)

Description

The necessary methodologies and standards will be developed to ensure the recognition and acceptability of the system to be established in the international arena, taking into account national conditions.

K-S.3.4 Carrying out the necessary authorization and accreditation studies for the verification system within the scope of the national system in line with international systems

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
IDB	TSE, TURKAK, TOBB, Business Representation Organizations	2024-2026	 Legislation and guidance documents published (number) Number of accredited institutions/organizations (number)

Description

It is aimed to carry out the necessary work for the authorization and accreditation of verification bodies that are part of carbon markets.

K-S.3.5 Conducting studies for the effective promotion of the voluntary carbon market

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators	
IDB	ETKB, EPDK, TSE, TOBB, TÜSİAD	2024-2026	At least 4 events/ meetings, workshops, seminars organized every year	

Description

Since the voluntary carbon market, which has existed in Turkey since 2008, will gain importance with the establishment of the national crediting system and the ETS, more informative work is needed.

Strategy K-P.4

Participation in Article 6 of the Paris Agreement Conducting studies for its evaluation

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K-S.4.1 Carrying out studies to determine Turkey's role in the implementation of Article 6 of the Paris Agreement within the scope of the National Contribution Declaration

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators
IDB	SBB, HMB, ETKB, Representation Organizations	2024.2030	Article 6 policy document preparedPrepared analysis studies

Description

It is planned to carry out the necessary studies to determine its role (buyer/seller) within the scope of Article 6 of the Paris Agreement.

K-S.4.2 Carrying out sectoral assessment studies on participation in pilot implementations initiated by various countries in implementations within the scope of Article 6 of the Paris Agreement

Responsible Institution	Related Institutions	Implementation Period	Monitoring Indicators	
IDB	SBB, HMB, ETKB, Representation Organizations	2024-2026	Article 6 policy document prepared	

Description

It is aimed to conduct a sectoral assessment study to guide the strategy formulation phase for participation in the international carbon market.

PREPARATION FOR THE
PARTICIPA
NT
INSTITUTION
S

The institutions and organizations that participated and to the preparation of Climate Change Mitigation Action are listed below.

- Ministry of Environment, Urbanization and Climate Change
 - " Climate Change Directorate
 - " Presidency of Strategy Development
 - " General Directorate for Combating Desertification and Erosion
 - " General Directorate of Environmental Management
 - "General Directorate of Environmental Impact Assessment, Permitting and Inspection
 - " Directorate General for European Union and Foreign Relations
 - " General Directorate of Spatial Planning
 - " General Directorate of Meteorology
 - "Turkish Environment Agency
 - " General Directorate of Construction Works
 - " General Directorate of Infrastructure and Urban Transformation Services
 - " General Directorate of Vocational Services
 - " General Directorate of Land Registry and Cadastre
 - " General Directorate of Local Governments
- Presidency of the Republic of Turkey, Presidency of Strategy and Budget
- Ministry of Energy and Natural Resources
 - " Department of Energy Efficiency and Environment
 - " General Directorate of Energy Affairs
 - " General Directorate of Mineral Research and Exploration
- Ministry of Foreign Affairs
 - " Directorate General for Energy and Environment
 - " Presidency of the European Union
- Ministry of Industry and Technology
 - " Directorate General for European Union and Foreign Relations
 - " General Directorate of National Technology
 - " General Directorate of Industry
 - " General Directorate of Strategy Research and Productivity
 - " General Directorate of Industrial Zones

•	Ministry	of Agricul	lture and	Forestry
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- " Directorate General for European Union and Foreign Relations
- " General Directorate of Crop

Production

- " General Directorate of State Hydraulic Works
- " General Directorate of Nature Conservation and National Parks
- " Department of Education and Publication
- " General Directorate of Food and Control
- " General Directorate of Animal Husbandry
- " General Directorate of Forestry
- " General Directorate of Water Management
- " Presidency of Strategy Development
- " General Directorate of Agricultural Research and Policies
- " General Directorate of Agricultural Reform
- Ministry of Trade
 - " General Directorate of Export
 - " Directorate General for Trade Research and Risk Assessment
 - " Directorate General for International Agreements and European Union
- Ministry of Treasury and Finance
 - " General Directorate of Foreign Economic Relations
 - " Directorate General for Economic Programs and Research
 - " Revenue Administration
 - " General Directorate of Borrowing
- Ministry of Interior
 - " General Directorate of Population and Citizenship Affairs
- Ministry of National Education
 - " General Directorate of Support Services
 - " Presidency of Strategy Development
- Ministry of Transport and Infrastructure
 - " Directorate General for European Union and Foreign Relations
 - " General Directorate of Maritime Affairs
 - " General Directorate of Communication
 - " General Directorate of Highways
 - " Presidency of Strategy Development

" Directorate General of Civil Aviation

" General Directorate of Transportation Services Regulation

- Ministry of Labor and Social Security
 - " General Directorate of Labor
- Ministry of Family and Social Services
- General Directorate of State Hydraulic Works
- Scientific and Technological Research Council of Turkey
- TUBITAK Marmara Research Center
- Turkish Standards Institute
- Turkish Statistical Institute
- Small and Medium Enterprises Development Organization
- ILBANK A.S.
- Turkish Energy, Nuclear and Mining Research Council
- General Directorate of Generation
- General Directorate of Turkish Electricity Transmission Inc
- General Directorate of Turkish Electricity Distribution Corporation
- Republic of Turkey Energy Market Regulatory Authority
- Pipeline Petroleum Transportation Corporation
- Agricultural and Rural Development Support Institution
- General Directorate of TCDD
- Capital Markets Board Presidency
- Banking Regulation and Supervision Agency
- Public Oversight, Accounting and Auditing Standards Authority
- Central Bank of the Republic of Turkey
- General Directorate of TCDD
- General Directorate of TCDD Tasimacilik AS
- PTT A.S. General Directorate
- Public Procurement Authority
- Turkish Accreditation Agency
- Vocational Qualification Authority
- Union of Municipalities of Turkey
- Union of Chambers and Commodity Exchanges of Turkey
- TUSIAD

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- Higher Education Institution
- Turkish Steel Producers Association
- TURKÇİMENTO

MUSIAD

- Istanbul Industry (ISO)
- Ankara University
- Nigde Omer Halisdemir University
- Kahramanmaraş Sütçü İmam University
- Kadir Has University
- METU Solar Energy Research and Application Center
- Bosphorus University
- Gazi University
- Ankara Metropolitan Municipality
- Istanbul Metropolitan Municipality
- Gaziantep Metropolitan Municipality
- Eskisehir Metropolitan Municipality
- Konya Metropolitan Municipality
- Kayseri Metropolitan Municipality
- Kocaeli Metropolitan Municipality
- Izmir Metropolitan Municipality
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