Revision and update of the national strategy on adaptation to climate change in Slovakia

Deliverable 2.2: Report on the state of play of the climate adaptation policies and governance framework and proposal for a stakeholder engagement plan - Final Report

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Revision and update of the national strategy on adaptation to climate change in Slovakia

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Revision and update of the national strategy on adaptation to climate change in Slovakia

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Table of Contents

Abbreviations

APMA	Action Plan for Mitigation and Adaptation to Climate Change
ARI	Agriculture Research Institute
AZZZ	Association of Employers
CAP	Common Agriculture Policy
CFP	Common Fisheries Policy
CSRD	Corporate Sustainability Reporting Directive
DV	Deliverable
EC	European Commission
EEA	European Environment Agency
ETS	Emissions Trading System
EU	European Union
EUCRA	European Climate Risk Assessment
FRMP	Flood Risk Management Plans
HLC	High Level Committee for the Coordination of Climate Change Policy
ICDPR	International Commission for the Protection of the Danube River
ICT	Information and Communications Technology
ICZM	Integrated Coastal Zone Management
IEDP	Passive House Institute Slovakia
KTM	Key Type Measures
LULUCF	Land use, land use change and forestry
MoE	Ministry of Environment of the Slovak Republic
MRE	Monitoring, Reporting, and Evaluation
MS	Member State of the European Union
MSFD	Marine Strategy Framework Directive
NAP	National Action Plan (of the NAS)
NAS	National Climate Change Adaptation Strategy
NBSAP	National Biodiversity Strategy and Action Plan 2030
NDC	Nationally Determined Contributions
NECP	National Energy and Climate Plan
NEHAP	New Action Plan for the Environment & Health of inhabitants of the Slovak Republic
NBS	National Bank of Slovakia
NFP	National Forestry Programme
NFRD	Non-Financial Reporting Directive
NGFS	Network of Central Banks and Supervisors for Greening the Financial System
NGO	Non – Governmental Organisation
RRF	Resilience and Recovery Fund
RRP	Resilience and Recovery Plan
SDGs	Sustainable Development Goals
SHMU	Slovak Hydrometeorological Institute
SAS	Slovak Academy of Sciences
SK	Slovakia
SK8	Association of Self-governing Regions
SO	Specific Objective
SOPK	Slovak Chamber of Commerce and Industry
SPPK	Slovak Agricultural and Food Chamber
UNFCCC	United Nations Framework Convention on Climate Change
UNMS	Slovak Office of Standards, Metrology and Testing
URSO	Regulatory Office for Network Industries
WFD	Water Framework Directive
WGA	Working Group on Adaptation

1. Introduction

Slovakia is a landlocked country in Central Europe and shares borders with the Czech Republic and Austria to the west, Poland to the north, Ukraine to the east and Hungary to the south. The Slovak economy is driven by the services industry as well as manufacturing, particularly in the automotive industry, and other industrial activities.

The geography of Slovakia is characterised by a diverse landscape that includes heavily forested mountains in the north and central regions; the lowlands of the Danube River in the west; and the Hornad River in the east, with the latter two also being important agricultural areas of Slovakia. The country's climate experiences some variety, due to its topography. In the plains, a moderately continental climate can be experienced, while in the mountains (Tatra mountains) in the north, a high mountain climate can be experienced.

Over the past century, the mean annual air temperature has steadily increased, while the annual precipitation has stayed the same on average, although in the south of Slovakia, there has been an increase. Additionally, the amount of extreme daily precipitation has increased within the last 15 years, which leads to local flood risks. There has also been a decrease in snow cover until the altitude of 1,000 meters, although an increase in snow cover days has increased in higher mountains. Some sectors are considered more vulnerable than others, such as transport, infrastructure and agriculture.[1]

Slovakia has demonstrated a commitment to proactive climate change adaptation measures. In 2014, the country adopted the Strategy for Adaptation of the Slovak Republic to the Adverse Impacts of Climate Change. Building upon this foundation, in 2018, the country introduced the Strategy for Adaptation of the Slovak Republic to Climate Change - Update (hereinafter referred to as the "2018 NAS"). In 2021, the National Adaptation Strategy Action Plan (NAP) was adopted, aligning with the global climate change agenda and the EU commitments.

1.1. Purpose of this study

Slovakia has developed and is implementing various measures to support adaptation to climate change. As an EU MS, the country has developed these within the EU legislative framework. At the same time, despite the global commitments agreed under the United Nations Framework Convention on Climate Change (UNFCCC), climate change has shown no signs of slowing down and continues to pose the most significant risk to people, economies, and nature.[2] Therefore, it is crucial to ensure that adaptation measures remain effective and are improved/redesigned to address the escalating threats. Aligned with the EU Adaptation Strategy, the focus should be on ensuring that policy cycles focus on making adaptation smarter, swifter, and more systemic while bolstering international action on climate resilience. This involves a structured process including preparation, assessment of climate risks and vulnerabilities, identification and evaluation of adaptation options, implementation, and ongoing evaluation of measures to ensure their relevance and effectiveness over time.

In response to this imperative, Slovakia has decided to revise its National Climate Adaptation Strategy (NAS) and Action Plan (NAP). These efforts are supported through the project *"Revision and update of the national strategy on adaptation to climate change in Cyprus and Slovakia*." This study aims to provide critical information to tailor the overall Project activities to the current context and needs of Slovakia.

[1] Ministry of Environment (2016) Adaptation Strategy of the Slovak Republic on Adverse Impacts of Climate Change Overview: Executive Summary
[2] World Economic Forum (2024). The Global Risks Report 2024.

The report presents an overview of the climate adaptation policies and the existing governance framework in Slovakia, identifying gaps and opportunities for improvements. It also analyses the progress of adaptation measures implemented in Slovakia thus far and maps key stakeholders whose participation is crucial to designing and implementing a successful adaptation strategy.

Information for this study was collected through desk research, literature review, and interviews conducted between January and April 2024. Interviews aimed to clarify the context and identify additional resources that may have been overlooked in the desk research. A total of ten interviews were conducted with representatives from national authorities and research institutions. Their inputs were analysed to understand any gaps and opportunities in the policy landscape, governance framework, and adaptation efforts in the country, and are integrated into the analysis presented in the following chapters. Stakeholders that were interviewed, along with the interview questions are presented in Annex 1.

1.1.1. Reading guide

This report consists of six chapters and five annexes, synthesizing information gathered from extensive literature analysis, as well as stakeholder interviews. The main body of the report, delineated in the six chapters, includes the most crucial and informative data. To ensure conciseness and coherence, some information has been condensed or selectively presented, such as the sections covering adaptation measures and stakeholder analysis. The full breadth of information is available in the annexes for readers seeking more comprehensive details.

Chapter 2 delves into pertinent policies on climate adaptation at the EU and Slovak (both at national and sub-national) levels, along with key gaps in the transposition/implementation of policies indicating potential revisions that Slovakia could consider. Annex 2 provides an overview of adaptation-relevant policies specific to Slovakia.

In Chapter 3, the progress of adaptation measures outlined in the current NAP are assessed. This chapter is supplemented by a detailed assessment of the measures in Annexes 2 and 3.

Chapter 4 assesses the country's adaptation governance framework, pinpointing opportunities for improvement based on literature research and insights from scoping interviews.

Chapter 5 provides recommendations regarding stakeholder engagement in the development and execution of the adaptation strategy. These recommendations are informed by a detailed power-interest mapping, explained in detail in Chapter 5, accessible in Annex 4.

Finally, Chapter 6 brings together the conclusions from Chapters 2-5 and provides recommendations for focus areas when it comes to tasks during the rest of the project.

2. Policy landscape

This chapter aims to assess climate adaptation policies, focusing on both the EU and Slovakia. It follows this structure:

- Section 2.1 analyses climate adaptation within the EU policy framework;
- Section 2.2 explores climate adaptation in Slovak policies, including sectorial and municipal strategies;
- Section 2.3 presents other key policy documents and assessments relevant to climate adaptation in Slovakia;
- Section 2.4 presents the results of a comparative analysis of sub-national adaptation strategies;
- Section 2.5; a gap analysis is conducted to determine the alignment of current climate adaptation policies in Slovakia with the EU framework;
- Finally, section 2.6 discusses the implications of the analysis for revising and updating the NAS and how these findings can inform subsequent phases of the project.

2.1. Climate adaptation in the EU policies

The European Union is an active participant in the fight against climate change. Many of the EU policies are designed with a view to contribute to the global commitments agreed under the auspices of the United Nations (see Box 2-1). In addition to strategies and policies that directly promote adaptation to climate change, the EU also ensures that requirements for adaptation are mainstreamed through policies of various sectors that are affected by climate change or can contribute to building societal resilience to it. To facilitate the implementation of climate change measures, the Multiannual Financial Framework 2021-2027 indicates that 30% of the European budget should go towards climate-related expenditures.

2.1.1. EU adaptation policies

In 2018, the **Regulation on the Governance of the Energy Union and Climate Action**[3] was established, which lays down a monitoring mechanism that enables the EU to comply with its reporting obligations under the UNFCCC and the Paris Agreement. In order to track the progress of the implementation of EU climate legislation, this Regulation requires Member States to develop National Adaptation Strategies (NAS) and Action Plans (NAP) and report on their progress every two years, starting from March 2021. This requirement was further strengthened in 2021 when the European Climate Law and the EU Strategy on Adaptation were enacted.

The **European Climate Law**[4] is aligned with global agreements, specifically integrating the Global Goal on Adaptation (GGA) of the Paris Agreement into the law (see Box 2-1). Concerning climate adaptation, the Law aims to enhance adaptive capacity, strengthen resilience, and reduce vulnerability to climate change across the EU and specifically requires EU MS to adopt and implement national adaptation strategies and plans. Integrating the monitoring and reporting mechanism set up in the Regulation, MS are expected to develop measures to keep track of progress and adjust actions accordingly. However, while MS are required to develop and submit NAS and NAP, and are expected to make efforts to follow and revise them every two years, there are no binding targets for which they can be held accountable.

The **EU Strategy on Adaptation** complements the European Climate Law outlining how the EU can adapt to the adverse effects of climate change and become climate resilient by 2050. Its main objectives are to i) improve knowledge and availability of data on climate-related risks and losses, ii) support adaptation policy development at all levels of governance, society and the economy by

[3] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action
[4] Regulation (EU) 2021/1119 establishing the framework for achieving climate neutrality ('European Climate Law')

improving existing plans, integrating climate resilience in macro-fiscal policy and promoting nature-based solutions for adaptation, and iii) speed up adaptation across the board by accelerating the development and rollout of adaptation solutions. An important goal of the Strategy is to mainstream climate change adaptation across sectoral policy areas applicable to both the public and private sectors, with a view to develop and implement adaptation strategies beyond sectors targeted in the 2013 EU Adaptation Strategy, This will be achieved by considering three cross-cutting priorities: integrating adaptation into macro-fiscal policy, nature-based solutions for adaptation, and local adaptation action.[5] The Strategy aims to help MS to make informed decisions in integrating adaptation solutions in their plans and strategies by making more accessible adaptation options that can be used at various governance levels.

Box 2-1 Global efforts towards adaptation to climate change

Global adaptation efforts in fighting climate change are spearheaded by the United Nations. The **Sendai Framework on Disaster Risk Reduction**[6], agreed in 2015, aims to build adaptive capacity by implementing measures that reduce vulnerabilities and increase preparedness for response and recovery to climate-induced disasters over the next 15 years. In addition to strengthening governance to manage disaster risk, the Framework also calls for increased investment in actions to reduce risk and increase resilience.

The **2030 Agenda for Sustainable Development**[7], endorsed in 2016, includes two sustainable development goals (SDGs) relevant to climate change adaptation. SDG 13 focuses on building adaptive capacity and resilience, as well as integrating climate change into national policies, strategies and planning. The implementation of SDG 17 'strengthening the means of implementation and revitalising the global partnership for sustainable development' also supports the national adaptation process by respecting each country's policy space and leadership on adaptation. While SDGs are not legally binding, the governments are expected to take ownership, establish national frameworks and regularly monitor and report progress towards the achievement of the goals. Also in 2016, the **Paris Agreement**[8], a legally binding international treaty developed under the UNFCCC process entered into force. A landmark in the multilateral climate change process, this binding Agreement brings all nations together to combat climate change and adapt to its effects. Since 2020, the Agreement has worked on a five-year cycle, where countries have been developing and submitting increasingly ambitious climate action plans. Known as nationally determined contributions (NDCs), these plans include actions to build resilience to adapt to climate change impacts, as well as decarbonisation strategies.

When it comes to the **Global Goal on Adaptation (GGA**), the **UAE Framework for Global Climate Resilience**, was a significant achievement at COP 28, representing the largest adaptation negotiations under the Paris Agreement to date. It aims to enhance collective well-being, protect livelihoods and economies, and preserve nature under seven thematic targets that emphasise iterative adaptation cycles, along with cross-cutting considerations such as gender responsiveness. The framework offers a foundation for countries to align their monitoring and evaluation systems, though further efforts are needed.[9] As part of the UAE Framework, The UAE-Belém Work Programme on Indicators is also part of the UAE Framework for Global Climate Resilience. It was established to develop indicators related to climate adaptation and resilience. The two-year work programme aims to conclude by November/December 2025.[10]

[5] See Communication From The Commission To The European Parliament, The Council, The European Economic And Social Committee And The Committee Of The Regions Forging A Climate-Resilient Europe - The New Eu Strategy On Adaptation To Climate Change Lex - 52021dc0082 - En - Eur-Lex. (N.D.). Retrieved From Https://Eur-Lex.Europa.Eu/Legal-Content/En/Txt/?Uri=Com%3a2021%3a82%3afin

[6] https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030

[7] https://sdgs.un.org/publications/transforming-our-world-2030-agenda-sustainable-development-17981

[8] https://unfccc.int/process-and-meetings/the-paris-agreement

[9] IISD *(2024). After COP 28: What's next for adaptation? Retrieved from https://www.iisd.org/articles/explainer/after-cop-28-what-is-next-for-adaptation*; *(UN.int). Retrieved from https://unfccc.int/topics/adaptation-and-resilience/workstreams/gga*

[10] See https://climatenetwork.org/resource/submission-uae-belem-work-programme-on-indicators/

2.1.2. Climate adaptation in EU sectoral policies

Mainstreaming climate change adaptation in EU policies is an important goal of the EU Adaptation Strategy, and relevant measures and requirements have been integrated into various sectoral policies that can contribute to enhancing climate resilience and support adaptation efforts, or where sectoral vulnerability to climate change requires specific and dedicated measures. Given the complexity and overlap between many of these sectors, only the main sectoral policies and their key requirements for MS are presented below.

Table 2-1 Mainstreaming adaptation in key sectors – MS requirements

Sector	EU policy with specific MS requirements
Agriculture	**Land use, land use change and forestry (LULUCF) Regulation**[11] includes adaptation-related policies and measures to reduce the vulnerability of land to natural disturbances. This includes the implementation of nature-based solutions and reducing the impact of land management and forestry practices. MS are required to implement a binding national target for increased net GHG removal and commit to additional removals for the 2026-2029 period. **Common Agriculture Policy (CAP) 2023 – 2027**[12] includes strengthened support for climate change mitigation, while through efforts to protect natural resources and enhance biodiversity, it contributes to adaptation. CAP promotes climate-friendly farming techniques, and measures that safeguard quantity and quality of water, limit soil loss and erosion, and improve carbon sequestration in agricultural soils. It encourages actions that conserve and enhance biodiversity (e.g., establishment and maintenance of landscape features and "wildlife corridors"). MS are required to develop national CAP strategic plans that support viable farm income and promote resilience of the agricultural sector.
Forestry	**EU Forest Strategy for 2030**[13] includes several adaptation-relevant actions focused on strengthening forest protection and restoration, enhancing sustainable forest management and improving the monitoring and effective planning of forests in the EU. One of the measures promoted under the Strategy is re- and afforestation of biodiverse forests by planting 3 billion trees by 2030 in the EU. There are several regulations that fall under this strategy, such as the proposed Forest Monitoring Law[14] that would require MS to develop long-term forest plans or adapt their existing plans to take into account a medium- or long-term perspective. MS need to develop national strategies in alignment with EU Strategy goals (e.g., protecting the last remaining primary and old-growth forests).
Biodiversity	**Biodiversity Strategy 2030**[15] sets specific nature restoration requirements, such as restoring EU forests, restoring degraded soils, and strengthening the protection of forest ecosystems by strictly protecting areas for habitats and fish stock recovery. Additional requirements are expected to come from the proposal on a Nature Restoration Law (e.g., concrete nature restoration targets), while the Strategy itself seeks to support the achievement of objectives of the Birds and Habitats Directives. MS are expected to contribute to the target of legally protecting 30% of land and 30% of sea, and to the target of strictly protecting 10% of all protected areas.
Water	Water policy of the EU consists of several interlinked and mutually supporting legislations that aim to ensure resource protection and sustainable management, in light of the changing climate as well. The **Water Framework Directive** (WFD)[16] ensures an integrated approach to sustainable water management. It aims to protect and, where necessary restore water bodies in order to reach good chemical and ecological status and prevent deterioration. The WFD applies to inland, transitional and coastal surface waters, as well as groundwaters. It is further supported by two directives, one focused on the quality and quantity of groundwater and another focused on the quality of surface water. MS must develop river basin management plans (RBMPs), with a programme of measures that includes also activities to support adaptation to climate change. **Floods Directive**[17] aims to reduce and manage the risks that floods pose to human health, the environment, cultural heritage and economic activity. It requires MS to assess all areas where significant floods could take place, map the flood extent and assets and humans at risk in these areas, and take adequate and coordinated measures

[11] Regulation (EU) 2018/841 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 and energy framework
[12] EC(n.d.) Common Agricultural Policy https://agriculture.ec.europa.eu/common-agricultural-policy_en
[13] COM/2021/572 final New EU Forest Strategy for 2030
[14] EC (2023) Press corner- commission proposes comprehensive monitoring to improve resilience of European Forests https://ec.europa.eu/commission/presscorner/detail/en/ip_23_5909
[15] COM/2020/380 final EU Biodiversity Strategy for 2030 Bringing nature back into our lives
[16] Directive 2000/60/EC establishing a framework for Community action in the field of water policy
[17] Directive 2007/60/EC on the assessment and management of flood risks

Sector	EU policy with specific MS requirements
	(inclusive of adaptation-related measures) to reduce this flood risk. These are presented in Flood Risk Management Plans (FRMP), which MS need to report every six years.
Buildings	**Energy Performance of Buildings Directive**[18] seeks to improve and renovate buildings to deal with extreme temperatures and climate-related natural disasters. Measures include the gradual introduction of minimum energy performance standards for non-residential buildings to support the renovation of buildings with the lowest energy performance, and the modernisation of existing buildings with better energy system integration for heating, cooling, ventilation, etc. MS are required to establish a long-term renovation strategy aimed at decarbonising building stock by 2050 and set minimum performance requirements for new buildings and existing buildings undergoing major renovation (from 2021, nearly zero-energy).
Energy	2030 Framework for Climate and Energy includes EU-wide targets and objectives on energy efficiency, renewable energy and decarbonisation.[19] It integrates the requirement from the **Regulation on the Governance of the Energy Union and Climate Action** to develop National Energy and Climate Plans (NECPs). These plans identify climate vulnerabilities and risks, set adaptation goals, and develop measures to achieve adaptation and enhance resilience in the energy system.[20] MS need to develop NECPs and submit progress reports every two years.
Transport	**Sustainable and Smart Mobility Strategy**[21] is structured around three objectives, which include making the EU transport system sustainable, smart and resilient. In the context of adaptation, it focuses on making all transport modes more sustainable, making sustainable alternatives widely available in a multi-modal transport system, and putting in place the right incentives to drive the transition. MS are required to integrate policies into national programmes that target mobility planning and implementation.
Tourism	**European Tourism Agenda 2030** calls for a green transition in the tourism sector, emphasising the need to involve all stakeholders across various sectors and to seek to develop labour skills that can contribute to building a more resilient and sustainable sector. Tourism is a cross-cutting sector, so the Agenda builds on existing EU legislation for water, agriculture, biodiversity, energy, and building sectors, amongst others.[22] MS are encouraged to take voluntary actions supporting the green transition of tourism companies and SMEs, and research and innovation projects and pilots on circular and sustainable tourism.
Cultural heritage	**New European Agenda for Culture**[23] includes multi-annual work plans for culture where MS define their priorities for cultural policy-making at the EU level. The current work plan includes the need to protect and preserve cultural heritage in the face of both climate change-induced disasters such as floods and storms, as well as slow onset events, such as rising temperatures and sea-level rise. Cultural heritage is a cross-cutting sector, where existing EU legislations like the Floods Directive are applied.[24] Under the Agenda, MS are encouraged to draft an action plan for cultural heritage at the national level and follow up on initiatives mentioned in the work plans.
Business, Industry, Finance	**EU Sustainable Finance Strategy** focuses on redirecting private investment into the transition to a climate-neutral, climate-resilient, environmentally sustainable, resource-efficient and fair economy, as a complement to public money. It establishes the EU Taxonomy framework[25] to recognise environmentally sustainable economic activities, including those related to climate change adaptation.[26] Investors and companies will need to report the alignment and contribution of their activities to the Taxonomy objectives. The **Corporate Sustainability Reporting Directive**[27] strengthens the rules concerning social and environmental information that large companies (public interest companies with more than 500 employees) and listed SMEs have to report (alongside other requirements defining reporting entities, including a turnover threshold)[28], starting in 2025. This includes describing any climate adaptation

[18] Directive (EU) 2018/844 on the energy performance of buildings
[19] https://www.consilium.europa.eu/en/policies/climate-change/2030-climate-and-energy-framework/#:~:text=The%202030%20framework%20aims%20to,especially%20for%20oil%20and%20gas
[20] https://commission.europa.eu/energy-climate-change-environment/implementation-eu-countries/energy-and-climate-governance-and-reporting/national-energy-and-climate-plans_en
[21] COM/2020/789 final. Sustainable and Smart Mobility Strategy
[22] https://data.consilium.europa.eu/doc/document/ST-15441-2022-INIT/en/pdf.
[23] https://culture.ec.europa.eu/policies/strategic-framework-for-the-eus-cultural-policy
[24] Within the Floods Directive, MS have to report every six years how many cultural heritage sites might be affected by flooding.
[25] Regulation (EU) 2020/852 on the establishment of a framework to facilitate sustainable investment
[26] COM/2021/390 final. Strategy for Financing the Transition to a Sustainable Economy
[27] Directive (EU) 2022/2464 as regards corporate sustainability reporting
[28] See Sustainable economy: Parliament adopts new reporting rules for multinationals: News: European Parliament. (2023). Retrieved from https://www.europarl.europa.eu/news/en/press-room/20221107IPR49611/sustainable-economy-parliament-adopts-new-reporting-rules-for-multinationals

Sector	EU policy with specific MS requirements
	measures taken as a part of risks management process. MS are required to integrate reporting requirements in their industrial and financial sectoral policies.
Disaster risk resilience	**Directive on the Resilience of Critical Entities**[29] entered into force in 2023 and aims to ensure the protection of critical infrastructure against a range of threats, including natural hazards resulting from the adverse effects of climate change. The Directive covers 11 different sectors including energy, drinking water, wastewater, digital infrastructure and health. MS have until October 2024 to transpose the Directive into national legislation. They will need to adopt a national strategy and carry out risk assessments to strengthen the resilience of critical entities against a range of threats including natural hazards from climate change. The **Floods Directive** (explained in the water sector) requires MS to develop and implement plans for managing and mitigating the impact of floods, including measures relevant to adaptation.
ICT	**2030 Digital Compass: The European way for the digital decade**[30] focuses on improving the resilience of ICT infrastructure to climate change impacts and reducing the environmental footprint of the sector through energy efficiency measures and other initiatives. It proposes a list of 2030 targets that MS are required to implement, which include adaptation-relevant measures. **Directive on the Resilience of Critical Entities** (mentioned above under Disaster risk resilience) also pertains to the digital infrastructure sector.
Health	**EU4Health Programme**[31] is a funding instrument that aims to prepare for future health crises, including those associated with climate change. **EU Plant Health Law**[32] and **Animal Health Law**[33] also cover climate-driven risks to the health of crops, forests and farm animals. MS are required to include consideration of health-related aspects in their national adaptation strategies and plans.
Land use planning	**Land use planning** is a horizontal sector, where multiple policies converge to develop spatial plans. While there is no overarching land use planning policy, the **EU Soil Strategy** for 2030 calls on MS to set land-take[34] targets for 2030, with the aim of reaching land-take neutrality by 2050. According to the EEA, the land-take trend is putting pressure on biodiversity and degrading habitats, contributing to issues ranging from decreased carbon sequestration to landscape fragmentation and impaired flood protection.[35]

2.1.3. EU initiatives aiming to support better adaptation planning and implementation

The European Commission has set up several initiatives that complement the existing policy efforts and aid Member States in their planning and implementation of adaptation policies. This includes the **European Climate Risk Assessment** (EUCRA) - published in March 2024[36] which assesses the current and future climate change impacts and risks relating to the environment, economy and wider society in Europe. The EUCRA focuses particularly on 'complex' climate risks, including risks caused by the combination of various climatic and/or non-climatic hazards ('compound hazards'), risks cascading through systems and sectors ('cascading risks'), and risks impacting Europe from outside Europe ('cross-border risks'). The first EUCRA will support the identification of adaptation-related policy priorities in Europe and EU policy development in climate-sensitive sectors. It may also provide an EU-wide point of reference for conducting and updating national or subnational climate risk assessments.

Another initiative is the **EU Covenant of Mayors**[37], which aims to engage and support cities and towns to commit to reaching the EU climate mitigation and adaptation targets. The focus is on bringing together local governments that have voluntarily committed to achieving and exceeding

[29] Directive (EU) 2022/2557 on the resilience of critical entities
[30] https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A52021DC0118
[31] https://health.ec.europa.eu/funding/eu4health-programme-2021-2027-vision-healthier-european-union_en
[32] Regulation (EU) 2016/2031 on protective measures against pests of plants
[33] Regulation (EU) 2016/429 on transmissible animal diseases and amending and repealing certain acts in the area of animal health
[34] Land-take refers to the use of undeveloped land, i.e., agricultural and natural land for human settlements and transportation infrastructure. https://www.eea.europa.eu/help/glossary/eea-glossary/land-take
[35] https://www.eea.europa.eu/en/topics/in-depth/land-use?activeTab=e3e6b879-fef4-4a88-9436-5f0064698270
[36] EEA (2024) European Climate Risk Assessment https://www.eea.europa.eu/publications/european-climate-risk-assessment
[37] Covenant of Mayors website, European Commission. https://eu-mayors.ec.europa.eu/en/home

the EU climate and energy targets. The initiative provides tools, such as the Urban Adaptation Support Tool[38], which can assist cities, towns and local authorities in developing, implementing and monitoring adaptation plans.

The **EU Mission on Adaptation**[39] focuses on supporting EU regions, cities and local authorities in their efforts to build resilience against the impacts of climate change. This includes a better understanding of the risks that the regions currently face and will be confronted with in the future, as well as supporting regions to test and deploy on-ground solutions needed to build resilience. The Mission's objective is to accompany at least 150 European regions and communities towards climate resilience. As part of its efforts, the EU Mission on Adaptation runs the EU Mission on Adaptation to Climate Change Portal which shares updates on the Mission and progress, with input from regional and local authorities and research projects. It provides tools and knowledge to help authorities develop and monitor their climate change plans at a regional level. For example, it showcases the Regional Adaptation Support Tool (RAST)[40] which offers practical guidance for each step of this process

2.2. Climate adaptation in Slovak policies

Figure 2-1 (next page) provides an overview of various policy documents and complementary reports related to climate adaptation in Slovakia. In the subsequent subsections, each document is described in detail, Following this, an analysis of complementary sectorial policies relevant to adaptation is presented. The complete list of documents reviewed can be found in Annex.

2.2.1. Strategy for Adaptation of the Slovak Republic to the Adverse Impacts of Climate Change (Adopted in 2014, updated in 2018)

Strategy for Adaptation of the Slovak Republic to the Adverse Impacts of Climate Change (Adopted in 2014; Strategy horizon: 2020)

The *Strategy for Adaptation of the Slovak Republic to the Adverse Impacts of Climate Change* was initially adopted in 2014. In its first version, it aimed to address the effects of climate change on various sectors, including natural systems, human health, urban environments, agriculture, forestry, transportation, energy, industry, and tourism. The strategy included a set of adaptation measures for each sector. The strategy aimed to draw attention to the fact *that climate change is an urgent issue that requires an integrated and comprehensive approach*.[41] The key principles of the Strategy adopted in 2014 were:

- Integrated approach and coherence between mitigation and adaptation measures
- Implementation of win-win and no-regret measures;
- Avoiding maladaptation;
- Knowledge and objective information for decision-making at all levels.

Objectives included:

- To describe the adverse impacts of climate change in the Slovak Republic;
- To analyse the expected impacts of climate change on key areas/sectors of the economy;
- To propose a set of proactive adaptation measures and mechanisms for their implementation;
- To identify opportunities associated with the process of adaptation and create space for their practical realisation;

[38] Urban Adaptation Support Tool, Climate Adapt. https://climate-adapt.eea.europa.eu/en/countries-regions/local

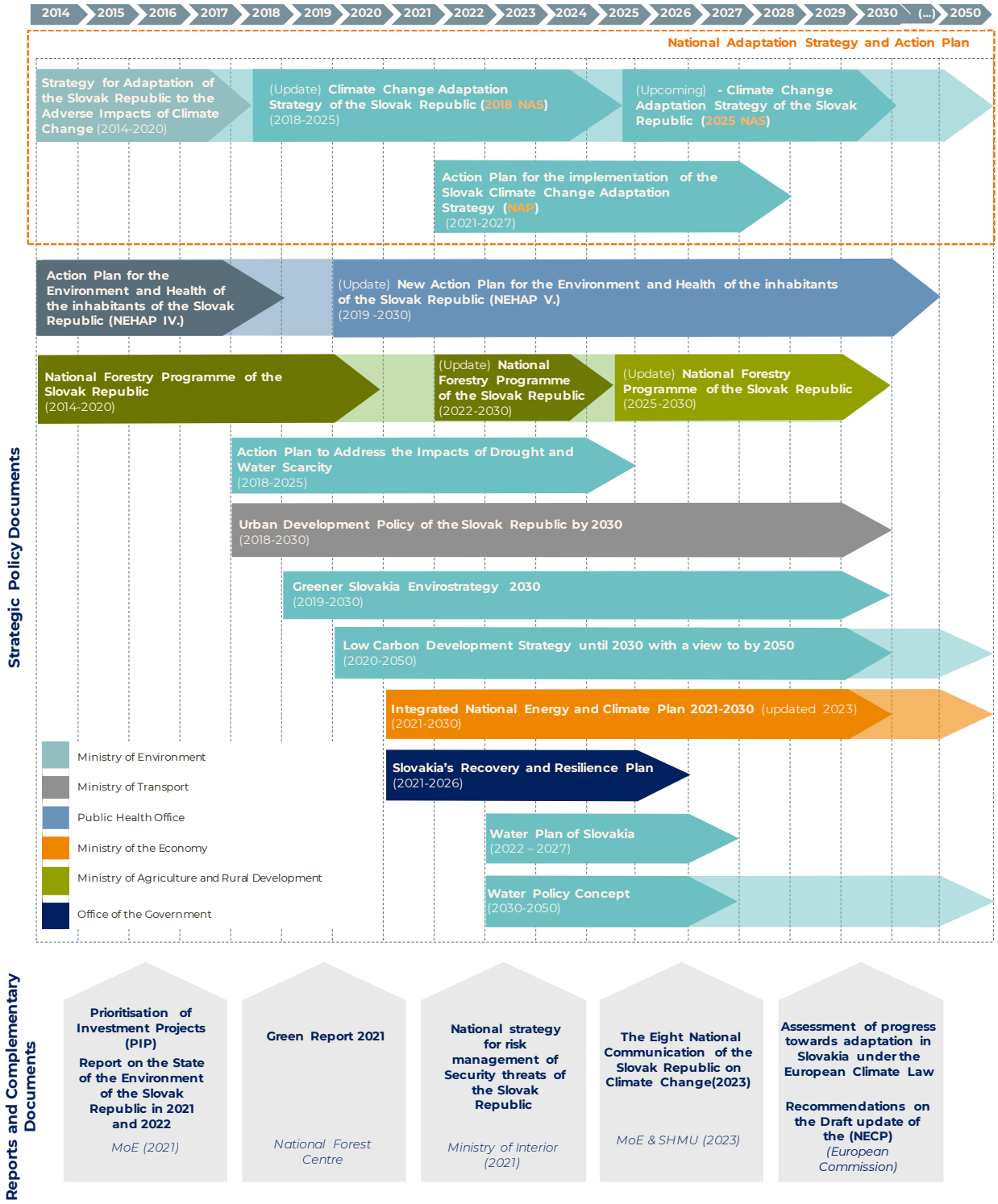
[39] https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/eu-missions-horizon-europe/adaptation-climate-change_en

[40] https://climate-adapt.eea.europa.eu/en/mission/knowledge-and-data/regional-adaptation-support-tool

[41] MoE (2016) Adaptation Strategy of the Slovak Republic on Adverse Impacts of Climate Change Overview: Executive Summary. Retrieved from: https://climate-adapt.eea.europa.eu/en/countries-regions/countries/nas_summary_slovakia.pdf

- To create an institutional framework which would enable efficient and cost-effective adaptation to adverse climate change effects by 2020

Figure 2-1 Overview of the Adaptation Policy Landscape in Slovakia



Source: Own elaboration

The MoE was appointed as the National Contact Point, playing a central role in facilitating communication with international organisations and overseeing national initiatives. Working in tandem with the Working Group for Adaptation (WGA), the MoE ensured that adaptation efforts were aligned with national objectives. The WGA was responsible for implementing adaptation activities, collaborating with relevant stakeholders, and preparing essential documents for decision-making. Furthermore, it was foreseen that the High-Level Committee for the Coordination of Climate Change Policy (HLC) would provide strategic direction by defining key tasks and guiding policy development processes related to adaptation.[42]

In addition, monitoring and evaluating the effectiveness of adaptation measures were integral components of the 2014 Strategy. At the time, a standardised methodology for this purpose was lacking, posing challenges in identifying appropriate indicators to measure progress and outcomes. However, efforts were underway to develop a specific set of indicators and methodology. In the interim, the monitoring focus remained on tracking the costs of adaptation measures implemented within selected operational programs from 2014 to 2020. it was recommended to update the Strategy every 5-10 years. Accordingly, in 2017, the MoE started the process of updating the Strategy which led to the *Climate Change Adaptation Strategy of the Slovak Republic* adopted in 2018.

Climate Change Adaptation Strategy of the Slovak Republic (Adopted: 2018; Strategy horizon: 2025 with a view to 2030)

The main objective of the Adaptation Strategy updated in 2018 (hereafter referred to as "2018 NAS") is to *improve the preparedness of Slovakia to face the adverse effects of climate change, to provide the broadest possible information on the current adaptation processes, and based on their analysis, to establish an institutional framework and coordination mechanism to ensure effective implementation of adaptation measures at all levels and in all areas, as well as to increase the overall awareness of this issue*. To ensure the fulfilment of this main objective, the 2018 NAS established six sub-objectives accompanied by framework measures:

1. Active development of national adaptation policy
    - Assess and update adaptation policy periodically
    - Enhance institutional framework and coordination mechanisms
    - Adapt legislative framework to support the adaptation process
    - Incorporate current science and research findings into policy-making
2. Effective implementation of adaptation measures
    - Ensure sustainable funding for priority adaptation measures
    - Develop indicators for monitoring and evaluating adaptation measures
3. Mainstreaming adaptation objectives and recommendations:
    - Translate adaptation into sectoral, socioeconomic and territorial policies
    - Strengthen adaptation at regional and local levels
    - Increase the resilience of businesses to climate change impacts
4. Raising public awareness and building knowledge for adaptation
    - Promote public-private dialogue and awareness, training and education
    - Establish an official web portal among others for verified information on adaptation
5. Promoting synergies between adaptation and mitigation measures and using the ecosystem approach where applicable in adaptation measures.
6. Promoting the implementation of international legal instruments

The 2018 NAS's key principles emphasise a proactive adaptation approach aimed at continuously enhancing resilience to climate change. This process begins with preparing the ground for adaptation, followed by an assessment of climate risks and vulnerabilities. Subsequently, adaptation solutions are identified and then implemented, with careful monitoring and evaluation of their

[42] The HLC is no longer operational.

effectiveness. Based on the outcomes of this evaluation, adjustments may be made, leading back to the preparation of the adaptation setting. This iterative process ensures that adaptation measures remain relevant and effective in the face of evolving climate challenges.

The 2018 NAS key principles encompass several elements. These include prioritising no-regret and win-win measures (mutually beneficial) avoiding maladaptation, ensuring coherence between mitigation and adaptation efforts as well as applying an integrated approach across environmental, economic, and social domains.

2.2.2. Action Plan for the Implementation of the Slovak Climate Change Adaptation Strategy (Adopted in 2021; Strategy horizon: 2027)

With the overarching goal of enhancing Slovakia's resilience to the detrimental impacts of climate change, the Action Plan for the implementation of the Slovak Climate Change Adaptation Strategy (NAP) delineates five overarching cross-cutting measures. These measures aim to bolster the implementation framework, advance scientific inquiry and research in climate change adaptation, establish an efficient crisis management system to address extreme events like floods and fires, promote green infrastructure, and foster education and awareness.

The scope and focus of the NAP are based on the 2018 NAS and build on its contents. Central to the NAP are seven specific focus areas: water protection, management, and utilization; sustainable agriculture; adaptive forestry; preservation of the natural environment and biodiversity; ensuring health and well-being of populations; enhancing the resilience of the built environment; and implementing technical, economic, and social measures. In order to meet the main objective and strategic priorities, and also to provide a framework for the implementation of the specific objectives for each area, 5 cross-cutting actions will be supported through 18 tasks. In total, 45 specific measures and 169 associated tasks have been identified for the duration of the NAP's validity until 2027. Chapter 3 of this report analyses in detail NAP adaptation measures and tasks.

2.2.3. New Action Plan for the Environment and Health of the Inhabitants of the Slovak Republic V (Current version adopted: 2019; Strategy horizon: 2030)[43]

The New Action Plan for the Environment and Health of the Inhabitants of the Slovak Republic (NEHAP V.) aims to minimise risks from environmental factors that can harm and endanger public health. It underscores the need to bolster efforts in addressing primary environmental determinants impacting both individual and population health, including air and water pollution, inadequate drinking water supply, hazardous chemicals, noise pollution, waste management, contaminated sites, and climate change. The action plan was developed through inter-ministerial collaboration, engaging partners from key government departments. The term for implementation varies with some measures planned to be implemented until 2030.

The most relevant priority for climate change adaption in NEHAP V is Priority (e), which focuses on *strengthening adaptive capacity and resilience to climate-related health risks while supporting actions to mitigate climate change in accordance with the Paris Agreement*.

The proposed objectives under this priority aim to address the challenges posed by climate change and enhance public health resilience. Firstly, there is an emphasis on systematically preparing for climate change impacts, focusing on reducing vulnerability and increasing adaptive capacity among citizens, health personnel, and public institutions. This also includes raising awareness of climate change. Additionally, the plan aims to strengthen collaboration between environmental and health authorities and provide accurate information on allergenic organic particles through services like the Pollen Information Service to facilitate informed decision-making. Attention is also directed towards reducing the negative trend in vector-borne disease morbidity. The Annex of the NEHAP presents

[43] https://www.uvzsr.sk/web/uvz/akcny-plan-pre-zivotne-prostredie-a-zdravie-obyvatelov

the list of specific activities under each priority objective, including responsible body, deadline, estimated financial impact and source of funds. Activities are listed for priority (e):

1. Monitoring the evolution of vector-borne diseases
2. Monitoring of tick-borne encephalitis agent in ticks captured in selected risk areas in Slovakia
3. Regular tick prevention campaigns
4. Update and approve the national invasive species strategy and subsequently prepare an action plan for the implementation of measures
5. Identify invasive species in Slovakia, ensure their inventory, prioritisation, research and mapping
6. Renew and expand the network of monitoring stations for monitoring the concentration of biological allergenic particles in the outdoor air
7. Develop information transfer tools, intensify public communication, and awareness-raising campaigns on health and climate change
8. Strengthen dialogue between institutions responsible for public health, nature and biodiversity conservation, and emergency management
9. Prioritise areas with invasive non-native allergenic plant species for eradication and control
10. Develop an Information System (IS) for drinking water, swimming pools and bathing water
11. Creation of an information leaflet on the impact of climate change on human health and its distribution to the general public

2.2.4. National Forestry Programme of the Slovak Republic 2025-2030[44] (Current version adopted: 2024; Strategy horizon: 2030)

The National Forestry Program (NFP) of the Slovak Republic serves as a fundamental document for forestry policy, facilitating sustainable forest management. The NFP operates as an inter-ministerial tool for forestry policy, covering planning, implementation, financing, monitoring, and evaluation. NFP also contributes to fulfilling international obligations, such as those outlined in the EU Forest Strategy and other global agreements. It builds on the National Forestry Programme of the Slovak Republic 2022-2030.[45]

Under the vision "Forests for Society", one of the three global goals outlined in the NFP SR 2025-2030 focuses on adaptation: *Diversified forests better prepared to withstand and mitigate climate change*. These objectives will be achieved through strategic and specific objectives (SO), most of which are directly relevant to climate adaptation, in particular, *Strategic Objective I :*

Strategic objective I: Implement adaptation measures in forests vulnerable to climate change.
- SO 1.1: Improve the effectiveness of forest protection measures in the most threatened stands
- SO 1.2: Achieve the conversion of 10 % ha of forests with inappropriate tree species composition to more resilient mixed forests
- SO 1.3: Ensure the conservation of the forest tree gene pool

In addition, *SOI II* revolves around the introduction of nature-friendly forest management and *SOIII* targets the utilisation of tree species on non-forest land for landscape adaptation to climate change.

2.2.5. Action Plan to Address the Impacts of Drought and Water Scarcity [46] (Adopted: 2018; Strategy horizon: 2025)

The 2018 Action Plan (H2odnota Je Voda) aims to prevent drought and mitigate its negative consequences, particularly in light of climate change. It is structured around three main areas: (1) Enhancing monitoring and establishing a warning system to mitigate drought effects; (2) Supporting

[44]https://www.mpsr.sk/aktualne/oznamenie-o-strategickom-dokumente-narodny-lesnicky-program-sr-2025-2030/19074/
[45] https://www.enviroportal.sk/eia/detail/narodny-lesnicky-program-slovenskej-republiky-2022-2030
[46]https://www.minzp.sk/voda/koncepcne-dokumenty/h2odnota-je-voda-akcny-plan-riesenie-dosledkov-sucha-nedostatku-vody.html

research, development, and modelling to prioritise water supply during prolonged water scarcity; (3) Implementing measures across various sectors, including agriculture, forestry, water retention in river basins and landscapes, and improvements in the built environment.

The Action Plan is accompanied by a Programme of Measures, categorised into preventive, operational, and crisis measures. The estimated cost of implementing selected measures from 2018 to 2020 is approximately EUR 140 million. Measures included in the Action Plan are planned to be implemented until 2025.

Examples of relevant adaptation measures include reassessing the composition of tree species in forests to enhance resilience to drought and reduce vulnerability to environmental stressors in agriculture and forestry. Another measure involves developing a "Master Plan of Sites for the Accumulation and Retention of Surface Water", which identifies suitable locations based on geological and hydrogeological criteria to mitigate floods and droughts. Additionally, the plan envisages the promotion of research in soil science focusing on soil functions and adaptation to extreme weather events and climate change.

Furthermore, the Action Plan includes measures aimed at capturing and infiltrating rainwater using a combination of nature-based and technical features. Examples cited include the planting of vegetation, installation of vegetated roofs and walls, as well as the implementation of underground retention basins for rainwater utilisation. The plan also underscores the importance of environmental education, public awareness campaigns, and research support.

2.2.6. The Urban Development Policy of the Slovak Republic by 2030 (Adopted: 2018; Strategy horizon: 2030) [47]

The *Urban Development Policy of the Slovak Republic by 2030* marks the country's approach to urban development matters. Emphasising the imperative for urban authorities to adopt a systematic approach towards climate change adaptation, the document underscores the importance of integrating climate considerations early in urban planning regulations. It stresses the critical need to assess the vulnerability of territories and anticipate potential climate-related risks across all key areas, as a prerequisite for proposing effective adaptation measures at the local level.

Measure 5 of the Urban Development Policy centres on fostering adaptation to climate change's adverse effects and advocating for the integration of adaptation measures into urban planning. The implementation timeline is *ongoing*, with the Ministry of Environment of the Slovak Republic designated as the responsible authority; additionally, collaboration with the Ministry of Health of the Slovak Republic is emphasised for effective execution.

2.2.7. Greener Slovakia Envirostrategy 2030 - Strategy of the Environmental Policy of the Slovak Republic until 2030 (Adopted: 2019; Strategy Horizon: 2030) [48]

The core vision of the *Envirostrategy 2030* is to enhance environmental quality and foster sustainable economic practices, emphasising robust protection of natural resources and minimising the use of non-renewable resources and harmful substances. This approach aims to enhance public health while promoting environmental consciousness among citizens and policymakers. Efforts to mitigate and adapt to climate change are integral, with specific focus areas outlined in the strategy.

In Chapter 6, climate change adaptation is addressed, with measures aimed at prevention and reduction of its impacts. Part 6.4 emphasises the importance of local authorities in developing and implementing adaptation strategies. Legislative changes will be pursued to ensure adequate preparation and funding for adaptation measures at regional and municipal levels, integrating them

[47] https://www.mindop.sk/uploads/media/177add300b0faa6f4201a4d8a240021e77552653.pdf
[48]https://www.minzp.sk/files/iep/greener_slovakia-strategy_of_the_environmental_policy_of_the_slovak_republic_until_2030.pdf

into urban planning processes. Section 6.5 underscores the significance of protecting ecosystems to mitigate climate change impacts. Sustainable solutions, including carbon storage, water retention, and ecosystem conservation, are proposed to enhance living standards and public health. Key sectors such as agriculture, forestry, business, healthcare, and territorial development will be aligned to address climate change and ecosystem preservation effectively, eliminating inconsistencies and promoting synergy between strategies.

Other relevant chapters addressing climate adaptation measures include Chapter 2 on the effective protection of nature and landscape and Chapter 7, focusing on protection against flood consequences. It emphasizes integrating green measures into the flood protection system alongside essential technical infrastructure. The strategy prioritizes the prevention of damage by addressing root causes and ensuring urban planning aligns with flood maps to mitigate risks effectively. In addition, chapter 8 delves into strategies to combat droughts and water scarcity issues highlighting the importance of enhanced planning across urban, agricultural, and forested landscapes to optimise water management. Notably, urban development projects are urged to integrate measures that preserve natural water accumulation processes, while agricultural and forestry practices will focus on bolstering soil water retention and reducing erosion.

2.2.8. Low-Carbon Development Strategy of the Slovak Republic until 2030 with a View to 2050 (Adopted: 2020; Strategy horizon: 2030 with a view to 2050)

The *Low-Carbon Development Strategy of the Slovak Republic until 2030 with a View to 2050* outlines a long-term roadmap for transitioning to a low-carbon economy, with the ultimate goal of achieving climate neutrality by 2050. The strategy emphasises the need for cost-effective measures to reduce emissions while considering economic and social impacts. It acknowledges that current measures alone will not achieve climate neutrality by 2050 and proposes additional measures to bridge the gap. Implementation will require collaboration across sectors and society, with horizontal implementation overseen by the Council of the Government of the Slovak Republic for the European Green Deal and Low-Carbon Transformation.

When detailing the Adaptation Policies and Measures (2.2), the strategy refers to the 2018 NAS as a key framework without specifying additional measures or actions.

2.2.9. Draft update of the National Energy and Climate Plan (NECP) for the period 2021-2030 (Adopted: 2023; Strategy horizon: 2030)

Slovakia's draft updated national energy and climate plan ('the draft updated NECP') was submitted on 23 August 2023. Among others, key targets in the draft updated NECP for 2030 include a reduction of 22.7% in greenhouse gas (GHG) emissions for non-ETS sectors and a 23% incorporation of renewable energy sources in final energy consumption. It also establishes a target of national contribution in energy efficiency at 30.3% and a national electricity interconnection of at least 15 %. Furthermore, alongside these, the draft updated NECP emphasises implementing measures to enhance the security of energy supply and ensure affordability.

The draft updated NECP explicitly references the 2018 NAS and the NAP and emphasises their prioritisation for adaptation actions. It does not outline additional adaptation policies or measures.

2.2.10. Slovakia's Recovery and Resilience Plan (Adopted: 2021; Strategy horizon: 2026)[49]

Slovakia's Recovery and Resilience Plan (RRP), approved by the Council in July 2021 and updated in July 2023, encompasses reforms and investments aligning with REPowerEU objectives. Valued at €6.408 billion and entirely financed by RRF grants, it comprises 64 investment streams and 70 reforms. Notably, 46% of the plan focuses on climate objectives, with 21% targeting the digital transition. The plan addresses key challenges related to the green transition, emphasising renewable

[49] https://rokovania.gov.sk/RVL/Material/28317/1

energy, energy efficiency, transport, industry decarbonisation, and climate adaptation. The climate adaptation measures, which amount to almost €150 million, encompass a combination of investments and reforms in nature protection, water management, and landscape planning. Their overarching goals are to conserve biodiversity and foster a sustainable local economy. As part of these efforts, approximately 90 kilometres of watercourses will undergo renaturation processes. All measures must be implemented within a strict time frame, as mandated by the Regulation which stipulates that all milestones and targets must be achieved by August 2026.

Component 5 of the RRP focuses on adaptation measures, specifically addressing climate change. This component includes two reforms and one investment:

Reform 1: Landscape Planning Reform This reform aims to establish a framework for protecting landscape structures, ecological stability, and biodiversity within spatial planning documentation and subsequent approval processes for building permits and activities. Methodological documents and map documents will be developed to serve as a professional basis for spatial planning, ensuring the preservation of landscape structures and biodiversity.

Reform 2: Entry into Force of Amended Nature and Landscape Protection Act and Water Legislation This reform targets the enhancement of habitats in protected areas to bolster their long-term contribution to landscape protection and resilience against climate change. Amendments to the Nature and Landscape Conservation Act and water legislation will strengthen institutional nature protection, streamline protected area management, and integrate national parks. The reformed legislation will prioritise nature and biodiversity conservation.

Investment 1: Adaptation of regions to climate change with an emphasis on nature conservation and biodiversity development. For investment 1, three distinct components are essential to support climate change adaptation: revitalisation of watercourses, property settlements with non-state owners of land in protected areas, and development projects in the Poloniny and Muránska planina. Due to the thematic complexity of these components, several departments within the Ministry of E (MoE) are involved. The estimated contribution is EUR 35 million.

2.2.11. Water Plan of Slovakia for the years 2022 and 2027 (Adopted: 2022; Strategy horizon: 2027) [50]

The Water Plan of Slovakia, aligned with the EU Water Framework Directive, addresses national-level water management. A dedicated chapter focuses on climate change adaptation, evaluating its impacts on surface water and groundwater quantity and quality. Approved by the government of the Slovak Republic on May 11, 2022, this plan includes specific measures for the Danube and Vistula river basins.

2.2.12. Water Policy Concept for 2030 with an outlook to 2050 (Adopted: 2022; Strategy horizon: 2030 with a view to 2050)[51]

The Water Policy Concept aims to translate the commitments and objectives of water protection and management into actionable strategies. It intends to facilitate the continued implementation of the Water Framework Directive through river basin management plans and the Water Plan of Slovakia. The development of the Water Policy Concept was a collaborative effort undertaken from 2020 to 2021, involving key experts from various sectors. A Working Group was established to oversee the development process. The implementation of the concept will be evaluated in the second third of the implementation of the concept (2027) and at the end of the validity of the concept (2030) when the update of the concept of water policy of Slovakia is planned to be elaborated.

The implementation of the Water Policy Concept adheres to a set of guiding principles, one of which is *Adapting to climate change*. In line with this, it delineates several specific objectives and

[50] https://www.minzp.sk/voda/vodny-plan-slovenska/
[51] https://www.minzp.sk/voda/koncepcne-dokumenty/koncepcia-vodnej-politiky-roky-2021-2030-vyhladom-do-roku-2050.html

corresponding measures aimed at bolstering Slovakia's capacity to adapt to climate change. These objectives include:

Objective 1.1: A country capable of retaining water and mitigating the effects of climate change, which involves implementing integrated landscape management practices at the sub-basin level, where adherence to principles of sustainable water management becomes legally obligatory. It also entails supporting measures aimed at slowing down water runoff and retaining it in the cultural landscape in line with the 2018 NAS. It prioritises nature-based water retention measures.

Objective 2.1: A new approach to stormwater management in urban areas, which involves clarifying and differentiating the permitting process for simple water conservation and adaptation measures, particularly concerning their location within urban settings.

Objective 2.3: Protection of property, health, and lives against floods in agglomerations, which includes implementing new modifications of watercourses in urban areas, accompanied by revitalisation and adaptation efforts. This includes the installation of migration barriers on watercourses for fish and aquatic animals, measures to preserve aquatic habitats during periods of low water flow, and the enhancement of public spaces around rivers.

Objective 6.1: Systematic restoration of watercourses, including riparian wetlands, and mitigation of adverse impacts of water use, which includes the development and implementation of revitalisation projects aimed at restoring the original character of watercourses and retaining water in the landscape. Among others, this seeks to improve adaptation to the negative effects of climate change.

Objectives 10.5 Finance adaptation measures to increase water sector resilience which includes promoting measures that maintain ecosystem services even amidst changing climate conditions, without increasing operational costs, and establishing financial mechanisms and legislative frameworks to support adaptation activities in water and landscape management, encouraging private sector involvement.

2.3. Other policy documents and assessments relevant to climate adaptation

2.3.1. Prioritisation of MoE's investment projects (Current version: 2023; Straregy horizon: n/a) [52]

The document sets out the methodology for prioritising investment projects within the MoE. Government Resolution No. 649/2020 mandates the preparation and publication of analytically-based methodologies for determining investment priorities, as well as the publication of prioritised investment plans and timetables for investments exceeding EUR 1 million. Prioritisation methodologies vary across sectors. For instance, the remediation of environmental burdens relies on detailed geological surveys and risk analyses, while flood control measures employ a sophisticated system. Drinking water supply projects utilise a new scoring system.

For the prioritisation of measures in the context of climate change adaptation, the document relies on the principles of the NAP and emphasises the need to prioritise funding distribution to maximise benefits: adaptation funding should be concentrated in the most affected areas of the country. The methodology presented therefore prioritises municipalities according to their vulnerability to three climate hazards: extreme heat, extreme precipitation, and drought, and are divided into ten categories based on vulnerability to each threat, considering socio-economic and landscape factors. According to the results, for extreme heat, southern Slovakia, including the capital city, is most at risk. For droughts, the southwest, including Žitný ostrov (known also as Rye Island), faces significant

[52] https://www.minzp.sk/files/iep/priorizacia_projektov_mzp.pdf

threats, impacting agricultural production and food security. Extreme rainfall threats are concentrated in the north, particularly affecting villages with marginalised Roma communities due to underdeveloped infrastructure.

In addition, the document highlights that while climate change adaptation requires increased funding, particularly depending on the severity of climate change impacts, other investments in sectors like restoration, and sediment removal are not currently leading to major costs. However, unlike investment needs for other areas, the specific investment required for climate change adaptation measures is unknown. The document highlights Slovakia's lack of a formalised methodology to assess adaptation needs.

2.3.2. Progress towards objectives, targets and contributions (Decarbonisation: adaptation) (Last report delivered in 2023) [53]

The report responds to the obligation on decarbonisation adaptation progress in accordance with EU commitments outlined in Art. 17(2)(d) of Implementing Regulation 2022/2299, Annex III.

While the report references other documents containing adaptation goals, such as the NAP, it does not introduce any new measures. Instead, it provides insights into the existing risks and challenges within the energy sector and emphasises the importance of integrating adaptation measures into future planning and investment projects.

2.3.3. Assessment of progress towards adaptation in Slovakia under the European Climate Law (2023)[54]

The main EC conclusions regarding Slovakia's climate adaptation progress are as follows:

- Slovakia has continued to enhance its climate monitoring and modelling tools. However, methodological gaps persist in monitoring adaptation and climate risks, limiting the capacity for systemic risk assessments and translating climate risk information into actionable solutions.
- There have been no major changes in governance structures since 2021, with the MoE taking primary responsibility for implementing, monitoring, and reporting on the 2018 NAS and the NAP. The Ministry of the Interior is also engaged in disaster risk management tasks. Efforts are underway to mainstream climate adaptation in interministerial coordination, disaster risk management, and environmental impact assessments. Furthermore, the adoption of a national climate law is being prepared.
- Adaptation efforts appear to have been effectively mainstreamed since 2021. However, climate risk management is not fully integrated into insurance policies, leading to a climate protection gap that could impact public finances significantly in the event of a major climate event. There is also a lack of funding and promotion of nature-based solutions, despite their inclusion in Slovakia's RRP. Additionally, there may be unresolved conflicts of interest between different ministries, and stakeholder engagement does not seem to prioritise vulnerable groups.
- Slovak regions and cities are increasingly developing and implementing adaptation policies, including in cross-border cooperation. However, there is a lack of detail on how these policies are reviewed and updated in the 2023 reporting.
- No new financing mechanisms have been introduced, and there is still a lack of a database of adaptation-related spending. Additionally, demonstrating the results of adaptation policies, such as reductions in risks and increases in adaptive capacity, remains challenging due to the absence of a vulnerability assessment of the country.

[53] Reported under Instrument: Regulation on the Governance of the Energy Union and Climate Action https://reportnet.europa.eu/public/dataflow/897

[54] EC (2023) Commission Staff Working Document. *Assessment of progress on climate adaptation in the individual Member States according to the European Climate Law* https://climate.ec.europa.eu/system/files/2023-12/SWD_2023_932_1_EN.pdf

2.3.4. Recommendations on the Draft update of the NECP for the period 2021-2030 (2023) [55]

The document provides recommendations on the draft update of the NECP for the period 2021-2030. The recommendations are based on the *Assessment of progress towards adaptation in Slovakia under the European Climate Law*.

With regards to climate adaptation, the document includes a section specifically with *Recommendations on the consistency with the Union's climate-neutrality objective and with ensuring progress on adaptation*. These recommendations include:

1. Establish an appropriate legal framework for climate change adaptation policy and action. Ensure progress in the implementation of adaptation measures. Ensure that public and private financing mechanisms for adaptation actions are in place and that the budgets are commensurate with the investment needs, in particular in the priority vulnerable sectors.

2. Engage stakeholder groups that are particularly vulnerable to the impacts of climate change in Slovakia´s adaptation policy design and implementation. Document the processes and outcomes of relevant consultations Improve coordination between different levels of governance (national/regional/local) to align planning tools and help coordinate interventions aimed at 'systemic' transformation. Establish mechanisms to ensure that sub-national policies are prepared and that they are regularly reviewed and updated.

3. Promote nature-based solutions and ecosystem-based adaptation in national strategies, policies and plans and provide investments for their deployment.

The document also emphasises the importance of improving funding mechanisms for adaptation actions, enhancing stakeholder engagement, and promoting systemic transformation towards climate resilience.

2.3.5. Complementary sectorial documents and their relevance to adaptation

In addition to the policy documents analysed in the previous sections, there are additional documents across various ministries that directly or indirectly address aspects of climate adaptation. Analysing these documents helps to identify potential gaps. **Error! Reference source not found.** presents these documents and their relevance, if any, to climate adaptation policy in Slovakia.

Table 2-2 Complementary sectorial documents and their relevance to climate adaptation

Body	Document	Year	Relevance to Climate Adaptation Policy Framework
Ministry of Economy	Energy Policy of the Slovak Republic	2014	Relevant for climate adaptation as it emphasizes the importance of transitioning to low-carbon electricity generation
	National Policy Framework for the Development of the Alternative Fuels Market	2015	No specific mention of adaptation to climate change is made in this document, indicating a potential gap
	National Hydrogen Strategy + Action Plan for the Implementation	2021	No specific mention of adaptation to climate change is made in this document, indicating a potential gap
	Action Plan for the Development of Electromobility	2023	No specific mention of adaptation to climate change is made in this document, indicating a potential gap
Ministry of Agriculture	National Action Plan Organic Agricultural Production 2023-2027	2023	No specific mention of adaptation to climate change is made in this document, indicating a potential gap

[55] EC (2023) *Commission Recommendation of 18/12/2023 on the draft updated integrated national energy and climate plan of Slovakia covering the period 2021-2030 and on the consistency of Slovakia's measures with the Union's climate-neutrality objective*. Retrieved from https://commission.europa.eu/publications/commission-recommendation-assessment-swd-and-factsheet-draft-updated-national-energy-and-climate-3_en

Body	Document	Year	Relevance to Climate Adaptation Policy Framework
	National Action Plan to Achieve Sustainable Use of Plant Protection Product	2021	One of the main objectives of this plan is to adapt agriculture and forestry to climate change, acknowledging the need for measures to mitigate the impacts of changing climatic conditions.
	Package of Measures in the Area of Hydro melioration for Adaptation to Climate Change and Renewal of the Irrigation Infrastructure in Slovakia	2022	Aims to create conditions for water management, strengthen agricultural competitiveness, ensure food security, and reduce risks from climate change. It includes technical measures supporting effective water management and reducing negative consequences such as agronomic and hydrological droughts and torrential rains.
	Strategic Plan for the Development of Aquaculture in the Slovak Republic until 2030	2022	Highlights the need for adaptation to climate change and mitigation of its consequences in aquaculture. It emphasizes the necessity of reconstructing and modernising facilities, planning amelioration measures, and supporting entities affected.
	National Program of Stabilisation and Development of Slovak Beekeeping 2019/2020 to 2021/2022	2019	No specific mention of adaptation to climate change is made in this document, indicating a potential gap
Department of Defence	Defense Strategy of the Slovak Republic	2021	• Identifies key challenges such as massive illegal migration linked to dysfunctional states and climate change, as well as global health threats. • Underscores the need to counter extremism infiltrating armed forces and state administration bodies, while also addressing attempts by entities to usurp tasks exclusive to the armed forces.
	Act 435/2010 Coll. on the provision of subsidies within the scope of the Ministry of Defense of the Slovak Republic	2010	• The act outlines a range of actions to achieve ecological stability, maintain a favourable environment, and address natural disasters. • Measures include the removal of invasive species, ecological projects, forest care programs, fire protection and flood measures, land melioration, disaster response, water resource protection, waste management, and ecosystem revitalisation.
	Draft Military Strategy of the Slovak Republic	2021	Highlights the need for the Armed Forces to adapt to climatic challenges to maintain operational effectiveness.
	Armed Forces of the Slovak Republic: Climate Change Preparedness Strategy	2023	Specifically addresses climate change preparedness within the Armed Forces, outlining measures to mitigate climate-related risks and enhance resilience in military operations.
Ministry of Interior	National Strategy for Risk Management of Security Threats of the Slovak Republic	2022	• Emphasises integrating civil protection and crisis management for an integrated approach to risk management and multi-sector cooperation. • Prioritises the protection of life, health, property, environment, and social values, acknowledging the necessity of adapting society to climate change. • Current threats include natural disasters, locally spread diseases, epidemics, and adverse effects of climate change on infrastructure and public health. • Focuses on preventive measures, modern technology utilisation, training, crisis communication, and education to reduce vulnerability and enhance resilience • Thematic focus includes modelling and unification of procedures and data indicators across departments for adaptability to climate change. • Priority area 1 emphasizes adapting legislative framework and processes, and institutional revision to reduce vulnerability and increase resistance to

Body	Document	Year	Relevance to Climate Adaptation Policy Framework
			threats. ·Activities involve synchronizing prevention, preparedness, response, and recovery measures at all levels of government and civil society.
	Action Plan for the Slovak Republic's National Strategy for the Management of Security Threats until 2025	2023	·Priority area 2P2 emphasizes the environment, specifically supporting climate change adaptation and disaster risk prevention and resilience. The objective is to strengthen and modernize intervention capacities for managing biological, technological, and economic disasters resulting from climate change. ·Support includes modernizing and constructing modules of the Union Mechanism in civil protection, such as aerial forest fire extinguishing, due to the heightened risk of large-scale forest fires.
	Concept of the organization and development of civil protection and crisis management until 2027	2022	No specific mention of adaptation to climate change is made in this document, indicating a potential gap
	Action plan for the Concept of the organization and development of the integrated rescue system until 2027	2023	No specific mention of adaptation to climate change is made in this document, indicating a potential gap
	Concept of the organization and development of the integrated rescue system until 2027	2022	No specific mention of adaptation to climate change is made in this document, indicating a potential gap
Ministry of Education, Science, Research and Sport	National Strategy for Research, Development, and Innovation 2030	2023	·Priority areas will be connected with the initiatives of cities participating in EU missions for climate-neutral and smart cities by 2030 and adaptation to climate change. ·The strategy aims to align national missions with European and Slovak domains of intelligent specialization, strategically coordinating resources to maximize Slovakia's potential. Additionally, tools will be strengthened to address various challenges, including those posed by climate change, urbanisation, decarbonisation, and technological advancements, among others.
	Research and Innovation Strategy for Smart Specialisation of the Slovak Republic 2021-2027	2021	·Consumer preferences in Slovakia's food sector are shifting, mirroring trends in other EU countries, necessitating greater alignment with innovative food systems. ·To address these challenges and trends, there's a need for enhanced collaboration with the research and innovation ecosystem, focusing on sustainability, quality, and safety of natural resources, including biodiversity and ecosystems, amidst increasing human lifestyle pressures and land-use intensification.
	Roadmap of Research Infrastructures - SK VI Roadmap 2020-203	2021	·Highlights the role of the National Gene Bank of the Slovak Republic in the long-term conservation and research of plant genetic resources, including their adaptability and plasticity in response to climate change. It underscores the importance of preserving genetic diversity in the face of changing environmental conditions.
	National strategy for open science 2021-2028 + Action Plan 2021-2022	2021	No specific mention of adaptation to climate change is made in this document.

Body	Document	Year	Relevance to Climate Adaptation Policy Framework
	Long-term intention 2023-2028[56]	2023	No specific mention of adaptation to climate change is made in this document.
	Open Science Action Plan 2024	2024	No specific mention of adaptation to climate change is made in this document.
Others	Strategy on Adaptation to Climate Change- International Commission for the Protection of the Danube River (ICPDR)[57]	2018	• Aims to offer guidance on the integration of climate change adaptation into ICPDR planning processes. • Relevant EU Directives and Policies, such as the EU Strategy on Adaptation to Climate Change and the EU Water Framework Directive, inform the strategy. • It describes the ICPDR's approach to integrating climate change adaptation into its activities, including the Danube River Basin Management Plan and Flood Risk Management Plan. • An overview of possible adaptation measures for the most relevant impact fields is included with a link to an online tool.

2.4. Adaptation plans at the sub-national level

In Slovakia, various adaptation plans and strategies are being implemented at the sub-national level.https://www.sazp.sk/zivotne-prostredie/starostlivost-o-krajinu/zelena-infrastruktura/zelena-infrastruktura-v-procese-adaptacie-na-zmenu-klimy.html[58] In terms of the legislative framework, it is the Spatial Planning Act 88 contains adaptation measures at the regional level. [59]

For this study, we conducted a comparative analysis to evaluate sub-national adaptation strategies. We gathered a total of 20 documents, including 17 at the city level (from 39 cities meeting a population threshold of at least 20,000 citizens) and 3 at the regional level (with 5 regions lacking adaptation strategies). Our assessment focused exclusively on documents linked to self-governing regions and municipalities. The methodology for evaluation and the criteria considered are outlined in Box 2-2, with the assessment results presented in Table 2-3.

Box 2-2 Methodology for assessing sub-national adaptation strategies

The methodology for assessing sub-national adaptation strategies in Slovakia conducted for this study involved several key steps and criteria:

1. **Data Collection**: Information on adaptation plans and strategies at the sub-national level was gathered from publicly available documents on the websites of individual cities or regions.

2. **Selection for assessment**: Regions and cities/towns were selected based on the presence or absence of adaptation strategies. Cities with a population threshold of at least 20,000 citizens were included in the analysis. Adaptation documents not associated with self-governing regions or cities with over 20,000 citizens, such as city boroughs were excluded

[56] Long-term intention in educational, research, development, artistic and other creative activities for the area of higher education institutions for the years 2023-2028

[57] The International Commission for the Protection of the Danube River (ICPDR) is a transnational body, which has been established to implement the Danube River Protection Convention. The ICPDR is formally comprised by the Delegations of all Contracting Parties to the Danube River Protection Convention, but has also established a framework for other organisations to join. Today, national delegates, representatives from highest ministerial levels, technical experts, and members of the civil society and of the scientific community cooperate in the ICPDR to ensure the sustainable and equitable use of waters in the Danube River Basin. For more information about ICPDR, see https://www.icpdr.org/about-icpdr/framework/about-us

[58] See the dedicated website by the Slovak Environmental Agency https://www.sazp.sk/zivotne-prostredie/starostlivost-o-krajinu/zelena-infrastruktura/zelena-infrastruktura-v-procese-adaptacie-na-zmenu-klimy.html

[59] Spatial Planning Act 88 - https://stavebnyurad.gov.sk/www/media/layout/1689343456-2568-ZZ_2022_200.pdf

from the assessment.

3. **Assessment against defined criteria:** The adaptation strategies were evaluated against specific criteria, including time horizon, budget and funding, response to climate threats, spatial climate risk assessment, sectoral risk assessment, multidimensional risk assessment, adaptation capacity assessment, evaluation mechanism, methodological logic, and applicability as a management tool, as shown in the assessment grid. Points were assigned based on the criteria:

- *Budget and funding allocation*[60]*:* extent to which this information is included in the strategy
- *Response to climate change threats:* Considers strategy's coverage of different climate threats.
- *Spatial risk assessment:* evaluates strategy's analysis of vulnerable areas in detail.
- *Sectoral risk assessment*: assesses strategy's evaluation of risks across different sectors.
- *Multi-dimensional risk assessment*: considers social, infrastructural, and environmental risks.
- *Adaptation capacity assessment*: evaluates the readiness of the city or region to react or prevent the negative effects of climate change from a process and institutional point of view
- *Evaluation mechanism:* assesses strategy's method for tracking progress and effectiveness, including detailed indicators and method of implementation
- *Methodological logic*: examines strategy's coherence and systematic approach.
- Applicability as a management tool: considers strategy's practicality for decision-makers

4. **Scoring and ranking**: Each adaptation strategy was scored based on the extent to which it met the criteria, with points (from 0 to 3) allocated according to a predetermined scale for each criterion. For instance, a score of 3 points for the criteria applicability as a management tool for city/region development would indicate guidance and actionable recommendations tailored to local government needs. Based on the results, the adaptation strategies were classified into three categories:

- *Robust*: Adaptation strategies that demonstrate strong alignment with assessment criteria and are well-developed, and effective in addressing climate change impacts across sectors. These strategies provide thorough risk assessments, clear methodologies, and high applicability as management tools for the city
- *Developing*: Adaptation strategies that show potential and effectiveness in addressing climate change impacts but may require further refinement in certain areas. While they offer valuable insights and guidance, there may be opportunities for strengthening some aspects.
- *Preliminary*: Adaptation strategies that are in the early stages of development and may need significant improvements to adequately address climate change impacts. These strategies may lack risk assessments or clear methodologies but show potential for improvement.

[60] This criterion is not included in Table 2-3. for readability reasons, as only one strategy includes this information. The details will be described in the analysis of results following the table.

Table 2-3 – Assessment of subnational adaptation strategies: a comparative analysis

	Plan (City or region)	Year	Time horizon	Criteria								Final assessment (Box 2-2)
				Response to Climate Threats	Spatial climate risk assessment	Multi-sectorial risk assessment	Multi-dimensional risk assessment	Adaptation capacity assessment	Evaluation mechanism	Method logic	Applicability as a management tool	
City level	Action Plan For Sustainable Energy And Climate – City of Bratislava	2024	2024-2030	Yes	Yes	Yes	Yes	No	Yes	High	High	Robust
	Adaptation Plan For Climate Change – City Of Kosice	2022	2022-2030	Yes	Yes	Yes	Yes	Yes	Yes	High	High	Robust
	Adaptation Strategy And Action Plan To Adverse Consequences Of Climate Change – City Of Žilina	2023		Yes	Yes	Yes	Partially	Partially	Partially	High	Medium	Robust
	Strategy Of Climate Change Adaptation – City Of Martin	2024		Yes	Yes	Yes	Yes	Yes	Yes	High	High	Robust
	Strategy Of Climate Change Adaptation – City Of Spisska Nova Ves	2024		Yes	Yes	Yes	Yes	Yes	Yes	High	High	Robust
	Strategy For Adverse Consequences Of Climate Change - City Of Hlohovec	2021		Yes	Yes	Yes	Partially	Yes	No	High	High	Robust
	Basic Strategy For Adaptation To The Adverse Consequences Of Climate Change In The City Of Presov	2018		Yes	Partially	No	Yes	No	No	High	Low	Developing
	Adaptation Strategy Of Trnava City On Climate Change Impacts – Heat Waves	2015	2015-2017 (Action Plan)	Partially	Yes	Partially	Partially	Partially	No	Medium	Medium	Developing
	Action Plan For Mitigating And Adapting To Climate Change - Brezno City	2023		Yes	Yes	Yes	Yes	Inconclusive	Partially	High	Low	Developing
	Action Plan For Climate Mitigation And Adaptation – City Of Banská Bystrica	2023		Partially	Inconclusive	Inconclusive	Inconclusive	No	Inconclusive	Low	Low	Preliminary:
	Strategy For Climate Change Adaptation - City Of Nitra	2019	2020-2025	Partially	No	Inconclusive	Partially	No	No	Low	Medium	Preliminary
	Strategy For Climate Change Adaptation Measures Strategy - City Of Trenčín	2019		Inconclusive	No	Partially	Inconclusive	No	No	Low	Low	Preliminary
	Prievidza City Adaptation Strategy For Climate Change	2022		Partially	Inconclusive	Inconclusive	Partially	No	Inconclusive	Low	Low	Preliminary
	City Of Zvolen Adaptation Strategy For Climate Change – Use Of Rainwater	2015		Partially	No	Inconclusive	Inconclusive	No	No	Low	Low	Preliminary
	Draft Action Plan Mitigating & Adapting To Climate Change - Bardejov City	NA		Partially	No	Inconclusive	Inconclusive	No	No	Low	Low	Preliminary
	Draft Action Plan For Climate Change Mitigation & Adaptation – City Of Šaľa	NA		No	No	No	No	No	Inconclusive	Low	Low	Preliminary
	Action Plan For Climate Change Preparedness - City Of Snina	2022	2023-2030	Partially	Inconclusive	Partially	Inconclusive	No	Inconclusive	Low	Low	Preliminary
Region	Climate Change Adaptation Strategy Of The Bratislava Self-Governing Region	2023	2023-2030	Yes	Yes	Partially	Yes	Yes	Yes	High	High	Robust
	Climate Change Adaptation Strategy Of The Kosice Self-Governing Region	2020		Partially	Yes	Partially	Yes	No	No	Medium	Medium	Developing
	Climate Change Adaptation Strategy Of The Presov Self-Governing Region	2023		Inconclusive	Inconclusive	Partially	Partially	No	Inconclusive	Low	Low	Preliminary

The overall finding of the analysis summarised in Table 2-3. is that sub-national adaptation strategies/plans in Slovakia currently span a spectrum of maturity. While a subset demonstrates robustness (7 out of 20), aligning well with the assessment criteria in (Box 2-2) and effectively addressing climate change impacts across sectors, others are still in the developing or preliminary stages. The strategies categorised as *developing* (4) exhibit potential for enhancement, while the *preliminary* (9) ones require substantial refinement. Geographical coverage of subnational strategies also varies substantially, with only a few (3 out of 8) regions having developed a strategy and with most of the smaller towns missing their strategies.

In general, **despite the progress made in implementing adaptation plans, there remains a challenge regarding the scattered nature of municipal plans, suggesting a need for more data collection and coordination efforts**. The assessment by the EC points out uncertainty regarding the extent of progress in reviewing and updating subnational adaptation policies, strategies, plans, and measures.[61]

Geographical coverage and overall assessment of strategies

- **Out of 8 self-governing regions only 3 regions have developed an adaptation strategy**, with only Bratislava region being ranked as robust. Progress with respect to regional coverage as well as the depth of analysis is therefore needed as regional strategies provide an important building block for strategies of smaller towns in respective regions.
- **Despite there being 39 cities with populations over 20,000 in Slovakia, only 17 have developed adaptation strategies**. Moreover, only 9 towns that are not a regional capital (i.e. largest towns) have developed a strategy, indicating a particular lack of strategies for small and medium-sized cities. This indicates a considerable gap that needs addressing to guide the remaining cities in the adaptation process effectively.
- **All of the 8 regional capitals have prepared an adaptation strategy**, but only 3 have been assessed as robust, so additional effort is needed to enhance their maturity.

Evaluation of key criteria

- **Time horizon** - The majority of analysed sub-national adaptation strategies lack a clear time horizon for implementation, emphasising the need for more precise planning and scheduling to ensure effective adaptation measures.
- **Budget and funding allocation** for sub-national adaptation efforts is a significant challenge, as only one of the revised strategies (*Adaptation Strategy Of Trnava City On Climate Change Impacts)* specifies budgetary provisions, suggesting the need for enhanced financial planning and resource mobilisation.
- **Spatial climate risks** - While many sub-national adaptation strategies address relevant climate threats, some fall short in adequately assessing spatial climate risks, indicating a potential gap in identifying vulnerable geographic areas. We note that for a smaller town, spatial risks may be less critical compared to a larger region.
- **Sector-specific risk assessment** - Sub-national adaptation strategies that assess risks within specific sectors are more prevalent, indicating a robust understanding of sectoral vulnerabilities in certain cities/regions. However, this approach is not present across all revised strategies.
- **Multi-dimensional risk assessment** - Only 8 out of the 20 strategies reviewed showed a multi-dimensional risk assessment. While many sub-national strategies assess risks from various perspectives, some lack a holistic approach, indicating room for improvement in considering social, infrastructural, and natural environmental factors.
- **Adaptation capacity assessment** - The assessment of adaptation capacity varies across strategies, with most failing to evaluate the readiness of the city or region to react or prevent

[61] EC (2023) Commission Staff Working Document. *Assessment of progress on climate adaptation in the individual Member States according to the European Climate Law* https://climate.ec.europa.eu/system/files/2023-12/SWD_2023_932_1_EN.pdf

negative climate change effects from a process and institutional standpoint. Only 5 out of 20 strategies have incorporated this evaluation aspect.

- **Evaluation mechanism** - There is a notable gap in evaluation mechanisms within subnational-adaptation strategies, with only 5 strategies including a mechanism for evaluating objectives.
- **Methodological clarity** remains a challenge, with around half of the strategies showing adequate methodological logic in presenting information.
- **Applicability as a management tool** - In terms of applicability as a management tool for city/region development, only a few strategies demonstrate high applicability, with 6 out of 20 being exemplary in this regard.

2.5. Gap analysis

As an EU Member State, Slovakia is expected to transpose and implement various policies agreed upon at the EU level. Inherent to this process is a lag between when a policy is adopted at the EU level and when it is integrated into a national framework.

The purpose of this gap analysis is to determine which of the current climate adaptation relevant policies in Slovakia are aligned with the current EU framework, and which should be reviewed and updated based on EU-level developments. Table 2-4 below presents this analysis in a colour-coded format, where green reflects alignment, red reflects non-alignment with EU policies that have been in place for longer than one year, while yellow indicates non-alignment with policies that have been adopted recently or whose implementation start date is still expected.

Table 2-4 Gap analysis of Slovakia's adaptation policies and current EU framework

EU Policy	Alignment	Policy in Slovakia
EU Climate Law	🟡	Slovakia is in the process of drafting a Climate Law aimed at legally embedding the goal of achieving climate neutrality. In March 2023, Slovakia provided an update on the progress of its NECP reaffirming its commitment to the climate-neutrality objective. This commitment is further underscored in the draft updated NECP in 2023.
LULUCF Regulation	🔴	According to the EC's assessment of the draft updated National Energy and Climate Plan of Slovakia (hereafter "2023 NECP EC's assessment"), the NECP falls short in fully reflecting the increased ambition outlined in the LULUCF Regulation and does not outline a clear pathway for increasing Slovakia's land sector contribution to the EU's overall enhanced climate target. [62] The EC recommends setting out a concrete pathway towards reaching the national LULUCF target as defined in Regulation (EU) 2018/841. Include additional measures in the LULUCF sector, detailing their timing and scope, and quantifying their expected impacts to ensure that greenhouse gas removals are effectively aligned with the 2030 EU net removal target of – 310 Mt CO2eq and with the country-specific removal target of -504 kt CO2eq. The legislative process is currently underway for a draft Law on Landscape Planning (LP/2023/519)
Common Agricultural Policy	🟢	Slovakia's CAP Strategic Plan 2023-2027 is in place[63] . Amendments to the CAP Strategic Plan submitted by the Slovak Republic in November 2023 were approved by the Commission.

[62] EC (2023) COMMISSION STAFF WORKING DOCUMENT *Assessment of the draft updated National Energy and Climate Plan of Slovakia* Accompanying the document- COMMISSION RECOMMENDATION on the draft updated integrated national energy and climate plan of Slovakia covering the period 2021-2030 and on the consistency of Slovakia's measures with the Union's climate-neutrality objective and with ensuring progress on adaptation. Retroeved from: https://commission.europa.eu/publications/commission-recommendation-assessment-swd-and-factsheet-draft-updated-national-energy-and-climate-3_en

[63] https://agriculture.ec.europa.eu/cap-my-country/cap-strategic-plans/slovakia_en

EU Policy	Alignment	Policy in Slovakia
Forest Strategy 2030		The National Forestry Programme (NFP) of the Slovak Republic 2025-2030 (published in February 2024) aims to establish the national framework for the implementation of the Forest Strategy 2030. However, the EC's assessment of the draft NECP (2023) pointed out some gaps. These include concerns regarding the efficacy of certain actions outlined in the NFP, such as afforestation with fast-growing trees, in enhancing carbon sinks and safeguarding biodiversity. Additionally, the absence of assessments regarding the impacts of ecosystem restoration measures on carbon sinks and biodiversity within the programme was noted. As of now, it remains unclear whether the recommendations and gaps identified by the EC have been addressed in the updated version of the NFP.
Biodiversity Strategy 2030		Biodiversity protection is featured in some of the key strategic policy documents of Slovakia outlined in the previous section. For instance, a primary objective of the Slovak Environment Policy Strategy 2030 (Envirostratégia 2030) is halting the loss of biodiversity. In addition, biodiversity is one of the 7 specific areas at the core of the NAPs. Both the NAP and the Water Policy Concept refer explicitly to the commitments adopted by Slovakia as part of the EU Biodiversity Strategy. However, the new National Biodiversity Strategy and Action Plan 2030 (NBSAP) is still under preparation. [64] The proposed Nature Restoration Law would add additional requirements that will need to be integrated into the SK framework.
Water Framework Directive (WFD)		The *Concept of Water Policy of the Slovak Republic Until 2030 With a View to 2050* is closely aligned with the EU water protection policy. At its core lies the WFD) 2000/60/EC, which has been integrated into Slovak legislation through the Water Act (Act No. 364/2004 Coll.) and other relevant regulations. Another critical legal framework is Act No. 442/2002 Coll., which governs public water supply, sewerage, and wastewater treatment, ensuring the provision of safe drinking water and sanitation services to the population.
Common Fisheries Policy		Implementation is still underway. The EC has adopted the EMFAF Programme for Slovakia, to implement the EU CFP. The total financial allocation for the Slovak programme 2021-2027 is €20.4 million over the next six years, of which the EU contribution accounts for €15.2 million.[65]
Energy Performance of Buildings Directive (EPBD)		The implementation of the EPBD in Slovakia has been robust; however, in light of recent developments, a revision is needed.. The country has effectively incorporated the EU's strategic and legislative framework on energy efficiency into its national policies. This includes the development of Energy Efficiency Action Plans, which assess energy efficiency measures and introduce new strategies to achieve energy savings targets. -[66]The EPBD was officially adopted in 2012 and underwent subsequent revisions. As of January 1, 2021, Slovakia mandates the

[64] In 2022, the MoE and the Slovak Environmental Agency, along with the Slovak Office of the Government, continued developing the new National Biodiversity Strategy and Action Plan 2030 (NBSAP). This followed a review of the previous NBSAP 2011-2020 initiated in 2021. The new strategy aligns with the EU Biodiversity Strategy 2030 and the Kunming-Montreal Global Biodiversity Framework 2030, approved in December 2022. Efforts included participation in the 15th Conference of the Parties to the Convention on Biological Diversity and integrating biodiversity into sectors like agriculture, forestry, and tourism. MoE (2022) *Report On The State Of The Environment Of The Slovak Republic In 2022*

[65] EC - Directorate-General for Maritime Affairs and Fisheries (2023) *Slovakia will receive €20 million from the European Maritime, Fisheries and Aquaculture Fund 2021-2027.* Retrieved from https://oceans-and-fisheries.ec.europa.eu/news/slovakia-will-receive-eu20-million-european-maritime-fisheries-and-aquaculture-fund-2021-2027-2023-03-14_en

[66] MoE (2023) Draft NECP in Slovakia

EU Policy	Alignment	Policy in Slovakia
		design and construction of buildings with nearly zero energy demand, reflecting its commitment to advancing energy efficiency standards in the building sector [67] In December 2023, a provisional agreement was reached regarding the EPBD revision, which is currently undergoing the formal adoption process.[68] The revised EPBD places greater emphasis on energy-efficient construction, renovation, and smart technologies. Slovakia must align its policies and practices with the key provisions (incl. Zero-Emissions buildings, renovation targets, and smart readiness indicators, among others)
Regulation on the Governance of the Energy Union and Climate Action		Slovakia presented its updated NECP which is part of the annual State of the Energy Union report.[69] However, according to the 2023 NECP EC's assessment, the NECP's contribution to the overall EU target of renewables falls short of the target set in the Governance Regulation.
Sustainable and Smart Mobility Strategy		In Slovakia, the implementation of the Sustainable and Smart Mobility Strategy is guided by several key initiatives. According to the draft NECP submitted in 2023, these efforts are coordinated by the National Coordinator for Smart Mobility at the Slovak Ministry of Transport, strategic documents such as the Smart and Sustainable Mobility Strategy of Slovakia and long-term plans have been developed.[70] The NECP EC's assessment notes, however, that information is missing on the implementation of sustainable urban mobility plans based on the proposed TEN-T Regulation and Low emission zones / urban vehicle access regulations (UVAR).[71]
Corporate Sustainability Reporting Directive		Proposed EU Directive with implementation is expected to be transposed into national legislation in 2024. This will build on the Non-Financial Reporting Directive (NFRD). The first disclosures under CSRD are expected in 2025 for the 2024 reporting period.
Directive on the Resilience of Critical Entities		Proposed EU Directive with implementation is expected to be transposed intonational legislation in 2024. [72]
Floods Directive		Act No. 7/2010 Coll. On flood protection addresses the assessment and management of flood risks, aiming to mitigate their adverse impacts on human health, the environment, cultural heritage, and economic activities. Flood Risk Management Plan (2022-2027) – preliminary flood risk assessment is completed.

[67] See a more detailed analysis on EPBD in Slovakia in Kozlayová , A. et al (2022) *Posúdenie a analýza súčasného legislatívnoregulačného rámca SR z hľadiska reakcie na dopady zmeny klímy https://odolnesidliska.sk/*
[68] Energy Performance of Buildings Directive https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficient-buildings/energy-performance-buildings-directive_en
[69] *State of the energy union report 2023 – country fiches https://energy.ec.europa.eu/publications/state-energy-union-report-2023-country-fiches_en*
[70] See *Strategia inteligentnej a udrzatelnej mobility* Retrieved from https://smartmobility.gov.sk/wp-content/uploads/2022/03/Strategia-inteligentnej-a-udrzatelnej-mobility.pdf
[71] EC (2023) COMMISSION STAFF WORKING DOCUMENT *Assessment of the draft updated National Energy and Climate Plan of Slovakia* Accompanying the document- COMMISSION RECOMMENDATION on the draft updated integrated national energy and climate plan of Slovakia covering the period 2021-2030 and on the consistency of Slovakia's measures with the Union's climate-neutrality objective and with ensuring progress on adaptation. Retrieved from: https://commission.europa.eu/publications/commission-recommendation-assessment-swd-and-factsheet-draft-updated-national-energy-and-climate-3_en
[72] See *EU resilience: Council adopts a directive to strengthen the resilience of critical entities* https://www.consilium.europa.eu/en/press/press-releases/2022/12/08/eu-resilience-council-adopts-a-directive-to-strengthen-the-resilience-of-critical-entities/

EU Policy	Alignment	Policy in Slovakia
EU Soil Strategy		Proposed EU Directive on Soil Monitoring and Resilience with implementation expected to be transposed into national legislation [73]

2.6. Implications for next steps

Based on the analysis presented in this Chapter, considerations for the revision of the 2018 NAS (hereafter referred to as "2025 NAS") in the subsequent phases of this project include:

- **The 2025 NAS should maintain the key principles of the 2018 NAS, prioritising a proactive approach in line with the adaptation policy cycle.**[74] This involves a structured process of preparation, assessment of climate risks and vulnerabilities, identifying and assessing adaptation options, implementation and evaluation of adaptation measures, and ensuring their relevance and effectiveness over time. To ensure the effectiveness of this proactive approach amidst evolving policy landscapes and climate challenges, it is crucial to incorporate a structured framework for monitoring and evaluation, which is currently one of the main gaps identified in our analysis. At the same time, the 2025 NAS should echo the four principal objectives outlined in the EU Adaptation Strategy, focusing on making adaptation smarter, swifter, and more systemic, and bolstering international action on climate resilience. This involves leveraging robust data and accessible tools for informed decision-making (smarter), implementing measures to address urgent climate impacts (swifter), integrating climate resilience across sectors (more systemic), and enhancing global resilience through increased support and effectiveness (global action).

- **Furthermore, addressing the need for a longer-term vision in the 2025 NAS is essential**, extending beyond the current timeframe (2030) to anticipate climate risks and their socio-economic implications up to the year 2050. This was highlighted by interviewees, underlining the importance of forward-thinking strategies in climate adaptation planning.

- **The 2025 NAS should be aligned with current and upcoming EU policies and strategies to ensure coherence and synergy in adaptation efforts. This includes addressing specific areas identified as main gaps in the analysis (see section 2.5) and anticipating the implications of the upcoming transposition of EU directives and policies into the national framework**. Specifically, the 2025 NAS must provide the guiding framework for sectorial strategies to proactively acknowledge the implications of policies such as the CSRD, the Directive on the Resilience of Critical Entities, the Floods Directive, the Common Fisheries Policy and the EU Directive on Soil Monitoring and Resilience, among others, all of which will shape the adaptation policy landscape in Slovakia. For instance, the 2025 NAS could encompass provisions to leverage corporate sustainability reporting under the CSRD for enhancing adaptation efforts and fostering public-private collaboration. In addition, considering the implications of the EU Soil Strategy, the NAS should incorporate consistent strategies to address soil-related climate impacts. National developments such as the new National Biodiversity Strategy and Action Plan 2030 still under preparation should also be key inputs for the NAS. In the 2025 NAS, attention should be given to specific areas such as the LULUCF Regulation, as shown in 2.5.

- **In addition, the 2025 NAS should recognise (and consolidate into a centralised source of information) the existing array of (evolving) national policy documents relevant to climate adaptation that have been developed by various ministries and external stakeholders (e.g., OECD, ICPDR), ensuring coverage of all adaptation-related efforts**. This will prevent duplication of efforts and promote coherence across institutions. To facilitate this, the 2025 NAS could aim to

[73] See Machničová,Z.(2022).An Overview of Selected Tools and Strategies for Agricultural Land Protection in Slovakia and the European Union. EU agrarian Law,11(1) 22-29. https://doi.org/10.2478/eual-2022-0004
[74] In accordance with The Adaptation Support Tool – Getting started — Discover the key services, thematic features and tools of Climate-ADAPT (europa.eu)

consolidate all relevant policies in a centralised source of information building upon ongoing efforts, such as the dedicated web platform *Adaptácie na zmenu klímy*, (klima-adapt.sk) operated by the Slovak Environment Agency in cooperation with the MoE. The platform aims to provide climate change adaptation information at national, regional, and local levels, with potential for future expansion to integrate into the planned climate information provision system.[75] Similarly, the Slovak Environmental Agency (PHÚ Green Infrastructure) has also taken steps in this direction by establishing a dedicated website that consolidates information on local adaptation strategies and action plans for in cities and municipalities, emphasising the importance of education in the field of climate change for both the public and state administration. Establishing a single, centralised source of information would enhance the accessibility and transparency of adaptation efforts, serving as a valuable tool for both national and international stakeholders involved in adaptation.

The 2025 NAS should identify and leverage synergies between national and sub-national adaptation measures and policy objectives across sectors, clarifying the extent to which these objectives and measures are interconnected. The analysis in sections

- Climate adaptation in Slovak policies0 and 2.3 showed that while current policy documents reference each other in certain instances, they predominantly appear as standalone documents. Communication could be improved in how they complement each other. This will aid in prioritising and sharing lessons learned across regions municipalities and sectors (from those that have more developed plans to those that still lack strategies).

- **The 2025 NAS should provide enhanced guidance for sub-national adaptation strategies, building upon the insights learned from the analysis of main gaps in current strategies**. Our analysis (in section 2.4) highlighted the diverse landscape of sub-national adaptation strategies, ranging from robust to developing or preliminary stages. While some strategies demonstrate a thorough understanding of climate change impacts and sectoral vulnerabilities, others require refinement and enhancement. The limited number of cities and regions with developed adaptation strategies underscores the need for the 2025 NAS for broader engagement to guide all jurisdictions effectively through the adaptation process, addressing areas where cities and regions tend to pay less attention. For this, the 2025 NAS could include a standardised process for the development of sub-national adaptation strategies based on available tools such as the Adaptation Support Tool.[76] This would guide cities and regions through the various stages of adaptation planning, ensuring consistency and coherence, and would help address current gaps (like the lack of clear time horizons, budgetary provisions, and evaluation mechanisms)

- **The 2025 NAS could intensify efforts to raise public awareness and enhance knowledge for adaptation**. This aspect is one of the NAP's six key objectives; however, our analysis did not find a specific strategic document addressing it. Although the absence of a dedicated strategy document does not fully reflect the effectiveness of public awareness efforts, it underscores the need to enhance activities in this area. The 2025 NAS could leverage the initiatives undertaken by the Slovak Environment Agency in environmental education and training, as indicated on their webpage.[77]

- **The 2025 NAS could underline the importance and urgency of addressing the notable absence of complementary sectoral plans for sectors like tourism and finance.** Sectorial gaps are further discussed in the next Chapter.

The absence of an analysis of climate vulnerabilities and risks across different sectors is a notable gap identified in the revision of the policy documents and subnational strategies in sections

[75] https://www.klima-adapt.sk/
[76] https://climate-adapt.eea.europa.eu/en/knowledge/tools/adaptation-support-tool/index_html
[77] https://www.sazp.sk/zivotne-prostredie/environmentalna-vychova-a-vzdelavanie

- Climate adaptation in Slovak policies**0 and 2.3**. This is in line with the concerns raised by the EC in the assessment of the draft updated NECP, which highlighted the failure to consider relevant climate vulnerabilities and risks, potentially compromising energy and climate mitigation objectives.[78] The analysis to be developed under DV2.3 will play a crucial role in addressing this gap.
- **The limitation of data and information at the sub-national level identified during the revision of the policy documents highlights a significant gap in understanding climate vulnerabilities and risks across various regions**. To address this gap, it is recommended to prioritise stakeholder engagement and collaboration under DV2.3. This would involve working closely with local authorities to assess regional gaps.

[78] EC (2023) COMMISSION STAFF WORKING DOCUMENT *Assessment of the draft updated National Energy and Climate Plan of Slovakia* Accompanying the document- COMMISSION RECOMMENDATION on the draft updated integrated national energy and climate plan of Slovakia covering the period 2021-2030 and on the consistency of Slovakia's measures with the Union's climate-neutrality objective and with ensuring progress on adaptation. Retrieved from: https://commission.europa.eu/publications/commission-recommendation-assessment-swd-and-factsheet-draft-updated-national-energy-and-climate-3_en

3. Assessment of current adaptation measures in Slovakia

A comprehensive analysis of current adaptation measures in Slovakia is necessary to identify the key gaps within the existing framework and to understand how a new adaptation policy can effectively address them. This chapter aims to delve into the adaptation measures and implementation tasks outlined in the first NAP of Slovakia, which is grounded in the 2018 NAS. It follows this structure:

- Section 3.1 presents an overview of the NAP cross-cutting measures and summarizes the progress made so far based on available information.
- Section 3.2 analyses sectoral adaptation measures, focusing on NAP implementation tasks. A traffic light assessment is conducted based on the progress made, examining three main aspects: i) relevance within national priorities (i.e., priority given to adaptation measures within each sector, availability of complementary sectorial plans and coverage of different types of adaptation measures), ii) effectiveness of sectorial climate adaptation measures considering the diversity of stakeholders involved within each sector and the capacity for implementation monitoring, and iii) coherence, exploring the extent to which sectorial adaptation measures contribute to broader climate change mitigation efforts.
- Section 3.3 provides an overview of best practices identified from the implementation of NAS and NAP in other MS.
- Finally, section 3.4 presents the implications derived from the analysis for the revision and update of the 2018 NAS in Slovakia and how can these inform the subsequent phases of the project.

3.1. Cross-cutting adaptation measures

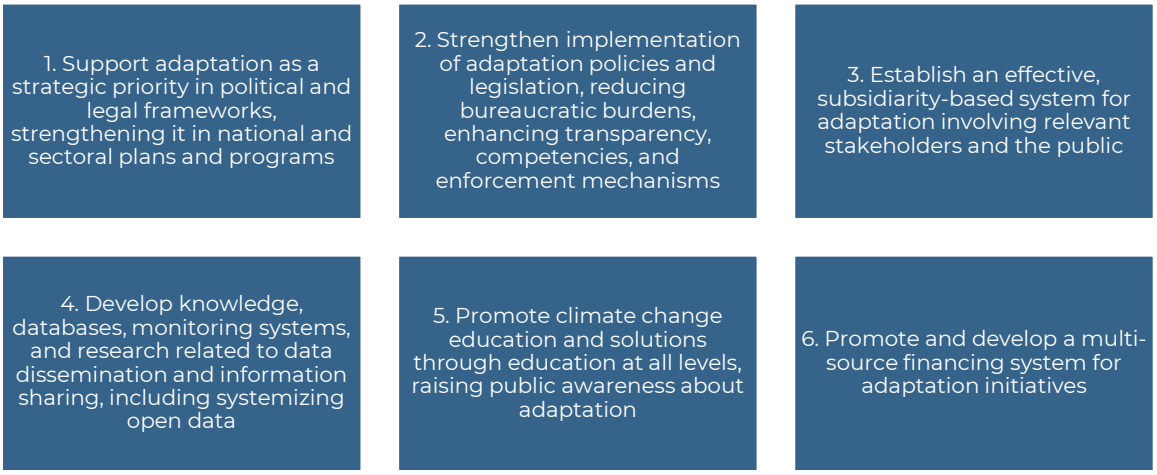
In 2021, the MoE started the implementation phase of the NAP. The NAP distinguishes seven distinct policy domains that are associated with specific principles, objectives, and specific tasks. The six strategic priorities of the NAP are presented in Figure 3-1.

In total, the NAP in Slovakia includes

- 5 cross-cutting measures, comprising 18 specific implementation tasks;
- 45 specific measures in seven key areas and 169 implementation tasks (or actions) determining their implementation.

In the context of the NAP, "measures" refer to broad strategies or approaches to address climate adaptation challenges. These measures are overarching actions or initiatives linked to specific policy domains. On the other hand, "implementation tasks" are specific actions or activities that need to be carried out to implement each measure effectively. These tasks are more detailed and operational, breaking down the broader measures into actionable steps. In summary, while measures provide the overall direction, the implementation tasks are the specific actions required to implement those measures successfully. Implementation tasks (specific tasks, actions) are implemented and reported in the short-term (2021 – 2023) and mid-term (2024 – 2027) time horizon.

Figure 3-1 NAP strategic priorities



The 5 cross-cutting measures included under the NAP include:

- **Strengthening the policy and legislative framework adaptation and effective setting up of financial mechanisms for the implementation of adaptation measures**. Tasks under this measure include conducting an assessment report to guide adaptation strategies in alignment with broader development goals, enhancing compliance and enforcement of existing policies, and identifying and addressing legislative barriers to implementing agroforestry land management systems. Additionally, there is a focus on integrating adaptation measures into sectoral policies across ministries and considering the introduction of a "Climate Clause" in legislative rules to address climate change systematically.
- **Establishing a national Information System for climate data**, utilising existing state administration capacities and external funding from EU sources. This entails progressively capturing missing climate adaptation data and updating existing information while developing mechanisms for data collection, management, and communication. Activities include developing climate change scenarios, mapping, and modelling climate impacts.
- **Effective climate change risk management,** underscoring the importance of a functional system, integrating climate knowledge, future scenarios, and security risks. The primary focus areas include floods, landslides, snow calamities, wind storms, fires, and hazards related to substances.
- **Establishing a functional framework to support science**, education and awareness-raising on adaptation which includes promoting climate change education across all levels of education, integrating adaptation into relevant research supported by domestic grant agencies, and facilitating data and information sharing. Additionally, outputs from science and research efforts will be utilised to educate on adaptation and mitigation measures, fostering professional capacity building within higher education institutions and across all levels of the education system.
- **Building green infrastructure and green networks,** which includes diversifying landscape structures in agricultural, forest, and urban areas to mitigate risks and establish ecological corridors. Legislative protection for designated areas, particularly concerning water retention in settlements, is highlighted under relevant acts.

The responsible bodies report the implementation progress of cross-sectorial measures. Progress has been documented for 10 measures out of the total of 18 measures. It is important to note that the MoE differentiates between short-term, mid-term, and long-term measures, and thus some measures have not yet been evaluated. Therefore, the absence of information in the evaluation

files does not imply that these measures are either not implemented or being implemented, as they will be the focus of the next evaluation cycle. The assessment presented in this report is based on the evaluation files provided by MoE in March 2024, incorporating only the information available up to that time. Therefore, any updates made after this date are not reflected in the analysis.

Box 3-1 Implementation progress on cross-cutting adaptation measures – key points[79]

- **Strategic planning and legislation**: The adoption of the CAP Strategic Plan 2023-2027 by the EC in November 2022 signifies a significant step towards addressing climate change adaptation in Slovakia.
- **Risk mapping and national strategy**: Efforts to address risk mapping and propose recommendations for addressing climate change adaptation, as outlined in the National Strategy for Risk Management, demonstrate a proactive approach to managing climate-related threats. However, modernising risk assessment processes and strengthening protective measures, particularly for critical infrastructure, remain ongoing challenges that require legislative support.
- **Early warning systems:** The implementation of Building Early Warning Systems projects (or BSVV) has significantly improved. The expansion of warning terminals and the establishment of three-tier warning systems have enhanced the country's resilience to climate-related hazards.
- **Financial support for adaptation projects**: Financial support for 86 research and innovation projects in climate adaptation, totalling EUR 2 840 973 in 2021. Additionally, funding opportunities provided by the MoE further promote research and innovation in climate adaptation.
- **Natural Resource Management and Biodiversity**: Efforts to improve landscape diversity, enhance the NATURA 2000 system, and support green infrastructure solutions are ongoing.
- **Legislative Challenges and Resilience Planning**: the ongoing process of drafting a new law on landscape planning (LP/2023/519) , which includes provisions for climate change adaptation measures, reflects the country's commitment to integrating adaptation strategies into legislative frameworks. However, challenges remain in advancing through the legislative process.[80]
- **Methodological guidance for green infrastructure:** The publication of Methodological Guidance by the Slovak Environment Agency provides valuable support for implementing green infrastructure solutions. This guidance aims to overcome barriers, promote best practices, and inform public policies, thereby enhancing the built environment's resilience to climate change impacts.

3.2. Sectorial Adaptation Measures in Slovakia

This section analyses sectoral adaptation measures, focusing on the 169 NAP implementation tasks. A traffic light assessment is conducted based on three main aspects:

- **relevance** within national policies, considering the priority given in the NAP to adaptation measures within each sector, availability of complementary sectorial plans and coverage of

[79] Based on the evaluation files provided by MoE in March 2024, incorporating only the information available up to that time.
[80] The draft Law on Landscape Planning (LP/2023/519) was approved by the Government of the Slovak Republic in February 2023, but subsequently failed to pass the second reading in the National Council of the Slovak Republic on March 16, 2023. In August 2023, the draft law was resubmitted due to the threat to the fulfilment of commitments and milestones resulting from the RRP.

different types of adaptation measures;

- **effectiveness**, considering the diversity of stakeholders involved within each sector and the capacity for implementation monitoring, and
- **coherence**, exploring the extent to which sectorial adaptation measures contribute to broader climate change mitigation efforts.

All 169 implementation tasks outlined in the NAP underwent evaluation against the established criteria. Figure 3-2 shows the assessment results for the implementation tasks included in the NAP. The list of sectors corresponds to the finalised selection agreed upon during the inception phase of the project.

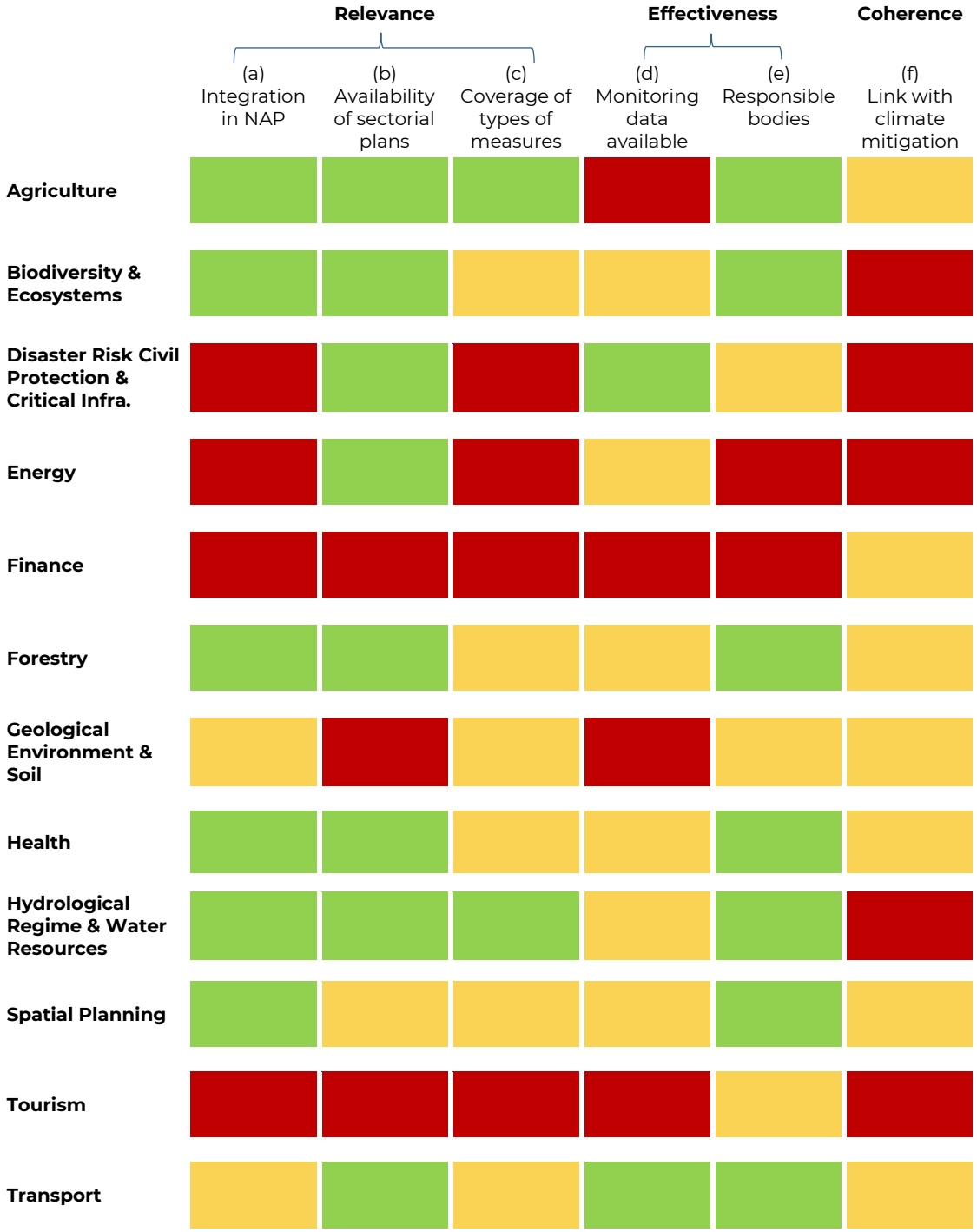
The sectors of *Cultural Heritage* and *Information & Communication Technology* are excluded from the analysis as none of the implementation tasks were found to be primarily relevant to these sectors. Specifically, none of the actions outlined in the NAP were deemed as being directly applicable to Cultural Heritage, and while the Information & Communication Technology sector is addressed, it is of secondary importance.

The assessment presented in Figure 3-2 has some limitations. These could be summarised as follows:

- Firstly, while attempts were made to categorise each of the 169 implementation tasks into the most relevant sector, many tasks may have relevance to multiple sectors. Consequently, the analysis is confined to the sector considered most pertinent to each task.
- In assessing the coverage of types of measures, the most appropriate type of measure for each implementation task was determined based on the Key Type Measures framework - KTM) (see Box 3-2 for background). However, in some cases, multiple types of measures could apply to a single implementation task.
- Regarding the availability of monitoring data, the assessment relies on the evaluation files provided by the MoE in March 2024, incorporating only the information accessible at that time (i.e., any subsequent updates are not reflected in the analysis).
- Lastly, for evaluating the criterion of interconnectedness with climate mitigation, a light assessment was conducted for each implementation task, and only those with clear mitigation benefits were identified as such. However, this assessment is based on available information only and may not provide an exhaustive analysis of mitigation relevance.

The following sections present detailed explanations for each criterion illustrated in Figure 3-2 and offer deeper insights into the assessment process. Additional information on the assessment methodology is presented in the Annex. Given the limitations of this analysis and available data, we note that our findings are open to discussion and can benefit from additional input.

Figure 3-2 Assessment of climate adaptation implementation tasks NAP



Source: Own elaboration based on information from the NAP for the 169 implementation tasks. Refer to the detailed assessment in the Annex. a) Integration in NAP: Sectors are categorized into green (>20 implementation tasks), yellow (between 10 and 20 tasks), and red (<5 tasks). b) Availability of Sectorial Plans: Sectors are categorized into green (complementary Sectorial plans available), yellow (crosscutting sector), and red (no Sectorial plans available). c) Responsible Bodies: Sectors are categorized into green (>6 different responsible bodies), yellow (between 5 and 3), and red (below 2). d) Coverage of Types of Measures: Sectors are categorized into green (>8 different sub KTMs), yellow (between 4 and 7 tasks), and red (<3 different sub KTMs). e) Monitoring Data Available: Indicator is the share of implementation tasks with data on implementation status available. Green indicates >80% of implementation tasks with implementation info available, yellow indicates between 30 and 80%, and red indicates less than 30%. f) Link with Climate Mitigation: Green indicates most of the measures have a clear link with adaptation measures, yellow indicates only partly, and red indicates very few measures have a clear link with climate mitigation.

3.2.1. Relevance within national priorities

This aspect assesses the importance and priority given to adaptation measures within each sector. It considers:

a. *Integration in NAP*: This criterion evaluates the number of implementation tasks included under each sector in the NAP, indicating their overall relevance and strategic importance. The assessment categorises sectors into green (>20 implementation tasks), yellow (between 10 and 20 tasks), and red (<5 tasks). While this assessment offers insight into sector prioritisation within the NAS, it may not fully capture the relative importance or impact of individual implementation tasks within each sector. Therefore, comparing the number of implementation tasks across sectors might not provide an understanding of their prioritisation. To complement this analysis, we include criteria b and c below.

b. *Availability of complementary sectorial policies or plans:* This parameter describes the extent to which adaptation measures relevant to the sector are included in other sectorial documents, as presented in Chapter 1.

c. *Coverage of types of measures:* The diversity and range of adaptation measures included under each sector were assessed using the KTM framework (see**Error! Reference source not found.** Box 3-2 for background). For this assessment, the number of different sub-KTMs was considered. This framework categorises adaptation actions into different categories, offering an overview of the different actions included. It is important to note that adaptation options and measures can often span multiple categories. For this assessment, we considered the KTM, sub-KTM and specification that best describes each of the implementation tasks based on the information available in the NAP.

The assessment shows that:

- **The sectors Forestry, Hydrological Regime & Water Resources Management, Spatial Planning, Health, Biodiversity and Ecosystems, and Agriculture have a higher number of implementation tasks included in the NAP.** Conversely, sectors like Disaster Risk Management, Civil Protection & Critical Infrastructure, Energy, Finance, and Tourism have fewer tasks associated, which might indicate relatively lower priority on adaptation efforts in these sectors. There is a notable absence of complementary sectorial plans outlining adaptation measures for the Tourism and Finance sectors.
- **Efforts aimed at formulating or updating policy instruments (A) are extensively covered across various sectors**, with particular attention drawn to sectors like Biodiversity and Ecosystems, Spatial Planning, and Hydrological Regime & Water Resources Management. Conversely, sectors such as Tourism and Disaster Risk Management, Civil Protection & Critical Infrastructure, lack specific actions pertaining to this Governance and Institutional dimension. However, there is a noticeable absence of policies in the category (*A3) Coordination, cooperation and networks* which might imply a potential oversight in establishing effective mechanisms for inter-ministerial collaboration and engagement with key stakeholders. Figure 3-4 offers a detailed representation of climate adaptation actions in the NAP, categorised according to the KTM framework. Various groups of measures are designated different colours, such as light blue representing the Governance and Institutional dimension.

Box 3-2 KTM framework[81]

Under the Key Type of Measures (KTM) framework, adaptation measures are categorised into five main categories listed below (from A to E) and then further structured into related sub-categories (Sub-KTMs; cf. bullet points A1-E2) and specifications for each Sub-KTM. namely:

KTM	Sub-KTM	Specification
A: Governance and Institutional	A1: Policy instruments	A11: Creation / revision of policies
		A12: Creation / revision of (implementing) regulations
	A2: Management and planning	A21: Mainstreaming adaptation into other sectors
		A22: Creation / revision of technical rules, codes and standards
	A3: Coordination, cooperation and networks	A31: Creation / revision of ministerial coordination formats
		A32: Creation /revision of stakeholder networks
B: Economics and Finance	B1: Financing and incentive instruments	B11: Creation / revision of incentive mechanisms
		B12: Creation / revision of funding schemes
	B2: Insurance and risk sharing instruments	B21: Creation / revision of insurance schemes and products
		B22: Creation / revision of contingency funds for emergencies
C: Physical and Technological	C1: Grey options	C11: New physical infrastructure(s)
		C12: Rehabilitation, upgrade and/or replacement of physical infrastructure(s)
	C2: Technological options	C21: Early warning systems
		C22: Hazard / risk mapping
		C23: Service / process application
D: Nature Based Solutions and Ecosystem-based Approaches	D1: Green options	D11: Creation of new / improvement of exiting green infrastructure
		D12: Natural and/or semi-natural land-use management
	D2: Blue options	D21: Creation of new / improvement of existing blue infrastructure
		D22: Natural and/or semi-natural water and marine areas management
E: Knowledge and Behavioural change	E1: Information and awareness raising	E11: Research and innovation
		E12: Communication and dissemination
		E13: Decision support tools and databases
	E2: Capacity building, empowering and lifestyle practices	E21: Identification and sharing of good practices
		E22: Training and knowledge transfer
		E23: Reporting on lifestyle practices and behaviours

- **There is limited inclusion of actions with a focus on (B) Economics and Finance across sectors**. The Forestry sector stands out with more actions concerning Financing and incentive instruments (B1). In other sectors, such as the Hydrological Regime & Water Resources Management sector there is a notable gap in Financing and incentive instruments, despite the overall good average of different KTMs within that sector. Moreover, there is a noticeable lack of actions on insurance and risk-sharing instruments across sectors, with only two actions among the 169 identified (both within the Disaster Risk Management, Civil Protection & Critical Infrastructure sector). Remarkably, none were categorised under B22: Creation/revision of contingency funds for emergencies.

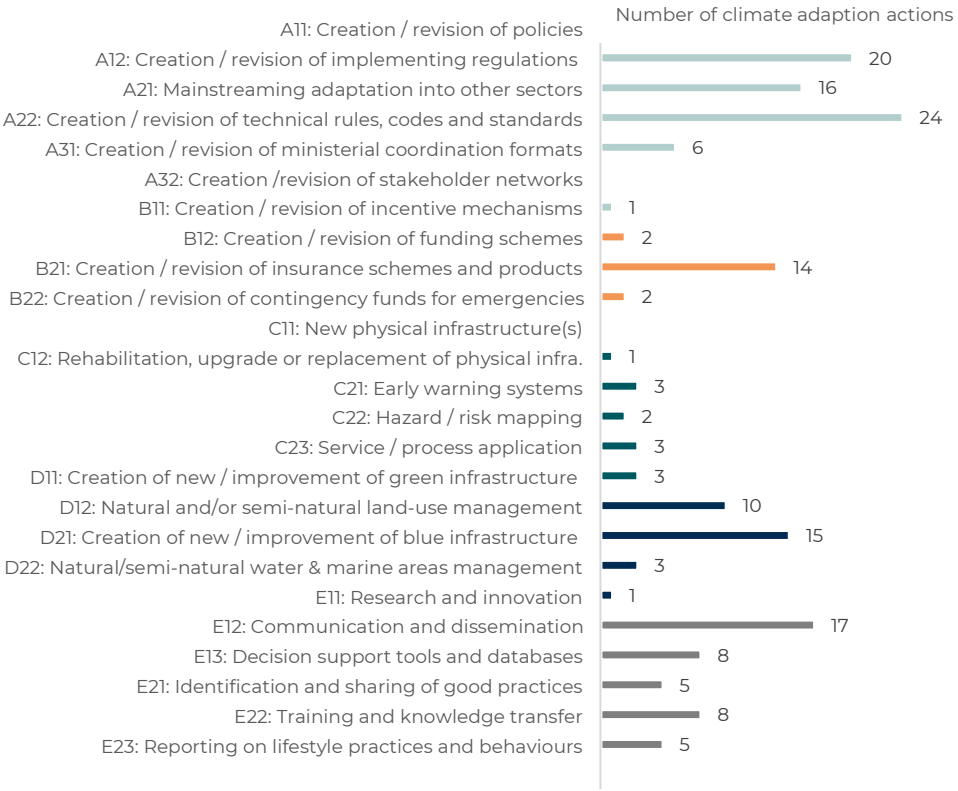
[81] Further information about the KTM framework can be found in EEA (2020) Rationale, approach and added value of Key Type f Measures for adaptation to climate change https://www.eionet.europa.eu/etcs/etc-cca/products/etc-cca-reports/rationale-approach-and-added-value-of-key-type-of-measures-for-adaptation-to-climate-change

- **The category Physical and Technological options (C) comprises fewer actions compared to the other categories.** The Hydrological Regime & Water Resources Management sector notably leads with the highest number of measures. Across sectors, there is a clear prioritisation of (C2) Technological options, such as early warning systems, over (C1) Grey options, which typically involve the creation of new physical infrastructure. Notably, the rehabilitation and upgrade of existing infrastructure (C12) surpasses the development of new physical infrastructure (C11) across sectors.

- **Across sectors, there is a notable priority on Nature-Based Solutions and Ecosystem-Based Approaches (D)** In terms of actions covering (D) Nature-Based Solutions and Ecosystem-based Approaches, there is high variability across sectors, but there is a general prioritisation of actions targeting D1: Green options (25) compared to D2: Blue options (4). The Forestry and Agriculture sectors are the ones with more actions in this dimension, indicating a specific emphasis on nature-based and ecosystem-centred strategies within these sectors.

- **There is variable coverage of actions targeting Knowledge and Behavioural Change (E).** Across sectors, the implementation of actions in E: Knowledge and Behavioural change varies significantly, with certain sectors prioritising it highly. Notably, the Hydrological Regime & Water Resources Management sector leads with 10 measures dedicated to this aspect. Furthermore, the Transport Infrastructure sector stands out for its focus on capacity building, knowledge transfer, and empowering stakeholders (E2). **Error! Reference source not found.** offers a detailed representation of climate adaptation actions in the NAP, categorised according to the KTM framework. Various groups of measures are designated different colours, such as light blue representing the A Governance and Institutional dimension. Furthermore, **Error! Reference source not found.** provides a sector-wise overview of climate adaptation actions, facilitating comparative analysis across sectors.

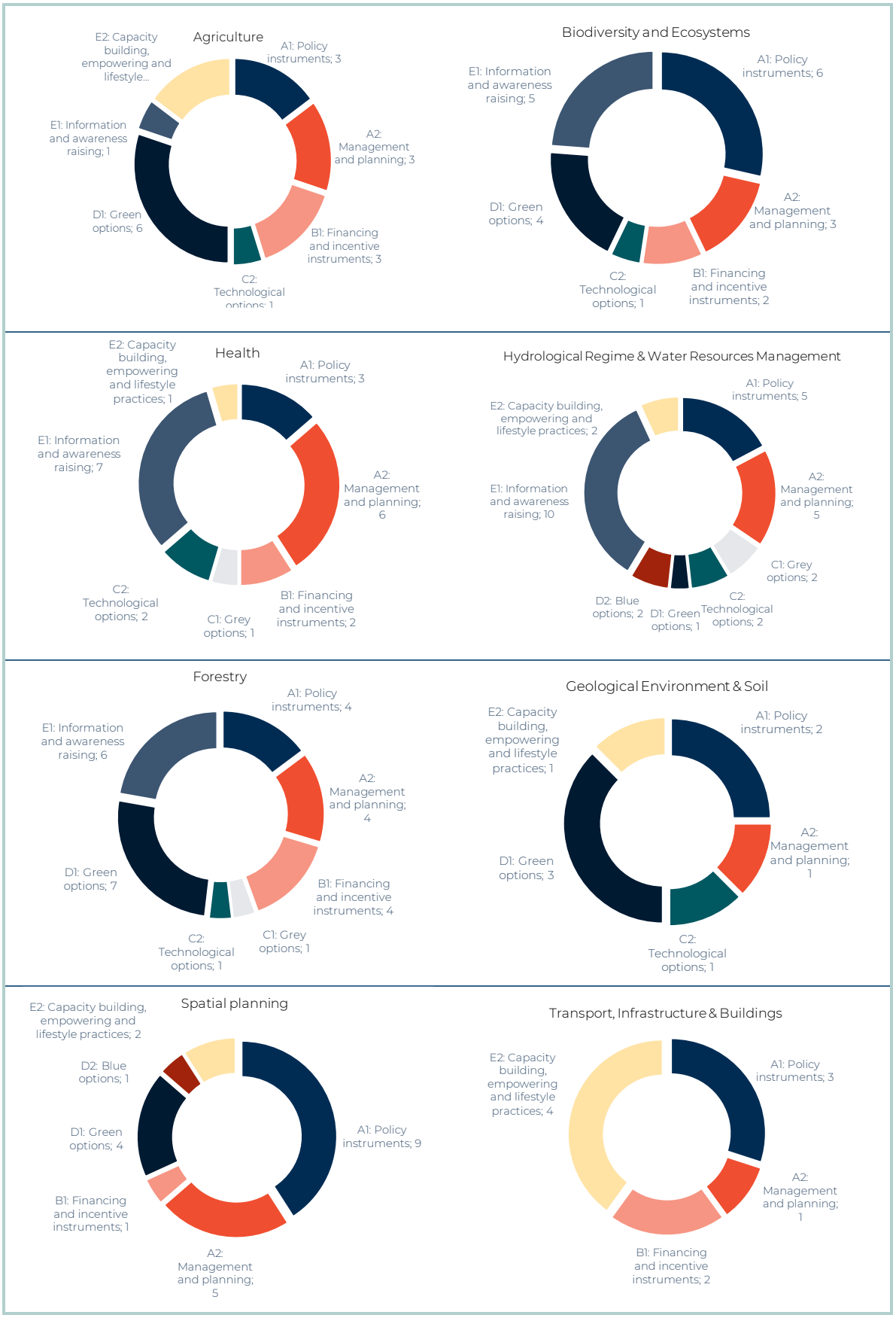
Figure 3-3 NAP Climate adaptation actions per type



Source: Own elaboration based on information from the NAP. Refer to the assessment of each action in Annex. Categorization was determined by selecting the KTM, sub-KTM, and specifications that best describe

each implementation task, relying on expert assessment and available information in the NAP.

Figure 3-4 NAP climate adaptation actions per type and sector



Source: Own elaboration based on information from NAP. Refer to the assessment of each action in Annex..

3.2.2. Effectiveness of sectorial climate adaptation measures

This aspect evaluates the diversity of adaptation measures and stakeholders involved within each sector and their capacity for implementation monitoring. The assessment considers:

d. *Availability of information on implementation status*: The percentage of measures with available monitoring data, indicating the extent to which the implementation progress of adaptation actions is tracked and evaluated. The assessment relies on the evaluation files provided by the MoE) in March 2024, which incorporate only the information accessible at that time. Subsequent updates are not reflected in the analysis.

   The assessment reveals that monitoring data availability is generally poor across sectors based on our analysis. This is a particularly concerning issue for sectors such as Agriculture where a significant number of adaptation tasks were proposed. Enhancing monitoring and reporting mechanisms across all sectors is crucial to improving the understanding and assessment of adaptation efforts.

e. *Responsible bodies*: The number of entities involved in each of the implementing tasks under each sector, according to the NAP. A higher number of entities indicates a greater level of multi-institutional coordination required and may also suggest the relevance of implementation tasks to other sectors. However, it also suggests increased complexity and potential challenges in coordinating with numerous actors.

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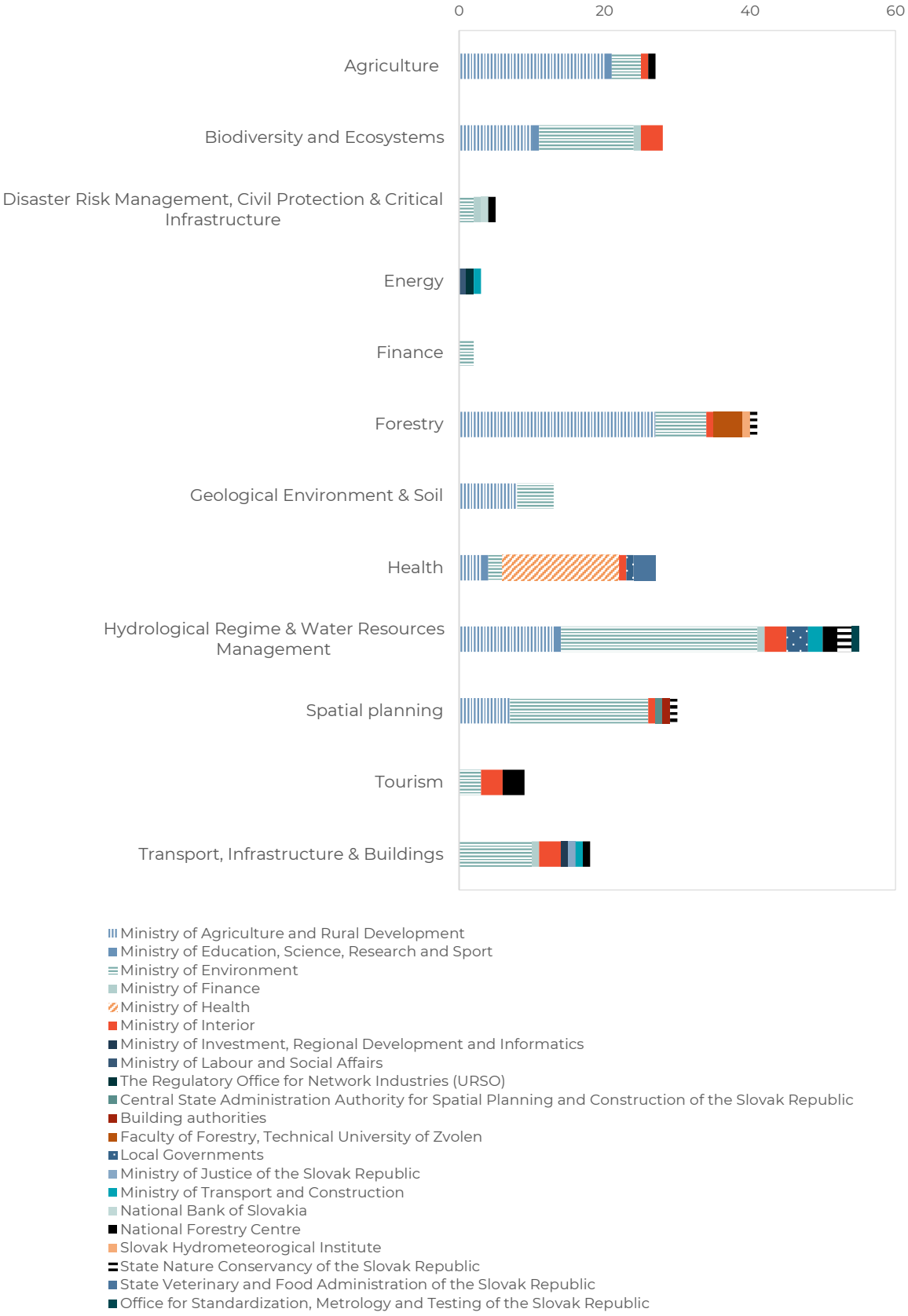
- Figure 3-5 illustrates the distribution of responsible bodies involved in implementing NAP tasks across various sectors. Each sector is listed on the y-axis, while the x-axis represents the number of tasks per implementing body. It is noteworthy that many implementation tasks in the NAP involve multiple responsible bodies, resulting in instances where there are 4-5 responsible bodies associated with each task. Therefore, the values in

Figure 3-5 do not sum up to the total number of actions (169), but exceed this figure given multiple responsible bodies that are responsible for certain tasks.

The assessment shows a diverse array of stakeholders engaged in implementing adaptation measures, with varying levels of involvement depending on the sector. Implementation tasks within the Hydrological Regime & Water Resources sector involve the greatest diversity of responsible bodies (11). The high number of implementing bodies suggests more expertise, resources, and perspectives contributing to the implementation of the adaptation tasks. However, it also highlights the importance of effective coordination, communication, and cooperation among these bodies to ensure cohesive and impactful adaptation strategies. Regarding the formal governance structure in place to ensure such coordination and communication, the specific mechanisms may vary depending on the context and jurisdiction. “Local governments” are mentioned as responsible bodies only for four (4) implementation tasks out of the 169.

Figure 3-5 Distribution of responsible bodies involved in implementing NAP tasks across various sectors



Source: Own elaboration based on information from the NAP. Refer to the detailed assessment in Annex.

3.2.3. Coherence: interconnection with Climate Mitigation

This aspect examines the extent to which adaptation measures contribute to climate change mitigation efforts. It is based on:

a. *Percentage of measures with distinctive positive effects on climate change mitigation*: Evaluates the proportion of adaptation measures that also generate positive impacts on mitigating climate change based on the tasks' descriptions in the NAP.

The assessment indicates varying levels of integration between adaptation and mitigation efforts across sectors. In general, the link with climate mitigation benefits of the implementation tasks under all sectors is generally weak. While the benefits may exist, this assessment relies on the descriptions of the measures in the NAP. This suggests a need for improvement in communicating the link with climate mitigation, as it could improve the implementation of some measures e.g., enhancing accessibility to funds and other resources.

3.3. Analysis of best practices from NAP/NAS implementation

Table 3-1 provides an overview of best practice examples from the implementation of NASs and NAPs in various countries. For this analysis, we aimed to prioritise Member States with similar administrative structures to Slovakia, whenever feasible. Examples include Estonia, the Czech Republic, and others considering a variety of indicators.[82] Additionally, we prioritised countries facing similar challenges related to climate change and its associated risks, such as the Netherlands concerning water management as we explain below. However, we also include examples that, in our expert assessment, can apply to Slovakia, regardless of their administrative structure.

Table 3-1 – Best practices from the implementation of national adaptation strategies and plans

Policy area	Example of best practice	Relevance for Slovakia
Finance information for adaptation measures	Czechia serves as a positive example for integrating financial information concerning adaptation measures. [83] The NAP, first published in 2017 and updated in 2021, provides financial information for each identified measure. In the updated NAP in 2021,[84] this includes expected financial requirements, potential economic instruments, and the allocation of EU and national resources until 2025. In addition, it distinguishes measures with the financial intensity symbol 'X' (that do not require additional budgetary resources and can be implemented within the existing staff capacity and current expenditure. The NAP also presents in detail existing or future EU financial instruments or national subsidy titles and, as in other European countries, a certain amount of public and business participation that could be envisaged. Finally, other economic instruments such as insurance and payments for ecosystem services are presented. Similarly, the Estonian NAP includes detailed forecasts for the budget requested for adaptation by sub-goals, administrative areas and budget types.[85]	In Slovakia's NAP, a *Matrix of measures and funding* is included to outline the funding sources for each action and programme. However, while the source of funding for each programme is indicated, the specific amounts allocated for individual actions or measures are not always included. Only total amounts for different programmes are provided. Additionally, in many cases, the precise funding amounts for the programmes are not yet available. Slovakia can benefit from following the examples set by Czechia and Estonia to enhance the information available for financing adaptation measures.

[82] We considered the analysis presented in European Commission (2018) A comparative overview of public administration characteristics and performance in the EU28. When seeking examples, we also focused on Hungary, Poland, Slovenia, and Bulgaria, however, no significant best practices were identified from their respective experiences.
[83] EEA (2020) Monitoring and evaluation of national adaptation policies throughout the policy cycle (Map 3.1)
[84] Národní akční plán adaptace na změnu klimatu (2021-2025)
[85] Republic of Estonia - Climate Change Adaptation Development Plan until 2030 (See Chapter 6)

Policy area	Example of best practice	Relevance for Slovakia
Description of consequences for the country from the expected impact of climate change	Estonia's National Climate Plan serves as a good example of presenting a thorough situational analysis of the impacts of climate change within the country.[86] It includes current sectoral challenges and forecasts future climate trends specific to Estonia. In addition to examining the anticipated impacts on variables, such as precipitation and temperature, details are provided on the social impacts of climate change (for instance, it provides specific figures on how the probability of skin cancer might increase as a result of climate change). The analysis of sectorial impacts covers all economic sectors and is presented in a reader-friendly format. Similarly, Finland's National Climate Plan stands out with a detailed analysis of the consequences of climate change on various economic sectors and the provision of specific figures illustrating potential costs to society, supported by historical data and estimates where available.[87,88] In the NAP, Finland also acknowledges the potential positive effects of climate change on certain sectors, such as agriculture, while emphasising the importance of implementing adaptation measures to capitalise on these benefits effectively. It also mentions that the potential positive impacts of climate change may turn into negative ones if the efforts to mitigate climate change do not succeed.	Slovakia could enhance its adaptation policy framework by providing more detailed analyses and specific examples of how climate change could impact various economic sectors. Incorporating specific figures can contribute to raising awareness, especially given the prevalent lack of awareness at regional, local, and public levels.[89] Both SK NAP and NAS rightly acknowledge the importance of early investment to mitigate future costs but lack detailed examples or figures to illustrate the potential impacts of climate change on the economy. While the NAP references studies estimating the costs of climate change for the EU, it fails to provide specific figures for Slovakia. In the revised NAS, it can be considered to include historical data, estimates from insurance companies, and other relevant sources to illustrate potential costs associated with climate-related challenges and delays in implementing adaptation measures.
Ranking approach for prioritising adaptation measures	According to the EEA, Cyprus is an example of the significance of involving diverse stakeholders when evaluating various adaptation options.[90] Utilising a multi-criteria analysis approach across 11 sectors, Cyprus undertook an evaluation of adaptation measures with a qualitative perspective. This assessment involved considering criteria such as efficiency, economic and technical viability, urgency, public acceptance, and intrinsic usefulness even in the absence of climate change. Stakeholder input from various entities, including non-governmental organizations, national authorities, research institutes, and civil society organizations was also incorporated. The outcomes of this analysis, documented in the NAS highlight the weighted importance of each adaptation measure. The most effective measures identified through this process were then integrated into the NAP.	For its revised NAS/NAP, Slovakia can take the approach of presenting a wider range of options (i.e., a *Portfolio* of adaptation measures), and subsequently selecting priority options to enhance transparency across stakeholders by ensuring that their opinions are considered in the decision-making process. It can also show that various options were explored in terms of time, costs, benefits, and efforts, as well as considering cross-cutting issues, trade-offs, consideration of maladaptation potential, and synergies, among others. The guidance provided by the EU further emphasizes the importance of criteria in assessing and prioritising adaptation options.[91]
Management of	The project *Strategy for mitigation of floods for Bodrog River Basin* countries involved flood	Slovakia faces significant exposure to transnational climate impacts,

[86] Republic of Estonia - Climate Change Adaptation Development Plan until 2030 (See Chapter 3)
[87] In a study comparing and assessing the quality of 38 National Adaptation Plans, Finland scored very high compared to other countries in describing projected climate change consequences for the country. Woodruff, S. C., & Regan, P. (2019). Quality of national adaptation plans and opportunities for improvement. *Mitigation and Adaptation Strategies for Global Change*, *24*, 53-71.
[88] Finland's National Climate Change Adaptation Plan 2022
[89] TOR
[90] EEA (2020) Monitoring and evaluation of national adaptation policies throughout the policy cycle (Box 2.4)
[91] European Commission (2023) Guidelines on Member States' adaptation strategies and plans

Policy area	Example of best practice	Relevance for Slovakia
transboundary water	risk management, considering both national policies and local experiences.[92] The project facilitated collaboration between stakeholders at various levels, incorporating top-down policies into practical solutions and mainstreaming local flood protection experiences into national policies. Key activities included technical assistance for strategic document development (namely, the Strategy for mitigation of floods for the Bodrog River Basin) and concrete investments in pilot areas. The strategy aimed to reduce flood damage risks and levels, increase awareness, and improve flood forecasts through measures such as land use regulation, capacity building, and pollution mitigation. Early involvement of local stakeholders in technical measure development fostered consensus and permitting processes, despite challenges such as unclear ownership and agricultural subsidies[93]. Overall, the project emphasised collaborative approaches and interventions to address the complex challenges of flood management in the Bodrog River Basin.	particularly considering the indicator *Transboundary water dependency* (Slovakia is ranked within group 9, with group 10 indicating the countries with the highest level of exposure).[94] This indicator reflects the proportion of a country's water resources originating from transboundary upstream sources (the greater the reliance on water from upstream transboundary rivers, the higher the vulnerability to climate-induced changes in river flows). To address the challenges posed by climate-related changes in transboundary waters, Slovakia can learn several valuable lessons from the best practices demonstrated in the *Strategy for mitigation of floods for Bodrog River Basin countries* project, including the importance of adopting a comprehensive approach that incorporates both national policies and local experiences. In addition, the project's emphasis on the early involvement of local stakeholders in technical measure development highlights the importance of community engagement and participatory decision-making in flood management initiatives.
Management of water data	The Dutch *Making Water Data Available* initiative by Rijkswaterstaat (part of the part of the Dutch Ministry of Infrastructure and Water Management) serves as an example of efficient water information management and sharing.[95] Through this initiative, Rijkswaterstaat collects data on various water aspects, including water levels, temperatures, and aquatic life. The aim of the program is to streamline the exchange and integration of water data by adopting standardised formats and centralising storage systems. The initiative prioritises open data principles, making most data freely available for use.[96] Furthermore, a standard format for exchanging data within the water sector was defined (AQUO).[97] Overall, the Dutch example demonstrates a proactive approach to improving data quality, accessibility, and usability in water management.	Both Slovakia and the Netherlands have a high transboundary water dependency ratio, which underscores the role of water management data in both countries.[98] Under the NAP, Slovakia aims to enhance the monitoring and evaluation of climatic and hydrological elements (measure 1.) Tasks include consolidating hydrological and climatic data into a unified platform, ensuring data interoperability and accessibility through application programming interfaces, harmonising data with neighbouring countries, utilising remote sensing data, and completing the national hydrological network. By learning from initiatives such as the Dutch *"Making Water Data Available"* initiative, Slovakia can enhance its water data management systems, promote collaboration between stakeholders, and

[92] GWP Slovakia (n.d.) Making space for water in the Bodrog River Basin (#398)

[93] Slovakia, farmers were not willing to cooperate due to unclear ownership situation and current agro-environment subsidies which are discouraging farmers to change land use from arable land to grass land or wetlands. However, the project clearly demonstrated that there are available low-cost and effective solutions for flood prevention.

[94] . Each indicator divides countries into deciles (ranked groups, each representing 10% of the countries), numbered 1– 10, with 10 indicating the highest level of exposure. See Benzie, M., J. Hedlund and H. Carlsen (2016). Introducing the Transnational Climate Impacts Index: Indicators of country-level exposure – methodology report. Working Paper 2016-07. Stockholm Environment Institute: Stockholm.

[95] See https://waterinfo.rws.nl/

[96] Rijkswaterstaat Program Making Water Data Available

[97] IWH (n.d). Wat is Aquo IWH (n.d). Wat is Aquo

[98]Benzie, M., J. Hedlund and H. Carlsen (2016). Introducing the Transnational Climate Impacts Index: Indicators of country-level exposure – methodology report. Working Paper 2016-07. Stockholm Environment Institute: Stockholm

Policy area	Example of best practice	Relevance for Slovakia
		improve decision-making processes in water management (e.g., By consolidating data into a single central platform, adopting standardised data formats like the Dutch AQUO, embracing open data principles)
Make consistently available information on NAP monitoring and frequency	The Czech Republic, Spain and Germany are examples of monitoring, reporting, and evaluation systems for their adaptation policies.[99,100] These systems generate valuable information crucial for policy adjustments and enhancing the knowledge base for adaptation processes. Spain and Germany have published detailed monitoring and evaluation reports, ensuring transparency and accessibility for stakeholders which contributes significantly to effective data dissemination. Similarly, the Czech Republic has made public the NAP evaluation that led to the update of the Strategy of Adaptation to Climate Change in the Czech Republic[101]. Spain has so far published four monitoring reports of Spain's NAP have been carried out (2008, 2011, 2013 and 2018) and an evaluation report has been published in 2019.[102] All the information is available online.[103] Germany has so far published two monitoring reports (2015 and 2019) as two progress reports on the implementation of the national adaptation strategy.[104] In addition, in 2019 the first independent evaluation report was published.	Slovakia has various monitoring systems for specific areas[105] but it lacks a unified Monitoring, Reporting, and Evaluation (MRE) system for adaptation policies.[106] Thus, one of the key pillars of the NAP (see Chapter 3) is to develop knowledge, databases, and a monitoring system, while conducting research for better data dissemination. The NAP also outlines principles for monitoring and implementing adaptation measures, with each task having assigned indicators for ongoing evaluation. Although MRE indicators are listed in the NAP, their progress status is not available online. The next step is to report on progress towards short-term objectives of the Action Plan by June 30, 2024.[107] Once the information becomes readily accessible, Slovakia can focus on following the practices of Czechia, Spain and Germany as examples of a way forward. This involves establishing a structured monitoring and evaluation system, which would facilitate regular assessments of adaptation measures publicly. Additionally, making independent evaluation reports publicly available would enhance transparency and increase stakeholder confidence.
Linking science for climate adaptation	Portugal stands out as an example of reducing the gaps between science and policy by improving access to information and knowledge transfer in climate adaptation	Slovakia's NAP includes the *measure Establishing a functional framework to support science, education and awareness development on adaptation.*

[99] Leiter, T. (2021). Do governments track the implementation of national climate change adaptation plans? An evidence-based global stocktake of monitoring and evaluation systems. *Environmental Science & Policy*, *125*, 179-188.
[100] EEA (2020) Monitoring and evaluation of national adaptation policies throughout the policy cycle
[101] https://climate-adapt.eea.europa.eu/en/metadata/publications/evaluation-of-the-national-action-plan-on-adaptation-to-climate-change-in-the-czech-republic
[102] Government of Spain (2019). Informe De Evaluación Del Plan Nacional De Adaptación Al Cambio Climático. [Report on the Evaluation of the National Climate Change Adaptation Plan]: https://www.miteco.gob.es/es/cambio-climatico/temas/impactos-vulnerabilidad-y-adaptacion/informeevaluacion_pnacc_tcm30-499212.pdf Government of Spain (2018). Informe de seguimento [4th Follow-up Report]. Ministerio Paral La Transcicion Ecologica. https://www.miteco.gob.es/es/cambio-climatico/temas/impactos-vulnerabilidad-y-adaptacion/informeevaluacion_pnacc_tcm30-499212.pdf
[103] Leiter, T. (2021)
[104] https://www.bmuv.de/en/download/second-progress-report-on-the-german-strategy-for-adaptation-to-climate-change-das
[105] An overview of existing monitoring and information systems in the Slovak Republic that are relevant for gathering information on climate change mitigation, vulnerability, risks and enhancing adaptive capacity was provided in Annex 3 on national adaptation actions reported under the Governance Regulation
[106] OECD (2023) Adaptation Measurement: Assessing Municipal Climate Risks To Inform Adaptation Policy In The Slovak Republic https://www.oecd.org/publications/adaptation-measurement-assessing-municipal-climate-risks-to-inform-adaptation-policy-in-the-slovak-republic-dad34bb3-en.htm
[107] CimateADAPT Information on national adaptation actions reported under the Governance Regulation https://climate-adapt.eea.europa.eu/en/countries-regions/countries/slovakia

Policy area	Example of best practice	Relevance for Slovakia
	policy-making.[108] In the governance structure of its NAS (or *Estratégia Nacional de Adaptação às Alterações Climáticas, ENAAC*) Portugal established a dedicated thematic area around research and innovation and a scientific panel *Painel Científico*. The "research and innovation" thematic area fosters collaboration, particularly across the NAS sectoral working groups responsible for sectoral policy development and implementation.[109] In addition, the scientific panel consists of at least five members, each mandated to be a scientist with acknowledged expertise in areas relevant to climate change, environment, risk management, or public policies. The panel's objectives include: a) Providing advice and scientific support to entities engaged in the Strategy; b) Supporting and advising any member of the ENAAC coordination group while considering the Strategy's objectives; c) Monitoring the Strategy's implementation progress and recommending necessary improvements.[110]	The current status of adaptation science and research in Slovakia reflects a network of interconnected projects but There is a lack of linkage of research projects outputs to practice, dissemination and training activities[111]. In line with this, NAP priorities include integrating adaptation into research, enhancing data sharing, promoting climate change education at all levels, and supporting professional development. Slovakia could consider a dedicated approach to integrate scientific knowledge into policy-making processes for climate change adaptation. These platforms can serve as forums for synthesising scientific findings and translating them into actionable policies and strategies. Moreover, Slovakia can benefit from implementing scientific assessments, similar to Portugal's climate change, impacts, and vulnerability assessment, to provide policymakers with robust guidance and roadmaps for effective adaptation measures.

3.4. Implications for next steps

Based on the analysis presented in this Chapter, considerations for the revision of the NAS in the subsequent phases of this project include:

- **The 2025 NAS should provide the guiding framework to prioritise the inclusion of additional measures/tasks to sectors with either fewer or no implementation tasks under the current NAP**. Given that certain sectors, such as Cultural Heritage, Information & Communication Technology, Disaster Risk management, Civil Protection & Critical Infrastructure, Energy, Finance, Industry, and Tourism, have either fewer or no adaptation tasks associated with them, there is a need to prioritise these sectors in the 2025 NAS. To do so, the 2025 NAS could utilise to the best extent possible the findings from DV2.3 to identify vulnerabilities and develop tailored adaptation measures for these sectors.
- **The 2025 NAS should address the lack of policies focusing on coordination, cooperation, and networks across sectors**. Given the diverse array of stakeholders engaged in implementing adaptation measures, as shown in section 3.2, the 2025 NAS should establish mechanisms for effective coordination, communication, and cooperation among these bodies. This can include inter-ministerial collaboration mechanisms.
- **The 2025 NAS must urgently prioritise the establishment of monitoring and reporting mechanisms across all sectors to address the current lack of monitoring data.** Currently progress in implementing adaptation measures is not being directly monitored, and there is no overview of all NAP implementation tasks and their implementation status. This is crucial in improving the understanding and assessment of adaptation efforts, particularly in sectors such as agriculture, where numerous adaptation tasks have been proposed. To achieve this, Slovakia should develop a unified Monitoring, Reporting, and Evaluation (MRE) system for adaptation

[108] EEA (2020) Monitoring and evaluation of national adaptation policies throughout the policy cycle (Box 2.5
[109] APA (2020) Estratégia Nacional de Adaptação às Alterações Climáticas
[110] Decreto do Presidente da República n.º 87/2015 - National Adaptation to Climate Change Strategy (ENAAC 2020)
[111] See *Summary of the state of play* in the SK NAP cross-cutting measure 4 *Establishing a functional framework to support science, education and awareness-raising on adaptation*

policies, drawing inspiration from practices in Spain, and Germany (see section 3.3). This entails establishing standardised indicators, reporting mechanisms, and evaluation criteria to effectively track progress on adaptation measures. Making evaluation reports publicly available will further enhance transparency and accountability.

- **The 2025 NAS must improve communication regarding the link between adaptation measures and climate mitigation benefits to enhance the implementation of adaptation actions**. This could involve better articulating the co-benefits of adaptation measures, for example, for project developers as a prerequisite to access to national funds and resources. This was also mentioned during the interviews conducted as part of the assignment, which indicated that it is necessary to leverage synergies between adaptation and mitigation measures.

- **To enhance the effectiveness of the 2025 NAS, it is very important to improve the clarity and specificity of implementation tasks**. Our analysis showed that a large part of the implementation tasks currently in the NAP lack this clarity. For instance, implementation tasks such as "supporting projects to increase (...)" lack specificity regarding the nature of support required, be it financial, technical, communication support or other forms of assistance. Providing specific details will streamline coordination, and resource allocation, and ultimately lead to more successful implementation of adaptation measures outlined in the NAP.

- **Gaining insights from the approach adopted from other MS, the 2025 NAS could incorporate economic impact analyses to demonstrate the potential effects of climate change on various sectors**. By including, for instance, historical data, estimates from insurance companies, and relevant studies, the 2025 NAS can highlight the urgency of adaptation measures. For example, referencing specific figures for projected economic losses due to climate-related events can underscore the need for adaptation efforts. This information could be provided from the results of DV2.3. Section 3.3-*Analysis of best practices from NAP/NAS implementation - Analysis of best practices from NAP/NAS implementation* provides additional examples of how the 2025 NAS can build upon practices implemented in other MS.

- **In addition, the 2025 NAS could prioritise estimating the funding gap and investment needs** Currently, an estimation regarding the financial requirements for implementing adaptation actions is missing. Drawing inspiration from successful examples in Czechia and Estonia (see section 3.3), Slovakia can further enhance its adaptation efforts by providing detailed breakdowns of funding sources and allocation amounts for individual adaptation actions. This will facilitate effective monitoring and evaluation of adaptation initiatives, ensuring that resources are efficiently utilised and enhancing stakeholders' confidence (including e.g., private investors and international donors).

- **Given the extensive implementation task list of the current NAP** (totalling 169 as shown in the Annex), **incorporating Cyprus's approach of engaging stakeholders in decision-making processes into the guiding framework for prioritisation for the 2025 NAS can enhance effectiveness** (see section 3.3). This approach can be considered in the organisation of workshops in the next phases of the project.

- **Enhancing the NAS could involve drawing insights from successful national as well as initiatives such** as the Strategy for Mitigation of Floods for Bodrog River Basin countries project, which effectively manages transboundary water dependencies. The 2025 NAS should showcase good practices at the national level, including early stakeholder engagement, risk assessments, and integrated flood management strategies. Additionally, it can spotlight initiatives like the Dutch "Making Water Data Available," which centralises data and adopts standardized formats to improve data management systems.

4. Climate adaptation governance framework in Slovakia

4.1. Current adaptation governance framework in Slovakia

The two main strategic documents related to climate adaptation governance in Slovakia are the National Adaptation Strategy (NAS) and the National Adaptation Strategy Action Plan (NAP). The country's NECP for the 2021-2030 period is also relevant to an extent.

Adaptation to climate change as a policy issue is the responsibility of the Ministry of Environment (MoE), which ensures communication with both international and European organisations, and it also coordinates national activities. The MoE is also known as the National Contact point, working in cooperation with the Working Group on Adaptation.[112] It is the responsibility of the Ministry of Environment to ensure the implementation of the NAS, as well as monitor the progress of implementation. [113]

4.1.1. Mechanisms to coordinate climate adaptation policy development

Slovakia has one key mechanism in place to coordinate policy development across sectors and involved institutions – the Working Group on Adaptation, established through the government. The working group includes representatives from a number of ministries and other institutions, and meets at least once a year.[114] The working group cooperates with professional institutions and other organisations.

The working group has an important role within the NAS and NAP processes – it is tasked with operational coordination and implementation.[115] Additionally, it is also regularly informed on the NAP performance indicators, and contributes to the updates of both NAS and NAP. The membership includes representatives from ministries, institutions, academia or other interested groups, such as but not limited to: [116]

- Ministry of Environment,
- the Ministry of Education, Research, Development and Youth,,
- the Ministry of Health,
- the Ministry of the Economy,
- the Ministry of the Interior,
- the Ministry of Agriculture and Rural Development,
- the Ministry of Transport,
- the Public Health Authority of the Slovak Republic,
- the Slovak Hydrometeorological Institute (SHMU),
- the Slovak Academy of Science,
- the Association of Towns and Municipalities of Slovakia,
- the Union of Slovak Cities.

[112] Ministry of Environment (2016) Adaptation Strategy of the Slovak Republic on Adverse Impacts of Climate Change Overview: Executive Summary
[113] European Commission (2023) Assessment of progress on climate adaptation in the individual Member States according to the European Climate Law
[114] European Commission (2018) Adaptation preparedness scoreboard: Summary for Slovakia
[115] European Commission (2023) Assessment of progress on climate adaptation in the individual Member States according to the European Climate Law
[116] Ministry of Environment (2016) Adaptation Strategy of the Slovak Republic on Adverse Impacts of Climate Change Overview: Executive Summary

The institutions involved in the working group are also relevant for the implementation of the NAS and NAP, and they will remain relevant for further work on adaptation based on stakeholder mapping (see Chapter 5 for more details).

In addition to the the Working Group, the Council of the Government of the Slovak Republic for the European Green Deal is also involved in inter-ministerial coordination. Taken all together, it can be observed that Slovakia has established cross-ministerial coordination to integrate and mainstream climate change into sectoral policies. The progress on mainstreaming can also be observed with environmental assessment procedures, for which online tools, methodologies, checklists, and guidance are available.[117]

4.1.2. Implementation, monitoring and reporting of the NAS and the NAP

When it comes to implementation, monitoring and reporting of the NAS and the NAP, the main responsibilities lie with the Ministry of Environment. Following the approval of the NAP, a joint coordination, monitoring and evaluation mechanism was established, as an operational document of the Adaptation Working Group. It will serve for the ongoing coordination of the work of the Adaptation Working Group in the implementation of the NAP as the Working Group at the expert level is tasked with ensuring coordination in the implementation of the NAP.[118] The Adaptation Working Group is also instrumental in the monitoring and evaluation of progress, as it continuously assesses the risks to the implementation of the NAP and proposes procedures to eliminate such risks.

The implementation of the NAP does not fall on the MoE only, but rather on a mix of institutions. At the sectoral level, responsible ministries should be incorporating NAP tasks into their respective planning documents, including financial support, as well as applicable planning procedures.[119] It has been indicated that entities at the regional level should also participate in the NAS and NAP implementation. To ensure successful implementation at the local level, regional level entities will however need political, legislative and financial support from the Slovak government. The responsibility of measures and tasks in the NAP is set out in the Act 575/2001 Coll. on the organisation of the activities of the Government of the Slovak Republic and the organisation of the central government of the Slovak Republic, and these will be further explored in Chapter 5.[120]

The evaluation of the quantitative implementation of the measures and tasks under the NAP is entrusted to the institutions responsible for their implementation. For the first time, such an evaluation took place in 2022, and it is foreseen to take place every two years. Under the Governance Regulation, a number of evaluation questions on national adaptation measures are provided and the MoE uses these to prepare the report to the European Commission. The responsible institutions also have to monitor the efficiency and effectiveness of the measures implemented, while also potentially developing recommendations for practice.

4.2. Stakeholder views and recommendations for next steps

The Slovak government has set up a governance framework on climate adaptation that aids in continuously mainstreaming climate adaptation into other policy areas. This is done through a single coordination body –the Working Group on Adaptation – which involves many relevant institutions and organisations.[121] It has been noted in interviews that the Adaptation Working Group currently acts as more of a communication platform, rather than an expert group and/or platform. This has created a gap with relation to a formal structure within which relevant experts (from both sector and

[117] European Commission (2023) Assessment of progress on climate adaptation in the individual Member States according to the European Climate Law
[118] Ministry of Environment (2023) The eight national communication of the Slovak Republic on climate change
[119] Ministry of Environment (2023) The eight national communication of the Slovak Republic on climate change
[120] Ministry of Environment (2023) The eight national communication of the Slovak Republic on climate change
[121] European Commission (2023) Assessment of progress on climate adaptation in the individual Member States according to the European Climate Law

government institutions, such as local governments) could assist in co-design, corrections and implementation of the NAS. Interviewees proposed some other potential platforms that could be created: an expert commission (financed from public resources) that would have the ability to assess all strategic adaptation materials and adaptation measures on a larger scale or a Center of Excellence for adaptation at the national level, with regional branches (it could build on the experience of Belgium, Greece, Austria).

It is important to note, however, that the lack of professional capacities at all governance levels has been identified as a significant challenge. Capacity building on adaptation, especially at the regional and local government level, is needed. Related to this, during interviews it has been concluded that the unavailability of national methodological guidance, sufficient professional capacity and reliable climate and socio-economic data has resulted in some adaptation strategies being of insufficient quality. The implementation mechanism being formal, mainly focused on monitoring and evaluation, also does not contribute positively to capacity building across sectors and (potential) stakeholders.

The climate adaptation governance structures involve the most relevant institutions (both at the policy-making and sectoral actor level) that would be responsible for acting upon climate adaptation measures in these sectors. The outcome of this set-up is a continuous improvement in the horizontal approach to climate adaptation. The governance structure has both a horizontal and a vertical coordination mechanism in place, to ensure cross-sectoral implementation of the NAS and NAP.[122] At the same time, interviewees from key governance institutions have stated that cooperation, coordination and communication among departments and institutions need to be improved. Additionally, the involvement of regional government in the designing and implementation of the NAS could be improved. They could be more involved during the development of NAS, beyond providing a list of adaptation activities, and consequently should also be given more responsibilities towards implementation, including integration of adaptation activities in regional and local planning documents.

The overall responsibility of the NAS lies with the MoE. Slovakia plans on creating sectoral, regional or local adaptation strategies/plans and for these, the responsibilities for implementation should lie with relevant ministries, regional and local governments, which would report to the MoE. Currently regional and local governments do not have roles or responsibilities prescribed by the national government when it comes to adaptation, leading to having no staff working on adaptation and it being perceived as extra work. It has been noted that there is a need for clear coordination and leadership of the NAP implementation, whereby all sectors and stakeholders are motivated to participate.[123] This lack of engagement is likely a bottleneck towards comprehensive implementation of the NAP (and NAS). During interviews, it has also been noted that there is a need for a mechanism that would link the national, sectoral, regional and local adaptation plans because currently the strategies at different governance levels are being prepared in isolation from each other.

It has also been stated that the MoE is working on a law on climate change and low-carbon transformation. A key aspect of this law will be the codification of the obligation to develop strategies and action plans at the regional and local level, and the way adaptation strategies, implementation plans and other adaptation documents are developed at the national level.[124] In interviews it has been stated that the lack of legislation that takes into account the need for adaptation is a significant hindrance on the adaptation policy processes and thus is key in improving governance.

Climate adaptation governance for mainstreaming adaptation across sectors and governance levels, has room for improvement, based on previous experience. On the National Adaptation Strategy, interviewees mentioned that the current NAS needs a vision that takes into account long-term

[122] European Commission (2018) Adaptation preparedness scoreboard: Country fiche for Slovakia
[123] Ministry of Environment (2023) The eight national communication of the Slovak Republic on climate change
[124] Source: https://climate-adapt.eea.europa.eu/en/countries-regions/countries/slovakia

expected climate risks, for example in 2050, and their impacts on future socio-economic development. Additionally, research sector should be more involved in the NAS preparation process.

4.3. Assessment of governance structure(s)

In Table 4-1 an overview of an assessment of adaptation governance structures in Slovakia is presented, having carried out a SWOT (strengths, weaknesses, opportunities, and threats) analysis.

Table 4-1 SWOT matrix on adaptation governance structures in Slovakia

Strengths	Weaknesses
• There is a platform, in the form of the Working Group on Adaptation, that ensures horizontal coordination of adaptation and it includes the key stakeholders from academia and policy-making institutions. • NAS/NAP implementation mechanism is mainly focused on monitoring and evaluation of adaptation activities.	• The Working Group on Adaptation functions as an information channel, rather than a platform to engage experts to develop policies and activities. This leads to a gap in relation to a formal structure within which relevant experts could assist in design, corrections and implementation of the NAS. • The Working Group on Adaptation does not engage much with sub-national governments – vertical coordination is lacking. • The NAS is perceived as a very formal document, useful only for information – it does not currently serve as a coordinating document. It is not linked with the sub-national governance levels and their role in implementation of the NAS is limited. • The role of the private sector in climate adaptation in Slovakia is limited, and there is more room for engagement. • Adaptation is currently not formalized as a work topic at the sub-national level; this leads to no staff being assigned and issues are thus not systematically addressed. • Regions are underfunded and few funds are allocated towards adaptation. At the same time, it is not possible to rely on external sources (i.e., coming from EU, Norway and Switzerland) .
Opportunities	**Threats**
• **Systematic and formalized capacity building at all governance levels on adaptation is required; including for those who participate in the design and implementation of adaptation measures (e.g. city planners, spatial planners, designers, implementers of measures).**	• Lack of technical capacity on adaptation at all governance levels, as well as for stakeholders that are, or would be involved. • Lack of stakeholder engagement, particularly in implementation of adaptation activities. • The formal of engagement of sub-national level governments in the NAS/NAP design and lack of responsibilities for adaptation integration into policy development can lead to a delay in implementation of adaptation measures and/or

• **Sub-national governance level could be** more **involved in the design and implementation of the NAS**.[125] • **The Working Group on Adaptation could transform and expand its role by involving experts in assessing outputs of both the Working Group and/or the strategy documents created by sub-national administrations. The NAP has provided a logical grouping of sectors – subgroups could be created for these sectors; it would allow experts and stakeholders to focus on sector-specific measures and their implementation**. • **Sub-national governments should be given more responsibilities and scope when it comes to adaptation measure development and implementation, coupled with assistance from the national government (legislative, professional and financial).**	implementation of measures that are not best suited to the local realities. • Lack of legislation that takes into account the need for adaptation could prove as a significant hindrance on the adaptation policy processes.

The upcoming NAS 2025 should ensure that its implementation is not strictly formal, by assigning responsibilities and financial resources which would aid in implementation. The implementation system could be multi-level, and in interviews, it has been mentioned that the system could be similar to that of spatial planning in Slovakia. This would mean that at the national level, the NAS would have tools for implementation, and it would serve as an umbrella document which would be cascaded into regional and local adaptation strategy document. A mechanism could also be put in place for linking the national, sectoral, regional and local adaptation plans since currently the strategies at different governance levels are being prepared in isolation from each other. Physical adaptation measures would be done mainly at the local level, but the regional self-government would provide expertise, data and financial support towards the local level.

[125] Examples of good NAS transfer to the regional level are e.g. Portugal, Holland, Austria, Sweden, Greece, Denmark

5. Stakeholder engagement

5.1. Stakeholder mapping

Effective stakeholder engagement is paramount in the development of climate change adaptation plans, serving as a linchpin for success in addressing the multifaceted challenges posed by a changing climate. By actively involving stakeholders at every stage - from initial planning and prioritization to implementation, monitoring, and evaluation - climate change adaptation plans can benefit from broader ownership, legitimacy, and effectiveness. Engaging stakeholders fosters collaboration, consensus-building, and shared responsibility, ultimately enhancing resilience, reducing vulnerability, and safeguarding communities and ecosystems against the impacts of climate change.

While many different stakeholders can be engaged, it is important to distinguish the role they can play and the responsibilities that can consequently be attached to them. This is done through a power-interest mapping exercise, where for every stakeholder these two elements are determined. For the purpose of developing and implementing a climate adaptation strategy as an official document against which Slovakia will be reporting its progress to the EU and the global community, the starting point for mapping stakeholders is their mandate in the decision-making sphere in sectors related to adaptation to climate change.

Power refers to the ability of a stakeholder to influence the decision-making process by setting agendas and political priorities, or formulating policies, strategies or actions which are directly and indirectly relevant for climate adaptation. **Interest** refers to the degree of concern, involvement, or investment that stakeholders have in climate adaptation and the consequences of climate change to their sphere of business or interest. Power and interest are determined for each stakeholder qualitatively, distinguishing between low, medium and high value, based on the descriptions of the mandate of each stakeholder and feedback received through the scoping interviews. Based on the two values, each stakeholder is placed in a power-interest matrix to determine their significance for climate adaptation and consequently how they should be engaged in the process of developing and implementing an adaptation strategy. Box 3 provides further details on the methodology.

Box 5-1 Power-interest mapping and engagement strategies

Power refers to the ability of a stakeholder to influence the outcomes of decisions, actions, or events in a particular context.

- **High power**: significant influence and authority to shape decisions and outcomes; often play a central role in decision-making processes and can drive the direction of initiatives or projects
- **Medium power**: moderate influence and authority, enabling them to contribute to decisions and outcomes to some extent; while not as central to decision-making processes as high-power stakeholders, they still wield enough influence to impact certain aspects of initiatives or projects
- **Low power**: limited influence or authority in a given context; while they may have valuable perspectives or interests, their ability to shape outcomes is typically more limited

Interest refers to the degree of concern or investment that a stakeholder has in a particular issue or outcome.

- **High interest**: deeply invested in the issue at hand and are likely to be directly affected by the outcomes; often prioritize the issue and are committed to advocating for their interests or desired outcomes
- **Medium interest**: moderate level of investment and involvement in the issue at hand; neither deeply committed nor completely disengaged, showing a balanced level of concern and engagement
- **Low interest**: minimal investment or involvement in the issue, perceiving it as less relevant to their concerns, priorities, or areas of expertise

Based on the power – interest mapping, four main engagement strategies are recognised:

- **Collaborating**: continuing working with those stakeholders that are already actively participating in the process;
- **Engaging**: increasing involvement of relevant stakeholders in order to move them towards active collaboration;
- **Consulting**: involving relevant stakeholders for their insights, perspective and knowledge, in order to contribute to the process without expectation of driving the adaptation process;
- **Informing**: keeping relevant stakeholders in the loop of developments and progress with no expectation of active contribution to the process.

High power	**Engage or Consult**	**Engage**	**Collaborate**
Medium power	**Inform**	**Consult or Inform**	**Collaborate or Engage**
Low power	**Inform**	**Inform**	**Consult**
	Low interest	*Medium interest*	*High interest*

Based on a detailed power – interest mapping for Slovakia Table 5-1 presents which **stakeholders should be invited to collaborate, engage and consult in the process of developing and implementing adaptation strategy**, while comprehensive power – interest mapping is available in Annex 4.

Table 5-1 Stakeholder engagement strategies for Slovakia adaptation planning and implementation

Stakeholder name	Mandate	Engagement strategy	Adaptation process		
			Design	Implement	Monitor
National Government					
Ministry of Environment	The Ministry of the Environment is the central state administrative and inspection authority in environmental affairs. It is responsible for a number of policy areas: nature and landscape protection, waste management, protection of water resources and the quality of groundwater and surface water, fisheries and forestry in national parks, environmental impact assessment of activities and their consequences, air protection, geological works, genetically modified organisms, national environmental policy, unified information system on environment and area monitoring	collaborate	✓	✓	✓
Slovak Hydrometeorogical Institute	The Slovak Hydrometeorological Institute (SHMU) is a specialized organization providing hydrological and meteorological services at the national and international level. SHMU's activities include the following: monitoring of quantitative and qualitative parameters of the air and water in Slovak territory; collecting, verifying, interpreting and archiving data and information on the condition and regime of air and water; describing developments in the atmosphere and hydrosphere; and issuing forecasts, warnings and other information regarding the atmosphere and hydrosphere.	collaborate	✓	✓	✓
Slovak Environment Agency	Slovak Environment Agency is the professional organisation of the Ministry of Environment with nationwide competence, focused on environmental care, development of environmental studies, application of environmental policy instruments, ensuring access to environmental information, and environmental informatics.	collaborate	✓	✓	✓
Ministry of Interior	Ministry of Interior is a central body of state administration mainly for protecting the constitutional system, public order, security of persons and property, the state's borders, the safety and fluency of road traffic, refugees and transmigrants. They are also responsible for the Police Force and the Fire Fighting and Rescuing Corps.	collaborate	✓	✓	
Ministry of Investment, Regional Development and Informatics	The Ministry of Investment, Regional Development and Informatics is mainly responsible for creation and implementation of the uniform state policy in the field of the use of European Union funds, as well as informatization of the society, and investment.	collaborate	✓	✓	

Ministry of Agriculture and Rural Development	The Ministry of Agriculture and Rural Development performs state administration in the areas of agriculture and rural development and it directs, guides and inspects the performance of state supervision mainly in protection and use of agricultural land and forest land, in forestry and hunting, in irrigation and drainage systems, in aquaculture, in provision of support in agriculture and rural development.	collaborate	✓	✓
Ministry of Defence	The Ministry guarantees to deliver the defence of the Slovak Republic, to build and exercise command and control over the Slovak Armed Forces, to co-ordinate the activities of central state administrative bodies and institutions, aimed at preparing the defence of the Slovak Republic, to ensure the inviolability of Slovak airspace, to co-ordinate military and civil air traffic, to run Military Intelligence, to manage military facilities and military forests.	collaborate	✓	✓
Slovak Water Management Enterprise	Slovak Water Management Enterprise is in charge of management of commended water flows and water works and ensuring all their functions.	engage		✓
Ministry of Economy	Ministry of Economy is the central body of state administration for economy, industry, energy, power engineering, heat and gas production, and business.	engage		✓
Ministry of Finance	The Ministry of Finance is a central body of state administration responsible for the areas of finance, taxes and fees, customs, financial control, internal audit and government audit. It is also a central body of state administration responsible for coordination of state aid in the area of pricing and price control, except for the pricing and price control of the goods regulated by separate laws.	engage		✓
Ministry of Transport, Institute of Transport Policy	The Ministry of Transport is the central body of state administration under which the administration of railway, trolleybus, combined and road transport, land communications, shipping and ports, aviation, post and telecommunications falls.	engage	✓	✓
Office of Deputy Prime Minister for the Recovery and Resilience Plan of the EU	Office of Deputy Prime Minister for the Recovery and Resilience Plan of the EU is in charge of Slovak National Recovery and Resilience Plan.	engage		✓
Authority for Spatial Planning and Construction	The office is the central state administration body for spatial planning (except for ecological aspects), construction and expropriation	engage	✓	✓

Ministry of Labour, Social Affairs and Family	The Ministry is the central body of the state administration for the field of social affairs, especially labour relations, legal relations in the performance of work in the public interest and legal relations of elected officials of local self-government bodies, safety and health protection at work, labour inspection, employment strategy, coordination of its creation and implementation and labour market policy, social insurance, pensions, state social benefits, social assistance, social protection of children and coordination of state family policy.	engage	✓	✓	
Ministry of Health	The Ministry of Health is responsible for: national health policy; nursing education and health care professionals; ensuring quality and patient safety in healthcare; the management of societal and national programmes aimed at promoting health; keeping national health registries in cooperation with the National Health Information Centre; and development of long-term goals of the professional health education.	consult	✓	✓	
Public Health Authority	The Public Health Authority is the main public health research institute and the reference centre for the national network of sanitary epidemiological service, protection, promotion and development of public health.	consult	✓	✓	
State Nature Conservancy of the Slovak Republic	The State Nature Conservancy of Slovak Republic is the central expert organisation for nature and landscape conservation. The main tasks include work on legislation, policy, and guidelines documents as well as management of protected area, surveys and research provision and habitats monitoring.	consult	✓	✓	✓
Department of National Parks Management	The Department of National Park Management is a part of the Nature Protection and Biodiversity Section of the Ministry of the Environment.	consult	✓	✓	
National Bank of Slovakia	The National Bank of Slovakia (NBS) is the central bank of Slovakia. It is an independent institution whose basic function is to maintain price stability. It also supervises the financial market and other activities. It is member of the Network of Central Banks and Supervisors for Greening the Financial System (NGFS).	inform			✓
Slovak Office for Standards, Metrology and Testing	The Slovak Office of Standards, Metrology and Testing (UNMS) is the central state administration body for technical standardization, metrology, and quality and conformity assessment. UNMS standardization department performs the activities of the National Standards Body and fulfils the functions of the National Information Centre.	inform		✓	
Ministry of Tourism and Sport	The Ministry is the central body of the state administration for tourism, development, promotion and presentation of tourism products in Slovakia and abroad and for the development of sports	inform	✓	✓	

Office of the Plenipotentiary of the Government of the Slovak Republic for Roma Communities	Office of the Plenipotentiary of the Government of the Slovak Republic for Roma Communities is a part of the Ministry of Interior of the Slovak Republic. It is working on the activities for Roma youth as a part of accelerating the process of Roma integration.	inform		✓
Ministry of Education, Science, Research and Youth	The Ministry of Education, Research, Development and Youth is the central body of the state administration of the Slovak Republic for elementary, secondary and higher education, educational facilities, lifelong learning and for the state's support for research, development and youth.	inform	✓	✓
Ministry of Culture	The Ministry of Culture is the central body of the state administration for official language, protection of the monument fund, cultural heritage and librarianship, art, copyright and related rights, cultural and educational activities and folk art production, presentation of Slovak culture abroad, relations with churches and religious societies, media and audiovisual, promoting the culture of national minorities	inform		✓
Local Government				
Union of Cities	The Union of towns and cities protects rights and interests of members in relation to legislative and executive state authorities as well as to other organizations, unions, associations and home and foreign institutions, provides to members advisory and informational services and coordination of municipal policy activities especially in the area of protection, restoration, development and permanent sustainability of environment and cultural heritage, educational system, social and health services, local and regional development.	consult	✓	
Association of Self-governing Regions (SK8)	The Association of Self-Governing Regions of Slovakia (abbreviated as "SK8") is a voluntary, interest-based association of self-governing regions of the Slovak Republic, which advocates the interests of self-governing regions and their inhabitants while respecting their autonomous status. It involves representatives of all Slovak self-governing regions in solving common problems of local government and in the development of joint strategies.	consult	✓	
Bratislava city	Bratislava is the capital and largest city of Slovakia (total population 475 503). It is engaged in proactive systematic approach to climate change adaptation, including detailed vulnerability assessment and adaptation plan.	consult	✓	✓
Kosice city	Košice is the second city and largest city in eastern Slovakia (total population 229 040). It is engaged in proactive systematic approach to climate change adaptation, including detailed vulnerability assessment and adaptation plan.	consult	✓	✓

Malacky City	Malacky is midsized city in western Slovakia (total population 18 935). It is engaged in proactive systematic approach to climate change adaptation. It is the first city of Slovakia, which has comprehensive climate plan (including both adaptation and mitigation in one document).	consult	✓	✓	
Slovak Towns and Villages Association	The mission of the Association of Cities and Municipalities of Slovakia is to defend and enforce the common interests and rights of member cities and municipalities while respecting their autonomous status in accordance with the European Charter of Local Self-Government, the Constitution of the Slovak Republic and the laws of the Slovak Republic and based on the principles of sustainable development and social cohesion.	inform	✓		
Business					
Association of Employers (AZZZ SR)	AZZZ SR is the largest employer organization in the Slovak Republic, which was founded in 1991 to create conditions for the dynamic development of business in the Slovak Republic and to protect and promote the common employer and business interests of its members.	engage	✓	✓	✓
Slovak Insurance Association	The Slovak Insurance Association is an interest association of commercial insurance companies, and its task is to represent, protect and promote the common interests of its members in relation to the central body of state administration, other legal entities, the general public and abroad. The activities of the association are mainly focused on the field of insurance economy, education, and promotion of the insurance sector as a whole. As of January 1, 2023, 8 insurance companies and 4 insurance company branches from another member state are members of the Slovak Insurance Association.	inform		✓	
Slovak Chamber of Commerce and Industry	The Slovak Chamber of Commerce and Industry (hereinafter referred to as "SOPK") is a public institution established on the basis of Act no. 9/1992 Coll. on chambers of commerce and industry. It operates throughout the territory of the Slovak Republic (a regional chamber of SOPK is established in each regional city) and is focused on the protection and support of business and on the coordination of the common interests of its members in business activities at home and abroad. From the sectoral point of view, SOPK members are business entities across the entire economy – manufacturing, trading firms, banks, insurance companies, companies providing services in the field of science and research, agricultural and food entities, as well as vocational secondary schools, colleges, and universities.	inform	✓		

Slovak Agriculture and Food Chamber	The Slovak Agricultural and Food Chamber (SPPK) was based according to the Law no. 30/1992 Coll. as non-governmental, statutory and self-governing institution. The main goal and mission of SPPK is to represent the common interests of SPPK members in the process of the state socio-economical policy creation and the support and protection of SPPK members enterprise activities, in the sake of the agriculture and the food industry progress and improvement in Slovakia.	inform	✓		
Slovak Tourism Association	The Slovak Tourism Association is a voluntary non-political and professionally oriented organization of employers in tourism. The actual members are the Slovak Association of Hotels and Restaurants, Slovak Association of Tour Operators and Travel Agents, Lavex – cableways and ski lifts, Historical Hotels of Slovakia, Slovak Association of Rural Tourism and Agro Tourism, Association of Slovak Spas, Bratislava Tourist Board, TATRY MOUNTAIN RESORTS, Institute of Tourism, Hight Tatras Region, AquaCity Poprad and Trinity Hotels. The priorities of the Association are the unification of the tourism branch, active approach to legislative changes in the area of tourism, more intense co-operation in promoting Slovakia and supporting the domestic tourism.	inform	✓		
NGOs					
Climate Coalition	The Climate Coalition is a platform of environmental organizations that aims to promote solutions that are both environmentally and economically sustainable, while contributing to a just society. It focuses on cooperation with state officials, non-governmental and professional organizations as well as the private sector.	consult	✓		
Passive House Institute Slovakia - iEPD	Passive House Institute Slovakia (IEPD) is an apolitical, voluntary and interest-oriented non-governmental organisation. IEPD has been active since 2005. It´s objective is the multilateral support of passive energy housing, but also of architecture that is versatilely considerate to the environment, and of the sustainable approach in the creation of the environment. It associates physical and juristic persons, protects their interests and promotes their claims.	inform	✓		
Research					
National Forestry Center	National Forest Centre unites forestry science, research, consulting, education and forestry practice. At present, the National Forest Centre is comprised of four institutes:Forest Research Institute (FRI),Institute for Forest Consulting and Education (IFCE), Institute for Forest Resources and Information (IFRI), and Forest Management Planning Institute (FMPI)	consult	✓	✓	✓

National Agricultural and Food Center	The National Agricultural and Food Centre focuses on comprehensive research and gathering of knowledge in the sustainable use and protection of natural resources, especially soil and water resources for crop production and animal husbandry, quality and safety, innovation and competitiveness of food and non-food products of agricultural origin, productive and non-productive impact of agriculture on the environment and rural development and the transfer of knowledge from agricultural and food research to end users.	consult	✓	✓	
Slovak Academy of Sciences	Slovak Academy of Sciences (SAS) is national, non-university science and research institution. The first mission of SAS is to carry out top-level basic research at the frontiers of knowledge that leads to new discoveries and concepts. The second mission of SAS is to make the scientific infrastructure for technically demanding research available to all interested parties, be it universities or other organisations of research and development. The third mission is long-term strategic and applied research and development, whereby SAS intensively and effectively co-operates with the business sector, the public sector, and civil society to transfer knowledge into practice. SAS led the process of National Action Plan for the implementation of the Adaptation Strategy of Slovakia elaboration.	collaborate	✓	✓	✓

5.2. Stakeholder engagement plan

This Project aims to support the Department for global climate change policy and adaptation in the process of revising NAS and NAP, as well as facilitate development of knowledge and skills necessary for successful implementation of adaptation strategy and action plan. Therefore, the Project plans to cast a wide net when reaching out to stakeholders and enticing their participation. Wide outreach towards stakeholders will ensure that a diversity of perspectives, knowledge and needs is represented in all stages of Project implementation, thereby developing comprehensive outputs and building a sense of ownership among the community that will need to drive adaptation to climate change in Slovakia.

The Project will employ a multi-faceted methodology for stakeholder consultation, including interviews, focus groups, workshops and trainings. Each modus of engagement is chosen for its ability to capture information in the way and to the detail required for successful completion of specific tasks.

Interviews will allow for detailed insights from key informants, capturing nuanced perspectives that might be overlooked in larger settings. They will be organised on a needs-basis, in case specific clarification or validation of conclusions is required from a particular stakeholder.

Focus groups will enable in-depth discussions and the emergence of diverse viewpoints through interactive dialogue. The interactive nature of these discussions will help uncover underlying issues, generate new ideas, and build consensus on key aspects of the adaptation strategy. Focus groups will be designed to ensure representation from key institutions and stakeholders involved or expected to be involved in the implementation of adaptation strategy.

Workshops will serve as collaborative platforms where stakeholders can actively engage in hands-on activities, brainstorming sessions, and problem-solving exercises. In addition to increasing transparency and offering opportunity to exchange ideas, this interactive format will foster creativity and the generation of practical solutions, and entice community-wide participation. It will include a wider range of stakeholders than focus groups.

Training sessions will be designed to build capacity among stakeholders, equipping them with the necessary skills and knowledge to effectively contribute to and implement the adaptation strategies. They will be targeted to specific stakeholders based on their mandate and scope of work, differentiating between national, regional and local stakeholders, in order to ensure transfer of the most relevant knowledge that will enable long-term implementation of adaptation strategy.

Table 5-2 Planned engagement of stakeholders in this Project

Type of consultation	Methodology for organising	Project deliverable	Stakeholders	Stakeholder type			Reason for consultation	Timeline
				Decision-making	*Technical*	*Other*		
Press release	1. Draft of the press release 2. Approval 3. Publication by the Ministry of Environment	Inception	A press release announcing the launch of the project was drafted for dissemination by the Ministry of Environment, targeting interested stakeholders and the general public.			x	Information	February 2024
Semi-structured interviews	4. Agree on a date and time and send the invitations – as soon as a date is set 5. Send the interview guide – 1 week before the interview 6. Send the minutes – 1 week after the interview	DLV 2.1, DLV 2.2	Key staff from involved institutions and key stakeholders, identified in collaboration with the beneficiary	x	x		To gather stakeholder views for the analysis on relevant policies and/or governance structures for climate change adaptation.	March/April 2024
Workshop	1. Agree date with the beneficiary and confirm which stakeholders to invite 2. Send save the date to all stakeholders – 1.5. months before the event 3. Send an invitation with detailed agenda – 1 month before the event 4. Send a reminder about the workshop – 1 week before the event 5. Send a follow up email and any meeting minutes – 2-3 weeks after the event	DLV 2.3	First workshop series: all mapped stakeholders will be invited, to enable quality participation Second workshop: selected stakeholders that participated in the first workshop, permanent secretaries of ministries and other institutions, superintendents and heads of departments to be invited	x	x	x	First workshop: to provide in-depth knowledge and local expertise on the effects of climate change in all sectors Second workshop: to discuss and validate the findings of the climate risk and vulnerability assessment, identification of key risks, outlining strategic directions for adaptation planning	First workshop series: June 2024 Second workshop: September 2024
		DLV 2.4	All mapped stakeholders will be invited	x	x	x	First workshop: to validate strategic	First workshop:

Type of consultation	Methodology for organising	Project deliverable	Stakeholders	Stakeholder type			Reason for consultation	Timeline
				Decision-making	*Technical*	*Other*		
							direction and adaptation options Second workshop: to present the recommendations for the new NAP and the corresponding roadmap towards 2050	September 2024. Second workshop: to be agreed with the beneficiary, to best fit the formal consultation process
Focus group	1. Send invitations to the selected stakeholders to agree their participation 2. Send the focus group guide (incl. questions and general context of the project and tasks) and privacy statement – one week before the focus group 3. Conduct the focus group (in coherence with privacy requirements) 4. Send the minutes to the participants for validation – within one week of focus group	DLV 2.4	Key staff from involved institutions and key stakeholders, identified in collaboration with the beneficiary	x	x		To co-design concrete communication activities that the beneficiary will need to implement to promote new NAP	September 2024 - to be confirmed based on progress of the overall deliverable
Trainings	1. Select stakeholders in cooperation with the beneficiary 2. Send save the date to stakeholders – 2 months before the event 3. Send an invitation with detailed agenda – 1 month before the event	DLV 2.5	Stakeholders to be confirmed, based on the training curricula to be developed, according to the following matrix: • Training 1 – national level stakeholders • Training 2 – regional and local stakeholders • Training 3 – local stakeholders	x	x		To deliver training to national, regional and local stakeholders. National stakeholders will be addressed in one on-site training.	Spring 2025 – to be confirmed based on overall progress of deliverable

Type of consultation	Methodology for organising	Project deliverable	Stakeholders	Stakeholder type			Reason for consultation	Timeline
				Decision-making	*Technical*	*Other*		
	4. Distribute the invite to a broader network through a press release and social media channels 5. Implement satisfaction survey (questions agreed with the beneficiary) – within 2 weeks after the event						Regional and local stakeholders will be approached through 3 on-site trainings, while additional 3 on-line trainings will be offered for local stakeholders.	
In-person events	1. Select stakeholders in cooperation with the beneficiary 2. Select locations and dates in cooperation with the beneficiary and event hosts 3. Send save the date to stakeholders – 2 months before the event 4. Send an invitation with detailed agenda – 1 month before the event 5. Distribute the invite to a broader network through a press release and social media channels 6. Implement satisfaction survey (questions agreed with the beneficiary) – within 2 weeks after the event	DLV 2.6	Stakeholders to be selected in cooperation with the beneficiary (still to be defined whether this events will be open to the public)	x		x	Eight events to be organised to carry out validation-type events for the public communication tools about climate adaptation that have been identified. The event format should allow for active participation and feedback. The events will be held in 4 Slovak Regions, 1 municipality participating in the Horizon Europe Mission on Adaptation, 1 event on the premises of the Slovak Hydrometeorological Institute and 1 event on the premises of the Slovak Environment Agency	Spring 2025 – to be confirmed based on overall progress of deliverable

6. Conclusions and recommendations

Based on our **analysis of the current policy framework of climate adaptation** in Slovakia, several key considerations emerge for the revision of the NAS in subsequent project phases:

(1) The 2025 NAS should maintain the key principles of the 2018 NAS, prioritising a **proactive approach in line with the adaptation policy cycle**. This involves a structured process of preparation, assessment of climate risks and vulnerabilities, identifying and assessing adaptation options, implementation and evaluation of adaptation measures, ensuring their relevance and effectiveness over time. To ensure the effectiveness of this approach amidst evolving policy landscapes and climate challenges **the 2025 NAS should incorporate a structured framework for monitoring, reporting and evaluation (MRE), which is currently one of the main gaps identified in our analysis**. Given the diverse array of stakeholders involved in implementing adaptation measures, a unified MRE system inspired by some of the good practices would be crucial for tracking progress effectively.

(2) The **2025 NAS should echo the four principal objectives outlined in the EU Adaptation Strategy, focusing on making adaptation smarter, swifter, more systemic**, **and bolstering international action on climate resilience**. This involves leveraging robust data and accessible tools for informed decision-making (smarter), implementing timely measures to address urgent climate impacts (swifter), integrating climate resilience across sectors (more systemic), and enhancing global resilience through increased support and effectiveness (global action).

(3) **Addressing the need for a longer-term vision in the 2025 NAS is essential, extending beyond the current timeframe (2030)** to anticipate climate risks and their socio-economic implications up to the year 2050.

(4) At the same time, **the 2025 NAS must align closely with current and forthcoming EU policies and strategies** to ensure coherence and synergy in adaptation efforts. Specifically, the 2025 NAS must provide the guiding framework for sectorial strategies to proactively acknowledge the implications of policies such as the CSRD, Directive on the Resilience of Critical Entities, the Floods Directive, Common Fisheries Policy and the EU Directive on Soil Monitoring and Resilience, among others.

(5) In terms of the legislative framework at the national level, **the absence of a Climate Law in Slovakia today is a clear gap that must be addressed** promptly to establish a framework for climate adaptation. Interviews highlighted this deficiency, indicating a lack of legislation that adequately considers the imperative of adaptation measures. This gap not only hampers governance by failing to mandate the integration of adaptation measures into various sectors but also fosters a lack of coordination among adaptation plans across different governance levels. **The 2025 NAS should recognise and integrate existing national policy documents relevant to climate adaptation from various ministries and stakeholders**. Consolidating these policy documents into a centralised source of information would prevent duplication of efforts, promote coherence and enhance accessibility and transparency. The MoE and the Slovak Environmental Agency have already taken steps in this direction by establishing dedicated websites and platforms that consolidate information on local adaptation strategies and action plans for cities and municipalities.

(6) **The 2025 NAS could serve as an umbrella document**, a comprehensive framework guiding the formulation of sector-specific and local adaptation strategies. The responsibility for NAS implementation would then lie with MoE, while the specific adaptation strategy and/or plan implementation would lie with relevant ministries and sub-national governments. This will aid in prioritising and sharing lessons learned across regions municipalities and sectors (from those

that have more developed plans to those that still lack strategies). Therefore, it is essential that the **2025 NAS remains non-prescriptive, allowing sufficient autonomy for regions to focus on their action plans tailored to local needs and circumstances**. To this end, it should be clarified that the implementation tasks and measures currently outlined in the NAP are to be complemented with measures at the regional level. The current extensive list of implementation tasks in the NAP should be reviewed to clearly delineate responsibilities, identifying which measures should be led by local governments and which by the national government. A multi-level implementation system could be created, ensuring a coordinated approach across different governance levels, as well as delegate more responsibilities from the national level towards other governance levels.

(7) **The 2025 NAS should provide enhanced guidance for sub-national adaptation strategies and plans, building upon the insights from the analysis of main gaps in current** strategies. Our analysis (in section 2.5) highlighted the diverse landscape of sub-national adaptation strategies, ranging from robust to developing or preliminary stages. While some strategies demonstrate a thorough understanding of climate change impacts and sectoral vulnerabilities, others require refinement. The limited number of cities and regions with developed adaptation strategies underscores the need for the 2025 NAS for broader engagement to guide all jurisdictions effectively. For this, the 2025 NAS could include a standardised process for the development of sub-national adaptation strategies, or plans. In addition, the NAS should prioritise providing assistance—legislative, professional, and financial—to regional and local governments to enable these governments to develop and implement effective adaptation strategies or plans, as appropriate. In practice, this would mean that with the 2025 NAS, the next version of the NAP would become a much shorter document, focusing only on the main actions to be implemented at the national level and those needed to guide and provide assistance to regional and local governments. Meanwhile, local and regional adaptation strategies likely would need to be complemented by (action) plans. This streamlined approach will ensure that both national and local efforts are effectively aligned.

(8) **The updated 2025 NAS should prioritise raising public awareness and enhancing knowledge for adaptation**, leveraging initiatives like those of the Slovak Environment Agency in environmental education. Additionally, it should **provide guidance to specifically address the absence of complementary sectoral plans**, particularly in sectors like tourism and finance. The lack of comprehensive analysis of climate vulnerabilities and risks across sectors, as noted by the EC, underscores the need for further analysis under DV2.3. Moreover, addressing the limitation of data and information at the sub-national level requires prioritising stakeholder engagement and collaboration.

(9) The limitation of data and information identified during the revision of the policy documents highlights **a significant gap in understanding climate vulnerabilities and risks across various regions**. In general, there is a lack of reliable socio-economic data and methodological guidance, which has resulted in some adaptation strategies being of insufficient quality. It would be expected that the assessment under DV2.3 would allow for improvements in data inputs that could be fed into not only NAS and NAP updates but also for adaptation strategies on the sectoral or regional level. Regional self-government has proposed becoming a data hub for subjects in the region, as the current method of obtaining data is complicated.

(10) **There is currently a noticeable absence of implementation tasks focusing on coordination, cooperation, and networks across sectors,** but also between national, regional and local levels Without such coordination, it becomes challenging to develop holistic adaptation strategies that adequately address the interconnected nature of climate change impacts. Additionally, **the current NAP overlooks the importance of actions related to insurance and risk-sharing instruments and to creating or revising contingency funds for emergencies**. The 2025 NAS could set the direction to fill in these gaps.

(11) Another area requiring attention is the **variable coverage of actions targeting knowledge and behavioural change**. The current NAP lacks consistency in addressing these aspects. In particular, in the forest management sector, there is a need to bridge knowledge gaps regarding how individual forest species respond to changing environmental conditions. Establishing smaller reference areas without intervention, where natural forest development can be observed under varying climate scenarios, could provide valuable insights for adaptive management strategies (there are currently no models available that depict how forest species behave in different climatic, soil and geomorphological conditions).

(12) In terms of financial information, the **2025 NAS could prioritise estimating the funding gap and investment needs**. Currently, an estimation regarding the financial requirements for implementing adaptation actions is missing. Drawing inspiration from successful examples of other MS, Slovakia can further enhance its adaptation efforts by providing detailed breakdowns of funding sources and allocation amounts for individual adaptation actions. This will facilitate effective monitoring and evaluation of adaptation initiatives, ensure that resources are efficiently utilised and enhance stakeholders' confidence (including e.g., private investors and international donors)

(13) In the 2025 NAS, **it is also essential to enhance communication regarding the link between adaptation measures and climate mitigation benefits**. Articulating the co-benefits of adaptation measures and incorporating economic impact analyses, including projected economic losses due to climate-related events, can underscore the urgency of adaptation efforts.

(14) To enhance the effectiveness of the 2025 NAS, **it is very important to improve the clarity and specificity of implementation tasks**. Our analysis showed that a large part of the implementation tasks currently in the NAP lack this clarity. Providing specific details will streamline coordination, and resource allocation, and ultimately lead to more successful implementation of adaptation measures outlined in the NAP.

The current **climate adaptation governance framework** in Slovakia is set up to mainstreaming climate adaptation into other policy areas. Based on analysis, and stakeholder interviews, there is room for improvement on various aspects of governance, namely:

(15) **Research and academic partners, as well as regional and local governments, should be more involved in the NAS preparation process**. While the current NAP aims to establish a functional framework supporting science, education, and awareness development on adaptation, there is a notable gap in structuring the linkage between research project outputs and policymaking. In response, the upcoming NAS could adopt a dedicated approach to integrate scientific knowledge into policy-making processes for climate change adaptation. These platforms can serve as forums for synthesising scientific findings and translating them into actionable policies and strategies. For this, Slovakia can draw inspiration from dedicated governance frameworks for linking science with climate adaptation established in other MS as shown in section 3.3. This could be explored in more detail during stakeholder engagement, as outlined in section 5.2.

(16) Additionally, **the role of private companies in climate adaptation in Slovakia is limited, and there is more room for engagement**. As mentioned above, one approach to foster such engagement is by leveraging corporate sustainability reporting under the CSRD.

(17) The main coordination body, the Working Group on Adaptation (WGA), currently acts as more of a communication platform, rather than an expert group. this current role of the WGA has created **a gap for a formal structure for experts, that would allow them to assist in the co-design and implementation of the NAS**. Some options to address this gap that have been mentioned include an update to the mandate of the WGA to have the ability for more expert exchanges, including a mechanism that links the national, sectoral, regional and local adaptation plans or an expert commission could be created with the ability to assess all strategic

adaptation materials and adaptation measures on a larger scale. The options presented can be integrated into a WGA reform that foresees its enlargement and change in structures. An expansion of the WGA would be needed to integrate more researchers and local and regional policy makers, and this should be done together with a reform of the responsibilities of local and regional governments. The change in structure would be the establishment of subgroups based on sectors defined in the NAP, as that grouping was particularly highlighted by interviewees as working well. Given their specific focus, the subgroups should be able to engage experts in a manner that allows them to assess policy documents as they are being created and assist in the design of NAS and subsequent NAPs. The bringing together of more relevant stakeholder would also provide a space for potential knowledge exchanges.

(18) Division of sectors in the NAS and NAP are considered to be appropriate.

(19) **There is a lack of climate change education and professional capacities at all governance levels**, which is a significant challenge. Hence, at the regional self-governing level, it is necessary to build professional and institutional capacities so that they can provide services related to adaptation. The forthcoming work under DV2.5 and DV2.6 will be instrumental in closing the knowledge gaps and providing a robust foundation for future work. DV2.5 and DV2.6 can also use information from this report and subsequent tasks to provide scientifically fact-based information about the adaptation process to garner public support and prevent misinformation.

When it comes to **stakeholder involvement** in climate adaptation governance, the existing structures involve the most relevant institutions that are responsible for acting upon climate adaptation measures, including on the sectoral level. The governance structure has both a horizontal and a vertical coordination mechanism in place, to ensure cross-sectoral implementation of the NAS and NAP.[126] Nonetheless, improvement can be made:

(20) During interviews, it has been identified that **cooperation, coordination and communication among departments and institutions need to be improved**. The changes to the WGA and potential other platforms as mentioned above, could address this.

(21) Responsibility for creation and implementation of sectoral, regional or local adaptation strategies/plans **should lie with relevant ministries, regional and local governments, which would report to the MoE.** The implementation of NAS is the direct responsibility of the MoE.

(22) **Clear coordination and leadership of the NAS and NAP implementation is needed**, whereby all sectors and stakeholders are motivated to participate.[127] This could be done during the establishment of the climate law, which foresees the codification of the obligations to develop adaptation strategies and action plans.

(23) The analysis carried out, combined with stakeholder inputs during interviews, has highlighted the need for an environment at the regional level that would enable (adaptation policy, professional support, financial support) for cities, municipalities and other actors in their territory. Regional governments could be a bridge between the national and local levels. Direct implementation of adaptation measures would be at the local/community level. This can be more explored in DV2.4 as a transfer of competencies in this field may need to take place and would need to be explored in more depth.

[126] European Commission (2023) Assessment of progress on climate adaptation in the individual Member States according to the European Climate Law
[127] Ministry of Environment (2023) The eight national communication of the Slovak Republic on climate change

Table 6-1 Analysis summary: Issues and update opportunities for 2025 NAS

Aspect	Issue/barrier	Update opportunity for 2025 NAS
Policy & Governance Framework	• Lack of a longer-term vision in the 2018 NAS, failing to anticipate climate risks and their socio-economic implications up to the year 2050.	→ Extending the NAS vision beyond the current timeframe (2030) → Echo the four principal objectives of the EU Adaptation Strategy
	• Lack of structured MRE framework which hinders transparency and accountability in adaptation efforts	→ Incorporate a structured, unified MRE framework for transparency and accountability.
	• Specific gaps in EU climate adaptation policy transposition into SK context, including LULUCF-related regulation	→ Provide the guiding framework for sectoral measures to anticipate the implications of upcoming EU directives and policies → Provide guidance to specifically address the absence of complementary sectoral plans, particularly in sectors like tourism and finance
	• The current NAS (and NAP) is extensive and prescriptive, potentially limiting subnational autonomy and flexibility in developing locally tailored adaptation strategies. • Lack of clarity or direction regarding the requirement or recommendation for sub-national adaptation strategies (current NAP only indirectly mentions it in the form of *creating an enabling environment for the creation and implementation of adaptation strategies)*	→ Conceive the NAS as an umbrella document, guiding sector-specific and local adaptation strategies without dictating specific measures. → Ensure the NAS remains non-prescriptive, providing regions with the autonomy to develop tailored action plans. → Delineate responsibilities within the NAS and the NAP, distinguishing between tasks led by local governments and those led by the national government. → Create a multi-level implementation system to ensure coordinated efforts across different governance levels. → Provide explicit guidance and recommendations regarding the necessity and importance of sub-national adaptation strategies. → Outline the benefits and rationale behind the development of sub-national strategies, emphasising their role in enhancing local resilience → Incorporate specific actions to support the creation and implementation of sub-national adaptation strategies. This may include providing technical assistance, capacity-building activities, and financial support
	• Potential duplication and misalignment of efforts due to decentralised source of information for policy documents	→ Centralise policy documents to prevent duplication and promote coherence into a single source of information, building on existing websites and platforms.
	• Lack of emphasis in NAP on actions related to insurance, risk-sharing instruments, and the establishment or revision of contingency funds for emergencies	→ Encourage collaboration with actors in these sectors (e.g., insurance providers) to understand effective measures for insurance and risk–sharing instruments. → Provide the guiding framework for the establishment /revision of contingency funds for emergencies caused by climate-related events.
	• Failure to articulate the co-benefits of adaptation measures, including links with climate mitigation	→ Offer clear and concise guidelines on how to articulate the co-benefits of adaptation measures, including their links with climate

Aspect	Issue/barrier	Update opportunity for 2025 NAS
		mitigation. This can involve outlining specific examples / best practices to illustrate the interconnectedness between adaptation and mitigation efforts as well as methodologies to facilitate the association of adaptation measures with their economic, social, and environmental benefits.
Knowledge	• Limited data and information leading to gaps in understanding climate vulnerabilities	→ Provide guidance to establish data collection/sharing protocols or methodologies for collecting climate-related data across sectors and regions/cities to ensure consistency and comparability of information. This could be done by encouraging the establishment of regional/sectorial data hubs that can facilitate data management and promote collaboration among stakeholders. → Encourage measures that allocate additional resources for research projects focused on filling knowledge gaps and understanding climate vulnerabilities → Encourage measures that facilitate partnerships or collaboration with other MS and other institutions to fill data gaps. → Prioritise stakeholder engagement and collaboration to specifically address the limitation of data → Provide capacity building on adaptation for all governance levels to build knowledge → Build on D2.3 results
	• Inconsistent coverage of actions in NAP targeting knowledge and behavioural change • In particular, in the forest management sector, interviews underlined the need to bridge knowledge gaps regarding how individual forest species respond to changing environmental conditions.	→ Underline the importance of enhancing actions targeting knowledge dissemination and behavioural change → Leverage capacity-building activities like those of the Slovak Environment Agency in environmental education. Interviews underline the need for systematic and formalised capacity-building activities in climate adaptation at the level of regional and local self-governments. → Encourage the documentation and dissemination of successful case studies, innovative approaches, and lessons learned to inspire and inform other actors.
Finance	• Insufficient financial estimation for adaptation actions hinders the planning and implementation of adaptation measures due to a lack of clear financial requirements and allocations • Neglect of actions related to insurance, risk-sharing instruments, and contingency funds	→ Prioritise estimating the funding gap and investment needs → Provide detailed breakdowns of funding sources and allocation amounts for individual adaptation actions. → Fill gaps in insurance, risk-sharing instruments, and contingency funds → Drawing inspiration from successful examples of other MS, provide detailed breakdowns of funding sources and allocation amounts for individual adaptation actions
Stakeholder engagement	• Lack of measures linked to coordination, cooperation, and networks across sectors	→ Improve coordination, cooperation, and networks across sectors → Reform the Working Group on Adaptation

Aspect	Issue/barrier	Update opportunity for 2025 NAS
		to include more stakeholders and provide them with an opportunity to engage with the design of 2025 NAS. Including them can also lead to better cooperation and knowledge exchange on adaptation across sectors.
Others	• Lack of specificity in implementation tasks inefficiencies in resource allocation and implementation due to lack of clarity/specificity	→ Specify implementation tasks for streamlined coordination and resource allocation

Annex 1: Interviews

Formally invited stakeholders	Interview realization (Yes-No)	Note
Ministry of Environment	Yes	
Slovak Hydrometeorogical Institute	Yes	
Slovak Environment Agency	Yes	
National Forestry Center	Yes	
Association of Self-governing Regions (SK8)	Yes	
Slovak Paradise National Park	Yes	
Union of Cities	Yes	
Office of Deputy Prime Minister for the Recovery and Resilience Plan of the EU	No	
Public Health Authority of the Slovak Republic	No	Provided written reply.
Ministry of Interior	No	
Public Health Authority	No	Provided written reply.
National Agricultural and Food Center	No	
Slovak Academy of Sciences	No	
Ministry of Investment, Regional Development and Informatics	No	
Zilina Self-Governing Region	Yes	
Banska Bystrica Self-Governing Region	Yes	
European Environmental Agency	Yes	

Interview Questions

The following guiding questions are intended to steer the conversation, with the understanding that more technical interviews will follow to delve deeper into specific areas.

NAS Implementation – assessment of strengths and weaknesses

- What is your role or level of involvement in the implementation of current Slovakia's National Adaptation Strategy? What do you think are the main achievements since its adoption in 2018?
- What do you perceive as the main challenges or bottlenecks in Slovakia's adaptation framework? Have you identified significant gaps in the NAS (e.g., in terms of the institutional framework and coordination mechanisms)?

NAS Revision – inputs towards the NAS update (key sectoral and topical opportunities)

- What immediate improvements do you think should be made in the updated National Adaptation Strategy? How can it better address the country's current climate change adaptation needs (e.g., is the division of sectors still appropriate, or should a different approach be considered)? Which sectors should be top priorities?

- What documents do you consider essential for revising the strategy, including legislations, strategies, policy papers, or any recent key developments that you believe the project team should consider in the NAS update process?

NAS Governance and stakeholder engagement

- Is the current Working Group for Adaptation (WGA) involving enough relevant Ministries and bodies? Should more stakeholders be involved, or sector-specific subgroups be created? Are there any other inputs that you would like to provide on making the governance of the adaptation response more effective and efficient?
- Which stakeholders do you believe should be consulted more extensively during the NAS's update process to ensure a comprehensive and inclusive approach? Do you have any suggestions for the engagement strategy of the NAS's update (e.g., what type of activities will be most effective, in what format, etc.)?

Is there anything you would like to add or highlight that hasn't been previously mentioned?

Annex 2 Assessment of NAS measures

NAP Action	Title of the measure or action	Main responsible body	Main responsible body 2	Main responsible body 3	Main responsible body 4	Main responsible body 5	KTM	Sub-KTM	Specification	Main sector	Status of measure or action	Positive effects on CC mitigation
1.1.1.	Review and, where appropriate, supplement legislation in the field of river basin management (in the field of agriculture and forestry, focus on the obligations to implement preventive and protective measures to regulate runoff in the landscape and urbanised areas of towns and municipalities, including control and sanction mechanisms).	Ministry of Environment	Ministry of Agriculture and Rural Development	Ministry of Transport and Construction			A: Governance and Institutional	A1: Policy instruments	A12: Creation / revision of (implementing) regulations / revision of (implementing) regulations	Hydrological Regime & Water Resources Management	being implemented	No
1.1.2.	Review and possibly supplement legislation on options for regulating interventions and landscape management - addressing issues of suitability of cropping systems, the need for areas of permanent vegetative cover, in conjunction with runoff regulation and flood wave mitigation.	Ministry of Agriculture and Rural Development	Ministry of Environment				A: Governance and Institutional	A1: Policy instruments	A12: Creation / revision of (implementing) regulations / revision of (implementing) regulations	Spatial planning	planned	No
1.1.3	Assess existing Slovak technical standards, review and possibly supplement technical documentation and binding methodologies for measures to prevent threats to the territory of the state during floods (water runoff, landslides, etc.	Ministry of Environment	Ministry of Transport and Construction	Ministry of Agriculture and Rural Development	Ministry of Interior	Office for Standardization, Metrology and Testing of the Slovak Republic	A: Governance and Institutional	A2: Management and planning	A22: Creation / revision of technical rules, codes and standards	Hydrological Regime & Water Resources Management	No data	No
1.1.4	At the municipal level, support the preparation and implementation of multi-purpose water structures (e.g. ponds, small water reservoirs) and their reconstruction so as to avoid negatively affecting water flows, creating new barriers and destruction of more valuable natural/seminatural habitats	Ministry of Environment	Ministry of Interior				C: Physical and Technological	C1: Grey options	C11: New physical infrastructure(s)	Hydrological Regime & Water Resources Management	No data	No
1.1.5.	Develop methodological guidance to address the slowing down of water runoff from river basins through technical measures, changes in land management systems and green and blue infrastructure features in landscapes and settlements.	Ministry of Environment	Ministry of Agriculture and Rural Development	Ministry of Transport and Construction			E: Knowledge and Behavioural change	E2: Capacity building, empowering and lifestyle practices	E21: Identification and sharing of good practices	Hydrological Regime & Water Resources Management	being implemented	No
1.2.1.	Strengthen the application of Act No 7/2010 Coll.z. on flood protection and to take flood risks into account in spatial planning and construction in floodplains and in the design of projects in agricultural and forest landscapes.	Ministry of Environment	Ministry of Transport and Construction	Ministry of Agriculture and Rural Development	Ministry of Interior	Local Governments	A: Governance and Institutional	A2: Management and planning	A21: Mainstreaming adaptation into other sectors	Hydrological Regime & Water Resources Management	being implemented	No
1.2.2	Methodologically promote sustainable land use, rational forest and agricultural management soil with a balance of water demand, consumption and availability	Ministry of Environment	Ministry of Agriculture and Rural Development				E: Knowledge and Behavioural change	E2: Capacity building, empowering and lifestyle practices	E21: Identification and sharing of good practices	Hydrological Regime & Water Resources Management	No data	Yes

NAP Action	Title of the measure or action	Main responsible body	Main responsible body 2	Main responsible body 3	Main responsible body 4	Main responsible body 5	KTM	Sub-KTM	Specification	Main sector	Status of measure or action	Positive effects on CC mitigation
1.2.3	Restore, repair and develop built flood protection water structures, promote their multifunctional use in flood protection and in the prevention of adverse the effects of drought	Ministry of Environment	Ministry of Agriculture and Rural Development				C: Physical and Technological	C1: Grey options	C12: Rehabilitation, upgrade and/or replacement of physical infrastructure(s)	Hydrological Regime & Water Resources Management	No data	No
1.2.4	Identify new sites with retention potential, such as sites suitable for the accumulation and retention of surface water Prioritise the use of green and blue infrastructure, and encourage their incorporation into spatial plans	Ministry of Environment					D: Nature Based Solutions and Ecosystem-based Approaches	D1: Green options	D11: Creation of new / improvement of exiting green infrastructure	Hydrological Regime & Water Resources Management	No data	No
1.2.5.	Modify the definition and application of sustainable stormwater management principles in legislation and sectoral standards and modify the permitting process for simple water conservation adaptation measures in the intravillage.	Ministry of Environment					A: Governance and Institutional	A1: Policy instruments	A11: Creation / revision of policies	Hydrological Regime & Water Resources Management	being implemented	No
1.2.6	To complete the legislation governing the management of the country o Regulated landscape interventions - promoting appropriate cropping systems (including agroforestry), land needs with permanent vegetation cover, especially in vulnerable areas, regulating forest care programs	Ministry of Agriculture and Rural Development	Ministry of Environment				A: Governance and Institutional	A1: Policy instruments	A11: Creation / revision of policies	Spatial planning		Yes
1.3.1	Implement land protection measures in permitting decisions for new construction and infrastructure.	Central State Administration Authority for Spatial Planning and Construction of the Slovak Republic	Building authorities				A: Governance and Institutional	A2: Management and planning	A22: Creation / revision of technical rules, codes and standards	Spatial planning	planned	No
1.3.2	Complete and adapt strategic documents (economy, energy, land use planning, transport, agriculture, etc.) o ways of water retention in the implementation individual activities while respecting the principle of water availability for all, including biota.	Ministry of Environment	Local Governments				A: Governance and Institutional	A1: Policy instruments	A11: Creation / revision of policies	Hydrological Regime & Water Resources Management	No data	No
1.3.3.	Promote research on the effectiveness of nature-based management systems, water conservation measures and productive and non-productive soil functions and develop national methodologies, technical standards describing practical steps to implement measures in the context of climate change, including support for additional capacity building.	Ministry of Education, Science, Research and Sport	Ministry of Environment				E: Knowledge and Behavioural change	E1: Information and awareness raising	E11: Research and innovation	Hydrological Regime & Water Resources Management	implemented/completed	No
1.4.1	Update the strategic documents of the water policy of the Slovak Republic for the years 2022 - 2027 with the incorporation of adaptation measures. Encourage stakeholder participation in water planning and synergy with relevant policy documents (in	Ministry of Environment					A: Governance and Institutional	A1: Policy instruments	A11: Creation / revision of policies	Hydrological Regime & Water Resources Management	being implemented	No

NAP Action	Title of the measure or action	Main responsible body	Main responsible body 2	Main responsible body 3	Main responsible body 4	Main responsible body 5	KTM	Sub-KTM	Specification	Main sector	Status of measure or action	Positive effects on CC mitigation
	particular those of the agriculture sector).											
1.4.2.	Evaluate the current status of aquatic habitats, their relationship to water status and quality, and their changes due to climate change impacts	Ministry of Environment	State Nature Conservancy of the Slovak Republic				E: Knowledge and Behavioural change	E1: Information and awareness raising	E11: Research and innovation	Hydrological Regime & Water Resources Management	implemented/completed	No
1.5.1	Develop detailed basis for realistic data on water requirements for biota and landscape for different geological and pedological conditions of sub-basins or for geographical areas and update them regularly.	Ministry of Environment	Ministry of Agriculture and Rural Development				E: Knowledge and Behavioural change	E1: Information and awareness raising	E13: Decision support tools and databases	Hydrological Regime & Water Resources Management	being implemented	No
1.5.2	Determine critical conditions for the resilience of biota and landscapes to the effects of climatic extremes - floods and droughts, with emphasis on protected areas, species and habitats, with emphasis on forest, grassland and wetland communities.	Ministry of Environment	State Nature Conservancy of the Slovak Republic				E: Knowledge and Behavioural change	E1: Information and awareness raising	E11: Research and innovation	Hydrological Regime & Water Resources Management	planned	No
1.5.3	Promote international cooperation and information exchange in the field of extreme weather events.	Ministry of Environment					E: Knowledge and Behavioural change	E1: Information and awareness raising	E12: Communication and dissemination	Hydrological Regime & Water Resources Management	implemented/completed	No
1.5.4	Develop a methodology to determine the ecological flow for different types of surface water bodies.	Ministry of Environment					E: Knowledge and Behavioural change	E1: Information and awareness raising	E11: Research and innovation	Hydrological Regime & Water Resources Management	planned	No
1.5.5	Update the methodologies for assessing the water balance of surface and groundwater, taking into account uneven water abstractions and water demands for ecosystem needs during the year and in extreme situations water shortages.	Ministry of Environment					E: Knowledge and Behavioural change	E1: Information and awareness raising	E11: Research and innovation	Hydrological Regime & Water Resources Management	No data	No
1.6.1	Harmonise and link climate, hydrological and quality monitoring systems with other monitoring systems to make more effective and multi-purpose use of the data collected for decision-making in climate change adaptation.	Ministry of Environment	Ministry of Agriculture and Rural Development				E: Knowledge and Behavioural change	E1: Information and awareness raising	E13: Decision support tools and databases	Hydrological Regime & Water Resources Management	being implemented	No
1.6.2	Add requirements for monitoring climate elements and monitoring surface and groundwater quality, harmonise hydrological data with those of neighbouring countries, and make the results of monitoring available.	Ministry of Environment					C: Physical and Technological	C2: Technological options	C22: Hazard / risk mapping	Hydrological Regime & Water Resources Management	being implemented	No
1.6.3	To complete the national hydrological network for decision-making on the generation of runoff from catchments. Carry out hydrogeological surveys of deficit areas in Slovakia	Ministry of Environment					A: Governance and Institutional	A3: Coordination, cooperation and networks	A32: Creation /revision of stakeholder networks	Hydrological Regime & Water Resources Management	No data	No
1.6.4	Ensure appropriate hydrological modelling to assess the impact of climate change on the flood regime in individual sub-basins.	Ministry of Environment					C: Physical and Technological	C2: Technological options	C22: Hazard / risk mapping	Hydrological Regime & Water Resources Management	being implemented	No

NAP Action	Title of the measure or action	Main responsible body	Main responsible body 2	Main responsible body 3	Main responsible body 4	Main responsible body 5	KTM	Sub-KTM	Specification	Main sector	Status of measure or action	Positive effects on CC mitigation
1.7.1	Support the preparation and implementation of water retention projects in the landscape to mitigate surface runoff, meandering and revitalisation of small streams in forests and in the country in line with the forthcoming Cycle 3 measures Water Plan of Slovakia.	Ministry of Environment	Ministry of Agriculture and Rural Development				D: Nature Based Solutions and Ecosystem-based Approaches	D2: Blue options	D21: Creation of new / improvement of existing blue infrastructure	Hydrological Regime & Water Resources Management	No data	No
1.7.2.	Promote integrated landscape management with respect for the purpose of land use, considering the common goal of quantity and surface and groundwater quality. Strengthen control and sanction mechanisms and their application in practice for non-compliance with legal obligations.	Ministry of Environment	Ministry of Agriculture and Rural Development	Local Governments			A: Governance and Institutional	A2: Management and planning	A21: Mainstreaming adaptation into other sectors	Hydrological Regime & Water Resources Management	being implemented	No
1.7.3.	Prepare a programme to support the revitalisation of the hydric and water management functions of forests. Prioritise the water protection and anti-erosion function in special-purpose forests, using as far as possible nature-friendly forms of forest management in the second zone of protection of water sources.	Ministry of Agriculture and Rural Development					A: Governance and Institutional	A2: Management and planning	A21: Mainstreaming adaptation into other sectors	Hydrological Regime & Water Resources Management	being implemented	No
2.1.1	*Develop integrated management of water use in the landscape and implement 'water prioritisation' and soil conservation in all aspects of sectoral policies at national and regional level.*	Ministry of Agriculture and Rural Development	Ministry of Environment				A: Governance and Institutional	A2: Management and planning	A21: Mainstreaming adaptation into other sectors	Hydrological Regime & Water Resources Management	No data	This measure promotes efficient water use and soil conservation practices, which can lead to reduced energy consumption and emissions associated with water pumping and soil degradation.
2.1.2	*Support for projects aimed at increasing soil retention capacity and water retention in the landscape (e.g.planting strips, restoring wetlands, increasing soil organic matter, reducing heavy agro-mechanisation, promoting green infrastructure, change from large-scale to more nature-friendly smallscale and combined farming systems).*	Ministry of Agriculture and Rural Development	Ministry of Environment				D: Nature Based Solutions and Ecosystem-based Approaches	D1: Green options	D11: Creation of new / improvement of exiting green infrastructure	Geological Environment & Soil	No data	By increasing soil retention and water retention capacity through various ecological restoration projects, this measure can enhance carbon sequestration in soil and vegetation, thereby mitigating greenhouse gas emissions.
2.1.3	*Develop irrigation with an emphasis on irrigation efficiency (technologies that reduce water/energy consumption, reconstruction/upgrading of existing irrigation systems)*	Ministry of Agriculture and Rural Development	Ministry of Environment				C: Physical and Technological	C2: Technological options	C23: Service / process application	Agriculture	No data	Improved irrigation efficiency reduces energy consumption, thus lowering greenhouse gas emissions from energy production.
2.1.4.	Implement drought monitoring, information system on the occurrence and consequences of drought on the territory of the Slovak Republic and its connection to the soil information system, development of drought risk management plans.	Ministry of Environment	Ministry of Agriculture and Rural Development				C: Physical and Technological	C2: Technological options	C22: Hazard / risk mapping	Geological Environment & Soil	being implemented	Effective drought monitoring and management can help optimise water use, prevent soil degradation, and reduce the need for energy-intensive water extraction and transport during dry periods, thus contributing to emissions reduction.
2.1.5.	Develop monitoring of the use of existing water resources coupled with plans to improve connectivity of canals, watercourses, creation of new local water sources for irrigation needs.	Ministry of Environment	Ministry of Agriculture and Rural Development				A: Governance and Institutional	A2: Management and planning	A21: Mainstreaming adaptation into other sectors	Geological Environment & Soil	being implemented	Enhancing water resource management and infrastructure efficiency reduces energy consumption associated with water distribution, thus contributing to emissions reduction.

Revision and update of the national strategy on adaptation to climate change in Slovakia

NAP Action	Title of the measure or action	Main responsible body	Main responsible body 2	Main responsible body 3	Main responsible body 4	Main responsible body 5	KTM	Sub-KTM	Specification	Main sector	Status of measure or action	Positive effects on CC mitigation
2.1.6	Preparation of a methodological guide/Definition of criteria for soil water retention and soil drying mitigation measures (in cooperation with scientific organisations of the Department	Ministry of Environment	Ministry of Agriculture and Rural Development				A: Governance and Institutional	A1: Policy instruments	A12: Creation / revision of (implementing) regulations / revision of (implementing) regulations	Geological Environment & Soil	No data	Providing guidelines for soil water retention and drying mitigation measures promotes sustainable land management practices that enhance carbon sequestration in soil and vegetation, thereby mitigating emissions.
2.2.1	Improving the implementation of anti-erosion measures in the context of greening agriculture and linking this measure to the overall protection of landscape features "green infrastructure" under the CAP.	Ministry of Agriculture and Rural Development					D: Nature Based Solutions and Ecosystem-based Approaches	D1: Green options	D11: Creation of new / improvement of exiting green infrastructure	Agriculture	No data	Anti-erosion measures help prevent soil degradation and erosion, preserving soil carbon stocks
2.2.2	Increase the representation of new and encourage the preservation of and the restoration of existing landscape features with an anti-erosion effect	Ministry of Agriculture and Rural Development					D: Nature Based Solutions and Ecosystem-based Approaches	D1: Green options	D11: Creation of new / improvement of exiting green infrastructure	Geological Environment & Soil	No data	Anti-erosion measures help prevent soil degradation and erosion, preserving soil carbon stocks
2.2.3	Establish agroforestry systems on agricultural land, i.e. identify legislative barriers, propose amendments to the related omnibus legislation and prepare support schemes	Ministry of Agriculture and Rural Development					A: Governance and Institutional	A1: Policy instruments	A12: Creation / revision of (implementing) regulations / revision of (implementing) regulations	Agriculture	No data	
2.2.4	More rigorously control the application of the antierosion measures included in Act No 220/2004 Coll. on the protection and use of agricultural land by the Soil Service in practice (also in conjunction with specific SPP anti-erosion measures).	Ministry of Agriculture and Rural Development					A: Governance and Institutional	A1: Policy instruments	A12: Creation / revision of (implementing) regulations / revision of (implementing) regulations	Geological Environment & Soil	No data	Anti-erosion measures help prevent soil degradation and erosion, preserving soil carbon stocks
2.3.1	Promote activities to improve soil quality characteristics, including precision agriculture, agroforestry and the promotion of livestock production.	Ministry of Agriculture and Rural Development					D: Nature Based Solutions and Ecosystem-based Approaches	D1: Green options	D11: Creation of new / improvement of exiting green infrastructure	Geological Environment & Soil	No data	Soil quality improvement practices such as precision agriculture, agroforestry, and sustainable livestock management enhance soil carbon sequestration and can reduce emissions
2.3.2	Promote integrated production and organic farming measures, with a focus on supporting small/family farms	Ministry of Agriculture and Rural Development					E: Knowledge and Behavioural change	E2: Capacity building, empowering and lifestyle practices	E21: Identification and sharing of good practices	Agriculture	No data	Organic farming and integrated production systems promote soil health and carbon sequestration, reduce emissions from synthetic fertiliser and pesticide use, and enhance biodiversity
2.3.3	Increase support for the mosaic use of agricultural landscapes by including a specific measure to support High Nature Value (HNV) Type 2: Agricultural Mosaic Landscapes with Low Agricultural Intensity and with natural and structural elements	Ministry of Agriculture and Rural Development					A: Governance and Institutional	A1: Policy instruments	A12: Creation / revision of (implementing) regulations / revision of (implementing) regulations	Agriculture	No data	Organic farming and integrated production systems promote soil health and carbon sequestration, reduce emissions from synthetic fertiliser and pesticide use, and enhance biodiversity
2.3.4	Introduce project support for the application of agroforestry systems through the creation of a support measure under the CAP	Ministry of Agriculture and Rural Development					B: Economic and Finance	B1: Financing and incentive instruments	B12: Creation / revision of funding schemes	Agriculture	No data	Encourages the adoption of land use practices that sequester carbon in both soil and woody biomass, reducing emissions
2.3.5	Address ownership issues through land improvement projects and ensure that they include implementation measures aimed at increasing the ecological stability of the landscape.	Ministry of Agriculture and Rural Development					A: Governance and Institutional	A1: Policy instruments	A12: Creation / revision of (implementing) regulations / revision of (implementing) regulations	Agriculture	No data	

NAP Action	Title of the measure or action	Main responsible body	Main responsible body 2	Main responsible body 3	Main responsible body 4	Main responsible body 5	KTM	Sub-KTM	Specification	Main sector	Status of measure or action	Positive effects on CC mitigation
2.3.6	Promote regular monitoring and 'fitness-check' to assess the impacts of agriculture on soil quality in the context of climate change	Ministry of Agriculture and Rural Development	Ministry of Environment				E: Knowledge and Behavioural change	E2: Capacity building, empowering and lifestyle practices	E21: Identification and sharing of good practices	Geological Environment & Soil	No data	Regular monitoring and assessment of agricultural practices' impacts on soil quality help identify opportunities for e.g., improving soil carbon sequestration
2.3.7	Reduce the area of agricultural land, the nature of the soil profile of which corresponds to that of nonagricultural land (in the cadastre, recorded as an agricultural type; e.g. gullies, potholes, high scrub or rock borders, areas of gravel-clogged rivers, bogs, areas permanently waterlogged or overgrown with peat moss) in favour of ensuring ecological stability and respecting the requirements for food security and self-sufficiency of the Slovak Republic by using these areas, inter alia, for the creation of water retention measures on agricultural land	Ministry of Agriculture and Rural Development					D: Nature Based Solutions and Ecosystem-based Approaches	D1: Green options	D12: Natural and/or semi-natural land-use management	Spatial planning	No data	Reclaiming degraded agricultural land for ecosystem restoration and water retention measures helps enhance carbon sequestration
2.4.1	Increase crop diversity, integrated fruit production and vegetables and make good use of the agricultural potential in the SR	Ministry of Agriculture and Rural Development					D: Nature Based Solutions and Ecosystem-based Approaches	D1: Green options	D12: Natural and/or semi-natural land-use management	Agriculture	No data	
2.4.2	Within the CAP, introduce stronger support for farms that apply sustainable and organic farming practices and active measures that have a demonstrably better impact on biodiversity and climate (agri-environmental climate measures - AECM).	Ministry of Agriculture and Rural Development					B: Economic and Finance	B1: Financing and incentive instruments	B12: Creation / revision of funding schemes	Agriculture	implemented/completed	Increasing energy saving, energy efficiency and use of renewable energy;
2.4.3	Promotion of local sales, local productsand the application of environmentally friendly practices in crop production	Ministry of Agriculture and Rural Development					E: Knowledge and Behavioural change	E2: Capacity building, empowering and lifestyle practices	E21: Identification and sharing of good practices	Agriculture	No data	Increasing energy saving, energy efficiency and use of renewable energy;
2.4.4	Implement integrated pest management, in particular through the use of biological control	Ministry of Agriculture and Rural Development					D: Nature Based Solutions and Ecosystem-based Approaches	D1: Green options	D12: Natural and/or semi-natural land-use management	Agriculture	No data	Reduce emissions from pesticide use
2.4.5	Creation of plant genotypes with high resistance and adaptability to biotic and abiotic factors. Support for Slovak breeding	Ministry of Agriculture and Rural Development					D: Nature Based Solutions and Ecosystem-based Approaches	D1: Green options	D12: Natural and/or semi-natural land-use management	Agriculture	No data	
2.5.1	Within the CAP, give greater support to extensive livestock farming and eliminate the disparities across the board, in particular through support for smaller and medium-sized operators.	Ministry of Agriculture and Rural Development					B: Economic and Finance	B1: Financing and incentive instruments	B12: Creation / revision of funding schemes	Agriculture	implemented/completed	
2.5.2	Adapt CAP and animal welfare strategies and design and implement technological	Ministry of Agriculture and					A: Governance	A2: Managemen	A21: Mainstreaming	Agriculture	No data	

NAP Action	Title of the measure or action	Main responsible body	Main responsible body 2	Main responsible body 3	Main responsible body 4	Main responsible body 5	KTM	Sub-KTM	Specification	Main sector	Status of measure or action	Positive effects on CC mitigation
	measures and practices in conjunction with climate change	Rural Development					and Institutional	t and planning	adaptation into other sectors			
2.5.3	Develop procedures for rescue and handling of animals during floods and fires	Ministry of Agriculture and Rural Development	Ministry of Interior				E: Knowledge and Behavioural change	E2: Capacity building, empowering and lifestyle practices	E21: Identification and sharing of good practices	Agriculture	No data	
2.6.1	Prepare and implement a national strategy to support pollinators, which should include new approaches and supports to improve bee grazing conditions, as well as new partnerships to protect all important pollinators	Ministry of Environment	Ministry of Agriculture and Rural Development				A: Governance and Institutional	A2: Management and planning	A21: Mainstreaming adaptation into other sectors	Agriculture	No data	
2.6.2	Use "pollination" as one indicator of ecosystem services for environmental impact assessment of agriculture	Ministry of Agriculture and Rural Development					A: Governance and Institutional	A2: Management and planning	A21: Mainstreaming adaptation into other sectors	Agriculture	No data	
2.6.3	To promote conditions for the creation of nesting habitats for wild insect pollinators and the diversity of their food sources	Ministry of Environment	Ministry of Agriculture and Rural Development				D: Nature Based Solutions and Ecosystem-based Approaches	D1: Green options	D12: Natural and/or semi-natural land-use management	Agriculture	No data	
2.6.4	To apply research in bee keeping and bee grazing monitoring, the impact of pollination on increasing crop yields agricultural crops, mapping dangerous bee diseases, research on the impacts of change Climate	Ministry of Education, Science, Research and Sport	Ministry of Agriculture and Rural Development	Minstry of Environment			E: Knowledge and Behavioural change	E1: Information and awareness raising	E11: Research and innovation	Agriculture	No data	
2.6.5	Ensure support for the establishment of biogas strips and linear planting of trees on arable land for the subdivision of large hunts (over 30 ha) within the CAP	Ministry of Agriculture and Rural Development					D: Nature Based Solutions and Ecosystem-based Approaches	D1: Green options	D12: Natural and/or semi-natural land-use management	Agriculture	No data	Promoting renewable energy production,
3.1.1.	Develop and continuously update models of forest adaptation to climate change.	Ministry of Agriculture and Rural Development					E: Knowledge and Behavioural change	E1: Information and awareness raising	E11: Research and innovation	forestry	being implemented	
3.1.2.	Amend and supplement relevant forestry legislation and methodological rules to consider the latest scientifically verified knowledge on forest adaptation to climate change.	Ministry of Agriculture and Rural Development					A: Governance and Institutional	A1: Policy instruments	A12: Creation / revision of (implementing) regulations / revision of (implementing) regulations	forestry	implemented/completed	Enabling conditions to preserve/improve forest carbon stocks
3.1.3	Promote the preventive implementation of adaptive forest management models through Forest Stewardship Programmes (FSPs)	Ministry of Agriculture and Rural Development					A: Governance and Institutional	A2: Management and planning	A21: Mainstreaming adaptation into other sectors	forestry	No data	Enabling conditions to preserve/improve forest carbon stocks
3.2.1	To encourage the establishment of mixed forest stands composed of habitat appropriate tree species during forest rehabilitation and reconstruction measures, and their systematic education aimed at maintaining a favourable the forest structure according to the current PSL	Ministry of Agriculture and Rural Development	National Forestry Centre				D: Nature Based Solutions and Ecosystem-based Approaches	D1: Green options	D12: Natural and/or semi-natural land-use management	forestry	No data	Enabling conditions to preserve/improve forest carbon stocks
3.2.2	Promote the implementation of adaptive forest management models in forest rehabilitation and	Ministry of Agriculture and					D: Nature Based Solutions	D1: Green options	D12: Natural and/or semi-natural land-	forestry	No data	Enabling conditions to preserve/improve forest carbon stocks

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	reconstruction. MPRV SR Chapter appropriations/ using EU resources and co-financing from the SR	Rural Development					and Ecosystem-based Approaches		use management			
3.3.1	Conserve the gene pool of endangered tree species, with emphasis on genotypes that have the potential to better adapt to new climatic and habitat conditions, to be used in adaptation measures.	Ministry of Agriculture and Rural Development					E: Knowledge and Behavioural change	E1: Information and awareness raising	E11: Research and innovation	forestry	No data	
3.4.1	Implement projects beyond normal management to promote biodiversity and the conservation of the gene pool and their sustainable use in situ; practically support a core network of dynamic units for the conservation of genetic	Ministry of Agriculture and Rural Development	National Forestry Centre				A: Governance and Institutional	A1: Policy instruments	A12: Creation / revision of (implementing) regulations / revision of (implementing) regulations	Biodiversity and Ecosystems	No data	
3.4.2.	Introduce climate vulnerability assessment of tree species into stand-level planning and allow assisted migration of climatically suitable provenances of reproductive material.	Ministry of Agriculture and Rural Development					A: Governance and Institutional	A2: Management and planning	A21: Mainstreaming adaptation into other sectors	forestry	being implemented	Enabling conditions to preserve/improve forest carbon stocks/sequestration
3.4.3	Support for seed bank projects	Ministry of Agriculture and Rural Development	National Forestry Centre				E: Knowledge and Behavioural change	E1: Information and awareness raising	E11: Research and innovation	forestry	No data	
3.4.4	Measures for the conservation and sustainable use of forest genetic resources to be supported by the RDP/EU funds or state aid through Decree No. 660/2014-100 of the Ministry of Agriculture and Rural Development of the Slovak Republic.	Ministry of Agriculture and Rural Development					A: Governance and Institutional	A1: Policy instruments	A12: Creation / revision of (implementing) regulations / revision of (implementing) regulations	forestry	planned	
3.5.1	Support for research into alternative models and technological forest management practices increasing their adaptive capacity while maintaining all forest functions	Ministry of Agriculture and Rural Development	Faculty of Forestry, Technical University of Zvolen	National Forestry Centre			E: Knowledge and Behavioural change	E1: Information and awareness raising	E11: Research and innovation	forestry	No data	
3.5.2	Setting up financial support for the use of alternative management models increasing the adaptive capacity of forests	Ministry of Agriculture and Rural Development					B: Economic and Finance	B1: Financing and incentive instruments	B12: Creation / revision of funding schemes	forestry	No data	Enabling conditions to preserve/improve forest carbon stocks/sequestration
3.5.3	To support testing of the close-to-nature model forest management for the creation of permanently diverse flexible stand structures composed of native woody plants	Ministry of Agriculture and Rural Development	Faculty of Forestry, Technical University of Zvolen	National Forestry Centre			D: Nature Based Solutions and Ecosystem-based Approaches	D1: Green options	D11: Creation of new / improvement of exiting green infrastructure	forestry	No data	
3.5.4	To develop educational and regenerative harvesting and repair practices and technologies for alternative forest management models while maintaining forest ecosystem resilience.	Ministry of Agriculture and Rural Development	Faculty of Forestry, Technical University of Zvolen	National Forestry Centre			D: Nature Based Solutions and Ecosystem-based Approaches	D1: Green options	D11: Creation of new / improvement of exiting green infrastructure	forestry	planned	Enabling conditions to preserve/improve forest carbon stocks/sequestration
3.5.5	Support for the construction of demonstration facilities for the adaptation of forest plantations to climate change	Ministry of Agriculture and Rural Development	Faculty of Forestry, Technical	National Forestry Centre			D: Nature Based Solutions and	D1: Green options	D11: Creation of new / improvement	forestry	No data	

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			University of Zvolen				Ecosystem-based Approaches		of exiting green infrastructure			
3.6.1.	Updating of the sub-monitoring system Forests with a focus on parameters important from the point of view of adaptation of forests to climate change, including the creation of synergies, coordination, common outputs, and data exchange with other institutions such as The Research Institute for Soil Science and Soil Protection (VÚPOP) The Agricultural Paying Agency (APA), SHMI and State Nature Conservancy of the Slovak Republic (ŠOP SR).	Ministry of Agriculture and Rural Development	State Nature Conservancy of the Slovak Republic	National Forestry Centre			E: Knowledge and Behavioural change	E1: Information and awareness raising	E13: Decision support tools and databases	forestry	being implemented	Enabling conditions to preserve/improve forest carbon stocks/sequestration
3.6.2.	Ensure adequate financing of forest monitoring from the state budget, also focusing on parameters important for forest adaptation and their regular evaluation.	Ministry of Agriculture and Rural Development					B: Economic and Finance	B1: Financing and incentive instruments	B12: Creation / revision of funding schemes	forestry	being implemented	Enabling conditions to preserve/improve forest carbon stocks/sequestration
3.6.3.	Establish functional monitoring of the PMI fire weather index as a forecasting and warning system for forests.	Ministry of Agriculture and Rural Development	Slovak Hydrometeorological Institute				C: Physical and Technological	C2: Technological options	C21: Early warning systems	forestry	implemented/completed	Enabling conditions to preserve/improve forest carbon stocks/sequestration
3.7.1	To support research and monitoring projects on selected forests as a basis for assessing development and adaptation processes as a "benchmark" against managed forests	Ministry of Agriculture and Rural Development	Ministry of Environment	State Nature Protection of the Slovak	National Forestry Center		E: Knowledge and Behavioural change	E1: Information and awareness raising	E11: Research and innovation	forestry	No data	
3.7.2.	Develop a concept for the protection of forests and natural forests in accordance with international conventions in the context of climate change impacts.	Ministry of Agriculture and Rural Development	Ministry of Environment				A: Governance and Institutional	A1: Policy instruments	A11: Creation / revision of policies	forestry	being implemented	Enabling conditions to preserve/improve forest carbon stocks/sequestration
3.8.1	Support agroforestry systems on the basis of detailed typologies of identified areas of low biodiversity to ensure stability and protection of the damaged area water erosion, landslides, floods	Ministry of Agriculture and Rural Development					D: Nature Based Solutions and Ecosystem-based Approaches	D1: Green options	D12: Natural and/or semi-natural land-use management	forestry	No data	
3.8.2.	Amend relevant legislative documents, especially Act No. 220/2004 Coll. on the Protection and Use of Agricultural Land (§ 9 - 11) and related methodological documents, and generally support the legislative regulation of the so-called white areas.	Ministry of Agriculture and Rural Development					A: Governance and Institutional	A1: Policy instruments	A11: Creation / revision of policies	Spatial planning	being implemented	
4.1.1	*Ensure the maintenance/enhancement/ revitalisation of the favourable condition of water-related habitats (habitats V1, V02 and V03)33 and all peat bogs (Ra biotopes)*	Ministry of Finance	Ministry of Agriculture and Rural Development				D: Nature Based Solutions and Ecosystem-based Approaches	D2: Blue options	D22: Natural and/or semi-natural water and marine areas management	Hydrological Regime & Water Resources Management	being implemented	
4.1.2	Integrate green and blue infrastructure building in flood protection solutions with water retention for biodiversity in the country	Ministry of Environment					D: Nature Based Solutions and Ecosystem-based Approaches	D2: Blue options	D21: Creation of new / improvement of existing blue infrastructure	Disaster Risk Management, Civil Protection & Critical Infrastructure	being implemented	

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4.1.3	Improve water quality and associated ecosystems important for climate change mitigation (Water Framework Directive and Habitats Directive).	Ministry of Environment					A: Governance and Institutional	A1: Policy instruments	A11: Creation / revision of policies	Hydrological Regime & Water Resources Management	planned	
4.1.4	Develop an analysis of key ecosystems and ecosystem services for water retention in the landscape and identification of important wetland sites (including sites for migratory species) and their conservation.	Ministry of Environment					A: Governance and Institutional	A2: Management and planning	A22: Creation / revision of technical rules, codes and standards	Biodiversity and Ecosystems	being implemented	
4.2.1	Prohibit the use of pesticides and chemicals (outside integrated protection schemes) near watercourses, wetlands and significant groundwater sources.	Ministry of Agriculture and Rural Development					A: Governance and Institutional	A1: Policy instruments	A11: Creation / revision of policies	Biodiversity and Ecosystems	being implemented	Enabling conditions to preserve/improve forest carbon stocks
4.2.2	Analyse and set up support for sustainable management of grassland habitats and pastures (including agroforestry) in conjunction with support for sheep and goat farming in Slovakia's foothill and mountain areas and support for measures to protect migratory species and their habitats in the use of agricultural land	Ministry of Finance	Ministry of Agriculture and Rural Development				D: Nature Based Solutions and Ecosystem-based Approaches	D1: Green options	D12: Natural and/or semi-natural land-use management	Biodiversity and Ecosystems	No data	Enabling conditions to preserve/improve forest carbon stocks
4.2.3	Develop an analysis and evaluation of the real impact of the measures "greening" to promote biodiversity and pollination in agricultural landscape	Ministry of Agriculture and Rural Development	Ministry of Environment				E: Knowledge and Behavioural change	E1: Information and awareness raising	E11: Research and innovation	Biodiversity and Ecosystems	No data	
4.2.4	Develop an analysis of the implementation of CAP measures that have a positive impact on biodiversity in agricultural landscapes and propose a modification of the measures or new measures	Ministry of Agriculture and Rural Development	Ministry of Environment				E: Knowledge and Behavioural change	E1: Information and awareness raising	E11: Research and innovation	Biodiversity and Ecosystems	No data	
4.2.5	Ensure, through RDP schemes and support, a 10% increase in the area of agricultural land farmed using integrated crop protection systems compared to 2018	Ministry of Agriculture and Rural Development	Ministry of Environment				B: Economic and Finance	B1: Financing and incentive instruments	B12: Creation / revision of funding schemes	Spatial planning	No data	
4.2.6	Preserve and systematically restore ecotone elements for biodiversity in agricultural landscapes (10 % of the area left for biodiversity for every 1 ha of arable land)	Ministry of Agriculture and Rural Development	Ministry of Environment				D: Nature Based Solutions and Ecosystem-based Approaches	D1: Green options	D12: Natural and/or semi-natural land-use management	Biodiversity and Ecosystems	No data	
4.2.7	Halt the decline and deterioration of habitats and species tied to agricultural landscapes, including migratory species.	Ministry of Environment					D: Nature Based Solutions and Ecosystem-based Approaches	D1: Green options	D12: Natural and/or semi-natural land-use management	Biodiversity and Ecosystems	No data	Enabling conditions to preserve/improve forest carbon stocks
4.2.8	Ensure Funding agroforestry systems on agricultural or forest land	Ministry of Environment					B: Economic and Finance	B1: Financing and incentive instruments	B12: Creation / revision of funding schemes	Biodiversity and Ecosystems	No data	
4.3.1	Integrate conservation measures into management practices on agricultural land, forests,	Ministry of Environment	Ministry of Interior				A: Governance	A2: Managemen	A21: Mainstreaming	Spatial planning	No data	

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	watercourses, public infrastructure and in spatial planning						and Institutional	t and planning	adaptation into other sectors			
4.3.2	Support the target tree species composition of forest stands with habitat-appropriate tree species corresponding to natural conditions, optimal age and spatial structure of forest stands and the presence of dead wood and hollow trees so that forest ecosystems are able to withstand climate change and do not endanger the health of forest stands and the health and property of citizens	Ministry of Agriculture and Rural Development	Ministry of Environment				D: Nature Based Solutions and Ecosystem-based Approaches	D1: Green options	D12: Natural and/or semi-natural land-use management	forestry	No data	
4.3.3	Plan and implement forestry engineering measures to promote water retention in the landscape and slow down rainfall runoff, including erosion control measures on the forest road network.	Ministry of Agriculture and Rural Development					C: Physical and Technological	C1: Grey options	C12: Rehabilitation, upgrade and/or replacement of physical infrastructure(s)	forestry	No data	
4.3.4	Harmonise, coordinate and integrate forest adaptation plans and activities between forest management and nature conservation in the sense of legislation and strategic documents	Ministry of Agriculture and Rural Development	Ministry of Environment				A: Governance and Institutional	A2: Management and planning	A21: Mainstreaming adaptation into other sectors	forestry	No data	
4.3.5	Ensure more effective compensation mechanisms to compensate for the loss of less intensive management or non-management of forests in the context of adaptation for biodiversity	Ministry of Interior	Ministry of Agriculture and Rural Development				B: Economic and Finance	B1: Financing and incentive instruments	B11: Creation / revision of incentive mechanisms	forestry	No data	Enabling conditions to preserve/improve forest carbon stocks
4.3.6	Modify forest management practices to ensure the protection of forest habitats and species in order to adapt them to climate change and to promote the hydric and water management functions of forests.	Ministry of Agriculture and Rural Development	Ministry of Environment				A: Governance and Institutional	A2: Management and planning	A21: Mainstreaming adaptation into other sectors	forestry	being implemented	
4.3.7	Accelerate the process of conversion of monoculture stands in protected areas to stands with natural tree composition in order to increase their adaptive capacity	Ministry of Agriculture and Rural Development	Ministry of Environment				D: Nature Based Solutions and Ecosystem-based Approaches	D1: Green options	D12: Natural and/or semi-natural land-use management	Spatial planning	No data	
4.3.8	Promote less intensive and diversified land uses of large protected areas to increase their adaptive capacity.	Ministry of Agriculture and Rural Development					A: Governance and Institutional	A2: Management and planning	A21: Mainstreaming adaptation into other sectors	Biodiversity and Ecosystems	No data	
4.4.1	Align legislation in nature conservation, forestry, agriculture and other sectors to set coherent approaches to climate change adaptation and link approaches and actions.	Ministry of Agriculture and Rural Development	Ministry of Environment				A: Governance and Institutional	A1: Policy instruments	A11: Creation / revision of policies	forestry	implemented/completed	
4.4.2	Translate adaptation measures into protected area management programmes and ensure their effective implementation	Ministry of Environment	State Nature Conservancy of the Slovak Republic				A: Governance and Institutional	A1: Policy instruments	A12: Creation / revision of (implementing) regulations / revision of (implementing) regulations	Spatial planning	No data	
4.4.3	Streamline the system of protected areas in Slovakia	Ministry of Environment					A: Governance	A2: Managemen	A21: Mainstreaming	Spatial planning	No data	

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	(national, European, international) with an emphasis on their better adaptation and increasing the efficiency of care for protected areas						and Institutional	t and planning	adaptation into other sectors			
4.4.4	Support the preparation and control the incorporation of the documentation of the ÚSES into the spatial plans of regions, towns and municipalities, with emphasis on Ensuring the preservation/restoration of ecological corridors	Ministry of Environment	Central State Administration Authority for Spatial Planning and Construction of the Slovak Republic				A: Governance and Institutional	A2: Management and planning	A21: Mainstreaming adaptation into other sectors	Spatial planning	No data	
4.4.5	Implement the measures proposed in the ÚSES in order to improve the stability and adaptive capacity of the territory of villages and towns.	Ministry of Environment					A: Governance and Institutional	A1: Policy instruments	A12: Creation / revision of (implementing) regulations / revision of (implementing) regulations	Spatial planning	No data	
4.4.6	Implement the State's pre-emption right over land in protected areas and ensure sustainable and effective management of State land in protected areas	Ministry of Environment					A: Governance and Institutional	A1: Policy instruments	A12: Creation / revision of (implementing) regulations / revision of (implementing) regulations	Spatial planning	No data	
4.4.7	Refine the acreage in the reassessed national parks, classified in IUCN management category II protected areas, to a minimum of 50%	Ministry of Environment	Ministry of Agriculture and Rural Development				A: Governance and Institutional	A2: Management and planning	A22: Creation / revision of technical rules, codes and standards	Spatial planning	No data	
4.5.1	Ensure identification and systematic financing of care important ecosystems that contribute to the adaptive capacity of forest, agricultural and urban landscapes	Ministry of Environment	Ministry of Agriculture and Rural Development				B: Economic and Finance	B1: Financing and incentive instruments	B12: Creation / revision of funding schemes	forestry	No data	
4.5.2	Improve or maintain the favourable status of species and habitats of European and national importance (according to the targets in the Priority Action Framework - PAF and other strategic documents related to biodiversity conservation).	Ministry of Environment					D: Nature Based Solutions and Ecosystem-based Approaches	D1: Green options	D12: Natural and/or semi-natural land-use management	Biodiversity and Ecosystems	being implemented	
4.5.3	Develop and approve a national programme and implementation plan for ecosystem revitalisation with emphasis on landscape adaptation to the adverse impacts of climate change, mitigating the risks of flash floods, preventing landslides, land degradation and erosion	Ministry of Interior	Ministry of Agriculture and Rural Development				A: Governance and Institutional	A1: Policy instruments	A11: Creation / revision of policies	Biodiversity and Ecosystems	being implemented	
4.5.4	Implement the national programme and implementation plan for the revitalisation of degraded ecosystems.	Ministry of Interior	Ministry of Agriculture and Rural				A: Governance and Institutional	A1: Policy instruments	A12: Creation / revision of (implementing) regulations / revision of	Biodiversity and Ecosystems	No data	

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			Development						(implementing) regulations			
4.5.5	Introduce into legislation the principle of "no net loss", whereby any entity that in any way destroys/damages a natural habitat will revitalise/create/replace it to a reasonable extent in a similar quality in another nearest suitable location.	Ministry of Environment					A: Governance and Institutional	A1: Policy instruments	A11: Creation / revision of policies	Biodiversity and Ecosystems	being implemented	
4.5.6	Support basic and applied research on the identification, mapping and use of natural adaptation processes	Ministry of Education, Science, Research and Sport					E: Knowledge and Behavioural change	E1: Information and awareness raising	E11: Research and innovation	Biodiversity and Ecosystems	No data	
4.6.1	Develop a national assessment of ecosystems and the ecosystem services they provide and use this data to plan adaptation measures.	Ministry of Environment					E: Knowledge and Behavioural change	E1: Information and awareness raising	E13: Decision support tools and databases	Biodiversity and Ecosystems	implemented/completed	
4.6.2	Use the monitoring system for habitats and species of European importance and monitoring obligations under the Water Directive in assessing the impacts of climate change	Ministry of Environment					E: Knowledge and Behavioural change	E1: Information and awareness raising	E13: Decision support tools and databases	Biodiversity and Ecosystems	planned	
4.6.3	Introduce specific monitoring aimed at tracking climate change in the natural environment and biodiversity.	Ministry of Environment					A: Governance and Institutional	A2: Management and planning	A21: Mainstreaming adaptation into other sectors	Biodiversity and Ecosystems	planned	
4.7.1	Develop and approve action plans for invasive species in Slovakia and implement their prevention and control measures and removing invasive species and reducing their negative impacts on the health of the population, including in the context of climate change.	Ministry of Environment					A: Governance and Institutional	A1: Policy instruments	A11: Creation / revision of policies	Biodiversity and Ecosystems	being implemented	
4.7.2	Analyse the possibilities of using existing and creating new effective tools (including financial) to assist landowners, land users and municipalities to eliminate the spread of non-native, invasive species and to restore damaged habitats	Ministry of Environment					B: Economic and Finance	B1: Financing and incentive instruments	B12: Creation / revision of funding schemes	Biodiversity and Ecosystems	being implemented	
4.7.3	Ensure surveillance of the spread of invasive species and an early warning system, including official control of invasive species and control Penetration pathways for the inadvertent introduction and spread of invasive species with subsequent eradication	Ministry of Interior	Ministry of Agriculture and Rural Development				C: Physical and Technological	C2: Technological options	C21: Early warning systems	Biodiversity and Ecosystems	being implemented	
5.1.1	Improve public awareness of the importance of vaccination.	Ministry of Health					E: Knowledge and Behavioural change	E1: Information and awareness raising	E12: Communication and dissemination	health	being implemented	
5.1.2	Develop an analysis of the health and financial impact of vaccine-preventable diseases on the health sector.	Ministry of Health					E: Knowledge and Behavioural change	E1: Information and awareness raising	E11: Research and innovation	health	being implemented	

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5.1.3	Develop projections for future vaccination needs (e.g. tick-borne encephalitis).	Ministry of Health					E: Knowledge and Behavioural change	E1: Information and awareness raising	E11: Research and innovation	health	being implemented	
5.1.4	Encourage regular implementation of immunological screening	Ministry of Health					A: Governance and Institutional	A2: Management and planning	A21: Mainstreaming adaptation into other sectors	health	No data	
5.1.5	Extend compulsory vaccination (based on necessary analyses)	Ministry of Health					A: Governance and Institutional	A1: Policy instruments	A11: Creation / revision of policies	health	No data	
5.2.1	Tighten controls on the transport and storage of foodstuffs.	Ministry of Agriculture and Rural Development	State Veterinary and Food Administration of the Slovak Republic	Slovak Public Health Office			A: Governance and Institutional	A2: Management and planning	A22: Creation / revision of technical rules, codes and standards	health	implemented/completed	
5.2.2	Coordinate the food control system and link results to human cases	Ministry of Agriculture and Rural Development	State Veterinary and Food Administration of the Slovak Republic	Slovak Public Health Office			A: Governance and Institutional	A2: Management and planning	A21: Mainstreaming adaptation into other sectors	health	implemented/completed	
5.2.3	To expand the range of foods tested, the range of pathogens tested and the range of pathogenicity indicators tested.	Ministry of Agriculture and Rural Development	State Veterinary and Food Administration of the Slovak Republic	Slovak Public Health Office			A: Governance and Institutional	A2: Management and planning	A22: Creation / revision of technical rules, codes and standards	health	No data	
5.3.1	Legislatively ensure the change of the minimum material and technical provision of health care facilities.	Ministry of Health					A: Governance and Institutional	A1: Policy instruments	A11: Creation / revision of policies	health	No data	
5.3.2	Create appropriate legislation and consequently, an enabling environment for private individuals to invest in the climate comfort of hospitals.	Ministry of Health					A: Governance and Institutional	A1: Policy instruments	A11: Creation / revision of policies	health	No data	
5.3.3	Strengthen services in health facilities during critical periods in vulnerable areas - especially in summer during heat waves.	Ministry of Health					A: Governance and Institutional	A2: Management and planning	A21: Mainstreaming adaptation into other sectors	health	No data	
5.3.4	To train emergency medical service emergency call centre staff, emergency medical service provider staff, health facility staff in terms of potential climate change related illnesses.	Ministry of Health					E: Knowledge and Behavioural change	E2: Capacity building, empowering and lifestyle practices	E22: Training and knowledge transfer	health	No data	
5.3.5	To provide the necessary equipment for the emergency call centre of the emergency medical service, the emergency medical service provider and medical facilities	Ministry of Health					C: Physical and Technological	C1: Grey options	C12: Rehabilitation, upgrade and/or replacement of physical infrastructure(s)	health	No data	

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5.3.6	Financial support for ensuring appropriate temperature conditions in hospitals (financing of air conditioning) from the state budget or EU funds	Ministry of Health					B: Economic and Finance	B1: Financing and incentive instruments	B12: Creation / revision of funding schemes	health	No data	Optimisation of energy consumption
5.4.1	Encourage the dissemination of information regarding weather extremes through radio and television	Ministry of Interior					E: Knowledge and Behavioural change	E1: Information and awareness raising	E12: Communication and dissemination	health	No data	Awareness campaigns about the negative effects of climate change might encourage the reduction of emissions
5.4.2	Create (or use an existing) backbone website to provide the necessary information on the impacts of climate change on public health, with a link to a mobile app.	Ministry of Environment	Ministry of Health				E: Knowledge and Behavioural change	E1: Information and awareness raising	E12: Communication and dissemination	health	implemented/completed	Awareness campaigns about the negative effects of climate change might encourage the reduction of emissions
5.5.1	Targeted state health surveillance by public health authorities at workplaces during unusually warm days, with a focus on ensuring that employers take appropriate measures to reduce the adverse impact of heat stress on the health of employees.	Ministry of Health					A: Governance and Institutional	A2: Management and planning	A21: Mainstreaming adaptation into other sectors	health	being implemented	
5.5.2	Financial support for the provision of appropriate temperature conditions in schools from state money or EU funds.	Ministry of Education, Science, Research and Sport	Local Governments				B: Economic and Finance	B1: Financing and incentive instruments	B12: Creation / revision of funding schemes	health	No data	
5.6.1	Create a guide for cities and towns identifying potential invasive plants, native/autochthonous allergen-inducing plants, and instructions on how to eliminate these plants. (e.g., mowing before flowering season, how often to mow, ...) or what plants to use instead of allergenic ones.	Ministry of Environment					E: Knowledge and Behavioural change	E1: Information and awareness raising	E12: Communication and dissemination	health	implemented/completed	Awareness campaigns about the negative effects of climate change might encourage the reduction of emissions
5.6.2	Increase general awareness of dangerous invasive plants, especially those that cause allergic reaction.	Ministry of Health					E: Knowledge and Behavioural change	E1: Information and awareness raising	E12: Communication and dissemination	health	implemented/completed	Awareness campaigns about the negative effects of climate change might encourage the reduction of emissions
5.6.3	Expand the network of pollen allergen monitoring stations	Ministry of Health					C: Physical and Technological	C2: Technological options	C23: Service / process application	health	No data	
5.6.4	Continue to monitor pollen allergenic species and expand the list to include new species if necessary.	Ministry of Health					C: Physical and Technological	C2: Technological options	C23: Service / process application	health	No data	
6.1.1	Develop an audit/analysis of existing relevant legislation, identifying barriers to support for climate change measures in the urban environment.	Ministry of Environment	Ministry of Interior				A: Governance and Institutional	A1: Policy instruments	A12: Creation / revision of (implementing) regulations / revision of (implementing) regulations	Transport, Infrastructure & Buildings	being implemented	
6.1.2	Adopt legislative amendments to improve the existing legislative framework.	Ministry of Environment	Ministry of Justice of the Slovak Republic				A: Governance and Institutional	A1: Policy instruments	A11: Creation / revision of policies	Transport, Infrastructure & Buildings	being implemented	
6.2.1	Analyse the needs related to the preparation of settlement planning documents (PHRSR, UPN, MÚSES, sectoral plans and others), in terms of the inclusion of	Ministry of Environment					A: Governance and Institutional	A1: Policy instruments	A11: Creation / revision of policies	Spatial Planning	implemented/completed	

NAP Action	Title of the measure or action	Main responsible body	Main responsible body 2	Main responsible body 3	Main responsible body 4	Main responsible body 5	KTM	Sub-KTM	Specification	Main sector	Status of measure or action	Positive effects on CC mitigation
	the theme "adaptation to the impacts of climate change".											
6.2.2	Prepare a methodology for drafting planning documents and embed the new approach (complemented by a response to current and future climate change impacts) into the planning system in the built environment.	Ministry of Environment	Ministry of Investment, Regional Development and Informatization of the Slovak				E: Knowledge and Behavioural change	E2: Capacity building, empowering and lifestyle practices	E21: Identification and sharing of good practices	Spatial Planning	implemented/completed	
6.3.1	Review existing methodologies from Slovakia and abroad for assessing the vulnerability/resilience of settlements to climate change impacts and developing adaptation strategies for settlements	Ministry of Environment					A: Governance and Institutional	A1: Policy instruments	A11: Creation / revision of policies	Spatial Planning	implemented/completed	
6.3.2	To develop an optimal methodology for vulnerability assessment (assessment variants) and adaptation strategy development for settlements in Slovakia, taking into account their climatic and spatial specificities.	Ministry of Environment					A: Governance and Institutional	A1: Policy instruments	A11: Creation / revision of policies	Spatial Planning	implemented/completed	
6.4.1	Identify existing expert institutional capacity in Slovakia in all steps of the adaptation process.	Ministry of Environment	Ministry of Interior				A: Governance and Institutional	A2: Management and planning	A21: Mainstreaming adaptation into other sectors	Transport, Infrastructure & Buildings	being implemented	
6.4.2	Establish a mechanism for comprehensive professional support to the settlements (one stop shop) and its internal functioning (e.g. using formalised partnerships between existing institutions or the creation of a new institution).	Ministry of Environment	Ministry of Interior				A: Governance and Institutional	A1: Policy instruments	A12: Creation / revision of (implementing) regulations / revision of (implementing) regulations	Transport, Infrastructure & Buildings	being implemented	
6.5.1	Identify themes for public administration training in climate change response.	Ministry of Environment					E: Knowledge and Behavioural change	E2: Capacity building, empowering and lifestyle practices	E22: Training and knowledge transfer	Transport, Infrastructure & Buildings	being implemented	Awareness campaigns about the negative effects of climate change might encourage the reduction of emissions
6.5.2	Compile relevant educational materials and develop a programme of post-graduate lifelong learning for public administration on this topic, under the responsibility of the MoEW SR, in cooperation with the MoI SR and relevant ministries according to specific topics, to an agreed extent.	Ministry of Environment					E: Knowledge and Behavioural change	E2: Capacity building, empowering and lifestyle practices	E22: Training and knowledge transfer	Transport, Infrastructure & Buildings	implemented/completed	Awareness campaigns about the negative effects of climate change might encourage the reduction of emissions
6.5.3	Supplement climate change education and solutions as part of public administration education to the extent specified by applicable legislation	Ministry of Environment					E: Knowledge and Behavioural change	E2: Capacity building, empowering and lifestyle practices	E22: Training and knowledge transfer	Transport, Infrastructure & Buildings	No data	Awareness campaigns about the negative effects of climate change might encourage the reduction of emissions
6.5.4	Prepare and provide training to elected and executive representatives of cities and municipalities	Ministry of Environment					E: Knowledge and Behavioural change	E2: Capacity building, empowering and lifestyle practices	E22: Training and knowledge transfer	Transport, Infrastructure & Buildings	No data	Awareness campaigns about the negative effects of climate change might encourage the reduction of emissions

Revision and update of the national strategy on adaptation to climate change in Slovakia

NAP Action	Title of the measure or action	Main responsible body	Main responsible body 2	Main responsible body 3	Main responsible body 4	Main responsible body 5	KTM	Sub-KTM	Specification	Main sector	Status of measure or action	Positive effects on CC mitigation
6.6.1	Implement adaptation of the built environment as a priority for the Partnership Agreement 2021 - 2027, follow-up operational programmes and mechanisms of the EEA and Norway Grants.	Ministry of Investment, Regional Development and Informatics	Ministry of Finance	Ministry of Environment			B: Economic and Finance	B1: Financing and incentive instruments	B12: Creation / revision of funding schemes	Transport, Infrastructure & Buildings	implemented/completed	
6.6.2	Co-finance LIFE projects from the state budget, as the EU's financial instrument for environment and climate action	Ministry of Environment					B: Economic and Finance	B1: Financing and incentive instruments	B12: Creation / revision of funding schemes	Finance	No data	Some LIFE projects supports may directly contribute to mitigating climate change in urban settlements.
6.6.3	Include the topic - adaptation to climate change in settlements in the supported areas of the EnviroFund.	Ministry of Environment					B: Economic and Finance	B1: Financing and incentive instruments	B12: Creation / revision of funding schemes	Transport, Infrastructure & Buildings	implemented/completed	
6.6.4	Support projects aimed at water conservation measures in the urbanised landscape (municipal intravilas) - projects combining rainwater catchment measures with measures allowing the use of captured water in times of drought.	Ministry of Environment					D: Nature Based Solutions and Ecosystem-based Approaches	D2: Blue options	D21: Creation of new / improvement of existing blue infrastructure	Spatial planning	No data	Supporting water conservation projects in urban areas can indirectly contribute to climate change mitigation by reducing water demand and energy consumption associated with water treatment and distribution.
6.6.5	Support projects aimed at improving environmental aspects in cities and urban areas through the construction of green and blue infrastructure elements and other measures contributing to the adaptation of the urban environment to climate change.	Ministry of Environment					D: Nature Based Solutions and Ecosystem-based Approaches	D1: Green options	D11: Creation of new / improvement of exiting green infrastructure	Spatial planning	No data	Supporting projects to improve environmental aspects in urban areas, such as green and blue infrastructure, can enhance carbon sequestration,
6.6.6	Support projects aimed at improving environmental aspects in cities and urban areas through revitalization of neglected and unused areas in cadastral urban areas contributing to urban adaptation to climate change.	Ministry of Transport	Ministry of Environment				D: Nature Based Solutions and Ecosystem-based Approaches	D1: Green options	D11: Creation of new / improvement of exiting green infrastructure	Spatial planning	No data	Supporting projects to improve environmental aspects in urban areas, such as green and blue infrastructure, can enhance carbon sequestration,
7.1.1	Conduct a hydrogeological survey aimed at delineating deficit areas and securing drinking water sources in deficit areas.	Ministry of Environment					E: Knowledge and Behavioural change	E1: Information and awareness raising	E11: Research and innovation	Hydrological Regime & Water Resources Management	0	No
7.2.1	Develop a methodology for integration, coordination and the interlinking of climate risk assessments with the preparation of the plan/project and with the environmental impact assessment - draft modifications to the EIA and building regulations	Ministry of Environment					E: Knowledge and Behavioural change	E2: Capacity building, empowering and lifestyle practices	E21: Identification and sharing of good practices	Spatial planning	No data	
7.3.1	Analyse the possibilities for insurance companies to provide information on claims in the event of emergencies (Act No 42/1994 Coll. on Civil Protection of the Population) in the context of the new EU strategy for adaptation to climate change.	Ministry of Finance	National Bank of Slovakia				B: Economic and Finance	B2: Insurance and risk sharing instruments	B21: Creation / revision of insurance schemes and products	Disaster Risk Management, Civil Protection & Critical Infrastructure	being implemented	No
7.3.2	Involve the insurance sector (commercial insurers, health insurers) in accessibility mapping, collection and processing of information and	Ministry of Environment					B: Economic and Finance	B2: Insurance and risk sharing instruments	B21: Creation / revision of insurance schemes and products	Disaster Risk Management, Civil Protection & Critical Infrastructure	being implemented	No
7.4.1	Create a unified information system as a component of the National Information System, on weather conditions and warnings,	Ministry of Interior	Ministry of Transport and	Ministry of Environment			E: Knowledge and	E1: Information and	E12: Communication and dissemination	tourism	No data	No

NAP Action	Title of the measure or action	Main responsible body	Main responsible body 2	Main responsible body 3	Main responsible body 4	Main responsible body 5	KTM	Sub-KTM	Specification	Main sector	Status of measure or action	Positive effects on CC mitigation
	flood risks or fires in tourism facilities and national park administrations (link to Cross-cutting Measure 2 with an emphasis on the tourism sector)		Construction				Behavioural change	awareness raising				
7.4.2	Create a single information system, for organisers or approvers of different types of events, to pass on information about the time, expected numbers and security of the event	Ministry of Interior	Ministry of Transport and Construction	Ministry of Environment			E: Knowledge and Behavioural change	E1: Information and awareness raising	E12: Communication and dissemination	tourism	No data	No
7.4.3	Incorporate green and blue measures into programme documents and spatial strategies in the tourism sector (e.g. Tourism Development Strategy and others).	Ministry of Interior	Ministry of Transport and Construction	Ministry of Environment			A: Governance and Institutional	A2: Management and planning	A21: Mainstreaming adaptation into other sectors	tourism	No data	Some green and blue measures might contribute to the reduction of emissions via e.g. energy savings
7.4.4	Analyse options for changes to the tax system to address the need to support businesses introducing measures to mitigate or prevent adverse impacts climate change (e.g. development of ecological and nature tourism, development of sustainable forms of transport in tourism, etc.), formulation of recommendations	Ministry of Environment					B: Economic and Finance	B1: Financing and incentive instruments	B11: Creation / revision of incentive mechanisms	Finance	No data	
7.5.1	Adopt the Concept for the Protection of Energy Poverty Consumers.	The Regulatory Office for Network Industries (URSO)					A: Governance and Institutional	A1: Policy instruments	A11: Creation / revision of policies	energy	implemented/completed	No
7.5.2	When adopting social policy measures, take into account the possibilities of solutions to protect energy-poor customers.	Ministry of Labour and Social Affairs					A: Governance and Institutional	A2: Management and planning	A21: Mainstreaming adaptation into other sectors	energy	No data	No

Annex 3: Detailed assessment sectorial adaptation

Sector	(a) Integration in NAP	(b) Availability of + sectorial plans	(c) Coverage of types of measures	(d) Monitoring data available	(e) Responsible bodies	(f) Link with climate mitigation
Agriculture	20	Yes	8 different sub-KTMs. Significant emphasis on (D1) Green options	Monitoring data available for about 10% of the measures	6	Partial
Biodiversity & Ecosystems	21	Yes	Covers 6 different sub-KTMs. Strong focus on (A1) Policy instruments, (E1)Information and Awareness Raising, and (D1) Green options	Monitoring data available for about 50% of the measures	8	Limited
Disaster Risk Civil Protection & Critical Infra.	3	Yes	Covers only 2 different sub-KTMs, on Insurance and risk sharing instruments (B2) and Blue options (D2)	Monitoring data available for all the measures	4	Limited
Energy	2	Yes	Covers only 2 different sub-KTMs, on (A1)Policy instruments and (A2) Management and planning	Monitoring data available for about 50% of the measures	2	Limited
Finance	2	No	Covers only 1 sub-KTMs, (B1) Financing and incentive instruments	No monitoring data available	2	Partial
Forestry	27	Yes	Covers 7 different sub-KTMs. Strong emphasis on Green options (D1), Policy instruments (A1), Management and planning (A2), Financing and incentive instruments (B1), and Information and awareness raising (E1).	Monitoring data available for about 40% of the measures	9	Partial
Geological Environment & Soil	8	No	Covers 5 different sub-KTMs, mainly within Green options (D1), and Policy instruments (A1).	Monitoring data available for about 25% of the measures	4	Partial
Health	22	Yes	Covers 7 different sub-KTMs. Strong emphasis on Information and awareness raising (E1) and Management and planning (A2).	Monitoring data available for about 40% of the measures	8	Partial

Sector	(a) Integration in NAP	(b) Availability of + sectorial plans	(c) Coverage of types of measures	(d) Monitoring data available	(e) Responsible bodies	(f) Link with climate mitigation
Hydrological Regime & Water Resources	29	Yes	Covers 8 different sub-KTMs. Significant emphasis on Information and awareness raising (E1) and Policy instruments (A1).	Monitoring data available for about 60% of the measures	11	Limited
Spatial Planning	22	Cross-sectorial	Covers 6 different sub-KTMs. Strong emphasis on Policy instruments (A1), with some coverage for Management and planning (A2) and Green options (D1).	Monitoring data available for about 30% of the measures	9	Partial
Tourism	3	No	Covers only 2 different sub-KTMs, mainly Information and awareness raising (E1).	No monitoring data available	4	Limited
Transport	10	Yes	Covers 4 different sub-KTMs. Some emphasis on Policy instruments (A1) and Capacity building, empowering, and lifestyle practices (E2).	Monitoring data available for about 80% of the measures	7	Partial

Annex 4: Stakeholder mapping

Stakeholder name	Type	Mandate	Power	Interest	Engagement strategy	Current engagement	Capacity to engage	Adaptation process
Ministry of Environment	national government	The Ministry of the Environment is the central state administrative authority and supreme inspection authority in environmental affairs: nature and landscape protection, waste management, protection of water resources and the quality of groundwater and surface water, fisheries and forestry in national parks, environmental impact assessment of activities and their consequences, air protection, geological works, genetically modified organisms, national environmental policy, unified information system on environment and area monitoring	High	High	collaborate	active engagement	high capacity	all stages
Slovak Hydrometeorological Institute	national government	The Slovak Hydrometeorological Institute (SHMU) is a specialized organization providing hydrological and meteorological services at the national and international level. The SHMU's activities include the following: monitoring of quantitative and qualitative parameters of the air and water in Slovak territory; collecting, verifying, interpreting and archiving data and information on the condition and regime of air and water; describing developments in the atmosphere and hydrosphere; and issuing forecasts, warnings and other information regarding the atmosphere and hydrosphere.	High	High	collaborate	active engagement	high capacity	all stages
Slovak Environment Agency	national government	Slovak Environment Agency is the professional organisation of the Ministry of Environment with nationwide competence, focused on environmental care, development of environmental studies, application of environmental policy instruments, ensuring access to environmental information, environmental informatics.	High	High	collaborate	active engagement	high capacity	all stages
Slovak Water Management Enterprise	national government	Slovak Water Management Enterprise is in charge of management of commended water flows and water works and ensuring all their functions	High	Medium	engage	compliant engagement	limited capacity	implementation
State Nature Conservancy of the Slovak Republic	national government	The State Nature Conservancy of Slovak Republic is the central expert organisation for nature and landscape conservation in Slovakia. The main tasks include work on legislation, policy, and guidelines documents as well as management of protected area, surveys and research provision and habitats monitoring	Medium	High	consult	compliant engagement	high capacity	all stages
Ministry of Economy	national government	Ministry of Economy SR is the central body of state administration for economy, industry, energy, power engineering, heat and gas production, and business.	Medium	Low	engage	low / no engagement	limited capacity	implementation
Ministry of Finance	national government	The Ministry of Finance of the Slovak Republic is a central body of state administration responsible for the areas of finance, taxes and fees, customs, financial control, internal audit and government audit. The Ministry of Finance of the Slovak Republic is also a central body of state administration responsible for the, coordination of state aid in the area of pricing and price control, except for the pricing and price control of the goods regulated by separate laws	High	Low	engage	low / no engagement	limited capacity	implementation
Ministry of Transport, Institute of	national government	The Ministry of Transport of the Slovak Republic is the central body of state administration under which the administration of railway,	Medium	Medium	engage	compliant engagement	high capacity	design | implementation

Transport Policy		trolleybus, combined and road transport, land communications, shipping and ports, aviation, post and telecommunications falls						
Ministry of Interior	national government	Ministry of Interior of the Slovak Republic is a central body of state administration mainly for protecting the constitutional system, public order, security of persons and property, protection and administration of the state's borders, the safety and fluency of road traffic, refugees and transmigrants, for the Police Force and the Fire Fighting and Rescuing Corps.	High	High	collaborate	compliant engagement	high capacity	design | implementation
Ministry of Education, Science, Research and Youth	national government	The Ministry of Education, Research, Development and Youth of the Slovak Republic is the central body of the state administration of the Slovak Republic for elementary, secondary and higher education, educational facilities, lifelong learning and for the state's support for research, development and youth.	Mediu m	Low	inform	low / no engagement	limited capacity	design | implementation
Ministry of Investment, Regional Development and Informatics	national government	The main tasks of the Ministry include participation in creation and implementation of the uniform state policy in the field of the use of European Union funds, as well as informatization of the society, and investment.	High	High	collaborate	compliant engagement	high capacity	design | implementation
Ministry of Health	national government	The Ministry of Health is responsible for: national health policy; nursing education and health care professionals; ensuring quality and patient safety in healthcare; the management of societal and national programmes aimed at promoting health; keeping national health registries in cooperation with the National Health Information Centre; development of long-term goals of the professional health education.	Mediu m	High	consult	compliant engagement t	high capacity	design | implementation
Public Health Authority of the Slovak Republic	national government	The Public Health Authority of the Slovak Republic (PHA) is the main public health research institute and the reference center for the national network of sanitary epidemiological service, protection, promotion and development of public health.	Mediu m	High	consult	active engagement	limited capacity	design | implementation
Ministry of Agriculture a nd Rural Development;	national government	The Ministry performs state administration in the areas of agriculture and rural development and it directs, guides and inspects the performance of state supervision mainly in protection and use of agricultural land and forest land, in forestry and hunting, in irrigation and drainage systems, in aquaculture, in provision of support in agriculture and rural development, etc.	High	High	collaborate	compliant engagement	high capacity	design | implementation
National Forestry Center	research & academia	National Forest Centre unites forestry science, research, consulting, education and forestry practice. At present, the National Forest Centre is comprised of four institutes: Forest Research Institute (FRI), Institute for Forest Consulting and Education (IFCE), Institute for Forest Resources and Information (IFRI), and Forest Management Planning Institute (FMPI)	Low	High	consult	active engagement	limited capacity	all stages
Office of Deputy Prime Minister for the Recovery and Resilience Plan of the EU	national government	Office of Deputy Prime Minister for the Recovery and Resilience Plan of the EU is in charge of Slovak National Recovery and Resilience Plan	High	Low	engage	compliant engagement	limited capacity	implementation
Union of Cities	local government	The Union of towns and cities protects rights and interests of members in relation to legislative and executive state authorities as well as to other organizations, unions, associations and home and	Low	High	consult	active engagement	no capacity	design

		foreign institutions, provides to members advisory and informational services and coordination of municipal policy activities especially in the area of protection, restoration, development and permanent sustainability of environment and cultural heritage, educational system, social and health services, local and regional development.						
Association of Self-governing Regions (SK8)	local government	The Association of Self-Governing Regions of Slovakia (abbreviated as "SK8") is a voluntary, interest-based association of self-governing regions of the Slovak Republic, which advocates the interests of self-governing regions and their inhabitants while respecting their autonomous status. It involves representatives of all Slovak self-governing regions in solving common problems of local government and in the development of joint strategies.	Low	High	consult	compliant engagement	no capacity	design
Slovak Towns and Villages Association	local government	The mission of the Association of Cities and Municipalities of Slovakia is to defend and enforce the common interests and rights of member cities and municipalities while respecting their autonomous status in accordance with the European Charter of Local Self-Government, the Constitution of the Slovak Republic and the laws of the Slovak Republic and based on the principles of sustainable development and social cohesion.	Low	Medium	inform	low / no engagement	no capacity	design
National Bank of Slovakia;	national government	The National Bank of Slovakia (NBS) is the central bank of Slovakia. It is an independent institution whose basic function is to maintain price stability. It also supervises the financial market and other activities. It is member of the Network of Central Banks and Supervisors for Greening the Financial System (NGFS).	Low	Low	inform	low / no engagement	no capacity	monitoring
Slovak Office for Standards, Metrology and Testing	national government	The Slovak Office of Standards, Metrology and Testing (UNMS SR) is the central state administration body for technical standardization, metrology, and quality and conformity assessment. UNMS SR's standardization department performs the activities of the National Standards Body and fulfils the functions of the National Information Centre.	Low	Low	inform	low / no engagement	limited capacity	implementation
Slovak Insurance Association	business	The Slovak Insurance Association is an interest association of commercial insurance companies, and its task is to represent, protect and promote the common interests of its members in relation to the central body of state administration, other legal entities, the general public and abroad. The activities of the association are mainly focused on the field of insurance economy, education, and promotion of the insurance sector as a whole. As of January 1, 2023, 8 insurance companies and 4 insurance company branches from another member state are members of the Slovak Insurance Association.	Low	Low	inform	low / no engagement	no capacity	implementation
Slovak Chamber of Commerce and Industry	business	The Slovak Chamber of Commerce and Industry (hereinafter referred to as "SOPK") is a public institution established on the basis of Act no. 9/1992 Coll. on chambers of commerce and industry. It operates throughout the territory of the Slovak Republic (a regional chamber of SOPK is established in each regional city) and is focused on the protection and support of business and on the coordination of the common interests of its members in business activities at home and abroad. From the sectoral point of view, SOPK members are business entities across the entire economy – manufacturing, trading firms, banks, insurance companies, companies providing services in the field of science and research, agricultural and food entities, as well as vocational secondary schools, colleges, and universities.	Low	Low	inform	low / no engagement	no capacity	design

Slovak Agriculture and Food Chamber	business	The Slovak Agricultural and Food Chamber (SPPK) was based according to the Law no. 30/1992 Coll. as non-governmental, statutory and self-governing institution. The main goal and mission of SPPK is to represent the common interests of SPPK members in the process of the state socio-economical policy creation and the support and protection of SPPK members enterprise activities, in the sake of the agriculture and the food industry progress and improvement in Slovakia.	Low	Low	inform	low / no engagement	no capacity	design
National Agricultural and Food Center	research & academia	The National Agricultural and Food Centre focuses on comprehensive research and gathering of knowledge in the sustainable use and protection of natural resources, especially soil and water resources for crop production and animal husbandry, quality and safety, innovation and competitiveness of food and non-food products of agricultural origin, productive and non-productive impact of agriculture on the environment and rural development and the transfer of knowledge from agricultural and food research to end users.	Low	High	consult	compliant engagement	limited capacity	design | implementation
Slovak Tourism Association	business	The Slovak Tourism Association is a voluntary non-political and professionally oriented organization of employers in tourism. The actual members are the Slovak Association of Hotels and Restaurants, Slovak Association of Tour Operators and Travel Agents, Lavex – cableways and ski lifts, Historical Hotels of Slovakia, Slovak Association of Rural Tourism and Agro Tourism, Association of Slovak Spas, Bratislava Tourist Board, TATRY MOUNTAIN RESORTS, Institute of Tourism, Hight Tatras Region, AquaCity Poprad and Trinity Hotels. The priorities of the Association are the unification of the tourism branch, active approach to legislative changes in the area of tourism, more intense co-operation in promoting Slovakia and supporting the domestic tourism.	Low	Low	inform	low / no engagement	no capacity	design
Bratislava city	local government	Bratislava is the capital and largest city of Slovakia (total population 475 503, Census 2021). It is engaged in proactive systematic approach to climate change adaptation, including detailed vulnerability assessment and adaptation plan.	Low	High	consult	active engagement	high capacity	design | implementation
Kosice city	local government	Košice is the second city and largest city in eastern Slovakia (total population 229 040, Census 2021). It is engaged in proactive systematic approach to climate change adaptation, including detailed vulnerability assessment and adaptation plan.	Low	High	consult	active engagement	high capacity	design | implementation
Malacky City	local government	Malacky is midsized city in western Slovakia (total population 18 935, Census 2021). It is engaged in proactive systematic approach to climate change adaptation. It is the first city of Slovakia, which has comprehensive climate plan (including both adaptation and mitigation in one document).	Low	High	consult	active engagement	limited capacity	design | implementation
Climate Coalition	NGO	The Climate Coalition is a platform of environmental organizations that aims to promote solutions that are both environmentally and economically sustainable, while contributing to a just society. It focuses on cooperation with state officials, non-governmental and professional organizations as well as the private sector.	Low	High	consult	active engagement	limited capacity	design
Passive House Institute Slovakia - iEPD	NGO	Passive House Institute Slovakia (IEPD) is an apolitical, voluntary and interest-oriented non-governmental organisation. IEPD has been active since 2005. It ´s objective is the multilateral support of passive energy housing, but also of architecture that is versatilely considerate to the environment, and of the sustainable approach in the creation of	Low	Medium	inform	active engagement	limited capacity	design

		the environment. It associates physical and juristic persons, protects their interests and promotes their claims.						
Slovak Academy of Sciences	research & academia	Slovak Academy of Sciences (SAS) is national, non-university science and research institution. The first mission of SAS is to carry out top-level basic research at the frontiers of knowledge that leads to new discoveries and concepts. The second mission of SAS is to make the scientific infrastructure for technically demanding research available to all interested parties, be it universities or other organisations of research and development. The third mission is long-term strategic and applied research and development, whereby SAS intensively and effectively co-operates with the business sector, the public sector, and civil society to transfer knowledge into practice. SAS led the process of National Action Plan for the implementation of the Adaptation Strategy of Slovakia elaboration.	Mediu m	High	collaborate	active engagement	high capacity	all stages
Ministry of Tourism and sport	national government	The Ministry is the central body of the state administration for tourism, development, promotion and presentation of tourism products in Slovakia and abroad and for the development of sports	Mediu m	Low	inform	low / no engagement	no capacity	design | implementation
Office of the Governmental Plenipotentiary for Roma Communities	national government	Office of the Plenipotentiary of the Government of the Slovak Republic for Roma Communities is a part of the Ministry of Interior of the Slovak Republic. It is working on the activities for Roma youth as a part of accelerating the process of Roma integration.	Low	Low	inform	low / no engagement	no capacity	implementation
Ministry of Defense	national government	The Ministry guarantees to deliver the defence of the Slovak Republic,to build and exercise command and control over the Slovak Armed Forces, to co-ordinate the activities of central state administrative bodies and institutions, aimed at preparing the defence of the Slovak Republic, to ensure the inviolability of Slovak airspace, to co-ordinate military and civil air traffic, to run Military Intelligence, to manage military facilities and military forests.	High	High	collaborate	compliant engagement	limited capacity	design | implementation
Association of Employers (AZZZ SR)	business	AZZZ SR is the largest employer organization in the Slovak Republic, which was founded in 1991 to create conditions for the dynamic development of business in the Slovak Republic and to protect and promote the common employer and business interests of its members.	Mediu m	Low	engage	low / no engagement	limited capacity	all stages
Ministry of Culture	national government	The Ministry of Culture of the Slovak Republic is the central body of the state administration of the Slovak Republic for official language, protection of the monument fund, cultural heritage and librarianship, art, copyright and related rights, cultural and educational activities and folk art production, presentation of Slovak culture abroad, relations with churches and religious societies, media and audiovisual, promoting the culture of national minorities	Low	Low	inform	low / no engagement	no capacity	implementation
Authority for Spatial Planning and Construction	national government	The office is the central state administration body for spatial planning (except for ecological aspects), construction and expropriation	High	Low	engage	compliant engagement	limited capacity	design | implementation
Ministry of Labour, Social Affairs and Family	national government	The Ministry is the central body of the state administration of Slovakia for the field of social affairs, especially labour relations, legal relations in the performance of work in the public interest and legal relations of elected officials of local self-government bodies, safety and health protection at work, labour inspection, employment strategy, coordination of its creation and implementation and labour market policy, social insurance, old-age pension savings and supplementary	High	Low	engage	low / no engagement	limited capacity	design | implementation

		pension insurance, state social benefits, social assistance and assistance in material need, social protection of children and coordination of state family policy, state supervision of the implementation of social insurance, the activities of supplementary pension insurance companies and the provision of social services.						
Department of National Parks Management;	national government	The Department of National Park Management is a part of the Nature Protection and Biodiversity Section of the Ministry of the Environment	Medium	High	consult	compliant engagement	limited capacity	design | implementation

Annex 5: List of policy documents

The documents reviewed under the framework of this study are listed below, with the year of adoption in brackets. This list excludes the subnational adaptation strategies.

Key policy documents

(1) Strategy for Adaptation of the Slovak Republic to the Adverse Impacts of Climate Change (2014)
(2) Climate Change Adaptation Strategy of the Slovak Republic (2018)
(3) Action Plan for the Implementation of the Slovak Climate Change Adaptation Strategy (2021)
(4) New Action Plan for the Environment and Health of the Inhabitants of the Slovak Republic V (2019)
(5) National Forestry Programme of the Slovak Republic 2025-2030 (2024)
(6) Action Plan to Address the Impacts of Drought and Water Scarcity (2018)
(7) The Urban Development Policy of the Slovak Republic by 2030 (2018)
(8) Greener Slovakia Envirostrategy 2030 - Strategy of the Environmental Policy of the Slovak Republic until 2030 (2019)
(9) Low-Carbon Development Strategy of the Slovak Republic until 2030 with a View to 2050 (2020)
(10) Draft update of the National Energy and Climate Plan (NECP) for the period 2021-2030 (2023)
(11) Slovakia's Recovery and Resilience Plan (2021)
(12) Water Plan of Slovakia for the years 2022 and 2027 (2022;)
(13) Water Policy Concept for 2030 with an outlook to 2050 (2022)

Reports and complementary documents

(14) Prioritisation of MoE's investment projects (2023)
(15) Progress towards objectives, targets and contributions (Decarbonisation: adaptation) (Last report delivered in 2023)
(16) Assessment of progress towards adaptation in Slovakia under the European Climate Law (2023)
(17) Recommendations on the Draft update of the NECP for the period 2021-2030 (2023)

Complementary sectorial documents

(18) Energy Policy of the Slovak Republic (2014)
(19) National Policy Framework for the Development of the Alternative Fuels Market (2015)
(20) National Hydrogen Strategy + Action Plan for the Implementation (2021)
(21) Action Plan for the Development of Electromobility (2023)
(22) National Action Plan Organic Agricultural Production 2023-2027 (2023)
(23) National Action Plan to Achieve Sustainable Use of Plant Protection Product (2021)
(24) Package of Measures in the Area of Hydro melioration for Adaptation to Climate Change and Renewal of the Irrigation Infrastructure in Slovakia (2022)
(25) Strategic Plan for the Development of Aquaculture in the Slovak Republic until 2030 (2022)
(26) National Program of Stabilisation and Development of Slovak Beekeeping 2019/2020 to 2021/2022 (2019)
(27) Defense Strategy of the Slovak Republic (2021)
(28) Act 435/2010 Coll. on the provision of subsidies within the scope of the Ministry of Defense of the Slovak Republic (2010)
(29) Draft Military Strategy of the Slovak Republic (2021)
(30) Armed Forces of the Slovak Republic: Climate Change Preparedness Strategy (2023)
(31) National Strategy for Risk Management of Security Threats of the Slovak Republic (2022)
(32) Action Plan for the Slovak Republic's National Strategy for the Management of Security Threats ntil 2025 (2023)
(33) Concept of the organization and development of civil protection and crisis management until 2027 (2022)
(34) Action plan for the Concept of the organization and development of the integrated rescue system until 2027 (2023)
(35) Concept of the organization and development of the integrated rescue system until 2027 (2022)
(36) National Strategy for Research, Development, and Innovation 2030 (2023)
(37) Research and Innovation Strategy for Smart Specialisation of the Slovak Republic 2021-2027 (2021)
(38) Roadmap of Research Infrastructures - SK VI Roadmap 2020-2030 (2021)
(39) National strategy for open science 2021-2028 + Action Plan 2021-2022 (2021)
(40) Long-term intention 2023-2028 (2023)
(41) Open Science Action Plan 2024 (2024)
(42) Strategy on Adaptation to Climate Change - International Commission for the Protection of the Danube River (ICPDR) (2018)

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