

Montenegro NDC 3.0

A science-based enhancement of ambition aligned with national priorities and development needs

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Prepared by the United Nations Development Programme (UNDP) in Montenegro and Gauss International Consulting

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Context

Montenegro demonstrates its commitment to fulfilling its international obligations in a timely and effective manner

In the Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC), governments agreed to the long-term target of keeping the increase in global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C. Under the Paris Agreement, countries agreed to periodically update their Nationally Determined Contributions (NDC) over time, by an iterative process in 5-year intervals and, if possible, increasing the ambition of the previous NDC¹.

By the end of June 2021, Montenegro, the other Energy Community Contracting Parties (Albania, Bosnia and Herzegovina, Kosovo², North Macedonia, Georgia, Moldova, Serbia and Ukraine) and the EU (including 27 EU Member States) had updated their NDC2.0, all including emissions and removals from land use, land-use change and forestry (LULUCF) except Montenegro³. In 2025, Parties to the Paris Agreement are submitting the NDC3.0 with a 2035 target.



During 2024, Montenegro has updated its NDC3.0 and submitted it to the UNFCCC on 21 February 2025 (https://unfccc.int/sites/default/files/2025-02/001_eng_NDC_Montenegro.pdf). As a Contracting Party of the Energy Community Treaty, an European Union (EU) Candidate Country, signatory to the Sofia Declaration, and actively committed Party to the UNFCCC and the Paris Agreement, in its updated NDC3.0, **Montenegro aspires to comply with EU acquis and the EU climate change law and aims to increase its climate ambition to a 55% net greenhouse gas (GHG) emission reduction target by 2030 and to a 60% by 2035 compared to 1990 levels.**

Target setting

Setting up the target of the NDC3.0 based on the most recent scientific evidence

According to international best practices⁴, setting NDC targets requires a deep evaluation of the current situation of the national priorities and needs, GHG emissions and sinks, as well as the policy and socioeconomic context. This evaluation sets the ground for the elaboration of mitigation scenarios (i.e., GHG emission projections) that informs about the future emissions of the country under different policies and socioeconomic landscapes. Finally, the results of the evaluation of the current situation and the mitigation scenarios are discussed with national stakeholders to define achievable and realistic NDC

¹ UNFCCC (2015) FCCC/CP/2015/L.9/Rev.1: Adoption of the Paris Agreement. UNFCCC, Paris, France, pp. 1–32. <https://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf>

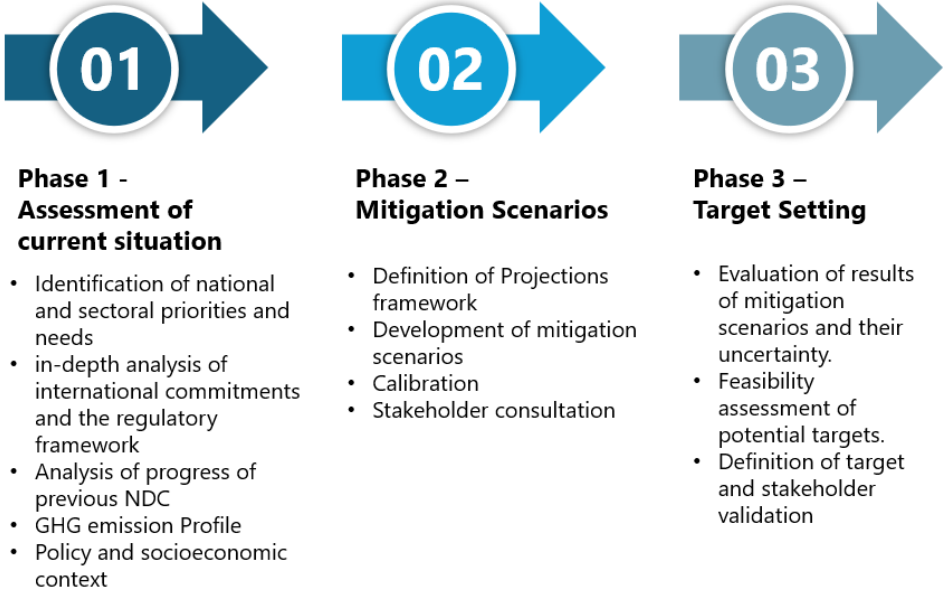
² References to Kosovo shall be understood to be in the context of United Nations Security Council resolution 1244 (1999).

³ UNFCCC, 2022. NDC registry. <https://www4.unfccc.int/sites/NDCStaging/Pages/LatestSubmissions.aspx>

⁴ Several references, among others:

- NDC 3.0 Guidebook for Industrial Decarbonization: <https://www.industrialenergyaccelerator.org/general/ndc-3-0-guidebook-for-industrial-decarbonization/>
- Enhancing NDCs: A Guide to Strengthening National Climate Plans by 2020: https://climatepromise.undp.org/sites/default/files/research_report_document/undp-wri-ndcsp-ndc-enhancement-report-2019.pdf
- NDC 3.0 Navigator: <https://ndcnavigator.org/>

targets that enhance climate ambition considering national circumstances, as defined by the Paris Agreement.



This three-steps process has been followed by Montenegro, building from national systems and circumstances, and aligning the process with national planning and commitments.



In the first phase, the analysis started with a compilation of data, an assessment of the quality of the latest national GHG inventory and macro-economic data available (historical and projected) and an assessment of the status quo of all existing and planned mitigation policies and measures (PaMs) including the socio-economic development plans and the EU accession plan of Montenegro.

A comprehensive review of relevant national and international strategic and legislative frameworks, including energy, industry, transportation, consumption of fluorinated gases, waste management, water discharge and treatment, agriculture and livestock, forestry and land use, and in-depth assessment of the progress in the implementation of the policies and measures (PaMs) included in the previous NDC was performed.

The assessment demonstrated that the land use, land use change and forestry (LULUCF) sector, which was excluded in the NDC2.0 target and represents a net sink in Montenegro, is suitable for inclusion in Montenegro’s mitigation targets. While national inventories continue to improve, the Montenegrin inventory aligns with the 2006 IPCC Guidelines and its 2019 Refinement and best international practices. Additionally, both an uncertainty assessment and a sensitivity analysis conducted to evaluate the inclusion of the LULUCF sector in the NDC3.0 demonstrated the robustness of the current LULUCF sector estimates of the Montenegrin GHG inventory for its inclusion in the NDC target.



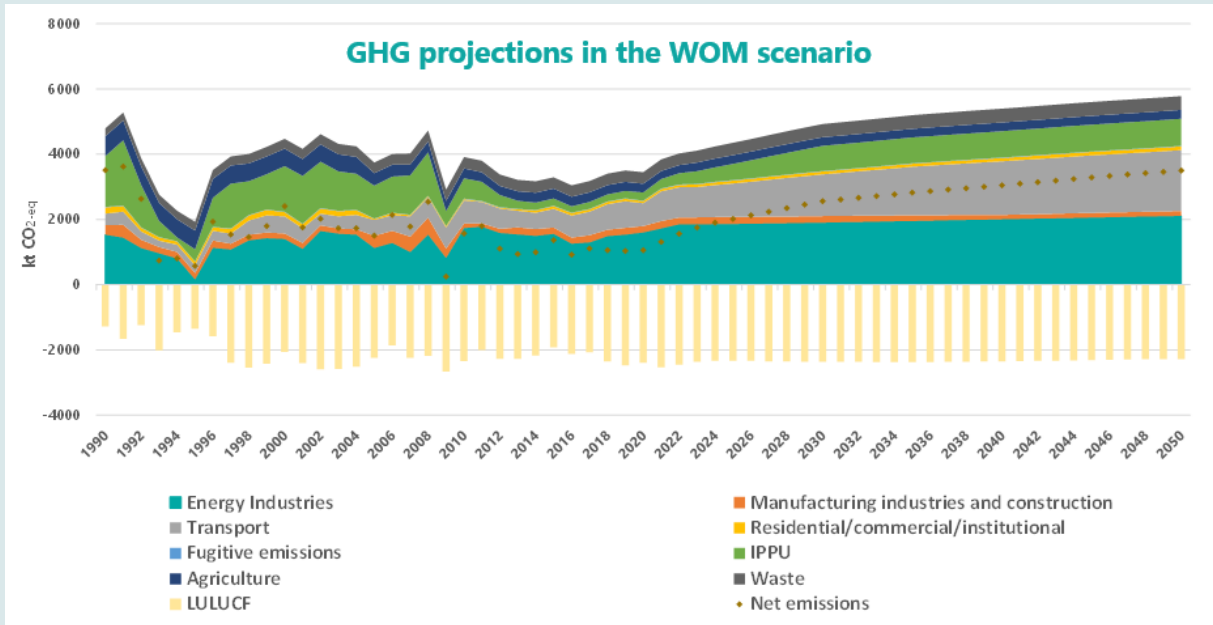
The second phase selected the best quality information compiled with the least uncertainties possible to assess the following three different scenarios (with and without LULUCF sector) that were presented and validated by the main national stakeholders to determine the NDC target, the third phase of the process.

Without measures (WOM): No mitigation policies from 2020 scenario

The Without measures (WOM) was built based on macro-economic historical and projected data and the current time series emissions data of the latest available GHG Inventory submitted by Montenegro to the UNFCCC in 2025 (<https://unfccc.int/documents/645835>).

An analysis of the GHG emission trends demonstrates that Montenegro is a service-based economy. The energy sector, comprising energy supply and consumption in the transport, industrial, residential and service sectors, has the highest share of 2022 GHG emissions. The size of the country causes reduced flexibility in the application of policies in some emitting sectors such as energy and industry where single source of emissions can be dominant, distorting the emission profile of the country. Emission reductions in few of these single sources are reflected in the total GHG emission trend. Drops in the GHG emission trend are mainly driven by activity decrease in two-point sources (namely lignite-fired power plant Pljevlja and primary aluminium production in Uniprom KAP⁵). Given the fact that KAP has progressively⁶ closed down the electrolysis process responsible for the Industrial Processes PFCs emissions, the contribution of the industrial processes sector in GHG emissions is expected to decrease further in the coming years.

Box – Summary of the WOM Scenario



- The Without Measures (WOM) scenario depicts the evolution of national GHG emissions in the absence of policies and measures (PAMs).
- The WOM scenario shows an overall increasing trend in national GHG emissions from the latest inventory year (2022).
- WOM GHG emissions are projected to grow at a slower pace than GDP. This indicates that the Montenegrin economy shows a slight decoupling of GHG emissions from economic growth⁷ even if Montenegro does not implement mitigation actions - due to the shift from high GHG emitting industrial sources to a services-based economy.

⁵ The Aluminium Plant Podgorica (Kombinat Aluminijuma Podgorica, or KAP), located in Podgorica. Construction of KAP commenced in 1969, following the discovery of high-quality bauxite deposits near Nikšić. Aluminium production began in 1971. In 2005, the Montenegrin government privatized KAP, selling a majority stake to Salomon Enterprises Limited. In 2014, the plant was sold to Uniprom, a Montenegrin company

⁶ Since the end of 2015, the outdated A-series assembly line in the electrolysis plant has been out of operation. In 2020, 155 of the 264 cells were in operation. Most of the electrolysis cells were shut down in December 2021. In 2023, Montenegro's Uniprom has shut down the last 12 remaining electrolysis cells, discontinuing aluminium production at the plant after 52 years of operation. The facilities for the production of aluminium logs and alloys will remain in operation, but the plant will import the metal to manufacture them.

⁷ Decoupling of GHG emissions from economic growth means that an economy can grow without a corresponding increase in emissions.

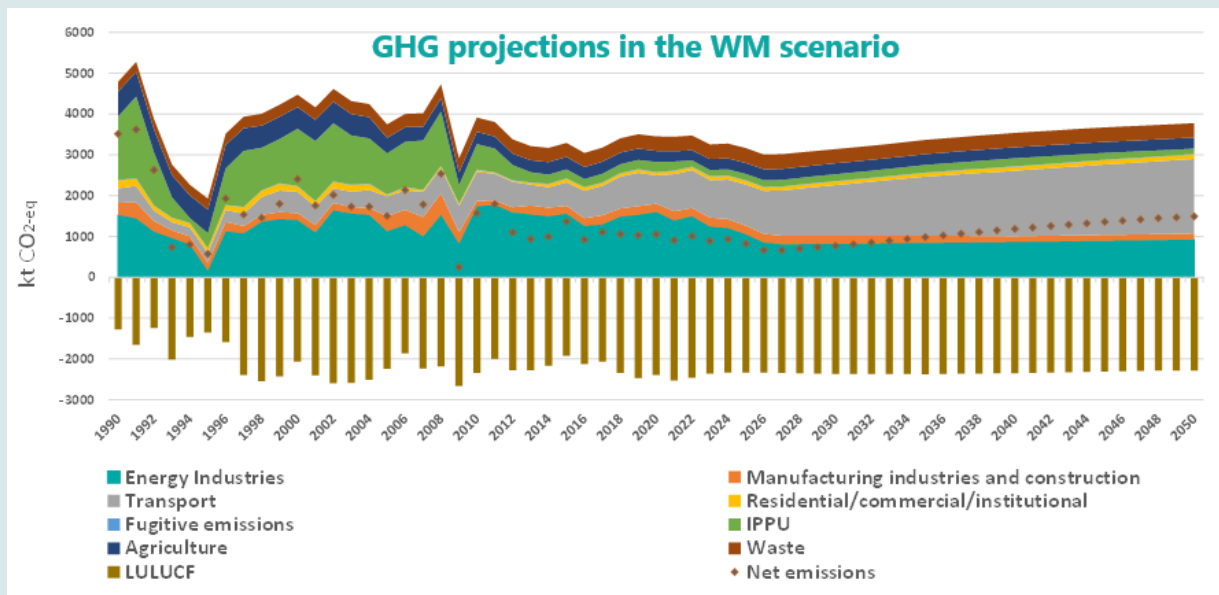
With existing measures (WM): Current policies scenario

The GHG emissions projections for the current policies used as a starting point historical 1990–2023 emissions and removals, to model projections until 2030, 2035, 2040 and 2050. The previous National Inventory Report (NIR) for Montenegro covers only Montenegro's territory and does not include data for the territory of the former Socialist Federal Republic of Yugoslavia (SFRY) or the Federal Republic of Yugoslavia (FRY). For the 1990s, when Montenegro was not fully statistically independent, national data sources were used where available, and expert estimates were applied to fill gaps, following the 2006 IPCC Guidelines and the 2019 refinements. The inventory ensures continuity by adapting international methodologies to local conditions, focusing exclusively on Montenegro's emissions and removals. The impact of adopted and implemented policies on GHG emissions across all sectors up to 2030, 2035, 2040, and 2050 has been projected using the MITICA⁸ software model. The starting point for calculating the impact of climate policies is the WOM (Without Measures) reference scenario.

Current climate and energy policies in Montenegro, as identified in the NDC2.0 (<https://unfccc.int/sites/default/files/NDC/2022-06/Updated%20NDC%20for%20Montenegro.pdf>) as well as new PaMs provided by the national stakeholders were included as follows: 1) the Pljevlja Thermoelectric Power Plant (TPP) ecological refurbishment which includes the construction of a de-sulphurisation (FGD) and denitrification (SCR) installation, upgrade of the electro-filtering plant, construction of a wastewater treatment facility, and reconstruction of the internal system for transporting by-products, as well as building a heating station, as a part of the district heating system (it is estimated that during the planned 7 months of shutdown for refurbishment in 2025 there will be a deficit of around 700 GWh of electricity with the corresponding GHG emissions avoided); 2) the Carbon Pricing for Pljevlja Thermoelectric Power Plant taking into account the inclusion of improvements in the draft law on Protection from the Negative Impacts of Climate Change and Protection of the Ozone Layer to ensuring that the cap on emissions is tight enough and decreases in line with the ambition needed to tackle climate change; 3) the increase in the capacity of renewable power plants for electricity generation such as the modernization and expansion of HPP Perućica, the reconstruction and modernization of HPP Piva, the Gvozd wind farm, the Velje Brdo solar photovoltaic (PV) project, along with prosumer installations, developing HPP Kruševo and HPP Čehotina, Čevo Solar, the Željezara Solar Power Plant, the construction of a small hydroelectric power plant at the Otilovići reservoir at the existing Otilovići dam, Bijela Wind Power Plant, and the introduction of an auction system for renewable energy projects under the Law on the Use of Energy from Renewable Sources; 4) the district heating development in Pljevlja town after TPP Pljevlja eco-refurbishment, resulting in the phasing out of lignite used in Pljevlja municipality residential sector; 5) the implementation of legislation on the minimum requirements for the energy efficiency of buildings, certification of building energy performance and regular energy audits for heating and air-conditioning systems; 6) Energy efficiency programs in public buildings to motivate authorities at the state and local levels to implement their own energy efficiency programs; 7) the Financial Incentives for Citizens/Private Households for Energy Efficiency Investments; 8) the Energy Labelling and Eco-Design Requirements for Energy-Related Products; 9) the Establishment and Implementation of Energy Efficiency Criteria in Public Tendering; 10) the implementation of Energy Efficiency Measures in Public Municipal Companies, Utilities and Services; 11) the Development of Transmission and Distribution Power Network; 12) the Refurbishment of Small Hydroelectric Power Plants such as Rijeka Crnojevića, Podgor, Šavnik, Mušovića rijeka and Lijeva Rijeka; 13) the Financial Incentives for Electric, Plug-In Hybrid and Full Hybrid Vehicles, for both Citizens and Companies/Entrepreneurs to purchase e-vehicles and/or to build the e-charging infrastructure or tax policy measures that favour e-vehicles; 14) the implementation of the Kigali Amendment of the Montreal Protocol on Substances that Deplete the Ozone Layer; 15) the Reduction of Bio-Waste in Municipal Waste and 16) the Increase in Connection Rate to Sewerage System.

⁸ UNFCCC Link: https://unfccc.int/sites/default/files/resource/Manual_draft_Mitigation_toolrev_v6.pdf

Box – Summary of the WM scenario



- The scenario With Measures (WM) considers the impact of the PAMs adopted and implemented.
- The PAMs with the greatest impact are carbon pricing and those related to the integration of new renewable capacity into the electricity mix, followed by energy efficiency measures.
- The increasing trend in emissions is led by the population and economic growth, and is not fully offset by the impact of current adopted and implemented PAMs, in other words, future GHG emissions due to growth cannot be fully reduced by the current policies and measures in place.⁹

With additional measures (WAM): Transposition of EU policies scenario

Which policies are included in the WAM scenario?

The European Union has submitted a more stringent NDC target, aiming for a reduction in domestic net GHG emissions of at least 55% below 1990 levels, by 2030¹⁰. This target has been secured by legislation as part of the European Climate Law, and proposals for measures to achieve the target were published under the Fit-For-55 policy package in July 2021¹¹.

This WAM scenario considers all PAMs Member States, and the EU as a whole have adopted or implemented to meet the targets of their NDC3.0. This WAM scenario assumes that Montenegro will access the EU in 2028 after having implemented the Acquis Communautaire (i.e. all adopted and implemented PAMs of Member States and EU) which can be briefly summarized as follows:

- Endorsement of the objective of achieving a climate-neutral EU by 2050, in line with the Paris Agreement.
- Endorsement of an EU climate target for 2030 applicable to the EU and its Member States of “a net domestic reduction of at least 55% in GHG emissions by 2030 compared to 1990”.

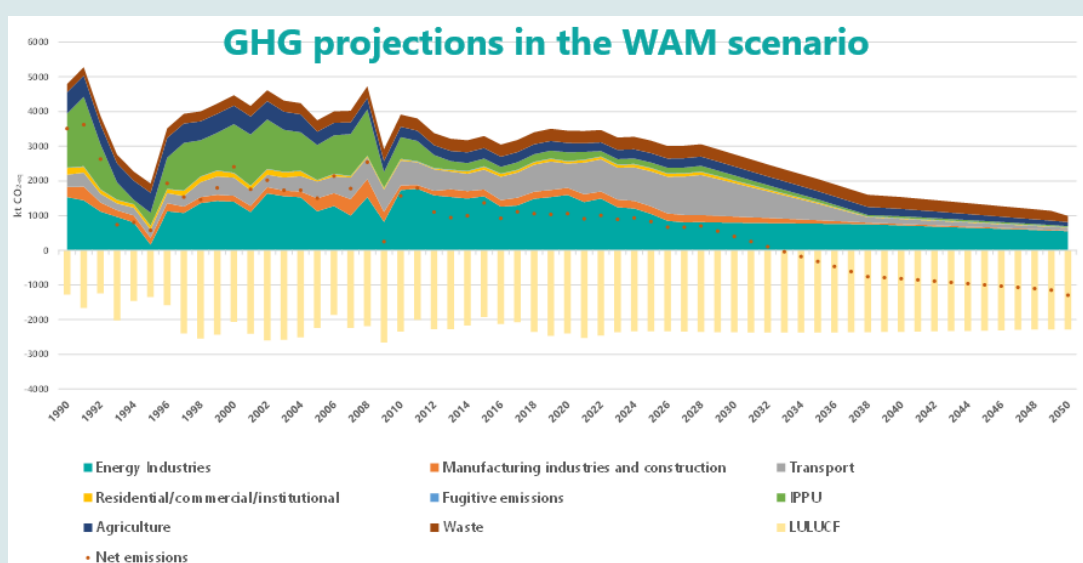
⁹ See Annex 1 - Understanding Key Concepts

¹⁰ See the NDC 3.0 of the EU and its 27 Member States at <https://www4.unfccc.int/sites/NDCStaging/Pages/LatestSubmissions.aspx>

¹¹ European Commission (2021) 'Fit for 55': delivering the EU's 2030 Climate Target on the way to climate neutrality. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, and the Committee of the regions, Brussels, June 2021, COM (2021) 550. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0550&from=EN>

- Endorsement of the legal framework for achieving climate neutrality, known as the European Climate Law.
- Endorsement of the “Fit for 55” set of proposals to revise and update EU legislation with the aim of ensuring that EU policies are in line with the climate goals set in the European Climate Law.
- Endorsement of the legislative framework necessary to implement the “Fit for 55”, and the agreed legislation which has been published in the official Journal of the European Union¹².
- Endorsement of the European Union Emissions Trading System (EU ETS) and its extension to maritime and aviation sectors¹³, the Effort Sharing Regulation (ESR)¹⁴, and the LULUCF Regulation¹⁵.
- Endorsement of additional legislation and policies on sustainable transport fuels, CO₂ emission performance standards for new passenger cars and for new light commercial vehicles, renewable energy and energy efficiency, part of the “Fit for 55”.
- Endorsement of the targets for improving energy efficiency and for increasing renewables in the EU energy mix.

Box – Summary of the WAM scenario



- The With Additional Measures (WAM) scenario considers that Montenegro will adopt and implement from 2028 all PAMs Member States and the EU as a whole have adopted or implemented to meet the targets of their NDC3.0 .
- In the WAM scenario, Montenegro would achieve carbon neutrality before 2035. This shows the prospects of Montenegro as EU accession country, and the benefits associated with the accession for both Montenegro and the EU.

¹² Briefly summarized, the legislative framework necessary to implement the “Fit for 55” includes: 1) Directive (EU) 2023/959 of the European Parliament and of the Council amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union and Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading system (ETS Directive); 2) Directive (EU) 2023/958 of the European Parliament and of the Council amending Directive 2003/87/EC as regards aviation’s contribution to the Union’s economy-wide emission reduction target and appropriate implementation of a global market-based measure (ETS Aviation); 3) Regulation (EU) 2023/857 of the European Parliament and of the Council amending Regulation (EU) 2018/842 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement, and Regulation (EU) 2018/1999 (Effort Sharing Regulation); 4) Regulation (EU) 2023/839 of the European Parliament and of the Council amending Regulation (EU) 2018/841 as regards the scope, simplifying the reporting and compliance rules, and setting out the targets of the Member States for 2030, and Regulation (EU) 2018/1999 as regards improvement in monitoring, reporting, tracking of progress and review (LULUCF Regulation).

¹³ The EU ETS is a market-based system that limits GHG emissions from companies and aircraft. The goal is to reduce emissions at the lowest possible cost.

¹⁴ The ESR is a EU policy that sets binding targets to reduce GHG emissions from key sectors like transportation, buildings, and agriculture. The ESR is part of the EU’s climate change strategy and is intended to help the EU meet its climate goals.

¹⁵ The EU’s LULUCF Regulation aims to reduce greenhouse gas emissions from land use, land use change, and forestry. The regulation was adopted in 2018 and is part of the EU’s efforts to meet its climate targets.

Why coal phase out is not included in the WAM scenario?

In the Montenegrin energy mix, hydropower plants are represented with 66.05% (704.904 MW), thermal power plants with 21.08% (225 MW), wind power plants with 11.06% (118 MW), and solar power plants with 1.81% (19.334 MW) in relation to the total installed production capacity in 2023. The single coal-based facility is the TPP Pljevlja which contributes between 40% and 45% of the annual electricity production in Montenegro under normal conditions (higher in periods in which hydroelectrical plants cannot work).

Reduced coal-fired electricity production, if not accompanied by diversification of economic activities in the local community, but also by diversification of energy production from renewable sources, can have a significant impact on population living standards and encourage economic migration. Additionally, rising expenditures will primarily affect the poorest and most vulnerable populations, owing to potential increases in energy costs. Based on the results of the analysis, reducing coal-fired electricity production as well as for the heating needs necessitates timely planning including support for the diversification of economic activity in Montenegro in general and the municipality of Pljevlja in particular, training of those whose jobs are threatened for employment in new sectors, and the development of support programs for those who decide to start their own business or retire.

The economic diversification will also depend on the road connectivity of Pljevlja, which is currently insufficient, given that Pljevlja is not connected by a railway line, nor is it in the corridor of the planned highway. Improved road infrastructure on the municipality's territory is required for agricultural development, particularly due to unfavorable winter conditions that cut off individual villages from urban areas. Poor road infrastructure not only impedes agricultural product marketing but also discourages people from staying in rural areas due to a lack of social and cultural resources. To encourage entrepreneurial activity among the residents, it is necessary to improve the educational process and to provide content in places where young people congregate that will allow the development of missing skills, creativity, and innovation¹⁶.

Setting up the NDC target

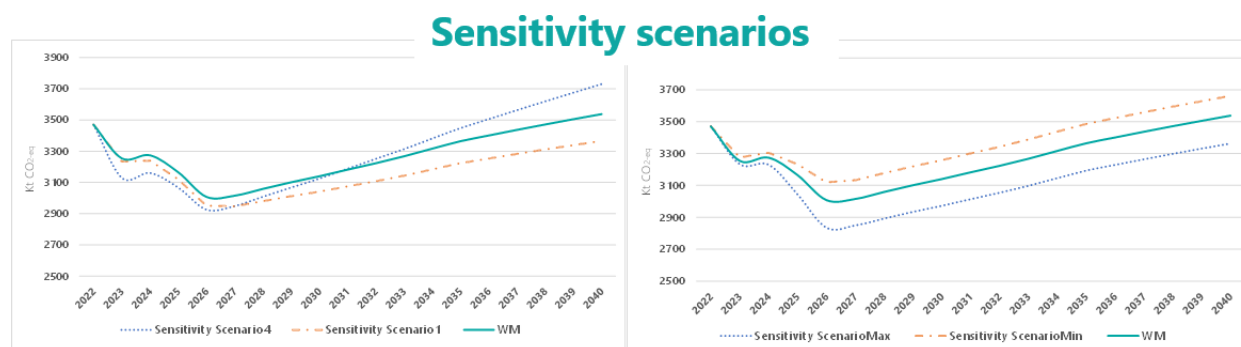
The results of the mitigation scenarios indicate that by 2035, Montenegro's GHG emissions could be reduced by 72% below 1990 levels under the WM scenario, and achieve carbon neutrality (i.e., over 100% reduction) under the WAM scenario (assuming full implementation of EU policies and measures ten years after accession – in 2038). However, these figures are subject to uncertainties due to a lack of knowledge of true values.

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In this context, Montenegro recognized that it is not realistic to define the NDC target as equal to the projected outcomes of a single scenario. Instead, uncertainty must be addressed through sensitivity analysis. The sensitivity analysis explored various factors, including different GDP growth trajectories and variations in the assumptions used to estimate the impact of policies and

¹⁶ UNDP (2023) diagnostics of the socio-economic situation of the coal region Pljevlja is available at <https://www.undp.org/montenegro/publications/diagnostics-socio-economic-situation-coal-region-pljevlja>.

measures. The analysis revealed that the estimated impact of policies and the future emissions trajectory carry an uncertainty range of approximately $\pm 20\%$.



Why has LULUCF been included in the target¹⁷?

As global warming increases, there is the risk of natural carbon sinks becoming sources, turning them from a solution into a problem¹⁸.

The EU is setting regulations for the expansion of the EU's natural carbon removals, which is key for balancing out emissions and reaching climate neutrality. The aim is to reverse the current trend of diminishing CO₂ removals and increase the quality and quantity of the EU's forests and other natural carbon sinks. EU has set up a target of net greenhouse gas removals in the LULUCF sector of 310 million tons of CO₂ equivalent by 2030. Specific national targets are being set up to contribute to this shared goal.¹⁹

To track progress towards climate neutrality the full net LULUCF sink needs to be included when looking at GHG ambition. Therefore, in the EU Impact Assessment on setting up the EU 2030 climate ambition, the full scope of the net LULUCF sink is included in all assessments to assess if 50% to 55% GHG reductions are achieved by 2030 and see its changes over time, from 1990 to 2030 and onwards to 2050 to achieve net zero GHG emissions²⁰.

The inclusion of the LULUCF sector represents an enhancement of ambition, enabling Montenegro to fulfill its commitments under the Paris Agreement²¹.

Member States have to include measures aligned with the EU's climate-neutrality objective in their National Energy and Climate Plans (NECPs),²² and climate neutrality cannot be achieved without the LULUCF sector. In parallel, the Energy Community as a whole, with its Contracting Parties, have also

¹⁷ National GHG emissions are split into five sectors Energy, Industrial Process and product Use, Waste, Agriculture and land use, land use change and forestry sector (LULUCF). Not considering LULUCF involve not considering all emissions and removals of the country. Furthermore, not considering LULUCF implies economy-wide emission reductions and carbon neutrality cannot be achieved, not being in line with the Paris Agreement (Article 4.4.) and EU neutrality targets.

¹⁸ den Elzen, M. G. J., Dafnomilis, I., Forsell, N., Fragkos, P., Fragkiadakis, K., Höhne, N., Kuramochi, T., Nascimento, L., Roelfsema, M., van Soest, H., & Sperling, F. (2022). Updated nationally determined contributions collectively raise ambition levels but need strengthening further to keep Paris goals within reach. *Mitigation and Adaptation Strategies for Global Change*, 27(6), Article 33. <https://doi.org/10.1007/s11027-022-10008-7>

¹⁹ European Commission (2021) 'Fit for 55': delivering the EU's 2030 Climate Target on the way to climate neutrality. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, and the Committee of the regions, Brussels, June 2021, COM (2021) 550. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0550&from=EN>

²⁰ European Commission (2020) Stepping up Europe's 2030 climate ambition. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, and the Committee of the regions, Brussels, June 2020, SWD(2020) 176 final. <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52020SC0176&from=EN>

²¹ UNFCCC (2015) FCCC/CP/2015/L.9/Rev.1: Adoption of the Paris Agreement. UNFCCC, Paris, France, pp. 1–32. <https://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf>

²² GovReg: https://eur-lex.europa.eu/legal-content/EN/TXT/?toc=OJ:L:2018:328:TOC&uri=uriserv:OJ.L_.2018.328.01.0001.01.ENG

agreed targets to achieve climate neutrality by 2050²³. Incorporating the LULUCF sector into the updated NDC target aligns Montenegro's commitments with those of the EU including the EU climate neutrality objective, supporting the country's path to EU accession.

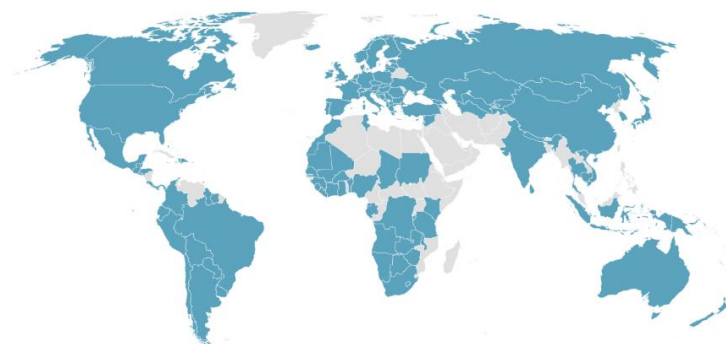
Technical input



Through a national collaborative and engagement process and the best international expertise available

UNDP has contracted **Gauss International Consulting** to provide technical support to the Government of Montenegro in revising the NDC. Gauss is a consultancy firm headquartered in Madrid (Spain), established in 2017, with a subsidiary office in Toronto (Canada), incorporated in 2023. Gauss conducts **evidence-based research** with the aim to assist policymakers and planners in crafting development policies, plans, and programs, and **implement just transition and action against climate change around the globe**. Gauss connects **up-to-date research with the real-world decision-making** processes, making it possible to increase ambition in acting against climate change and contribute to finding sustainable and equitable solutions. Gauss collects and assesses climate information and translate it into **prioritised action, supporting country teams** to navigate the complex internal and external challenges that can impact decision and policy making and ability to adapt to long-term climate risks. Gauss works with governments to analyze their institutional architecture for climate change adaptation and mitigation, and to provide concrete recommendations and support for necessary **policy and institutional reforms** to achieve their policy objectives. Gauss **generates and shares knowledge on actions taken related to international climate commitments and national development plans**, tracking climate action and support, and developing innovative and **customised methodologies, tools, and approaches** to allow for a just transition at the decision-making level as well as communication and outreach at both the national and international communities.

Gauss has broad experience across many sectors, geographical locations, and institutions and has completed hundreds of assignments, often working with complex program structures involving many organizational and government stakeholders. The following map shows all the countries in which Gauss has worked during the past seven years, demonstrating outstanding skills, experience, and expertise in project management, strong institutional set-up, stakeholder engagement, partnership development, capacity building, and knowledge transfer. The work has encompassed the design, review, and update of NDCs and Long-Term decarbonization Strategies, the design and development of MRV/M&E/transparency systems, GHG emissions inventories, and capacity building on climate change mitigation and adaptation.



GEOGRAPHICAL SCOPE OF PREVIOUS SUPPORT PROVIDED BY GAUSS IN CLIMATE CHANGE MITIGATION - 131 COUNTRIES.

Webpage: <https://gauss-int.com/gauss-international-consulting-services/>

Video of Gauss: <https://www.linkedin.com/feed/update/urn:li:activity:7244110267448446976>

MITICA Training <https://www.linkedin.com/feed/update/urn:li:activity:7295957829356515328/>

²³ para 11 of the Conclusions of the 20th Ministerial Council meeting of the Energy Community available at <https://www.energy-community.org/news/Energy-Community-News/2022/12/15.html>

Selection of track record from GAUSS

- European Topic Centre on Climate Change Mitigation (ETC/CM): <https://www.eionet.europa.eu/etcs/etc-cm/products> Gauss is the lead of projections and decarbonation at the ETC/CM, undertaking annual QA/QC of Member States projections and NECPs in line with the Governance Regulation.
- Moderators of the UNFCCC mitigation helpdesk (UNFCCC): <https://unfccc.int/ghg-help-desk>
- Support to the American EPA to review and update its GHG support toolkit. <https://www.epa.gov/ghgemissions/toolkit-building-national-ghg-inventory-systems>
- Technical Support to Eurostat for the validation and development of monetary environmental accounts.
- Support to the Development of National GHG Inventory and Projections systems in Spain, Belgium, Greece, Mexico, Armenia, Colombia, El Salvador, Honduras, Belize, Tajikistan, Uruguay, among others.
- Support in the development of NDC and Long-Term Strategies of Georgia, Nepal, Sri Lanka, Tunisia, Trinidad and Tobago, Ivory Coast, Grenada, Gabon, Belize, Tajikistan, Libya, Liberia,
- Support in the elaboration of national reports to the UNFCCC (Biennial Transparency Report, Biennial Update Reports, National Communications and National GHG inventory) of numerous countries.
- Quality review of updated NDCs and Long Term Strategies under the UNDP Climate Promise.

Relevant publications from GAUSS and its key experts:

- NDC 3.0 Guidebook for Industrial Decarbonization: <https://www.industrialenergyaccelerator.org/general/ndc-3-0-guidebook-for-industrial-decarbonization/>
- MITICA. Enhancing transparency of climate efforts: MITICA's integrated approach to greenhouse gas mitigation. Sustainability, 16(10), 4219. <https://doi.org/10.3390/su16104219>
- European Topic ETC/CM:
- Quality assurance and quality control procedure for national and Union GHG projections 2023. Retrieved from: [ETC CM report 2023/09: Quality assurance and quality control procedure for national and Union GHG projections 2023 — Eionet Portal \(europa.eu\)](https://www.eionet.europa.eu/etcs/etc-cm/products/etc-cm-report-2023-09: Quality assurance and quality control procedure for national and Union GHG projections 2023 — Eionet Portal (europa.eu))
- ETC CM report 2023/08: Analysis of Member States' 2023 GHG projections. Retrieved from: <https://www.eionet.europa.eu/etcs/etc-cm/products/etc-cm-report-2023-08>
- ETC technical paper 2024/03: Drivers and sector disaggregation of projections and trajectories. Retrieved from: <https://www.eionet.europa.eu/etcs/etc-cm/products/etc-cm-report-2024-03>

International recognition

- Lead authors of the IPCC 2019 Refinement of the 2006 IPCC Guidelines,
- Lead Authors of the 2027 IPCC Methodology Report on Short lived Climate Forcers.
- Review Editors of the IPCC Sixth Assessment Report on Mitigation published in 2022.
- UNFCCC Review officers and Lead reviewers of Parties submissions to the UNFCCC.
- Chairman of the Compliance Committee of the Protocol on Pollutant Release and Transfer Registers (PRTR).

Annex 1 - Understanding Key Concepts

What Are Greenhouse Gases (GHG)?

Greenhouse gases (GHG) are gases that trap heat in the Earth's atmosphere. They act like a blanket, keeping the planet warmer than it would be otherwise. GHG include carbon dioxide (CO₂), methane, nitrous oxide and fluorinated gases. When we burn fossil fuels or change land use, these gases are released into the atmosphere, contributing to global warming and climate change.

What Is a GHG Inventory?

An emissions inventory is a detailed record of the amount of GHG released by various human activities within a country. It tracks all the sources—like energy production, transportation, industrial processes, agriculture, forestry and land use and solid and liquid waste management—to see where the emissions come from and how much is being released. This helps countries understand their current situation and plan for reduction measures.

What Are the Sectors in a GHG Inventory?

The sectors of a GHG inventory include:

- **Energy:** This is usually the biggest source of emissions and includes sources like Power plants (electricity generation); Transportation (cars, trucks, planes); Energy consumption in industry; Heating and fuel use in buildings...
- **Industrial Processes**
These are emissions that happen during manufacturing, not just from burning energy. For example, in cement, iron and steel and aluminum production.
- **Agriculture**
Emissions come from Animals (especially cows, which release methane) and Fertilizer use (which releases nitrous oxide).
- **Waste**
Includes emissions from Landfills (which release methane) and Wastewater treatment.
- **LULUCF – Land Use, Land-Use Change and Forestry**
This one is special. It's about how land is used and how it changes. It includes Forests absorbing CO₂ (this is called a carbon sink) and deforestation releasing CO₂.

Why Is the LULUCF Sector So Important?

- **It can remove CO₂ from the air.** While other sectors emit GHG, LULUCF can actually do the opposite. Trees and soil absorb carbon, helping to cancel out GHG emissions from other sectors.
- **But it can also be a big source of emissions.** When forests are cut down (deforestation) or land is changed dramatically, that stored carbon gets released into the atmosphere.
- **It changes fast.** Land use can shift quickly based on economic or political decisions — like promoting biofuels or urban development — so it's a tricky but powerful part of climate planning.
- **Including it gives a more accurate GHG emissions picture.**
If a country leaves this sector out, it might look like it's doing better (or worse) than it really is. Including it makes the national GHG inventory more complete and honest.
- **It's key for nature-based solutions.**
Protecting and restoring forests, planting trees, and improving soil management are low-cost, high-impact ways to fight climate change.

What Is a Nationally Determined Contribution (NDC)?

An NDC as a country's official "climate action commitment" to help fight climate change at the global level. Each country that signed the Paris Agreement has to submit one every 5 years. It includes how much they plan to cut their greenhouse gas (GHG) emissions and by when (target year 2030 in the NDC2.0, 2035 in the NDC3.0, ...).

So an NDC is a promise, made public to the world, saying: "Here's how we're doing our part."

What are Policies and Measures (PAMs) in this context?

These are the actual mitigation actions a country will use to meet its climate goals.

- "Policies" = rules or plans, like: A new law that says coal plants must shut down by 2045; Tax incentives for electric cars or a national strategy for switching to solar energy.
- "Measures" = more like specific actions or programs, such as: Building wind farms; A program to help farmers use climate-friendly practices or Funding public transportation projects.

Together, policies and measures are the *how* behind the climate promise in the NDC.

What Are GHG Projections or Scenarios?

GHG projections or scenarios are different routes of future GHG emissions. Future GHG emission estimates are based on current data and trends. They are "what-if" stories about how emissions might change based on decisions made today. These scenarios help answer questions like:

- What will happen if we do nothing?
- What will happen if we follow current policies?
- What if we get more ambitious?

The 3 Main Types of Scenarios assessed for setting up the goals of the NDC are

Without Measures (WOM) Scenario = "If we don't change a thing." It assumes no new climate policies or actions are added; just keeps doing what the country is already doing. This shows the "worst case" for emissions—it's like leaving the lights on and expecting the bill to stay the same.

With Measures (WM) Scenario = "Based on what we're already doing." It includes all existing policies that are already working (or planned but officially adopted) and gives a realistic picture of where emissions are heading if nothing else is added.

With Additional Measures (WAM) Scenario = "If we step it up." It includes future actions or stronger policies that the country could take to cut emissions even more. This is often the scenario used to set new NDC targets—it shows what's possible with extra effort.

Why Do These Scenarios Matter?

- They help countries set realistic but ambitious climate goals.
- They allow scientists and policymakers to see what actions will have the biggest impact.
- They help explain to the public and international community why a country chose a certain target.
- They are used to plan for the future and show how quickly a country needs to act.
- They help policymakers and planners answer questions like:
 - What will happen to our emissions if we keep doing what we are doing?
 - How will changes in policies and technologies affect future emissions?

These projections are important because they allow governments to test different scenarios, discuss the possible impacts with stakeholders, and set realistic but ambitious targets for reducing GHG emissions over time.

Summary of Montenegro's Latest NDC and Its Importance

In its most recent NDC submission—referred to as Montenegro NDC 3.0—Montenegro has laid out a plan to strengthen its commitment to the global fight against climate change. Here are the main points:

1. Enhanced Ambition and Clear Targets

Montenegro's updated NDC3.0 sets out a target to reduce net GHG emissions by 55% by 2030 and by 60% by 2035, as compared to 1990 levels. This reflects a significant strengthening of its previous commitments and is aligned with both the requirements of the Paris Agreement and European Union climate standards on its path toward future EU accession.

2. Inclusive Analysis Process

The preparation of the NDC followed a three-step process:

- **Data Collection and Assessment:** This initial phase involved compiling the latest available data on GHG emissions and related economic activity. The quality of the national GHG inventory was carefully reviewed alongside various socio-economic factors.
- **Scenario Building:** International experts developed multiple scenarios (for example, one with no new policies, one with the current measures in place, and one that includes additional measures aligned with EU policies). These projections were designed to illustrate how emissions might change under different future conditions and policy choices.
- **Stakeholder Engagement:** The scenarios and findings were then discussed with national stakeholders to ensure that the chosen targets were both realistic and ambitious given the country's circumstances.

3. Inclusion of the LULUCF Sector

A noteworthy change in the NDC3.0 compared to the previous one is the incorporation of the land use, land-use change, and forestry (LULUCF) sector. Previously, this category was not included. By considering the role of forests and other natural lands, Montenegro has recognized that these natural sinks are vital in the overall balance of emissions. The new approach strengthens Montenegro's commitment to reaching a net reduction in GHG emissions while aligning its policies with those being adopted in the EU.

4. Alignment with International and EU Standards

The NDC3.0 not only reinforces Montenegro's responsibilities under the Paris Agreement but also aligns with European Union directives and policies. This alignment is important because it supports Montenegro's short-term goal of joining the EU and long-term goal towards net zero GHG emissions. By adopting EU policies and measures, Montenegro is better placed to secure its EU accession while demonstrating a serious commitment to climate action.

5. Future Outlook

The GHG projections made, though carrying inherent uncertainties, show that without any measures, emissions would continue to rise. However, with the current and additional measures—especially those related to the energy sector and renewable energy—Montenegro has a pathway to not only meet but potentially exceed its reduction targets. This approach stresses the importance of timely planning and the involvement of stakeholders to ensure that

the economic and social impacts of changes (for example, in energy production) are managed in a just and equitable manner.

A robust pathway toward a more sustainable future

Montenegro's updated NDC 3.0 is a clear demonstration of its commitment to reducing GHG emissions and aligning with both international climate goals and future EU standards. By thoroughly assessing current GHG emissions, running future scenarios, and engaging with national stakeholders, the country has set a robust and credible pathway toward a more sustainable future.