Institutional Analysis of the Current National System and Processes Related to Climate Change in Turkmenistan

An analysis to inform the development of the NAP process and sectoral integration of climate change adaptation

May 2021

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The NAP Global Network was created in 2014 to support developing countries in advancing their NAP processes and help accelerate adaptation efforts around the world. To achieve this, the Network facilitates South-South peer learning and exchange, supports national-level action on NAP development and implementation, and develops analysis, communications, and knowledge products. Financial support for the Network has been provided by Austria, Canada, Germany, the United Kingdom and the United States. The Secretariat is hosted by the International Institute for Sustainable Development (IISD). For more information, visit www.napglobalnetwork.org

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Executive Summary

Climate change, namely a strong increase in temperature and a slight increase in precipitation, will have significant impacts on Turkmenistan's economy. Water and agriculture are the most vulnerable sectors to climate change. At the same time, they play a key role in the economy of the country. To reduce the vulnerability of the population and ecosystems to climate change impacts and to address its medium- and long-term priorities for adaptation, Turkmenistan is implementing the National Adaptation Plan (NAP) process. The country has had a National Climate Change Strategy in place since 2012, which it updated in 2019 to the National Strategy of Turkmenistan on Climate Change (NSTCC).

The NAP process is a strategic planning tool that aims to reduce vulnerability and integrate climate change adaptation into new and existing development planning processes with all relevant sectors and at all levels. The aim of the NAP process in Turkmenistan is to (a) develop a common understanding of the current level of capacity to reduce the effects of climate change and (b) define adaptation measures.

To successfully continue the NAP process, it is imperative to conduct a thorough analysis of national institutional arrangements in Turkmenistan relating to climate adaptation. This type of analysis makes it possible to identify key actors and possible entry points for meaningful sectoral integration.

In addition to key entry points, this report identifies existing channels and mechanisms that may help Turkmenistan to mainstream integrated adaptation planning in the water and agriculture sectors. It targets national and sectoral policies to inform decision makers and technical experts who are working (or will work) adaptation integration into their planning.

The key outcomes of the analysis are:

- Since the adoption of the National Climate Change Strategy in 2012, significant progress has been made on adaptation integration; however, currently, there is no legal and institutional framework that ensures a systematic mainstreaming of adaptation into sectoral plans. The development of a NAP can offer a framework for integrating adaptation into various sectors.
- The potential institutional arrangements, according to the updated 2019 NSTCC, include the newly established Inter-Sectoral Commission on environmental protection. According to the 2019 NSTCC (Government of Turkmenistan, 2019), to accelerate its implementation, it is necessary to also create a permanent secretariat for the provision of technical support to the commission. The Inter-Sectoral Commission on environmental protection can initiate and drive the NAP process.

- To finance the implementation of the NSTCC, the government plans to establish a National Clean Climate Fund, which will have various forms of national and external funding sources. The NSTCC highlights the critical role of the private sector, international organizations, and development banks in the implementation and financing of adaptation measures and cooperation.
- In the water and agriculture sector, the following entry points are identified:
    - **Entry point 1:** Ensuring adaptation integration into sectoral planning through the elaboration of a NAP.
    - **Entry point 2**: Coordinating adaptation integration into sectoral planning through the Inter-Sectoral Commission on environmental protection.
    - **Entry point 3**: Ensuring adaptation mainstreaming either through the development of sectoral adaptation action plans or by integrating a climate lens into the current planning process and plans.
- There are four key enabling factors that support the integration of adaptation at all levels (vertically) and across sectors (horizontally): (a) high-level political support, (b) information sharing, (c) capacity development, and (d) securing financial resources.
- Key recommendations are provided on (a) institutional frameworks, (b) policy and legislation frameworks, and (c) adaptation mainstreaming into sectors:

    a) **Formalize institutional setup for the integration of adaptation into sectors through the NAP**: The Inter-Sectoral Commission on environmental protection can initiate and drive the NAP process. During the NAP process, the Inter-Sectoral Commission on environmental protection should guarantee cross-sectoral cooperation to ensure the efficient integration of adaptation into the planning process.

    b) **Create an enabling environment for adaptation**: Harmonization of laws and identification of priority strategic actions for adaptation and mitigation at the level of economic sectors are crucial. Ensuring funding sources, especially those on green recovery for supporting the integration of climate change adaptation measures into key economic sectors, will play an important role. Moreover, the strong engagement of international cooperation and the private sector is essential for the implementation of adaptation measures.

    c) **Support adaptation planning through data**: Developing ambitious but feasible sectoral adaptation plans is a crucial first step. Mainstreaming adaptation requires data exchange across sectors and administrative levels. Setting up measurement, reporting, and verification systems will then be a key step.

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Acronyms and Abbreviations

EC	European Commission
EU	European Union
GCF	Green Climate Fund
ICSD	Interstate Commission on Sustainable Development
IISD	International Institute for Sustainable Development
MAEP	Ministry of Agriculture and Environment Protection
MRV	measurement, reporting, and verification
NAP	National Adaptation Plan
NAS	National Adaptation Strategy
NCD	Nationally Determined Communication
NCCSD	National Climate Change Strategy Document
NCCAP	National Climate Change Strategy and Action Plan
NSTCC	National Strategy of Turkmenistan on Climate Change
SPA	Polish National Strategy for Adaptation to Climate Change
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
UNEP-WCMC	United Nations Environmental Programme World Conservation Monitoring Centre
UNFCCC	United Nations Framework Convention on Climate Change

Glossary

Term	Definition
Adaptation	"In human systems, the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate and its effects" (Intergovernmental Panel on Climate Change [IPCC], 2018).
Adaptation mainstreaming	"The integration of climate change adaptation into related government policies across multiple sectors [to overcome siloed responses. Also,] designing and implementing projects in a way that they 'automatically' take adaptation into account" (Climate Policy Info Hub, 2020).
Biodiversity	"Biological diversity means the variability among living organisms from all sources, including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems" (IPCC, 2018).
Climate change	"Climate change refers to a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings such as modulations of the solar cycles, volcanic eruptions and persistent anthropogenic changes in the composition of the atmosphere or in land use" (IPCC, 2018).
Climate finance	"Climate finance refers to local, national or transnational financing—drawn from public, private, and alternative sources of financing—that seeks to support mitigation and adaptation actions that will address climate change" (United Nations Framework Convention on Climate Change, 2018).
Climate risk	"The potential for adverse consequences of a climate-related hazard, or of adaptation or mitigation responses to such a hazard, on lives, livelihoods, health and well-being, ecosystems and species, economic, social, and cultural assets, services (including ecosystem services), and infrastructure. Risk results from the interaction of vulnerability (of the affected system), its exposure over time (to the hazard), as well as the (climate-related) hazard and the likelihood of its occurrence" (IPCC, 2018).

Term	Definition
Entry points	"Entry points are windows of opportunity, e.g., situations or processes that help gain the interest of policy-makers, stakeholders or the broader public for integrating adaptation into ongoing national and subnational processes and harnessing synergies with other approaches" (Deutsche Gesellschaft für Internationale Zusammenarbeit, 2017).
Monitoring and evaluation	"Monitoring and evaluation refers to mechanisms put in place at national to local scales to respectively monitor and evaluate efforts to reduce greenhouse gas emissions and/ or adapt to the impacts of climate change with the aim of systematically identifying, characterizing and assessing progress over time" (IPCC, 2018).
NAP	"A National Adaptation Plan (NAP) is a document prepared by a national government that presents the country's approach and priorities for adaptation" (NAP Global Network, 2018).
NAP process	"The National Adaptation Plan (NAP) process is a strategic process that enables countries to identify and address their medium- and long-term priorities for adapting to climate change. Led by national governments, the NAP process involves analyzing current and future climate change and assessing vulnerability to its impacts. This provides a basis for identifying and prioritizing adaptation options, implementing these options, and tracking progress and results" (NAP Global Network, 2019).
Vulnerability	"The propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm and lack of capacity to cope and adapt" (IPCC, 2018).

1. Introduction

Climate change will have significant effects on Turkmenistan, especially with regard to limited water resources. The steady increase in temperature (up to 6–7°C by 2100) and a sharp drop in precipitation (by 1.7 mm before 2040 and up to 22 mm by 2100) threatens the entire land-use sector. The sector plays a key role in the economy of the country, and agriculture especially plays a key role in the livelihoods of the population (Government of Turkmenistan, 2019). To reduce the vulnerability of the population and ecosystems to climate change impacts and to address its medium- and long-term priorities for adaptation, Turkmenistan is implementing the National Adaptation Plan (NAP) process. The country has had a National Climate Change Strategy in place since 2012, which it updated in 2019 to the National Strategy of Turkmenistan on Climate Change (NSTCC).

The NAP process is a strategic planning tool that aims to reduce vulnerability and integrate climate change adaptation into new and existing development planning processes with all relevant sectors and levels. To make sure that climate adaptation is not sidelined or treated as an isolated environmental issue, the NAP emphasizes the need for cross-sectoral integration of climate adaptation. To ensure wide acceptance and utilization by sectoral ministries, the NAP process requires leadership from national policy-makers across sectors. The aim of the NAP process in Turkmenistan is to (a) develop a common understanding of the current level of capacity to reduce the effects of climate change and (b) define adaptation measures (United Nations Development Programme [UNDP], 2017).

The Government of Turkmenistan already made significant progress in articulating and revising its original National Climate Change Strategy (from 2012) in 2019 with a strong adaptation focus. The country has also made strong commitments to implement the Sustainable Development Goals, which "will significantly change the direction of the country's socio-economic development through the diversification of the national economy" and the United Nations Framework Convention on Climate Change (UNFCCC) (Ministry of Nature Protection of Turkmenistan, 2015; Turkmen State Publishing Service, 2019). Further, the Government focuses on adaptation in the Nationally Determined Communication (NDC) to address key climate risks, such as droughts and heatwaves, among others. At the UN General Assembly, the President of Turkmenistan introduced an initiative to create a Regional Center for Technologies related to climate change in Ashgabat in cooperation with the United Nations. Turkmenistan is well positioned to play a leading role in promoting adaptation at the regional level through the Interstate Commission on Sustainable Development (ICSD). One of the priorities of the Regional Environmental Programme for Sustainable

Development in Central Asia (REP4SD) is to create a Regional Plan on Climate Change in Central Asia, and ICSD is closely involved.

In order to successfully continue the NAP process, it is useful to conduct a thorough analysis of national institutional arrangements in Turkmenistan relating to climate adaptation. This type of analysis makes it possible to begin to identify key actors and find possible entry points for meaningful sectoral integration.

This report identifies key entry points, existing channels, and mechanisms that may help Turkmenistan to mainstream integrated adaptation planning in the water and agriculture sectors. It targets national and sectoral policies to inform decision makers and technical experts who are working (or will work) adaptation integration into their planning.

2. Purpose and Approach of the Study

There are more than 200 methods and tools available to plan an approach, assess climate change scenarios, identify adaptation measures, and then implement and monitor them (Rattani & Lama, 2018; United Nations Environment Programme World Conservation Monitoring Centre [UNEP-WCMC] et al., 2019; UNFCCC, 2019). However, integration of climate-informed adaptation measures in sectoral planning is still far from being routine in most countries.

In this context, most developing and transitioning countries are facing similar barriers:

- The lack of an institutional setup and coordination among the state bodies.
- A lack of relevant climate information and information on specific climate risks per sector.
- Low technical skills to interpret relevant information and integrate it into planning.
- Financial constraints to implementing identified adaptation measures.

As a contribution to the NAP process, the aim of this report is to present a detailed institutional analysis and to identify entry points that could be used to ensure that climate risks are reflected in sector strategies (agriculture and water) and enable the implementation of adaptation priorities at the sectoral level. Based on an institutional analysis informed by government documents and stakeholder interviews, these findings will serve as the first step for national experts to further develop Turkmenistan's NAP process.

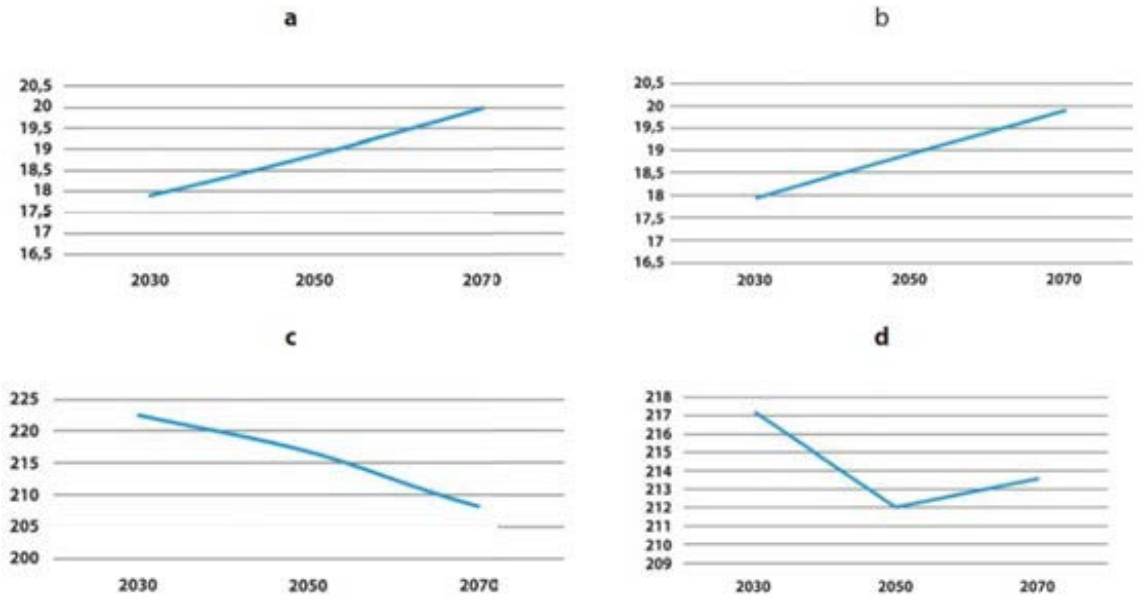
This report addresses several key topics. First, an overview of current institutional and governance arrangements is presented, identifying key actors, institutions, and policy frameworks relevant to Turkmenistan's NAP process. Second, existing and potential mechanisms or entry points for adaptation integration are described. Third, strategic recommendations are presented, with a focus on ways in which potential institutional entry points can be effectively leveraged into meaningful implementation actions to begin the process of "mainstreaming" adaptation across sectors. Finally, three good-practice case studies in successful NAP development and implementation are presented in Annex 1.

The first step in conducting the institutional analysis described above was a comprehensive review of the relevant national and international literature. Further, 18 semi-structured interviews were conducted with representatives from state agencies, public organizations, and international organizations working directly or indirectly on climate change adaptation at the national level. An interview guide and the list of interviewed agencies and organizations are provided in Annex 2.

Box 1: Climate change context of Turkmenistan

Climate change will have a major impact on Turkmenistan. Climate scenarios contain information on how the climate is likely to change in a certain period. Based on the two climate models ECHAM5.[1] and UKMO-HadCM3,[2] 2019 scenarios for the years 2030 to 2070 in Turkmenistan were modelled (Figure 1). Both models show that over 40 years, the air temperature will increase steadily (Figure 1 a, b). While the ECHAM5.1 model shows a constant decrease in precipitation for this period (Figure 1c), the UKMO-HadCM3 model shows that precipitation in Turkmenistan will first fall and then increase slightly (Figure 1d). Consequently, the increase in temperature and decrease in precipitation will lead to a significant decrease in the total volume of water resources in the country. Together, these two factors will finally have an important impact on the country's economy.

Figure 1: The average annual air temperature and the amount of precipitation (Ministry of Nature Protection of Turkmenistan, 2015)



The most significant climate risks for Turkmenistan are droughts, heatwaves, strong dry winds, high levels of dust, and the increase in dry years. These are triggered by constantly rising temperatures and the water shortage. Climate

[1] ECHAM is a general circulation model (GCM) developed by the Max Planck Institute for Meteorology. It was created by modifying global forecast models developed to be used for climate research. ECHAM5 is used in the IPCC *Fourth Assessment Report* alongside many other GCMs from different countries.

[2] HadCM3 (Hadley Centre Coupled Model, version 3) is a coupled atmosphere–ocean general circulation model (AOGCM) developed at Hadley Centre in the United Kingdom. It is one of the major models used in the IPCC *Third Assessment Report in 2001*.

change will therefore have a major negative impact on water resources—and their management—as well as on agriculture.

In Turkmenistan today, irrigated agriculture is the main consumer of water. Because of the permanent irrigation of agricultural land, the two most important economic sectors in the country, namely agriculture and water management, are inextricably linked. At present, a total of 1.7 million ha of agricultural land in Turkmenistan is artificially irrigated. This is expected to increase even further by 2030 based on a socio-economic program of the Government. In the future, the overuse of water resources will increasingly affect the total volume of the country's most important water resources, hydrography, and desertification. The droughts, high air temperatures, low humidity, and other factors will harm agricultural productivity and lead to shifts in the growing seasons. Therefore, an important adaptation strategy would be, for example, early detection and warning of droughts. This would reduce the negative effects and adjust the water balance.

In addition to drought, floods and mudslides will also become an increasing challenge in the future. Mostly, they are short-lived natural phenomena, but they often lead to great damage and severely affect the economy. The areas of Koytendag, Kopetdag, Greater and Lesser Balkans are today also already significantly affected. Regular monitoring of the affected areas should be carried out, special hydrographic services should be installed, and the monitoring stations should be better equipped.

Ice phenomena, which pose a high risk to the Turkmen economy and population, have also been observed in the past, especially in the Amu Darya River. In some years, the water level of the Amu Darya River has risen sharply due to temperatures dropping to below 0°C by powerful ice dams. Early warning of emergencies of these extreme weather situations (droughts, floods, mudslides, ice phenomena, etc.) is of crucial importance so that appropriate measures can be taken in time. This work should also be carried out along the borders to ensure exchange with the riparian states.

Given the importance of the water and agriculture sectors for the economy of the country and their vulnerability to climate change, the Turkmen government developed its NSTCC in 2019. The implementation of the strategy is currently ongoing.

Sources: Ministry of Nature Protection of Turkmenistan, 2015; Government of Turkmenistan, 2019.

3. The NAP Process and the Sectoral Integration of Adaptation

3.1 Why the Sectoral Integration of Adaptation Matters

While a large part of climate adaptation policy-making and planning takes place at the national level, many of the vulnerabilities and risks arising from climate change are highly sector specific. Certain sectors are particularly sensitive to climate risks. For example, in the agriculture sector, the negative impacts of climate change are likely to lead to major challenges, including reduced yield outputs and increased pressure from invasive species. Similarly, the water sector in many regions is also likely to face major reductions in water quality and quantity. However, other sectors will face a completely different risk profile. Examples include necessary changes to rural development due to increased flood risks or revisions to infrastructural design standards and criteria (Organisation for Economic Co-operation and Development, 2009).

For all climate-sensitive sectors, taking climate change projections and risks into account at the planning stage is extremely useful. Doing so can enable agencies to effectively identify climate-related risks and evaluate potential adaptation and development options. In addition, this approach can help identify new opportunities that may result from a changing climate.

Ministry-level technical staff members typically have greater depth of knowledge about the unique risks and solutions in their sectors than national policy-makers. For this reason, it is necessary for national climate adaptation policies to directly engage with issues and stakeholders at the sectoral level when implementing national planning processes.

At the same time, however, sectoral officials and stakeholders may lack access to information, as well as the capacity to use it and take observed and projected climate change impacts into account during planning. Long-term adaptation planning can be neglected in favour of other issues perceived as more pressing within the sector. As a result, national policy intervention can be necessary to make sure climate adaptation planning is adequately considered and integrated within each sector.

In response to the issues described above, there is a clear need to develop intentional strategies to enable sectoral policy planners and stakeholders to design, integrate, and implement adaptation actions.

3.2 The Role of the NAP Process in Integrating Adaptation into Sectors

The NAP process enables countries to strategically (a) reduce vulnerability to the impacts of climate change by building adaptive capacity and resilience and (b) facilitate the coherent integration of climate change adaptation into relevant new and existing policies, programs, and activities—and in particular, into development planning processes and strategies—within all relevant sectors and at different levels, as appropriate (UNFCCC, 2021). It was formally established in 2010 as an outcome of the 16th Conference of the Parties to the UNFCCC. The NAP process was launched to help countries integrate adaptation into core development decision making to ensure that it is not treated as a separate environmental issue. The official definition and guidelines of the NAP process have been developed by the UNFCCC and published in the form of the official *UNFCCC Technical Guidelines for the NAP Process*.

The NAP process is led by national governments and involves both analyzing current and future climate change trends and assessing potential vulnerabilities. Importantly, it puts in place the systems and capacities needed to make adaptation an integral part of a country's development planning, decision making, and budgeting processes. The NAP process can be thought of as comprised of three broad phases—planning, implementation, and measurement and evaluation—all of which must be supported through capacity development, financing, appropriate institutional arrangements, and information sharing among the different actors involved (Hammill et al., 2020).

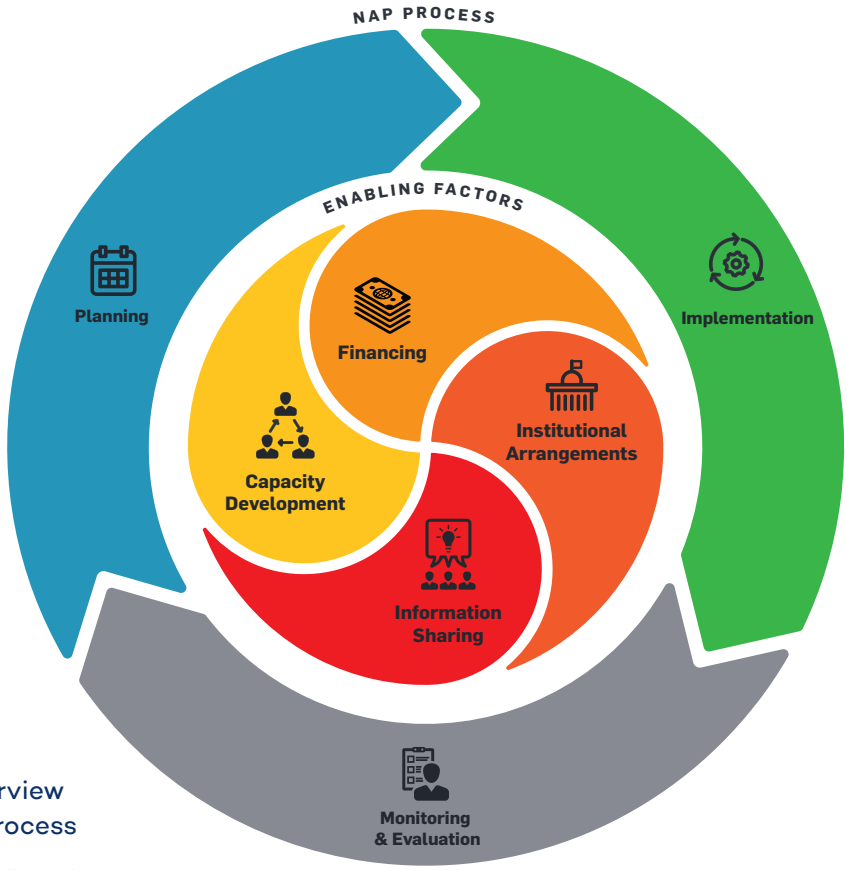


Figure 2. Overview of the NAP process

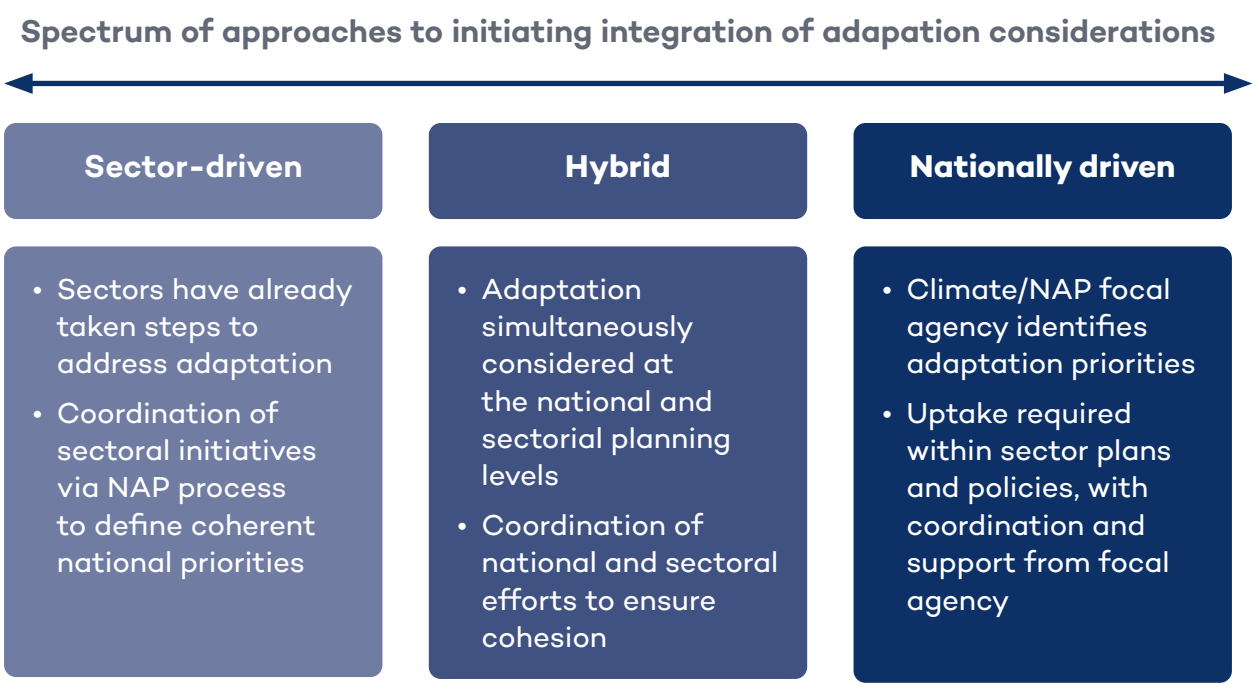
Source: Hammill et al., 2020.

One of the important objectives of the NAP process is to integrate climate change adaptation into new and existing development planning processes across sectors. The NAP process should thus clearly articulate the need to emphasize adaptation both within and across sectors while maintaining a multi-sectoral approach. This requires securing and sustaining input and commitments from multiple sectors and ministries throughout the NAP process. One key element of NAP development is assisting various sectors in understanding their vulnerabilities and becoming more resilient. This process involves identifying sector-specific vulnerabilities and potential climate change impacts on development goals. Based on this information, national governments can help set an overarching mandate to integrate climate information into ministry-level planning within climate-sensitive sectors. Further, the NAP process plays a key role in making financial and human resources available for sectors that are particularly vulnerable and provides a framework and guidance for all sectors to develop sectoral adaptation strategies (Price-Kelly & Hammill, 2016).

There is no single approach to integrating national adaptation considerations into specific sectors. In some countries, sectoral ministries have taken steps to address adaptation considerations in their own internal planning processes well before the start of NAP development. In these cases, the NAP is most useful as an opportunity for stocktaking and coordination of sectoral initiatives to define national adaptation priorities and ensure a coherent approach. In other countries, prioritization of climate adaptation requires national-level intervention or leadership. In these cases, the integration of climate adaptation into various sectors is often prompted by a national political mandate and supported by a national focal agency. For example, national policy-makers might task the national ministry of the environment (or some other centralized climate change focal agency) with identifying and implementing national adaptation priorities into the various sectors.

It is important to note that national and sector-driven approaches to NAP planning are not mutually exclusive. As shown in Figure 3, varying approaches exist within countries to drive the sectoral integration of adaptation planning. Currently, several countries are taking approaches that can more accurately be described as hybrid in nature. In these cases, adaptation is simultaneously considered at the national level and in sector-specific planning (Price-Kelly & Hammill, 2016).

Figure 3: Spectrum of approaches to initiating integration of adaptation considerations



Source: Price-Kelly & Hammill, 2015.

In summary, the NAP process is an effective planning tool that can facilitate national and sectoral climate adaptation planning in diverse contexts. A NAP is useful to:

- Help identify vulnerable sectors and development goals (e.g., which sectors and development goals could be affected by climate change and how).
- Help set a mandate for integrating adaptation into sectors.
- Help make financial and human resources available to sectors.
- Help sectors understand their vulnerability and become more resilient.
- Provide a framework and guidance to sectors for developing sectoral adaptation strategies.

4. Institutional Analysis: Sectoral Integration of Adaptation in Turkmenistan

4.1 Current Status of Integrating Adaptation Into Planning

In Turkmenistan, the existing legislative base determines the mandate and roles of individual ministries. National policies such as the National Programme on Socio-Economic Development of Turkmenistan for 2011–2030 and the Program of the President of Turkmenistan for socio-economic development of the country for 2019–2025 determine the priority areas for all sectors. The specific goals and targets of the sectors are determined in sector-specific programs, such as the National Forest Program and others. Overall, these policy documents provide a framework for sector-specific planning. In addition, the NSTCC has assigned responsible national authorities and international organizations to identify priority strategic actions for adaptation and mitigation at the level of economic sectors.

In Turkmenistan, several models were used during the development of the first, second, and third National Communications based on the methodologies recommended by the IPCC. Based on National Communications, identification of concrete climate risks for the agriculture and water sectors and the consequent adaptation measures are necessary.

Despite the progress Turkmenistan has made in climate policy, several challenges remain, such as insufficient coordination among stakeholders, harmonization among existing and forthcoming legislation, and the lack of implementation and enforcement of policies (UNDP, 2019; UNDP Climate and Forests, 2020). Since the adoption of the National Strategy on Climate Change in 2012, there has been a clear need to improve the legislative framework for its effective implementation (Government of Turkmenistan, 2019). According to the NSTCC (2019), the Law of Turkmenistan "On Climate Change" is slated for development in the near future. It should regulate all issues related to climate change, especially the cooperation/coordination of ministries and agencies and their responsibilities (Government of Turkmenistan, 2019). Additionally, there are around 30 legislative acts that are shaping climate change and environmental protection issues in Turkmenistan, some of which require revision (see Annex 3 and 4). The key national policies that address adaptation and increase resilience are the National Strategy of Social and Economic Transformation of Turkmenistan until 2030 and the NSTCC of 2019.

To attract international funding sources, the Government engaged the UNDP to support the preparation of its Readiness Proposal to the Green Climate Fund (GCF), *Integrating Climate Change Risks into Adaptation Planning Processes in*

Turkmenistan.[3] In this context, the following has been achieved so far (UNDP Climate and Forests, 2020):

- **Support to the capacity needs assessment and stakeholder consultations**: Based on the UNDP and United Nations Institute for Training and Research approaches, a rapid capacity assessment was undertaken in April 2017. Through two stocktaking missions, extensive stakeholder consultations with relevant government counterparts and representatives of the private sector and civil society were conducted.
- **Production of a stocktaking report**: The stocktaking report outlines the coordination, monitoring, and overarching strategic targets and focuses on cross-cutting adaptation and mitigation actions as well as stronger linkages between climate change adaptation and disaster risk reduction in the agriculture, water, and health sectors.
- **Building capacity and support on access to additional climate finance**: In July 2018, Turkmenistan submitted its Readiness Proposal to the GCF, *Integrating Climate Change Risks into Adaptation Planning Processes in Turkmenistan*. The majority of the project focuses on the national level, but there is a component on the water sectors of the Akhal and Dashoguz velayats (regions).

4.2 Potential Institutional Arrangements for Mainstreaming Adaptation at the Sector Level

The NSTCC is expected to be achieved through the implementation plan of the NDC. The implementation plan includes both adaptation and mitigation measures, as well as measures for research and technological development. Another key element of the plan is the creation of financial and coordination mechanisms for the implementation of these measures. The Government intends to begin preparing *velayat* (regional) and sectoral plans that will consider climate change context and then develop relevant adaptation measures (Government of Turkmenistan, 2019). Therefore, mainstreaming adaptation at the sectoral level is closely related to and dependent on the institutional arrangements that will be in place for the NSTCC implementation.

The potential institutional arrangements are presented in Figure 4. Since September 25, 2020, there has been a bicameral parliamentary system in Turkmenistan called Milli Geňeş. The Parliament consists of two chambers: Halk Maslakhaty (the upper chamber) and Mejlis (the lower chamber). The Cabinet of Ministers remains an executive body. Legislation is initiated either by the Cabinet of Ministers or directly by the ministries through the Cabinet of Ministers. Climate change policies are formulated by the Ministry of Agriculture and Environmental Protection (MAEP) in close cooperation with the Ministry of Foreign Affairs and the Cabinet of Ministers. The MAEP is responsible for coordinating all the environmental protection activities of various ministries and departments, environmental programs, and projects under the UNFCCC.

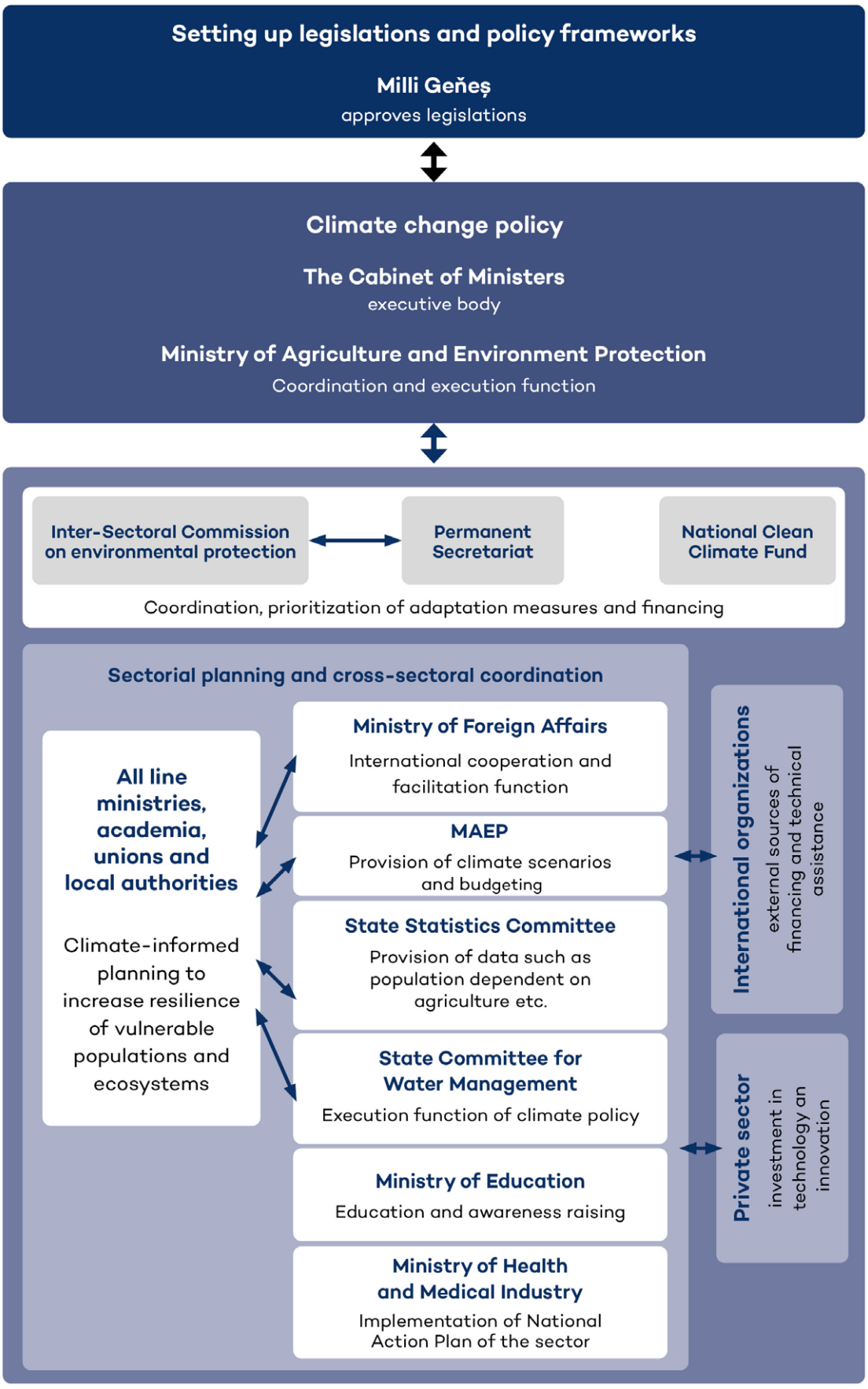
[3] The proposal had been submitted to GCF in December 2020.

In order to expand cooperation in Turkmenistan at the international level in the field of environmental protection and implementation of international agreements and conventions, the President of Turkmenistan signed a resolution to establish the Inter-Sectoral Commission on environmental protection (Turkmenportal, 2020). According to the NSTCC (2019), to accelerate its implementation, it is necessary to also create a permanent secretariat for the provision of technical support to the commission. The commission's mandate will be to tackle all climate change-related issues in the country and monitor the implementation of the NSTCC. It will function as an authorized coordinating body across sectors, mobilizing financial and logistical resources and informing interested organizations and the public. The permanent secretariat will support setting up such a mechanism (Government of Turkmenistan, 2019).

To finance the implementation of the NSTCC (2019), the Government plans to establish a National Clean Climate Fund, which will have various forms of national and external funding sources (Government of Turkmenistan, 2019). It is also important to highlight the role of the MAEP, which offers simplified climate scenarios and information that serve as a basis for identifying concrete climate risks per sector, consequential impacts, vulnerabilities, and adaptation measures that reduce these vulnerabilities. Further, solid planning will also require robust socio-economic and financial data that needs to be provided by the State Statistics Committee. It is also important to highlight the roles of the State Committee for Water Management, the Ministry of Education, and the Ministry of Health and Medical Industry. The Ministry of Health and Medical Industry has prepared a National Action Plan for the Implementation of the National Strategy for Health Adaptation to Climate Change in 2020–2025.

The NSTCC highlights the important role of the private sector (e.g., the Union of Industrialists and Entrepreneurs of Turkmenistan and public organizations), international organizations (e.g., UNDP, UNEP, the World Health Organization, the United Nations Children's Fund, and the United Nations Industrial Development Organization) and banks (e.g., the World Bank, the Asian Development Bank, the European Bank for Reconstruction and Development) in the implementation and financing of adaptation measures and cooperation (Government of Turkmenistan, 2019).

Figure 4. Potential institutional arrangement for climate-informed planning



5. Entry Points for Mainstreaming Adaptation into Sectoral Strategies

5.1 Key Entry Points for Mainstreaming Adaptation in the Water and Agriculture Sectors

The NSTCC has identified the water and agriculture sectors as being most affected by climate change, along with health, soil and land resources, ecosystems, and forestry. The agriculture and water sectors' economies are inextricably linked. The agriculture sector depends on irrigation, which makes the activities of the two subsectors highly relevant for adaptation. In 2015, around 88% of total water use was for agriculture (mostly irrigated farming) (Ministry of Nature Protection of Turkmenistan, 2015). Agriculture contributes 8.5% to the national GDP and employs around 50% of the population, the majority of whom live in rural areas and are thus vulnerable to climate change (Ministry of Nature Protection of Turkmenistan, 2015). The Programme of Socio-Economic Development envisions a nonsignificant increase in irrigated areas up to 2 million ha by 2030. Considering the dependency of agriculture on irrigation and most of the irrigation water coming from river flows, it is very important to consider adaptation planning in these two sectors simultaneously. As the temperature will increase and the rainfall will decrease in the long run, the impacts on these interlinked sectors could be significant.

Among many technical and engineering solutions and measures, such as water-saving technologies, the priority adaptation tasks of the NSTCC in the water economy and agriculture sectors can be grouped as follows:

- Improving the legal base: adoption of bylaws and elaboration of necessary laws for the legal regulation of management, protection, and use of water and land resources (for example, bylaws for the Water Code of Turkmenistan [2016], adoption of a new edition of the Land Code).
- Creation of a unified digital information system in relevant sectors.
- Development of smart irrigation planning information systems and agricultural innovation systems.

In the past decades, significant technological improvements (such as drip irrigation) have been implemented in the sector, and this continues to be the case. The NSTCC lists further priorities for adapting agriculture, which mostly focus on maximizing agricultural production through technical solutions. The NSTCC priority tasks in agriculture do not address decreasing the vulnerability of the population, but they encourage the development and implementation of a set of measures to adapt agricultural production to climate change. As half of the country's population

is dependent on agriculture, the priority tasks are assumed to contribute to improvements for livelihoods and an increase in resilience.

To integrate adaptation measures into planning at the sectoral level, three entry points/options can be considered:

Entry point 1: Ensuring the integration of adaptation into sectoral planning through the NAP. A single NAP will outline the roles and responsibilities of all relevant key ministries and provide a roadmap for the integration of adaptation into sectoral planning processes. Once such a plan is approved, it will give a mandate to the relevant line ministries to start the process of integrating adaptation into sectoral planning.

Entry point 2: Coordinating adaptation integration into sectoral planning through the Inter-Sectoral Commission on environmental protection. This entry point relates to institutional setting and coordination. The commission can initiate and coordinate the process of elaborating a NAP.

The functional responsibilities of the newly created commission include:

- Coordination, agreement, legislation, planning, and financing of adaptation measures.
- Monitoring adaptation indicators and considering them during planning.
- Developing methodologies and tools for the planning and implementation of adaptation measures.

Turkmenistan has long-term experience with a similar State Commission that was created in 1999 to implement the UNFCCC and other international conventions. The commission includes representatives from 10 ministries and state agencies. A key lesson learned from previous experiences is to keep the number of members relatively small (for example, one representative per sector) and to create working groups to carry out operational work.

Entry point 3: Ensuring adaptation mainstreaming either through the development of sectoral adaptation action plans or by integrating a climate lens into the current planning processes and plans. As described in Section 3.2, there is no single approach to integrating adaptation into sectors. Figure 3 shows a spectrum of approaches to cross-sector integration of adaptation, ranging from sector-driven to nationally driven approaches. In the case of Turkmenistan, the sectors should (a) develop a dedicated sector adaptation plan, which then informs future updates to broader sector policies, plans, and budgets, or (b) apply a climate lens to existing sector policies, plans, and budgets. Regardless of the approach, adaptation mainstreaming at the sectoral level requires several steps, which are presented in detail in Section 5.2.

5.2 The Adaptation Mainstreaming Cycle in the Water and Agriculture Sectors

For sectoral adaptation integration, it is necessary to secure high-level political support for each sector, which the Government has already demonstrated. In addition, a structured process to facilitate coordination and clearer guidance is required around human and financial resources for both the water and agriculture sectors. Further, sectoral actors need expertise on adaptation and related issues to effectively integrate climate change into their planning and budgeting. This requires access to information and building expertise within sector ministries.

Therefore, each sector should:

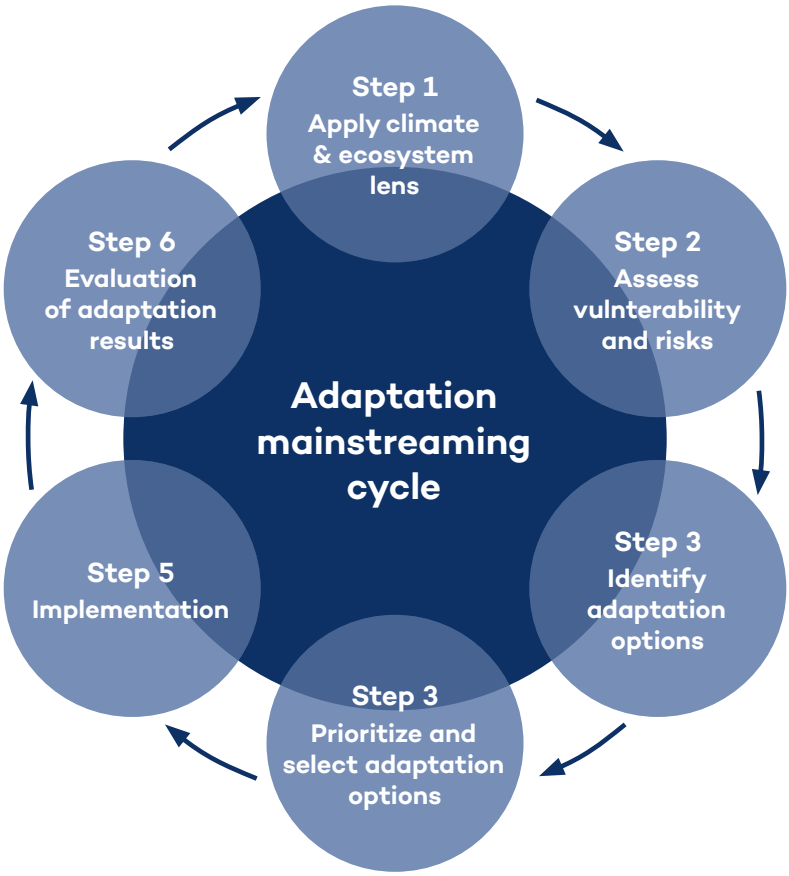
- Be supported through access to necessary climate information, technical working groups, and time to build the capacity of existing staff to conduct risk assessment and design adaptation options.
- Either launch a process to develop its sectoral adaptation action plan or integrate adaptation planning into its regular/annual planning processes. A climate lens should be applied to the measures that are already envisioned in the sector.

The plan should be ambitious but realistic and should have an operational character. It should address the following questions:

- What are the key climate risks for the sector and adaptation needs (e.g., droughts)?
- What do subsectors within the sectors need to consider adaptation measures and why (e.g., crop-yield response to increasing temperature)?
- What is the implementation mechanism for adaptation measures (e.g., sector-level planning)?
- What technical and human capacities does the sector have, and which ones need to be enhanced to implement the plan (e.g., needs for specific technical training)?
- How will the implementation of adaptation measures be financed?
- How will the implementation of adaptation measures be monitored and reported (e.g., reporting line)?
- What national and international policies is the sectoral plan contributing to, and what are the key synergies (e.g., NSTCC, NDC, Sustainable Development Goals, etc.)?

The development of a sectoral adaptation action plan (Step 5 in Figure 5) requires a systematic, step-by-step approach. Numerous approaches/methodologies are available to select measures and develop the sectoral adaptation action plan (Rattani & Lama, 2018; UNEP-WCMC et al., 2019; UNFCCC, 2019). The water and agriculture sectors need to decide on the relevant methodology to use for adaptation planning. Regardless of which methodology to select, the steps presented in Figure 5 are essential to each methodology.

Figure 5. Adaptation mainstreaming cycle for sectoral adaptation action plan development



Source: Adaptation Community, n.d.

5.3 Enabling Factors for the Sectoral Integration of Adaptation

There are four key enabling factors that support the integration of adaptation across sectors (horizontally) (Figure 6):

- **High-level political support**: Turkmenistan indicates strong political will to mainstream adaptation. They demonstrated this by revising the climate change strategy, launching the NAP process, and making declarations at high-level international events. The next steps to support the NAP process are establishing an operational mechanism to facilitate dialogue between all administrative levels, building organizational infrastructure, and allocating concrete budgets.
- **Information sharing**: Turkmenistan has an established system of data collection, which is available from the State Statistics Committee. Climate data is available from the Hydrometeorological Service. For adaptation mainstreaming at the sectoral level, information sharing will be key. This will require an operational-/working-level mechanism and communication of the scientific information in a way that is useful, understandable, and relevant for planning. In the framework of the NSTCC implementation, the Government plans to develop an electronic

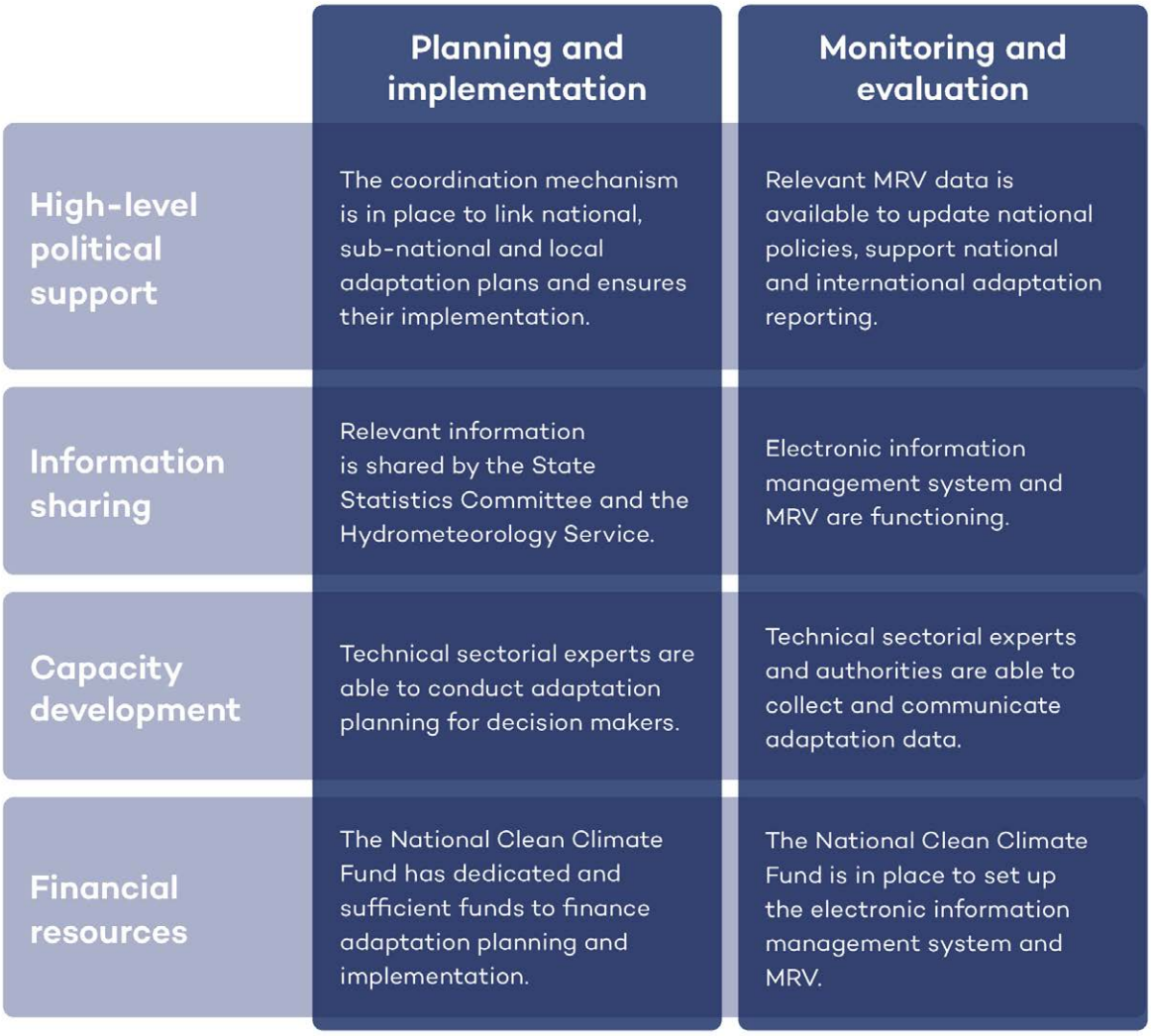
information management system with adaptation and mitigation units, including the level of detail of indicators, etc. It will be a multifunctional system and will cover all sectors of the economy. The Government also sees a clear need to establish a reliable system for measurement, reporting, and verification (MRV).

- **Capacity development**: The Aarhus Centre and the MAEP, together with the Organization for Security and Co-operation in Europe (OSCE Centre), conducted numerous activities to ensure public access to information, including information on climate change and sustainable development. While these activities mostly focused on increasing public environmental awareness, Turkmenistan lacks the capacity to mainstream adaptation into sectoral planning. Regardless of the level, adaptation planning involves an understanding of climate change scenarios and trends, relevant sectoral climate risks, and skills such as vulnerability assessment and measures planning.

  The implementation of the NAP process and the NSTCC will need to include a strong emphasis on capacity development across all levels. Concretely, this concerns capacity building for sectoral technical experts who should be able to (a) conduct vulnerability assessments, (b) develop climate impact chains, and (c) communicate justified adaptation measures mainstreaming to the decision makers in the sector. The decision makers in the sector and those who make decisions regarding fund allocation need to (a) understand the general approach of adaptation planning and (b) understand trends in the sector.

- **Securing and allocating financial resources**: The intention of the Turkmen government to create a National Clean Climate Fund clearly shows the will to allocate significant funds to climate change adaptation and mitigation. Funds for the implementation of the NSTCC are expected to come from different national and external sources (including international organizations and funds). In addition to conventional funding sources, the Turkmen government plans to promote innovative financing mechanisms that will include offsetting schemes for ecosystem services; payments for environmental services; small, targeted grants; benefits for environmental protection activities; etc.

Figure 6. Enabling factors to mainstream adaptation at the sectoral level



6. Recommendations for the Strategic Integration of Adaptation into Sectoral Planning

Institutional frameworks	Policy level and legislation	Mainstreaming adaptation into sectors
• It is crucial to ensure the clarity of the Inter-Sectoral Commission on environmental protection's role and its operational arrangements for climate change adaptation (and mitigation). • The MAEP should provide climate information to all sectors in a way that is useful, understandable, and relevant for planning. • The State Statistics Committee should provide aggregated subsector-level statistical data to sectors for planning purposes. • The institutional setting should guarantee and promote cross-sectoral cooperation to ensure the efficient integration of adaptation into the planning process. • The strong engagement of international cooperation and the private sector is essential for implementing adaptation measures.	• The development of a NAP will ensure adaptation integration into sectoral planning by outlining key relevant ministries, providing a roadmap, and giving a mandate for sectoral adaptation plans. • Harmonization of laws is crucial. This is a policy process that requires a longer time. It is recommended to start adaptation planning based on the existing legal framework, the NSTCC, and other relevant strategic documents to accelerate the process. • Identification of priority strategic actions for adaptation and mitigation should be made at the level of economic sectors. • Access to funding sources, especially green recovery funding, needs to be ensured to support the integration of climate change adaptation measures into key economic sectors.	• Developing sectoral adaptation plans is a key first step for the water and agriculture sectors. The sectors will require support to decide on which adaptation integration approach and how to implement it.* • The sectors are encouraged to develop ambitious but feasible plans that are in line with their sectoral goals and allocated budgets. • Mainstreaming adaptation requires data exchange across sectors and administrative levels. The MRV system is a key step. • Capacity-building measures should be implemented at the sectoral level to enable the technical experts to, e.g., identify sectoral climate risks, conduct vulnerability assessments, develop climate impact chains, communicate justified adaptation measures, etc.

** Numerous approaches are documented in Rattani & Lama, 2018; UNEP-WCMC et al., 2019.*

References

AdaptationCommunity.net. (n.d.). *Ecosystem-based Adaptation: Step 1: Apply a climate & ecosystem lens*. GIZ. https://www.adaptationcommunity.net/ecosystem-based-adaptation/eba-mainstreaming-cycle/step-1-eba-mainstreaming-cycle/

Balaban, O. & Şenol Balaban, M. (2015). Adaptation to climate change: Barriers in the Turkish local context. *TeMA Journal of Land Use, Mobility and Environment, 8*, 7–22. https://doi.org/10.6092/1970-9870/3650

BASE. (2014). *Climate adaptation strategies in the EU: Processes for design, implementation and review* [Policy Brief]. https://www.ecologic.eu/sites/default/files/publication/2017/base-policy-brief-no-2.pdf

Czech Republic. (2015). *Strategy on Adaptation to Climate Change in the Czech Republic, 2015*. https://www.preventionweb.net/english/policies/v.php?id=58333&cid=46

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). (2017, December). *Entry points for mainstreaming Ecosystem-based Adaptation* [Learning brief]. https://www.weadapt.org/sites/weadapt.org/files/giz2017-en-learning-brief-entry-points-eba-low-res_1.pdf

European Commission. (2009). *Adapting to climate change – Toward a European framework for action* (COM(2009) 147 final). https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM%3A2009%3A0147%3AFIN%3AEN%3APDF

European Commission. (2017). *Adaptation Preparedness Scorecard: Country fiche for the Czech Republic*. https://ec.europa.eu/clima/sites/clima/files/adaptation/what/docs/country_fiche_cz_en.pdf

European Commission. (2018). *Adaptation Preparedness Scorecard: Country fiche for Poland*. https://ec.europa.eu/clima/sites/clima/files/adaptation/what/docs/country_fiche_pl_en.pdf

European Commission. (2019). *Environmental Implementation Review 2019: Country report Poland*. https://ec.europa.eu/environment/eir/pdf/report_pl_en.pdf

Government of Turkey. (2011). *Turkey: National Climate Change Adaptation Strategy and Action Plan (2011–2023)*. https://www.preventionweb.net/english/policies/v.php?id=58369&cid=177

Government of Turkmenistan. (2019). *National Strategy of Turkmenistan on Climate Change*. (Updated Version). https://www.tm.undp.org/content/turkmenistan/en/home/library/national-strategy-of-turkmenistan-on-climate-change.html

Hammill, A. Dekens, J., & Dazé, A. (2020). *The National Adaptation Plan (NAP) process: Frequently asked questions*. NAP Global Network.

Intergovernmental Panel on Climate Change. (2018). Annex I: Glossary [Matthews, J.B.R. (ed.)]. In *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. https://www.ipcc.ch/sr15/chapter/glossary/

Ministry of the Environment. (2020a). *Polish National Strategy for Adaptation to Climate Change* (NAS 2020). Republic of Poland. https://klimada.mos.gov.pl/wp-content/uploads/2014/12/ENG_SPA2020_final.pdf

Ministry of the Environment. (2020b). *Development of Urban Adaptation Plans for cities with more than 100,000 inhabitants in Poland*. http://44mpa.pl/urban-adaptation-plans/?lang=en

NAP Global Network. (2019, December 5). *The National Adaptation Plan (NAP) process: Frequently asked questions*. https://napglobalnetwork.org/2019/12/the-national-adaptation-plan-nap-process-frequently-asked-questions/

Ministry of Nature Protection of Turkmenistan. (2015). *Third National Communication of Turkmenistan under the United Nations Framework Convention on Climate Change, 2015*. https://unfccc.int/sites/default/files/resource/Tkmnc3.pdf

Organisation for Economic Co-operation and Development. (2009). *Integrating climate change adaptation into development co-operation: Policy guidance*. https://www.oecd.org/development/integratingclimatechangeadaptationintodevelopmentco-operationpolicyguidance.htm

Price-Kelly, H. & Hammill, A. (2016). *Using NDCs and NAPs to advance climate-resilient development*. NAP Global Network. https://napglobalnetwork.org/2016/11/using-ndcs-naps-advance-climate-resilient-development/

Rattani, V. & Lama, Y. (2018). *Global approaches to adaptation planning*. Centre for Science and Environment. http://cdn.cseindia.org/attachments/0.75631200_1519109209_global-approaches-adaptation-planning.pdf

Turkmen State Publishing Service. (2019). *Voluntary National Review of Turkmenistan: Empowering people and ensuring inclusiveness and equality*. https://sustainabledevelopment.un.org/content/documents/24723Voluntary_National_Review_of_Turkmenistan.pdf

Turkmenportal. (2020). *The President of Turkmenistan has created an Inter-Sectoral Commission on environmental protection*. https://turkmenportal.com/en/blog/31508/the-president-of-turkmenistan-has-created-an-intersectoral-commission-on-environmental-protection

UNDP Climate and Forests. (2020). *Supporting Turkmenistan to advance their NAP process*. https://www.climateandforests-undp.org/projects/supporting-turkmenistan-advance-their-nap-process

United Nations Development Programme. (2019). *Proposal for Turkmenistan: Scaling climate resilience for farmers in Turkmenistan* (AFB/PPRC.24-25/10). https://www.adaptation-fund.org/wp-content/uploads/2019/06/AFB.PPRC_.24-25.10-Proposal-for-Turkmenistan.pdf

United Nations Environmental Programme (UNEP). (2012). *Turkey: Enhancing the capacity of Turkey to adapt to climate change*. http://mdgfund.org/program/enhancingcapacityturkeyadaptclimatechange

United Nations Environmental Programme World Conservation Monitoring Centre (UNEP-WCMC), International Institute for Environment and Development, International Union for Conservation of Nature, & Deutsche Gesellschaft für Internationale Zusammenarbeit. (2019). *Ecosystem-based Adaptation Tools Navigator: A searchable database of tools and methods relevant to EbA*. https://snrd-asia.org/launch-new-navigator-supports-uptake-of-ecosystem-based-adaption-solutions/

United Nations Framework Convention on Climate Change (2021). *Overview – National Adaptation Plans*. https://unfccc.int/topics/resilience/workstreams/national-adaptation-plans/overview

United Nations Framework Convention to Combat Desertification. (2019). *Various approaches to long-term adaptation planning: Adaptation Committee*. https://unfccc.int/sites/default/files/resource/variousapproaches%20.pdf

Annex 1: Case Studies

NAP Sectoral Integration in Turkey

Turkey is a middle-income country located on the eastern edge of the Mediterranean Sea. While currently a candidate for accession to the European Union, Turkey represents quite a different case than other European states, as it still needs a large proportion of resources to improve infrastructure and socio-economic development. In terms of climate change, Turkey will likely face increasing summer temperatures, reduced precipitation, and an increase in natural hazards. After ratifying the Kyoto Protocol in 2009, Turkey published a National Climate Change Strategy Document (NCCSD) in 2010, followed by a National Climate Change Action Plan (NCCASAP) in 2011. These documents together make up the core of Turkey's National Adaptation Plan (NAP) process and include both adaptation and mitigation measures (Government of Turkey, 2011).

Turkey's first policy with steps toward addressing climate adaptation began in 2000 with the creation of a public sector coordination board focused on climate change. This board did not pursue any systematic climate adaptation planning. A key element of Turkey's planning process was the intervention of the United Nations Joint Program on Enhancing the Capacity of Turkey to Adapt to Climate Change. One result of this program was the creation of a new climate change department in the Ministry of Environment and Urbanization. This department was responsible for the development and publication of the NCCSD and the NCCASAP (UNEP, 2012).

Turkey has so far pursued a centralized strategy for its NAP process. The Department of Climate Change has been assigned the responsibility of developing and publishing national adaptation documents. While the NCCASAP identifies key sectors in which adaptation is most crucial, there has so far been little success at mainstreaming adaptation within the sectoral ministries. Turkey has not yet developed a unified governance structure to enable close cooperation between sectoral ministries beyond the high-level strategic and coordinating role of the national Department of Climate Change (Osman & Meltem, 2015).

The current status of Turkey's NAP can be described as "in progress." While national-level strategic documents have been developed and published, these reports are yet to be mainstreamed at the sectoral level. To advance this objective, more work remains to be done on developing institutional coordination mechanisms between both horizontal and vertical levels of governance. This could take the form of either increased top-down adaptation mainstreaming from the national-level or sectoral-level efforts to focus on adaptation. The Government of Turkey has also developed a capacity-building project to help municipalities develop local climate adaptation policies (Osman & Meltem, 2015).

Entry Points and Financing the NAP Process

While Turkey had already begun developing a climate strategy in 2000, the primary impetus for prioritizing adaptation policy at a national level came through a UN program focused on capacity building for climate adaptation. This program provided funds and a framework that set the groundwork for Turkey's development of its strategic and planning documents.

More funding is still needed to continue the process of climate adaptation in Turkey. Currently, the Government of Turkey plans to utilize a mix of national budgetary funding and climate adaptation finance from various international funds. The government is presently conducting integrated cost-benefit analyses to determine which projects should receive available funding (Government of Turkey, 2011).

Key Barriers

Throughout its NAP process, Turkey has faced a number of barriers to the successful sectoral mainstreaming of adaptation. In terms of institutional barriers, Turkey faces a fragmented governance framework in which coordination across sectors remains a challenge. For example, the Ministry of Environment and Urbanization does not work closely with the Disaster and Emergency Management Presidency or the State Hydraulic Works in planning to mitigate flood risk, increasing the potential for conflicting policies and slowing adaptation mainstreaming (Government of Turkey, 2011). Regarding financial barriers, funds for climate adaptation are quite limited in Turkey, making it difficult to finance projects at any level of government. Finally, low knowledge and a lack of capacity at various levels of government have made it difficult to implement consistent adaptation policies across horizontal and vertical policy contexts (Government of Turkey, 2011).

Lessons Learned

Despite various barriers that have made Turkey's NAP process difficult, this case provides some useful insights:

1. It reveals that the creation of a national adaptation strategy is not sufficient to generate real mainstreaming of adaptation across sectors. A key part of NAP planning must, therefore, focus on improving coordination and communication across sectors and ministries.
2. This case demonstrates the importance of accessing international funding and expertise in developing a national NAP.
3. Finally, capacity building at the ministry and municipality levels is a key element of building a successful NAP.

NAP Sectoral Integration in Poland

The key climate change-related risks for Poland are reduced water availability and increased occurrence of extreme weather events (Ministry of the Environment, 2020a).

The development of the 2020 Polish National Strategy for Adaptation to Climate Change (SPA) was initiated to order to address the above concerns, as well as in response to the 2009 European Commission (EC) White Paper calling for the integration of climate adaptation into European Union (EU) and member state policies (EC, 2009). In 2010, the Polish government affirmed its support for this approach and announced that it would begin developing a NAP, which was published in 2013. This document presents a series of changes aimed at preserving economic competitiveness while increasing environmental and social resilience in the face of climate change.

The approach of the SPA is nationally driven, with the goal of mainstreaming adaptation actions into national policies. Poland's SPA is best described as a "soft-coordination model for implementation, [...] based on support, incentives, guidance, and soft measures" (EC, 2017). As such, the SPA assigns the Ministry of the Environment a central coordinating role for the NAP process, with the responsibility to prioritize actions within each sector. The Institute of Environmental Protection – National Research Institute carried out all related research and analysis. Actions are implemented through national legislative action, previously existing intersectoral coordination mechanisms, and nationally directed research programs. Despite this national focus, many elements of the SPA are also delegated to regional, state, and local authorities in a multi-level governance arrangement. One prominent example of this has been the coordinated development of Urban Adaptation Plans by all Polish cities with over 100,000 inhabitants (Ministry of the Environment, 2020b).

According to the EC's *Adaptation Preparedness Scorecard*, Poland's SPA is currently in its implementation phase (EC, 2017). In addition to efforts at knowledge creation and climate monitoring, the Ministry of Environment has identified and prioritized specific sectoral objectives and proposed actions. Many local Urban Adaptation Plans have also been developed. So far, however, there have been no published monitoring and evaluation reports documenting progress made toward implementation. The Government of Poland planned to release this information in 2020.

Entry Points and Financing the NAP Process

As described above, EU-level initiatives were a primary mechanism motivating the Government of Poland to develop its SPA. In addition to providing a high-level policy framework, EU climate policy also presented a viable source of finance for climate adaptation initiatives by member states.

The SPA itself was developed within the framework of the Development and Implementation of the Polish National Strategy for Adaptation to Climate Change – KLIMADA project, implemented on behalf of the Ministry of Environment from the funds of the National Fund for Environmental Protection and Water Management.

Key Barriers

The primary barrier currently faced by Poland in implementing its NAP is a lack of capacity for monitoring and evaluation. As of 2019, no systemic monitoring framework had been developed, and no official monitoring activities had yet taken place (EC, 2019). Meteorological and climate data used in projections are also somewhat outdated. Another key barrier has been a lack of stakeholder engagement or public consultation in policy development (EC, 2018). These barriers are likely to be shared in a variety of national contexts, highlighting the importance of high-quality information in developing a NAP.

Lessons Learned

Compared with low-lying or less-developed countries, Poland is not highly vulnerable to climate change. This means that adaptation activities in this context are less urgent and challenging than they are in Turkmenistan. However, some useful lessons may be drawn:

1. By developing its NAP, Poland managed to maximize the financial support it received from the EU and other entities.
2. The fairly centralized approach may serve as a useful model.
3. However, the use of multi-level governance structures may also be instructive, as this allows for maximum flexibility and agility within diverse local or regional contexts.

NAP Sectoral Integration in the Czech Republic

The primary climate-related risks identified by the Czech government are associated with an increased incidence of extreme weather events (particularly droughts, windstorms, torrential rains, and heatwaves) (Czech Republic, 2015). In response to these risks and to EU-level policy frameworks (EC, 2009), the country published a National Adaptation Strategy (NAS) in 2015, followed by a NAP in 2017.

In 2009, the Czech government assigned the Ministry of the Environment to lead a coordinated effort among all sectoral ministries to develop the NAS document. Over the next several years, the ministry convened 12 interdepartmental working groups to formulate sector-specific adaptation plans, each consisting of a combination of representatives from the relevant sectoral ministry, from national scientific institutes, and from the Ministry of the Environment. These sectoral plans were combined to form the NAS, which was approved in 2015 (BASE, 2014). The NAS outlines potential climate impacts in the Czech Republic and specifies sectoral adaptation measures.

The Czech government's adaptation planning can be described as a hybrid approach. While the process was clearly organized in a central manner, sectoral ministries were given significant input in developing their own sectoral priorities and policies. In the end, the final document was reviewed and finalized by the Ministry of the Environment. In addition to horizontal cross-sectoral collaboration, the NAS and NAP also both incorporated vertical coordination mechanisms, inviting regional, municipal, and other stakeholders to participate in the planning process. In addition, regions and urban areas were encouraged to develop their own adaptation plans. Currently, six cities have participated, including the capital city of Prague (EC, 2017).

Because the Czech NAP was only published in 2017, it is still too early to fully assess its level of success. Regarding mainstreaming of adaptation into sectoral planning, some progress has been made in the agriculture, water management, and disaster risk management sectors, with sectoral policies in these areas now incorporating specific targets and measures (EC, 2017). Regarding implementation, results so far are mixed, but real progress has been made in some sectors. As a next step, the Czech government is currently working on an updated NAP document. This update will include a comprehensive monitoring and evaluation framework and will present data evaluating the policy's impact so far (EC, 2017).

Entry Points and Financing the NAP Process Initiation

The NAP process in the Czech Republic was initiated by the federal government in response to EU-level policy change. The top-down approach made it easy to coordinate the various sectors and ministries in order to develop a comprehensive NAP.

Most of the financing for NAP-related activities has come from the EU and the Czech national government. While the planning process was supported through the national budget, implementation funding has mostly come in the form of one-off project financing from the EU or from national funding allocated to specific sectors. There is

no dedicated national fund for financing adaptation actions mentioned in the NAS or the NAP.

Key Barriers

One barrier faced by the Czech Republic is a lack of dedicated budgetary resources to finance cross-sectoral adaptation measures, forcing ministries to rely on sporadic project-based funding. This may cause problems in effective project prioritization. Another barrier is limited monitoring and evaluation capacity, which makes it difficult to accurately assess national progress toward adaptation goals. The government plans to overcome these barriers through the publication of a revised NAP and further investments in monitoring capacities. Finally, vertical coordination mechanisms to help harmonize national, regional, and municipal adaptation efforts are still underdeveloped. This is a particular issue, given the active involvement of many Czech municipalities in the Covenant of Mayors. The Ministry of the Environment has responded to this concern by taking on a role as national coordinator for the Covenant of Mayors, a step that promises to improve coordination (EC, 2017).

Lessons Learned

The Czech example provides some critical insights:

1. It highlights the benefits of a hybrid approach to climate adaptation. While the centralized approach made it easy for the Ministry of the Environment to coordinate adaptation in a cross-sectoral manner, the involvement of the sectoral ministries in the drafting of policy documents improved the quality of the national strategy.
2. The inclusion of regional, local, and non-governmental stakeholders also strengthened the national strategy formulation process.
3. Like Poland, the Czech Republic took advantage of international (mostly EU-level) policy frameworks and sources of funding.

In the case of Turkmenistan, it will be important to leverage as much international support as possible to help overcome potential barriers to the adaptation strategy.

Annex 2: List of Interviewed Agencies and Organizations

1. Mejlis
2. Ministry of Agriculture and Environmental Protection and its subordinate agencies
3. Ministry of Finance and Economy
4. Ministry of Health and Medical Industry
5. State Committee for Water Management
6. State Statistics Committee
7. Union of Industrialists and Entrepreneurs
8. Academy of Sciences of Turkmenistan
9. National Institute of Deserts, Flora and Fauna under the Ministry of Agriculture and Environmental Protection of Turkmenistan
10. Interstate Commission on Sustainable Development
11. Regional Environmental Centre for Central Asia
12. Food and Agriculture Organization of the United Nations
13. United Nations Development Programme
14. United Nations Framework Convention on Climate Change
15. United Nations Convention on Biological Diversity
16. United Nations Convention to Combat Desertification
17. United Nations Children's Fund
18. World Health Organization

Interview Guide

Assignment: "Institutional analysis of the current national system and processes related to climate change in Turkmenistan: An analysis to inform the development of the NAP process and sectoral integration of climate change."

- International Institute for Sustainable Development (IISD)
- GIZ Turkmenistan

1. Name of the institution:
2. Contact person
3. Have you contributed to adaptation planning in Turkmenistan (i.e., stocktaking, vulnerability assessments, and consultations)?

   If yes:

   Which level (national, local)? Which sectors?
4. Based on your experience, what are the institutional mechanisms for integrating adaptation into planning in Turkmenistan?
5. To what extent are adaptation measures currently included in the planning in your area of work?
6. Based on your experience, what are the priority sectors for adaptation mainstreaming in Turkmenistan?
7. Are there any specific adaptation activities that you are aware of in your field of work?

   If yes, examples:
8. Have the costs of implementing specific adaptation measures been assessed?

   If yes, examples:
9. What additions to the legislation are needed for timely and effective implementation of adaptation measures (new law, bylaws, amendments to the existing laws)?
10. What financing options could be used to implement adaptation activities (both general and planned)?

Annex 3: Legislative Acts Related to Climate Change

1. Constitution of Turkmenistan (new editions) (as amended and supplemented by the Constitutional Law of Turkmenistan No. 297-VI of September 25, 2020, to take effect on January 1, 2021)
2. The Law of Turkmenistan "On Nature Protection" of March 1, 2014. (Vedomosti of the Mejlis of Turkmenistan, 2014, No. 1, Art. 40) (As amended and supplemented by the Laws of Turkmenistan of 18.08.2015. No. 281-V; 20.03.2017 No. 532-V)
3. Law of Turkmenistan "On Protection of Atmospheric Air" of March 26, 2016. (Vedomosti of the Mejlis of Turkmenistan, 2016, No. 1, Art. 51) (as amended by the Law of Turkmenistan of 15.01.2018. No. 685-V)
4. Law of Turkmenistan "On Hunting and Hunting Management" of September 15, 1998. (Vedomosti of the Mejlis of Turkmenistan, 1998, No. 3, Art. 53) (as amended and supplemented by the Law of Turkmenistan of 18.04.2009 No. 32-IV)
5. Law of Turkmenistan "On Hydrometeorological Activity" of September 15, 1999. (Vedomosti of the Mejlis of Turkmenistan, 1999, No. 3, Art. 46) (as amended and supplemented by the Laws of Turkmenistan of 18.04.2009 No. 32-IV, 26.11.2010 No. 149-IV, 03.06.2017 No. 578-V, 02.03.2019 No. 131-VI)
6. Land Code of Turkmenistan approved by the Law of Turkmenistan of October 25, 2004. (Vedomosti of the Mejlis of Turkmenistan, 2004, No. 4, Art. 33) (Extraction)
7. Water Code of Turkmenistan approved by the Law of Turkmenistan of October 15, 2016. (Vedomosti of the Mejlis of Turkmenistan, 2016, No. 4, Art. 139) (new editions) (as amended and supplemented by the Laws of Turkmenistan of 05.01.2018. No. 685-V, 20.10.2018 No. 89-VI, 05.10.2019 No. 192-VI)
8. Law of Turkmenistan "On Hydrocarbon Resources" of August 20, 2008. (Vedomosti of the Mejlis of Turkmenistan, 2008, No. 3, Art. 40) (as amended and supplemented by the Laws of Turkmenistan of 12.03.2010 No. 96-IV, 04.08.2011 No. 217-IV; 01.10.2011 No. 238-IV; 04.05.2012 No. 302-IV and 22.12.2012 No. 368-IV, 12.09.2016 No.436-V, 04.11.2017 No.636-V, 09.06.2018 No.41-VI, 14.03.2020 No.238-VI) (The provision of the Law of Turkmenistan "On Amendments and Additions to the Law of Turkmenistan On Hydrocarbon Resources" of 12.09.2016 No.436-V shall apply to the relevant legal relations arising after 15.07.2016)
9. Law of Turkmenistan "On Protection of the Ozone Layer" of August 15, 2009. (Vedomosti of the Mejlis of Turkmenistan, 2009, No. 3, Art. 54) (as amended and supplemented by the Laws of Turkmenistan of 24.10.2015 No. 296-V, 03.06.2017 No. 578-V)
10. Law of Turkmenistan "On Radiation Safety" of August 15, 2009. (Vedomosti of the Mejlis of Turkmenistan, 2009, No. 3, Art. 57) (as amended by the Law No. 429-IV of August 29, 2013)

11. Sanitary Code of Turkmenistan, approved by the Law of Turkmenistan of November 21, 2009. (Vedomosti of the Mejlis of Turkmenistan, 2009, No. 4, Art. 77) (new editions) (Extraction)
12. Law of Turkmenistan "On Drinking Water" of September 25, 2010. (Vedomosti of the Mejlis of Turkmenistan, 2010, No. 3, Art. 60) (as amended and supplemented by the Laws of Turkmenistan of 03.06.2017 No. 578-V, 01.12.2018 No. 104-VI, 30.11.2019 No. 214-VI)
13. Forest Code of Turkmenistan approved by the Law of Turkmenistan of March 25,2011. (Vedomosti of the Mejlis of Turkmenistan, 2011, No. 1, Art. 10.) (as amended and supplemented by the Laws of Turkmenistan of 28.02.2015 No. 202-V, 03.06.2017 No. 578-V, 09.06.2018 No. 41-VI)
14. Law of Turkmenistan "On Chemical Safety" of March 25, 2011. (Vedomosti of the Mejlis of Turkmenistan, 2011, No. 1, Art. 9) (as amended by the Law of Turkmenistan of 02.03.2019, No. 126-VI)
15. Law of Turkmenistan "On Fishing and Preservation of Aquatic Biological Resources" dated May 21, 2011. (Vedomosti of the Mejlis of Turkmenistan, 2011, No. 2, Article 41) (as amended by the Law of Turkmenistan of 03.06.2017 No. 578-V)
16. Law of Turkmenistan "On Specially Protected Natural Areas" dated March 31, 2012. (Vedomosti of the Mejlis of Turkmenistan, 2012, No. 1, Art. 37) (as amended by Laws of Turkmenistan of 01.03.2014 No. 43-V, 16.08.2014 No. 114-IV, 03.06.2017 No. 578-V)
17. Law of Turkmenistan "On Sanatorium-Resort Business" of August 04, 2012. (Vedomosti of the Mejlis of Turkmenistan, 2012, No. 3, Art. 61) (as amended by the Law of Turkmenistan of 25.11.2017, No. 661-V) (Extraction)
18. Law of Turkmenistan "On Plant World" of August 04, 2012. (Vedomosti of the Mejlis of Turkmenistan, 2012, No. 3, Art. 60) (as amended by the Law of Turkmenistan of 03.06.2017, No. 587-V)
19. Law of Turkmenistan "On Wildlife" dated March 02, 2013. (Vedomosti of the Mejlis of Turkmenistan, 2013, No. 1, Art. 4) (as amended by the Law of Turkmenistan of 03.06.2017 No. 587-V)
20. Law of Turkmenistan "On Ecological Expertise" of August 16, 2014. (Vedomosti of the Mejlis of Turkmenistan, 2014, No. 3, Art. 108). (as amended and supplemented by the Laws of Turkmenistan of 18.06.2016 No. 419-V, 05.01.2018 No. 685-V, 09.06.2018 No. 54-VI, 02.03.2019 No. 131-VI)
21. Law of Turkmenistan "On Subsoil" of December 20, 2014. (Vedomosti of the Mejlis of Turkmenistan, 2014, No. 4, Art. 161) (as amended by the Law of Turkmenistan of 05.01.2018 No. 685-V)
22. Law of Turkmenistan "On Wastes" of May 23, 2015. (Vedomosti of the Mejlis of Turkmenistan, 2015, No. 2, Art. 59). (as amended and supplemented by the Laws of Turkmenistan of 05.01.2018 No. 685-V, 08.06.2019 No. 157-VI)

23. Law of Turkmenistan “On Pastures” of August 18, 2015. (Vedomosti of the Mejlis of Turkmenistan, 2015, No. 3, Art. 101). (as amended and supplemented by the Laws of Turkmenistan of 18.06.2016 No. 419-V, 15.01.2018 No. 685-V, 08.06.2019 No. 160-VI, 05.10.2019 No. 192-VI)
24. Code of Administrative Offences. Approved by the Law of Turkmenistan of August 29, 2013. Vedomosti of the Mejlis of Turkmenistan 2013, No. 3, Article 52. (Extraction)
25. Criminal Code (new version) approved by the Law of May 10, 2010. (Vedomosti of the Mejlis of Turkmenistan, 2010, No. 2, Article 28) (Extraction)
26. Law of Turkmenistan “On Ecological Information” of March 14, 2020. (Vedomosti of the Mejlis of Turkmenistan, 2020, No. 1, Art. 3)
27. Law of Turkmenistan “On Environmental Audit” of March 2, 2019. (Vedomosti of the Mejlis of Turkmenistan, 2019, No. 1, Art. 5)
28. Program of Social and Economic Development of the Country for the Period of 2019-2025
29. Law of Turkmenistan “On Statistics” of March 31, 2012. (Vedomosti of the Mejlis of Turkmenistan, 2012, No. 1, Art. 39) (as amended by the Law of Turkmenistan of 04.11.2017, No. 636-V)
30. Main statistical collections published by the State Statistics Committee of Turkmenistan
31. State Programme “Health”
32. National Forest Program of Turkmenistan (an updated Forest Program of Turkmenistan is being prepared)
33. The Law of Turkmenistan “On the Union of Industrialists and Entrepreneurs of Turkmenistan” (new edition). (Vedomosti of the Mejlis of Turkmenistan, 2019, No. 4, Art. 62)
34. The Law of Turkmenistan “On Entrepreneurial Activity” of October 01, 1993 (as amended and supplemented by the Mejlis of Turkmenistan on 01.10.1993. Vedomosti of the Mejlis of Turkmenistan, 1993, No. 9-10, Art. 58) (as amended and supplemented by the Laws of Turkmenistan of 18.04.2009 No. 32-IV, 28.02.2015 No. 194-V, 26.03.2016 No. 386-V, 04.11.2017 No. 636V, 20.10.2018 No. 86-VI)
35. State Program on Support of Small and Medium-Sized Entrepreneurship in Turkmenistan

Annex 4: Legislation that Requires Enhancement

In the long term, in order to enhance Turkmenistan's climate policy, additional legislation or an adjustment to those requiring enhancement will be necessary (based on the interviews and the NSTCC (Government of Turkmenistan, 2019):

1. The Law of Turkmenistan "On Climate Change"
2. The Law of Turkmenistan "On Soils"
3. The Law of Turkmenistan "On Energy Efficiency and Nature Conservation"
4. New edition of the Land Code of Turkmenistan
5. Development of a new edition of the National Forest Program
6. Development of bylaws to the Law "On Land Reclamation"
7. Development of bylaws to the Law "On Pastures"
8. Development of Law "On Biosafety"
9. Completion of the Law "On Waste"
10. Development of bylaws to the Law "On Atmospheric Air"
11. Development of bylaws to the Water Code

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