



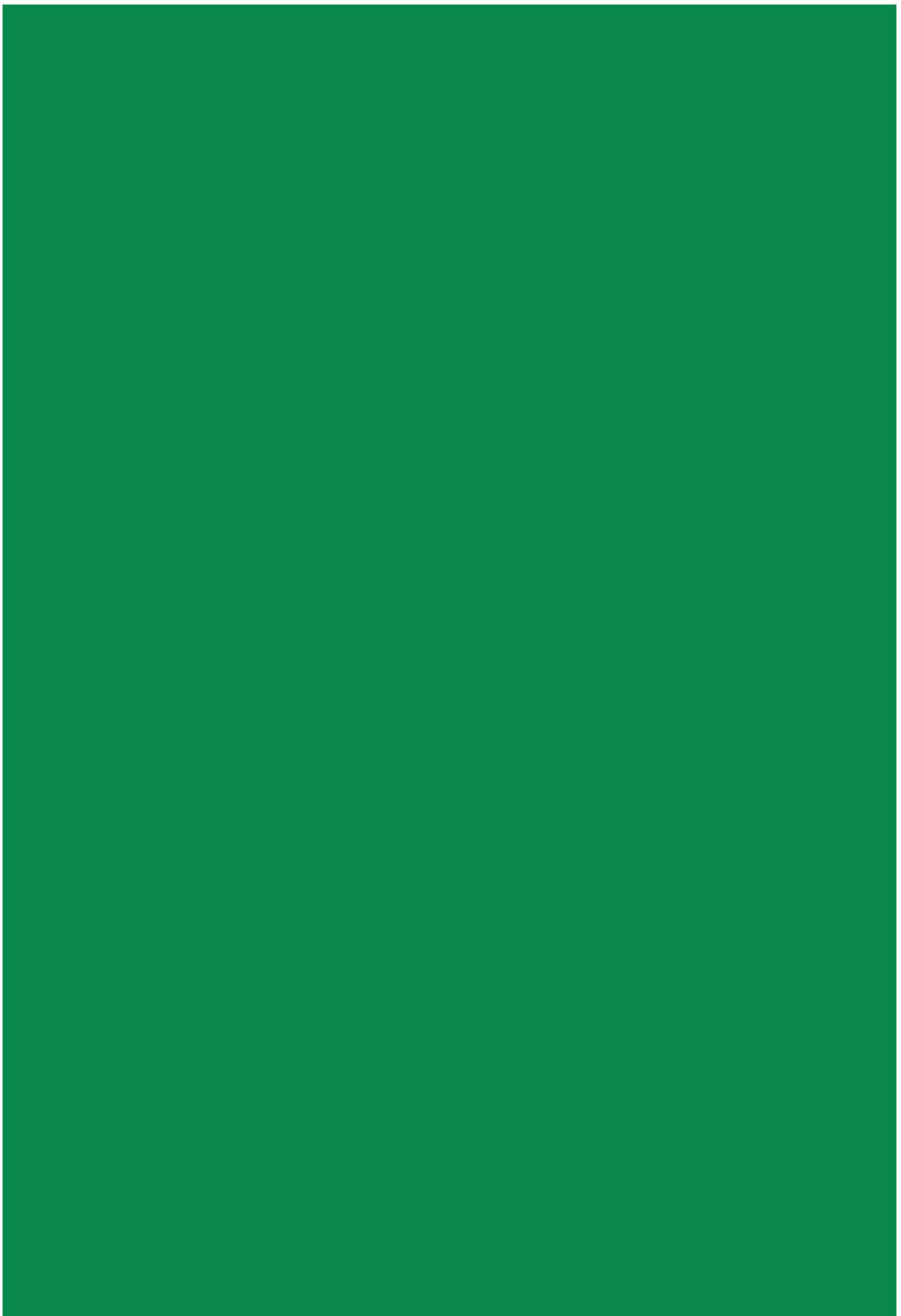
Republic of North Macedonia
**Ministry of Environment
and Physical Planning**



LONG-TERM STRATEGY ON CLIMATE ACTION AND ACTION PLAN

EXECUTIVE SUMMARY

Ministry of Environment and Physical Planning
2021



The Paris Agreement requires all countries to be part of the global effort to achieve the goal of limiting global temperature increase by 1.5-2°C. This requires global net zero emissions to be reached by the middle of the 21st century.

As a candidate for European Union (EU) membership, the Republic of North Macedonia is obliged to transpose the EU legal framework into its national legal system, namely the 2030 Climate and Energy Framework and the 2050 Long-term Strategy / European Green Deal.

This Strategy defines contribution of the country to the global effort, through a pathway towards green, low carbon and climate resilient development, based on the best available information and in the context of the country's accession to the EU.

Addressing climate change requires a set of policies and measures across a wide spectrum of policy sectors, each with a precise contribution to the overall achievement of the national climate commitments. It is therefore fundamental that the vision and objectives of this strategy are mainstreamed in the agendas of line ministries and that they permeate to the relevant sectoral policies, through enhanced horizontal policy coordination. This coordination imperative is valid to both emissions reduction (mitigation) and to reduced vulnerability to impacts of climate change (adaptation) and is required at national level, but also at different levels of administration, namely at local self-government level.



A Long-term Vision

The Republic of North Macedonia is, by 2050, a prosperous, low carbon economy, following sustainable and climate resilient development pathways, enhancing competitiveness and promoting social cohesion through action to combat climate change and its impacts.



A long-term objective quantifying North Macedonia's contribution to the global effort

Reduction of national net GHG emissions (including Forestry and Other Land Use and excluding MEMO items*) of 72% by 2050 compared to 1990 levels (or GHG emission reduction of 42% by 2050 compared to 1990, excluding FOLU and MEMO items) and increased resilience of North Macedonia's society, economy and ecosystems to the impacts of climate change.

*MEMO items include emissions from aviation and electricity import





General and specific objectives

On the basis of modelling results, the results of the Strategic Environmental Impact Assessment, the foreseen socio-economic benefits and the need to adapt to changed climatic conditions, the general objective is:

Reduction of national net GHG emissions (including Forestry and Other Land Use and excluding MEMO items) of 72% by 2050 compared to 1990 levels (or GHG emission reduction of 42% by 2050 compared to 1990, excluding FOLU and MEMO items) and increased resilience of Republic of North Macedonia's society, economy and ecosystems to the impacts of climate change

It should be noted that MEMO items include emissions from aviation and electricity import.

In order to support compliance with the general objective and with the implementation of sectoral measures, the general objective is disaggregated into specific mitigation, adaptation and crosscutting objectives, where specific mitigation objectives reflect the Intergovernmental Panel on Climate Change (IPCC) sectoral aggregation of GHG emissions and, therefore, to the extent possible, also correspond to the division of responsibilities for the achievement of specific objectives.



Specific mitigation objectives:

· Specific objective 1: To reduce GHG emissions by 64% in the Energy sector (excluding MEMO items) by 2050 compared to 1990.

The energy industries sector will deliver the greatest emissions reductions, namely through the implementation of the polluter pays principle (carbon taxation) and through the increased penetration of renewable energy sources (RES) in the energy mix. This will require an important transformation of the sector, given the current important reliance on the carbon intensive national lignite as a source of energy. The internalization of the cost of CO₂ in the price paid by the final consumer will provide an incentive for market participants to move to zero or lower emitting fuels (RES, natural gas); to adopting processes (in the industrial sector) which are less energy intensive and producing higher added value products; and/or promoting energy efficiency in order to reduce demand for electricity. The technological advancement of the RES technologies, especially the ones related to wind and solar generation, has substantially reduced the relevant installation and operation costs, making wind and solar capacity able to offer very competitive prices in the wholesale electricity markets. Market prices, nevertheless, assuming the internalization of the carbon prices in the bids of thermal power plants, are at adequate level and allow the cost recovery for wind and solar investments, reducing the need for subsidies and financial support.

Furthermore, on the side of consumption of energy, energy efficiency is at the core of the climate and energy policies and is fundamental to a competitive economy and a secure and resilient energy system. Attributing priority to energy efficiency is the only way to avoid wasting the costly energy produced and delivered to the final consumer. Investments in energy efficiency provide important cost-savings to businesses and households (in addition

to enhanced thermal comfort, in particular in the residential sector), thus constituting an important incentive to participate in the efforts towards a carbon constrained economy. In addition to reductions achieved in households and tertiary sector, reduction of GHG emissions in the transport sector is to be achieved mostly through an increase of energy efficiency and through the renewal of the fleet. In this context, the

introduction of hybrid and electric vehicles will play an important role, but, in the short term, not as important as the reduction of fuel consumption in traditional combustion vehicles, which will, by 2030, remain as the typical vehicle in Republic of North Macedonia.

- Specific objective 2: To reduce GHG emissions by 34% in the Agriculture sector by 2050 compared to 1990.

Agriculture will contribute to GHG emissions reductions through the adoption of measures that contribute to sustainable agriculture, through increased carbon sequestration in the soil (as a result of increased organic matter in the soil), and increased efficiency in milk production and reduced fertilizer input through enhanced agriculture practices and implementation of new technologies.

- Specific objective 3: To increase carbon sinks by 1733% in the Forest and Other Land Use sector by 2050 compared to 1990.

The Republic of North Macedonian forest has an important role to play in the transition to a low carbon economy, as it can provide a carbon neutral energy source and a great potential to increase the net carbon sink of the country. Afforestation and sustainable forest management will transform the forest sector in the country, providing great opportunities for job creation and to enhance resilience to climate change impacts. It should be noted that the afforestation and reforestation activities should be done in a professional manner, carefully selecting the tree species and diversity, taking into consideration preservation of old trees and grasslands, which are important for the ecosystems and the biodiversity.

- Specific objective 4: To reduce GHG emissions by 2% in the Waste sector by 2050 compared to 1990.

Reduction of GHG emissions in the waste sector will take place through the implementation of the measures contained in the current waste policy framework which is already to some extent aligned with the EU acquis. Nonetheless, based on the assessment of the current situation¹, the implementation of the current existing measures is lagging behind and requires an important effort up to 2030 and beyond.

Specific adaptation objectives

- Specific objective 5: To build solid systems for the regular and periodic collection data for the production and dissemination of scientific and technical knowledge.

Data collection system proves to be crucial for the appropriate and timely response to the effects of climate change. This is particularly important in the field of water resource and the use of water for irrigation. Furthermore, adapting to climate change in agriculture requires the vertical integration of scientific knowledge creation and dissemination. In addition,

¹North Macedonia 2019 Report, European Commission staff working document, Brussels, 29.5.2019 SWD(2019) 218 final.

climate change may have significant impacts on biodiversity which requires development of a national research plan for biodiversity and an indicator system to monitor the impacts of climate change on biodiversity. Above all, accurate real-time air-climate-health data is important for the whole society and significant improvement of the processes for collection and dissemination of such data is crucial for the adaptive capacity of the sector human health.

- Specific objective 6: To increase the resilience of climate change impacts of key socio-economic sectors and ecosystems.

The preparation and adoption of the National Adaptation Plan is an important step for Republic of North Macedonia to identify adaptation needs and to develop and implement policies and measures and actions to address those needs; and enable actions to protect vulnerable communities.

Specific horizontal/crosscutting objective

- Specific objective 7: To establish comprehensive policy planning, coordination and policy implementation instruments for climate action.

This has to be enabled by a comprehensive legal basis and legally established coordination instruments for facilitation of the cross sectoral policy design and implementation, as well as mechanisms for monitoring of the implementation of the foreseen policies and measures.

- Specific objective 8: Mainstream climate change related aspects into the future national strategic planning documents related to education, research, and development, innovation, social inclusion and equal opportunities on women and men,

The most important national strategic documents that should integrate climate related aspects are the future National Strategy for Education and the National Innovation Strategy. This will assure systematic and harmonised integration of the climate related aspects in the national educational, R&D and innovation ecosystem, as well as will increase the educational and the research capacities and the climate awareness of the general public. At the same time, intersecting climate change and gender will ensure effectiveness of the climate resilience policies and measures.

- Specific objective 9: To promote the green transition through capacity building, training for new skills and awareness rising.

The transition to a low carbon economy is based on technological innovation, on large scale investment and policy decisions, but is also based on decision and behaviours of the individual citizen. Well informed and aware citizens, of all ages, are more likely to actively engage in the effort to reduce GHG emissions. Additionally, reducing GHG emissions require new technical skills which can be acquired via education via the school system, but also, via adult training, thus facilitating the transfer of workers from sectors with job losses to sectors with job gains. Overall climate change framework needs to be managed and supervised by competent authorities where significantly enhanced capacity is needed as a pre-condition for sustainable implementation, monitoring and reporting of mitigation policies and measures.

Measures to achieve emissions reductions

- Introduction of CO2 tax
- Reduction of network losses
- Large hydropower plants
- Incentives feed-in tariff
- Incentives feed-in premium
- Biomass power plants (CHP optional)
- Solar rooftop power plants
- RES without incentives
- Energy efficiency obligation schemes
- Solar thermal collectors
- Labelling of electric appliances and equipment
- Increased use of heat pumps
- Public awareness campaigns and network of EE info centres (Including Cost of investment in advanced technologies)
- Retrofitting of existing residential, commercial, central government, and local self-government buildings
- Construction of new buildings (at least class C)
- Construction of passive buildings
- Phasing out of incandescent lights
- Improvement of the street lighting in the municipalities
- Green procurements
- Increased use of central heating systems
- Energy management in manufacturing industries
- Introduction of efficient electric motors
- Increased use of the railway
- Improved waste and materials management at industrial facilities
- Introduction of more advanced technologies
- Renewing of the national car fleet
- Renewing of other national road fleet
- Advanced mobility (walking, cycling and electric scooters)
- Construction of the railway to the Republic of Bulgaria
- Electrification of the transport
- Reduction of CH4 emissions from enteric fermentation in dairy cows by 3%
- Reduction of N2O emissions from manure management in dairy cows by 20%
- Reduction of NO2 emissions from manure management in swine farms by 13%
- Reduction of N2O emissions from manure in dairy cows by 20% for farms below 50 Livestock Units
- Establishing integrated management of forest fires
- Afforestation Conversion of land use of field crops above 15% inclination
- Contour cultivation on areas under field crops on inclined terrains (5-15%)
- Perennial grass in orchard and vineyards on inclined terrains (>5%)
- Use of biochar for carbon sink on agricultural land
- Photovoltaic irrigation
- Landfill gas flaring
- Selection of waste - paper
- Mechanical and biological treatment (MBT) in new landfills with composting

Measures to achieve adaptation objective

- Pilot project for the collection of data on water use in rural context for the purpose of ensuring effective adaptation to climate change
- Promote Cooperation Among Scientific Institutions and Enhance the Science-Policy-Implementers Link
- Define and develop an indicator system to monitor the impacts of climate change on biodiversity
- Define a national research plan for biodiversity (including agrobiodiversity) and climate change
- Restore and improve the system for the collection of air-climate-health data, including the platform for sharing it with the public (integrated system for weather extremes, air quality and human morbidity and mortality)
- Define and develop a system to monitor socio-economic vulnerability to climate change
- **Prepare the National Adaptation Plan**

Costs and Impacts

The implementation of the measures needed to meet the emissions reduction objectives will require cumulative capital investments of €35 billion in the period 2020-2050 (compared to €19 billion in the With Existing Measures (Reference) – WEM Scenario). The total energy system costs are €121 billion for the same period, which represent an economy wide cost reduction of €16 billion compared to the WEM Scenario.

These investments create the highest number of green jobs in 2035: 10,000 green jobs, which represents 2.7 times more jobs than the current number of employees in the coal power plants in Republic of North Macedonia.

€	Investments (Bill. EUR) – 2020-2050	35
(((€)))	Total system costs – Energy (Bill. EUR) – 2020-2050	121

Investment and Energy System Costs in the WAM Scenario

Enabling environment for climate investments

The transition to a low carbon development will require a significant convergence of financial flows to green technologies and an immediate moratorium on brown technologies that may lock the country in a carbon intensive pathway for decades. There's an established consensus that the later the enabling environment for climate investments is set, the more expensive the transition will become.

Most of the measures are planned to be implemented by consumers, which makes them the largest investors, as such, these investments should be largely supported and encouraged by the central and local government.

Private investors (private and state-owned companies) also play an important role in this process of transition (mainly for construction of RES capacities), for which it is necessary to create sustainable policies and a stable investment climate.



* The dramatic increase of the carbon sinks is owned to the extremely low level of carbon sinks in the reference year 1990. The reason behind the low level of carbon sinks in 1990 is statistical inconsistency in the reporting of the forest area for the year 1990 and the lack of other official national data regarding forests land for that specific year. The estimated carbon sinks for 2050 are on level very close to the reported sinks of the FOLU sector in the year 2016.

Contribution to key Sustainable Development Goals

The implementation of this strategy will align Republic of North Macedonia with the Sustainable Development Goal (SDG) 13 – Take urgent action to combat climate change and its impacts. The implementation of the measures included in the WAM scenario for mitigation, will align key indicators for Republic of North Macedonia (such as emissions per capita and per unit of GDP), with those of neighbouring EU Member States. Additionally, this strategy is also directly contributing to SGD 7 – Ensure access to affordable, reliable, sustainable and modern energy for all, which is supported by the indicator Share of renewable energy sources in gross final consumption, which shows an increase from 23% in 2020 to 49% in 2050 in the WAM scenario.

Horizontal coordination for a successful implementation of the Strategy

The implementation of the policies and measures foreseen under this Strategy require comprehensive policy planning, coordination and implementation processes. This must be enabled by a comprehensive legal basis and legally established coordination instruments to facilitate cross-sectoral policy design and implementation, as well as mechanisms to monitor the implementation of the foreseen policies and measures. The draft Law on Climate Action provides an enabling environment for overarching policy coordination processes, and defines the legal mechanism for monitoring progress towards the achievement of the national sustainable development pathway.

The capacity need assessment* has also demonstrated that all line ministries need capacities and knowledge to be fully capable to integrate climate change aspects into their sectoral plans and programs. This means that climate consideration should be brought higher on the political agenda of the Government in order for the country to allocate resources to engage additional human capacities at all levels.

In addition, it is fundamental to mainstream climate change related aspects into future national strategic planning documents related to education, R&D, and innovation. The most important national strategic documents that should integrate climate related aspects are the future National Strategy for Education and the National Innovation Strategy. This will assure the systematic and harmonised integration of climate related aspects into the national educational, R&D, and innovation ecosystem, as well as increase educational and research capacities, and climate awareness among the general public.



Way forward

The adoption of this Strategy should mark a turning point for Republic of North Macedonia, with the country embarking on its pathway towards a low carbon, climate resilient sustainable development. This Strategy provides for a set of concrete measures aimed at achieving such results, but in particular, provides for a vision of the country's future, which should inspire and shape policy development across the many different relevant key sectors. In addition, policy makers need to recognize that despite the recent economic recession caused by the COVID-19 pandemic, investing in climate action is rather a need than a luxury. Several other countries have already prepared their economic recovery plans and the international community advocates these plans should consider climate action as a building block for sustainable economic development. Considering national circumstances, it can be concluded that the implementation of the Long-term Strategy on Climate Action would facilitate the recovery of some of the main economic sectors including services, tourism, construction and energy, and, at the same time, create new job opportunities. In addition, investing in resilience and building adaptation capacities is crucial for dealing with the adverse effects of climate change and developing an enabling and sustainable environment for investments and economic development.

The Long-term Strategy on Climate Action supports the sustainable economic recovery of the country and the policies and measures foreseen under the Strategy can be used as a steering wheel for investments and financial injections for the private and public sectors, which would ultimately bring economic, environmental and social benefits, and enable sustainable development in the country.

Taking this development pathway grants the people of the Republic of North Macedonia with cleaner air and a healthier environment, as well as greater reliance on climate as we now know it. This national effort, taken in tandem and in cooperation with our closest allies in the region, in the European Union and at the United Nations, should collectively lead us to a limitation of global temperature as established in the Paris Agreement.

* Report on institutional analysis and assessment of administrative capacity needs for climate action.



**Climate change is the
greatest threat to our
existence**

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