Global Water Partnership 25 YEARS

How water resources management can support climate-resilient development in Ukraine

ABOUT THIS BRIEF

Water is a 'climate connector' – impacts of climate change on water will flow through all sectors of the economy and across national borders. This brief explains why integrated approaches to water management are essential for climate-resilient development, how Ukraine has laid a solid foundation in that sense, and what needs to change if Ukraine is to meet its commitments under the Paris Agreement and achieve the Sustainable Development Goals (SDGs).

SDG target 6.5, on integrated water resources management (IWRM), can make that climate connection. This brief looks at all four dimensions of IWRM, namely the enabling environment, institutions and participation, management instruments, and financing.

RECOMMENDATIONS

Key stakeholder(s)	Recommendation
Ministry of Environmental Protection and Natural Resources (MENR) State Agency for Water Resources (SAWR)	Roles and responsibilities for various aspects of water resources management and infrastructure development are scattered across multiple agencies and entities, which must coalesce in order to ensure prior IWRM commitments are built into vertically integrated policies and frameworks. **1** The newly re-established MENR needs to balance the mandates and agendas across different sectors to ensure that IWRM principles are mainstreamed.
As above + Ministry of Energy and Coal Mining Multilateral climate funds	Improving Ukraine's energy system (including increasing energy efficiency and diversifying energy supply) is a national strategic focus and has been the primary sector supported by climate financing to date. This brief highlights some of the overlaps between water and energy, including the links between water resource availability and hydropower. Declining water availability has been factored into national plans as part of the motivation for moving away from water-intensive coal and gas energy and increasing renewable energy capacity. **2** The water sector should use the water–energy–food nexus to demonstrate how integrated approaches to water management can help to achieve the country's climate objectives (and, by extension, how siloed approaches will result in the country failing to meet its climate objectives).

RECOMMENDATIONS CONTINUED...

Key stakeholder(s)	Recommendation
Inter-Agency Commission on Climate Change	The presidential decree to develop a National Adaptation Strategy by spring 2021 provides a current window of opportunity for the Ukrainian water sector to show how IWRM can help to achieve the country's climate objectives. 3 The Inter-Agency Commission on Climate Change should be used as a platform to highlight the interconnected nature of water and climate risks in Ukraine, with an emphasis on how water-related actions can support the National Adaption Strategy.
Inter-Agency Working Group on SDGs Department of Economic Strategy and Macroeconomic Forecasting (MEDTA)	The Voluntary National Review (VNR) of the Sustainable Development Goals (SDGs) was described in the 2020 VNR as being "a new stage in implementation of the SDGs in Ukraine". 4 The VNR should be used as an opportunity to review how water-related climate change adaptation is integrated across sectors, aiming to achieve coherence across and between the SDGs. Where possible, aim to achieve synergies and co-benefits and avoid trade-offs and sectoral conflicts.
Ministry of Economic Development, Trade and Agriculture (MEDTA) SAWR Ukrainian Hydrometeorological Institute (UHMI)	The 2019 Irrigation and Drainage Strategy proposes an increased irrigation withdrawal of 4–5 km^3/year. 5 Review whether the country can afford this irrigation increase under moderate and severe climate change projections. If the proposed increase remains, then review what agricultural water conservation and water demand management (WC/WDM) measures could be implemented alongside the allocation increase (WC/WDM measures appear to be a form of climate change adaptation currently under-used in policy and in practice in Ukraine).
SAWR	The remit of the SAWR is currently limited to surface water. There is a governance gap affecting the management of water resources more broadly (including groundwater). 6 The SAWR's remit should be expanded to include a more integrated view of water resources (surface water, groundwater, interflow). This would reflect a more general principle of, where possible, building on institutions that currently exist rather than seeking to create new institutions.

THE CHALLENGE

Climate-driven changes in Ukraine threaten the country's food security and economic growth, with implications for eco-tourism, energy, and urban water supply and management.

Rising temperatures will increase winter wheat yields in the north and reduce agricultural losses from early spring frost.

These gains in the north will, however, be offset by a decrease in precipitation in the south, which will have a negative impact on the yield of rainfed high-input cereals.

Extreme weather events have increased in Ukraine over the last 20 years, including increased incidence of strong floods, affecting nearly one third of the population, and an increase in the frequency and intensity of drought events, affecting multiple regions and sectors.

Although 69% of land area is under agriculture, the sector is heavily dependent on rainfall, with only 6% of cultivated land under irrigation.

The combination of intensified agriculture since Soviet times and water and wind erosion has resulted in large-scale soil loss (the cost of soil loss from erosion is estimated at one-third of the agricultural gross domestic product per year).

Ukraine's largely urban population (69.7% in 2020) is vulnerable to the country's infrastructural limitations, including limited potable water supply. Ukraine's centralised Soviet-era water supply system needs to be modernised: on average, 25% of drinking water samples do not meet European Union quality standards.

Ranked fifth in the world for energy intensity, Ukraine is one of Europe's largest energy consumers due to its:

- inefficient energy infrastructure
- historically low energy prices
- high industrial and agricultural energy sector demands.

Most of Ukraine's current renewable energy is hydropower. Changes in timing and flow of water resources as a result of climate change scenarios are expected to impact hydropower potential.

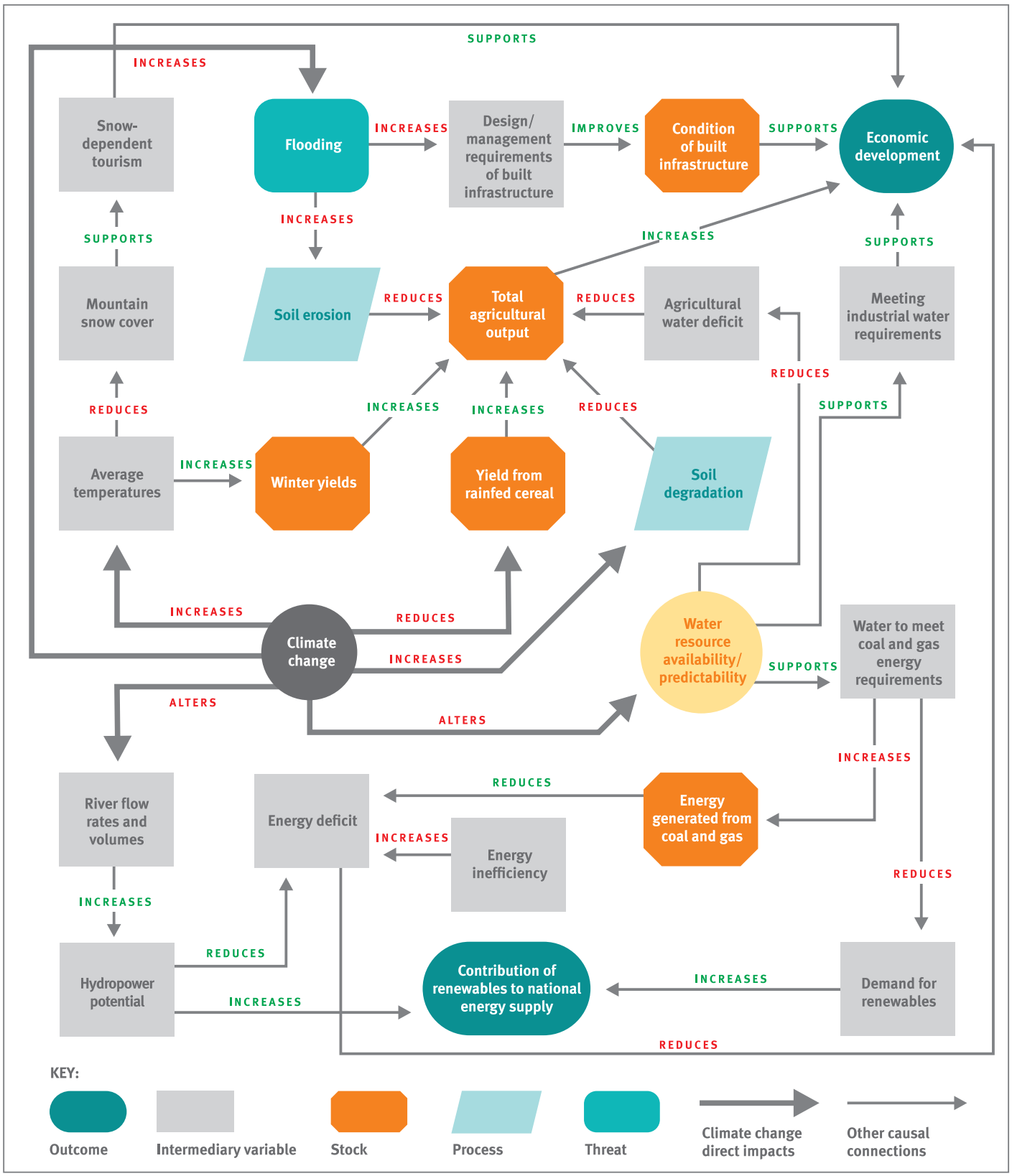
Renewable energy accounts for about 8% of Ukraine's installed energy generation capacity. Ukraine's National Renewable Energy Action Plan has set a target of 11% of its installed energy generation capacity to be renewables-based by 2020 (the negative impacts of reduced water availability on water-intensive coal and gas energy generation has also motivated the increase in renewable energy capacity in the national plans).

Climate change threatens tourism in the Carpathian Mountains region of Ukraine (one of the country's tourism centres):

- snowfall irregularities, with snows interrupted by winter rains, are projected to become increasingly common, with losses for snow-dependent tourism
- rare species in the Carpathians are threatened (this is a particular concern given that Ukraine is home to 36% of Europe's biodiversity).

As with the water–energy–food nexus, climate resilience and sustainable development are interconnected. The diagram below maps the relationships between some of the key climate challenges that Ukraine faces, showing why coordinated, integrated, and cross-sectoral responses are required to adapt to the impacts of climate change.

THE INTERCONNECTED NATURE OF WATER-RELATED CLIMATE CHALLENGES IN UKRAINE



The interconnected nature of these challenges

As with the water–energy–food nexus, climate resilience and sustainable development are interconnected. The diagram maps the relationships between some of the key climate challenges facing Ukraine, showing why coordinated, integrated, and cross-sectoral responses are required to adapt to the impacts of climate change.

At the centre of the diagram is water resource availability/predictability, which is impacted by climate change (as shown by the words written on the arrows between the variables). The complex relationship between climate change and water availability/predictability is not shown here for reasons of space. The word 'alters' is used to describe the fact that climate change can affect water resources via multiple vectors, including via changes in temperature and precipitation, and impact on availability in multiple ways, including via seasonality, changing frequency and intensity of rainfall events, and fluctuating water quality.

In order to facilitate the accurate reading of this diagram, the following description will describe two causal chains. The relationship between water resource availability/predictability and agricultural water deficit is inverse: an increase in water availability/predictability will generally reduce the agricultural water deficit (defined as the gap between the demand for agricultural water, expressed in the diagram as agricultural water requirements, and the water available for agriculture). The impacts of climate change in Ukraine are expected to mostly alter water resource availability/predictability in negative ways, which will then increase the agricultural water deficit. An increasing deficit will reduce the total agricultural output, with an associated decrease in economic development.

Climate change is also decreasing the mountain snow cover in Ukraine, via an increase in average temperatures. Given that mountain snow cover supports snow-dependent tourism, decreasing snow cover will reduce the viability of tourism, with associated economic impacts on the country's development. The remainder of the diagram can be read in the same way.

ENABLING ENVIRONMENT

What do key policy statements say about integrating water, climate, and other Sustainable Development Goal agendas?

WATER AND CLIMATE CHANGE POLICY

Key policy statements are divided into those that refer to the links between water and climate change, and those that do not. There is little evidence to suggest that IWRM principles have been integrated into subnational and more granular legislation and documentation or put into action through infrastructure development. The first and second National Determined Contributions neglected the role of water in climate change adaptation. The links between water resources, climate change, energy, and agriculture are not translated into practical policies, nor are these links viewed holistically or in an integrated manner.

Ukraine has a number of relevant national planning documents; however, many of these only run until the early 2020s, and it is unclear to what extent IWRM and climate change will be prioritised in future iterations. Ukraine's medium-term Priority Action Plan (2017–2020) is a case in point:

- The Priority Action Plan highlights the need for an effective legislative framework to overcome the lack of clear functions and coordination around planning and implementing climate action. It also highlights financial constraints and the lack of a systemic approach to creation and use of climate science in decision-making.
- The Priority Action Plan also identifies sustainable water management as a priority for strategic governance, noting the need to move to integrated watershed management (from the fragmented current water management structures) (see **Recommendation 1**).

POLICY STATEMENTS

SECTOR	KEY POLICY STATEMENTS (INCLUDING LAWS, STRATEGIES, AND PLANS)
Cross-sectoral	■ Medium-term Priority Action Plan (2017–2020)
Climate change	■ Sixth National Communication (2014) ■ Low Emissions Development Strategy ■ National Determined Contribution for Ukraine ■ Second National Determined Contribution
Water	■ Water Code of Ukraine (2009, amended 2015, 2017) ■ State Programme on Water Sector Development (2009) ■ Concept of Water Reform (draft)
Transboundary	■ Cooperation in the Field of Protection and Sustainable Development of the Dniester River Basin
Agriculture	■ Irrigation and Drainage Strategy (2019)
Energy	■ Energy Strategy of Ukraine until 2030 ■ Comprehensive National Plan on Energy and Climate Change (2021–2030)

- The document considers adaptation to refer to readiness of the Ukrainian populace rather than adaptation led by government.
- The action plan also makes little connection between the two themes of climate change and water resources, with little mention of the potential impacts of climate change on water resources.

In terms of national legislation and regulatory frameworks around water, Ukraine does not have a national water resource policy but intends to start implementing river basin management plans from 2024 in line with the Association Agreement between Ukraine and the European Union. However, it is not clear how climate change mitigation or adaptation will be recognised within these river basin management plans. The Water Code of Ukraine was amended in 2017 to establish a transition towards river basin-level resource management, while the State Programme on Water Sector Development up to 2020 (adopted in 2009) also recognises climate change adaptation as a priority. Both the Water Code and the State Programme endorse "complex/rational water resources use" but fall short of adopting IWRM as the policy basis for water resources (see **Recommendation 1**).

There is some hope for changes in the approach to adaptation and the role of water in it:

- As part of the Voluntary National Review (VNR) on SDG progress in July 2020, the Ukrainian Government accepted GWP proposals to change SDG13.1 from "emission reduction" to "resilience increase".
- The VNR also recommended more broadly that with SDG13 "politically, economically, and scientifically sound decisions on climate change should be adopted for all economic sectors, including … water management, land use, preservation and reproduction of ecosystems" (see **Recommendation 4**).
- Additionally, the President of Ukraine endorsed (in September 2019) IWRM in SDG.6 as "sustainable management" and not as "rational use of water resources".

There is no comprehensive agricultural strategy based on IWRM principles, but in late 2019, an Irrigation and Drainage Strategy was adopted by Cabinet Ministers that made some IWRM advances:

- the management of drainage and irrigation was devolved to the basin level
- the need to separate water resources management from water-related infrastructure management was recognised
- more inclusive stakeholder engagement was envisioned under a proposed "Law on Water Users Organizations".

Transboundary management

Ukraine is party to various agreements with neighbouring countries around water resources management, including the Russian Federation, Slovakia, Poland, Romania, the Republic of Moldova, Belarus, and Georgia, although many of these date to the early 1990s and contain no references to climate change. A noteworthy exception is the treaty between the Government of the Republic of Moldova and the Cabinet of Ministers of Ukraine on "Cooperation in the Field of Protection and Sustainable Development of the Dniester River Basin", which reportedly includes references to climate change.

Climate change

In the water-related chapter of its 2017 SDG Baseline Report, Ukraine does not include reference to any of the sectors outlined in its Nationally Determined Contribution (NDC) (including energy and agriculture), nor of climate change itself. This suggests a lack of integration when considering climate change in respect to other key water-related sectors. There is also little to no mention of water (transboundary/regional issues or otherwise) in Ukraine's first NDC or second NDC (NDC2). Ukraine's Sixth National Communication to the United Nations Framework Convention on Climate Change (UNFCCC) was submitted in 2014 but contains no references to transboundary or regional water issues. Ukraine's Low Emissions Development Strategy, on the other hand, does contain multiple references to water (primarily in terms of the impacts of climate change on water availability) but no reference is made to transboundary water issues, and no explicit links are drawn between water and energy diversification (see **Recommendation 4**). The potential impacts of climate change on water-related energy issues are recognised partly in the Energy Strategy of Ukraine (for the period until 2030), particularly with regards to the impacts of changes in river flow and volume on hydropower potential. Finally, while no National Adaptation Plan has been approved for Ukraine to date, a 2020 Presidential Decree has mandated the development of a National Adaptation Strategy by spring 2021 (see **Recommendation 3**).

INSTITUTIONS

Are Ukraine's institutions ready to manage the impacts of climate change on water resources and on other water-related sectors in an integrated way?

INTEGRATING WATER AND CLIMATE ISSUES

The re-establishment of the Ministry of Environmental Protection and Natural Resources (MENR) makes it complicated to assess how institutions are able to coherently draw together water and climate issues. However, if MENR builds on work undertaken by the State Agency for Water Resources (which continues to exist under its auspices), there is potential for improved integration among water, energy, and agriculture sectoral planning. Integration may also be improved among national action and reporting and ambition raising within the international frameworks for climate and the SDGs (given the new ministry is also the focal point for UNFCCC and SDGs).

Management of water-related climate change adaptation in Ukraine has been affected by institutional changes between 2019 and 2020, including:

- the merger of the Ministry of Environmental Protection and Natural Resources (MENR) with the Ministry of Energy. When this merger happened in late 2019, the budgets were reportedly liquidated. The 2020 re-establishment of MENR has been crippled by the lack of budget
- the Ministry of Agrarian Policy and Food (Minagro) being absorbed into the Ministry of Economic Development, Trade and Agriculture in late 2019. This ministry is responsible for irrigation. As of mid-2020, national discussions are under way about the re-establishment of the Ministry of Agriculture as its own ministry.

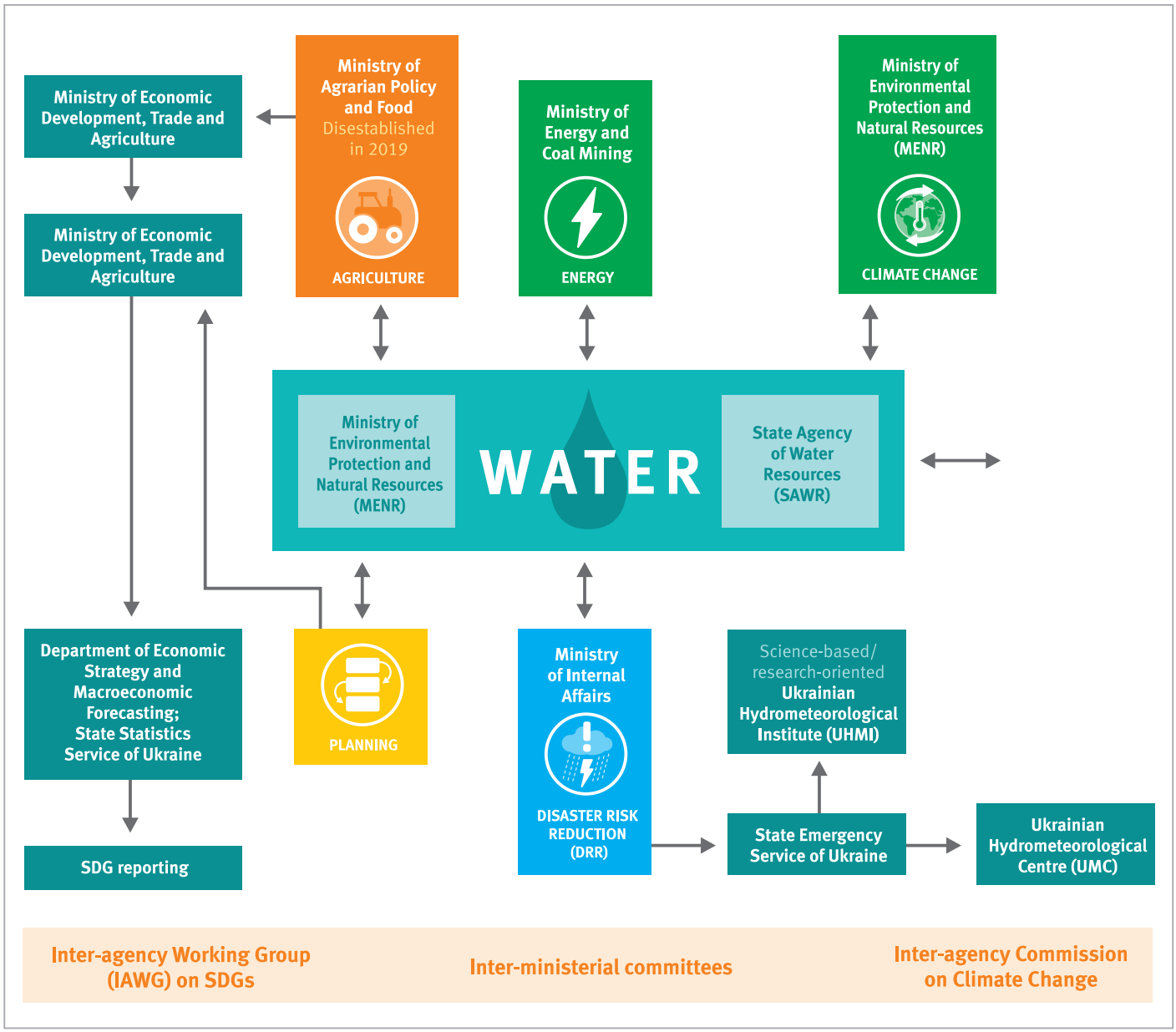
A key institution for water resource management is the State Agency for Water Resources (SAWR), which sits under MENR. While SAWR includes a division with an explicit IWRM remit, it is understood that the focus of the re-established ministry will continue to be on water infrastructure, with a new additional aim of reducing pollution through strengthening environmental inspectorates. The new ministerial priorities for water

and fragmentation of responsibility could make it harder to implement IWRM objectives set out in the water policy. A primary institutional challenge is that the SAWR's remit has historically only included surface water, leaving the rest of Ukraine's water resources largely unmanaged (see **Recommendation 6**).

The new MENR will remain responsible for climate change mitigation and adaptation, and may be better able to integrate climate action into water resource planning, and vice versa, and improve tracking and implementation of SDGs 6 (water) and 7 (energy) (see **Recommendation 2**). It is unclear how the new structure will interact with the agricultural ministry which, as noted above, has also been subjected to institutional reshuffling between 2019 and 2020. The institutional arrangements between the natural resource and agricultural ministries are particularly important for coordinating irrigation and drainage, including implementing the 2019 Irrigation and Drainage Strategy (see **Recommendation 5**).

There are few formal coordination mechanisms between various actors responsible for water resources (see figure below). The Inter-Agency Commission on Climate Change is made up of various relevant ministries and a network of Ukrainian NGOs. However, its remit is to coordinate national measures in line with Ukraine's climate commitments, which do not refer to water resource management. It does not appear to engage closely with SAWR on the relationship between water and climate change (see **Recommendation 3**).

UKRAINE'S INSTITUTIONS



Climate change presents both risks and opportunities in key water-related sectors and mitigating the former while maximising the latter will require successful integration of functions across agencies. This is undermined by the absence of clear roles and responsibilities for various aspects of IWRM implementation in Ukraine. It is unclear whether the new ministerial structure has improved or further complicated this alignment. While Ukraine's key water-related policy documents do tend to contain clear declarations of intent to implement IWRM principles and link to climate change and SDG implementation, this is not reflected in institutional responsibilities, structures, and commitments. This lack of capacity in the sectoral institutions and stakeholders to engage with IWRM remains an obstacle to mainstreaming climate change adaptation in the water sector.

MANAGEMENT INSTRUMENTS

Are management decisions in water and other Sustainable Development Goals being guided by evidence on climate change?

INFORMATION MANAGEMENT

While high quality, geographically tailored climate information and data is produced in Ukraine, it is unclear to what extent this underpins decision-making, with many key stakeholders holding only a limited understanding of water-related climate risks. Meanwhile, a lack of data and information on the level of implementation of IWRM prevents Ukraine from assessing progress towards implementing its own IWRM plans. Improved coordination and collaboration between the relevant bodies could lead to better understanding and use of climate information and make it easier to report on SDG progress, while also helping to realise IWRM objectives.

Hydrometeorological data is collected and analysed in Ukraine by two organisations under the State Service of Ukraine on Emergencies (which falls under the Ministry of Internal Affairs). The Ukrainian Hydrometeorological Center (UMC) produces regular bulletins on weather and hydrology while longer-term scientific research is undertaken by the Ukrainian Hydrometeorological Institute (UHMI). As the main scientific research organisation in the field of hydrometeorology and basic monitoring of the natural environment, the UHMI's remit includes the development of climatic forecasts. Both the UMC and the UHMI work with the Central Geophysical Observatory, which acts as a central repository and archive of select data, such as water pollution data.

The UHMI has undertaken water-related climate analysis and modelling in order to assess potential water-related climate change adaptation needs. It also conducts assessments of changes in river flow in key basins for use by SAWR. Much of this work is related to climate change mitigation rather than adaptation (see **Recommendation 5**).

As of late 2019, various studies are under way across multiple Ukrainian river basins to support the implementation of River Basin Management Plans, although it is unclear to what extent these studies factor in the aforementioned climate information and water resource data. The State Statistics Service of Ukraine – under the Ministry of Economic Development, Trade and Agriculture – collates data pertaining to the implementation of the SDGs, with inter-agency working groups responsible for particular sector groupings. The Environmental Working Group could be used as a coordination mechanism for water and climate change adaptation (see **Recommendation 4**).

FINANCES

How ready is Ukraine to finance water-related climate action?

FINANCING CLIMATE-RESPONSIVE WATER GOVERNANCE

Existing international financial support has, to date, primarily flowed into large water supply and sanitation infrastructure, with a gap in support for broader water resource management. This pattern is reproduced at the domestic level, where financing has historically focused on water-related infrastructure. International support for broader water resource management and climate change adaptation could result in improvements in domestic capacity to implement climate-responsive water governance. This could also indirectly lead to improved access to further development finance by demonstrating clear, integrated water resource planning. Particular areas for integrated management could be focused upon, such as the links between water and energy.

Domestic financing in the water sector has been reduced by a combination of institutional flux (as noted above) and budgetary reprioritisation because of the conflicts in the occupied territories of Crimea and its surrounds. Domestic budgets for water management are dominated by water-related infrastructure, and financing for managing water resources has been affected by the lack of budget allocated to the MENR between 2019 and 2020. Ukraine has a well-developed system of water pricing, including charges and tariffs for secondary water users and a system of fines and taxes for polluters. Historically, public funds have covered the capital cost of infrastructure, with the operational and management costs recovered from user charges. However, it is not clear to what extent funds raised from water levies cover the costs of the depreciation of assets or need for infrastructural upgrades.

In terms of international development finance provided to Ukraine for water-related infrastructure, the majority is provided in the form of concessional loans for large sanitation and water supply infrastructure, with little provided for water sector policy and administrative management. In 2016, US$1.05 billion was provided for water-related infrastructure investments, with the majority of these projects identifying climate change as either the principal or a significant component, however, none of these projects were directly water-related. Further international support for these activities could result in improvements in domestic capacity to implement climate-responsive water governance, and indirectly to accessing further development finance by demonstrating clear, integrated water resources planning (see **Recommendation 1** and **Recommendation 2**). Much of this finance comes from the European Bank for Reconstruction and Development and bilateral support from Germany and Poland, in the form of concessional loans, with minimal finance provided through project grants. A further US$46 million in funding was provided to biodiversity, environmental policy, and disaster risk preparedness projects in the same year. Climate finance (as opposed to broader development finance) tells a similar story, with most finance flowing into electricity generation, and no projects focused explicitly on water resource management as of February 2019.

Ukraine has been the recipient of a large amount of climate-related funding (according to one analysis by Carbon Brief, Ukraine received US$278 million in climate-related funding between 2013 and 2016, the second-highest amount of climate funding globally after India). The majority of this funding was from the Clean Technology Fund and was electricity generation-focused. It is understandable that the focus of climate financing has been energy related in Ukraine, given the context of Ukraine's energy intensity and requirements for increasing energy efficiency and diversifying energy supply. This brief has highlighted some of the overlaps between water and energy, including the links between water resource availability and hydropower, and the fact that declining water availability is a factor in moving away from water-intensive coal and gas energy. These are some of the dimensions of the water–energy–food nexus, which could be used to help orient climate change adaptation and energy sector financing (see **Recommendation 2**).

Three additional challenges are:

1. Ukraine's access to multilateral climate funds requires designated authorities. Out of three of the major funds (the Green Climate Fund, the Adaptation Fund, and the Global Environment Facility) information about the Ukrainian designated authority is only available for the Global Environment Facility (where the 'operational focal point' is listed as the 'Ministry of

Energy and Environmental Protection of Ukraine' and not the correct ministry, the MENR).
2. Ukraine lacks an investment strategy for rehabilitating its water infrastructure (including the required modernisation of the country's centralised water supply systems): the development of this strategy would support applications to the larger funds for the financial backing of the water supply system.
3. The signals sent in high-level policy documents concerning the move towards IWRM have not yet trickled down into frameworks for delivery, making it difficult to group projects for financing in the context of a wider strategy (see **Recommendation 1**).

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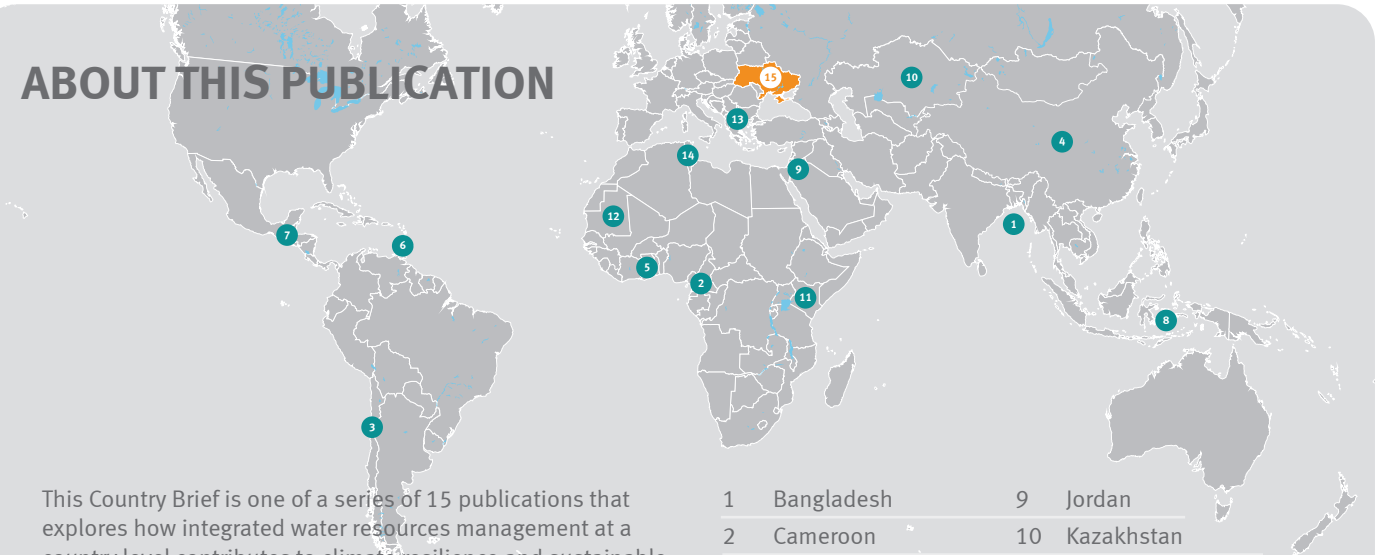

This Country Brief is one of a series of 15 publications that explores how integrated water resources management at a country level contributes to climate resilience and sustainable development, as well as meeting the commitments under the Paris Agreement and achieving the Sustainable Development Goals (SDGs).

The full synthesis report, The Untold Story of Water in Climate Adaptation. Part II. 15 Countries Speak, of the work undertaken in all 15 countries is available at www.gwp.org.

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