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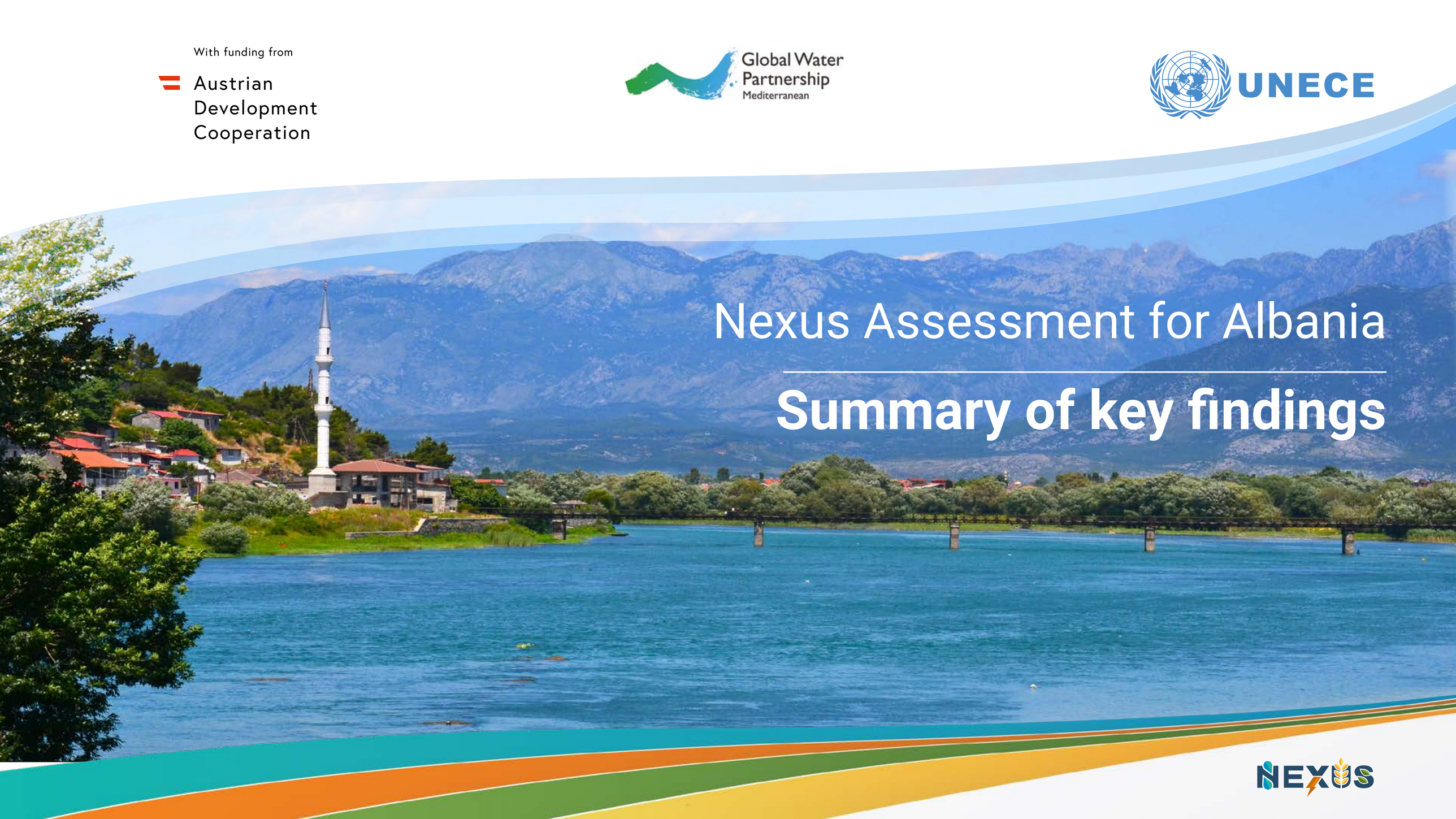

Nexus Assessment for Albania

Summary of key findings

NEXUS

The Nexus approach is especially relevant to Albania, given its rich water resources, the significant share of hydropower in the energy mix, the key socio-economic role of agriculture, and the extended natural areas of high ecological value.

Achieving climate resilience while ensuring water- energy- and food-security are key preconditions for economic growth, human prosperity and healthy ecosystems in the country.

Significant advancements, especially regarding institutional settings, have taken place in recent years regarding the sustainable management of natural resources. However, non-integrated and non-coordinated policies and practices remain a substantial challenge. An integrated and coherent approach in the design and prioritisation of policy options, management practices and infrastructure planning, would ensure the maximisation of overall benefits across sectors.

The overall aim of the Nexus Assessment is to facilitate an enhanced understanding of the complex and dynamic relationships between water, energy, agriculture / land use, and ecosystems, and improved coordination on policy and management aspects, by identifying trade-offs and synergies across the Nexus-related sectors.

The “Assessment of the Water-Energy-Food-Ecosystems Nexus in Albania” Report was developed within the framework of the “SEE Nexus Project”, financed by the Austrian Development Agency (ADA) and implemented by GWP-Med in partnership with the UNECE.

More information on the project is available at: www.gwp.org/seenexus

KEY CHARACTERISTICS OF ALBANIA’S NEXUS SECTORS

MAIN INTERLINKAGES (SYNERGIES AND TRADE-OFFS) ACROSS NEXUS SECTORS

KEY INTERLINKAGES EXPLORED

KEY CHARACTERISTICS OF ALBANIA'S NEXUS SECTORS

Water Resources Management

Albania is advancing the integrated management of its water resources, in line with the EU acquis. River Basin Management Plans have been prepared for two of its main basins while a further three are under preparation. With abundant average annual rainfall, Albania often encounters problems with floods – which typically occur between November and March.

Water Supply and Sanitation

The coverage of water supply and sanitation services in Albania is around 77% and 53%, respectively, with coverage being significantly lower in rural areas. The share of non-revenue water remains very high – at 63%. Water utilities are facing significant challenges to their financial sustainability.

Food / Agriculture

In Albania, agriculture provides 40% of employment and 19% of GDP. The country is a net importer of agricultural and food products. The average family farm size in the country is relatively small. 626 reservoirs are the backbone of irrigation infrastructure, but their actual water capacity is just above half of the nominal one, due to erosion and poor maintenance. 360,000 ha are equipped with irrigation infrastructure, but it is operational in only half of that area.

Energy

A key challenge for Albania is how to increase the low per capita energy consumption in the context of its developmental objectives, while reducing the high level of energy intensity and meeting its climate-related commitments. Albania remains a net importer of energy overall and of electricity – in typical years. Albania's power generation has been almost exclusively dominated by hydropower, but wind and solar power are expected to play an increasingly significant role.

Environment

Protected areas in Albania account for about 18% of its territory, with the government aiming to increase this. Forests occupy about 36% of the country's land area. Wood has been a traditional source of fuel in households. However, illegal logging has been negatively impacting forests, which led the Government to impose a 10-year moratorium on logging in 2016.

MAIN INTERLINKAGES (SYNERGIES AND TRADE-OFFS) ACROSS NEXUS SECTORS

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The report also provides a brief overview of the strategic and decision-making frameworks in each of the Nexus sectors, and a rapid assessment of how these address cross-sectoral considerations.

Based on all of the above findings, the report then identifies key interlinkages – both negative associations (trade-offs) and opportunities for synergies – across Nexus sectors in priority policy areas.

A detailed mapping of interlinkages is available in the Report and presented in the accompanying Factsheet.

The table below presents an outline of the key interlinkages, structured around the key policy objectives of each sector.

Water Supply and Sanitation

Policy Objectives	Synergies	Trade-offs
Expanding and improving access to water & sanitation services / Construction of wastewater Treatment Plants.	**Agriculture:** Potential for more (treated) water available for irrigation, and use of treated sludge. **Energy:** Potential for energy recovery (biogas) and/or on-site renewable energy installations. **Environment:** Reduced pollution – improved water quality.	**Energy:** Increased energy demand for pumping and water treatment.
Full recovery of operating and maintenance costs / Improved Corporate Governance and capacities.	**Water resources:** Improved performance and overall operations will result in increased efficiencies and reduced water losses. **Energy:** Improved energy efficiency is a prerequisite for the financial sustainability of utilities.	

Food / Agriculture / Land use

Policy Objectives	Synergies	Trade-offs
Improvement of irrigation and drainage services and infrastructure, reducing the consequences of flooding & droughts.	**Water resources management:** Impacts of floods/droughts are mitigated. **Energy:** Potential for increased energy efficiency and/or on-site renewable energy installations (e.g. agro-photovoltaics). **Environment:** Potential for sustainable practices reducing use of pesticides, preserving water quality and biodiversity.	**Energy:** Increased energy demand for additional irrigation and drainage services, and equipment.
Forestation and prevention of soil erosion.	**Energy:** Addressing soil erosion reduces sedimentation in reservoirs. **Environment:** Assistance in meeting land restoration objectives. **Water supply:** Forestation may lead to improved water quality.	

Energy

Policy Objectives	Synergies	Trade-offs
Sustainable hydropower development.	**Water resources management:** Potential for improved flood management in case of coordinated HPP operations. Potential for installing floating solar on reservoirs. **Agriculture:** Increased water storage capacities.	**Environment:** Potential for highly negative impacts on ecosystems without proper siting and full Environmental Impact Assessment. Hydropower development should take into account the expected impacts of climate change. **Agriculture:** Potential conflicts from land captured in the reservoirs and water allocation issues.
Increase security and affordability of energy supply / Promote renewable energy sources and energy efficiency.	**Water resources management:** Increasing non-hydro RES will reduce the need for additional HPPs and related stresses. **Water supply and sanitation:** Increased energy efficiency improves utilities' financial sustainability. **Agriculture:** On-site renewable energy installations (e.g., agro-photovoltaics). Increased energy efficiency reduces costs for farmers. **Environment:** Efficient heating reduces the need for wood fuels and unsustainable logging.	**Agriculture:** Solar installations on farmlands and/or switching to biofuels will reduce the available agricultural land for food production. Potential additional stress on available water in case of biofuel cultivation. **Environment:** Potential for highly negative impacts on ecosystems from harmful siting of wind farms in natural areas and/or unsustainable biomass use.

Environment and Biodiversity

Policy Objectives	Synergies	Trade-offs
Sufficient water for ecosystem services	**Water resources management:** Changes in rules around water allocation and permitting may be required.	**Energy:** Need to ensure appropriate regulations on environmental flows for HPP operations. **Agriculture:** Potential conflicts in case of scarce resources.
Expansion of system of protected areas.		**Agriculture:** Potential conflicts in land use. **Energy:** Potential impact on siting of RES installations.
Improvement of the SEA / EIA process.	**Water supply and sanitation:** Reduced potential impacts from WSS installations. **Agriculture:** Improved sustainability of agricultural production.	**Energy:** Potential impact on siting of RES installations.

KEY INTERLINKAGES EXPLORED

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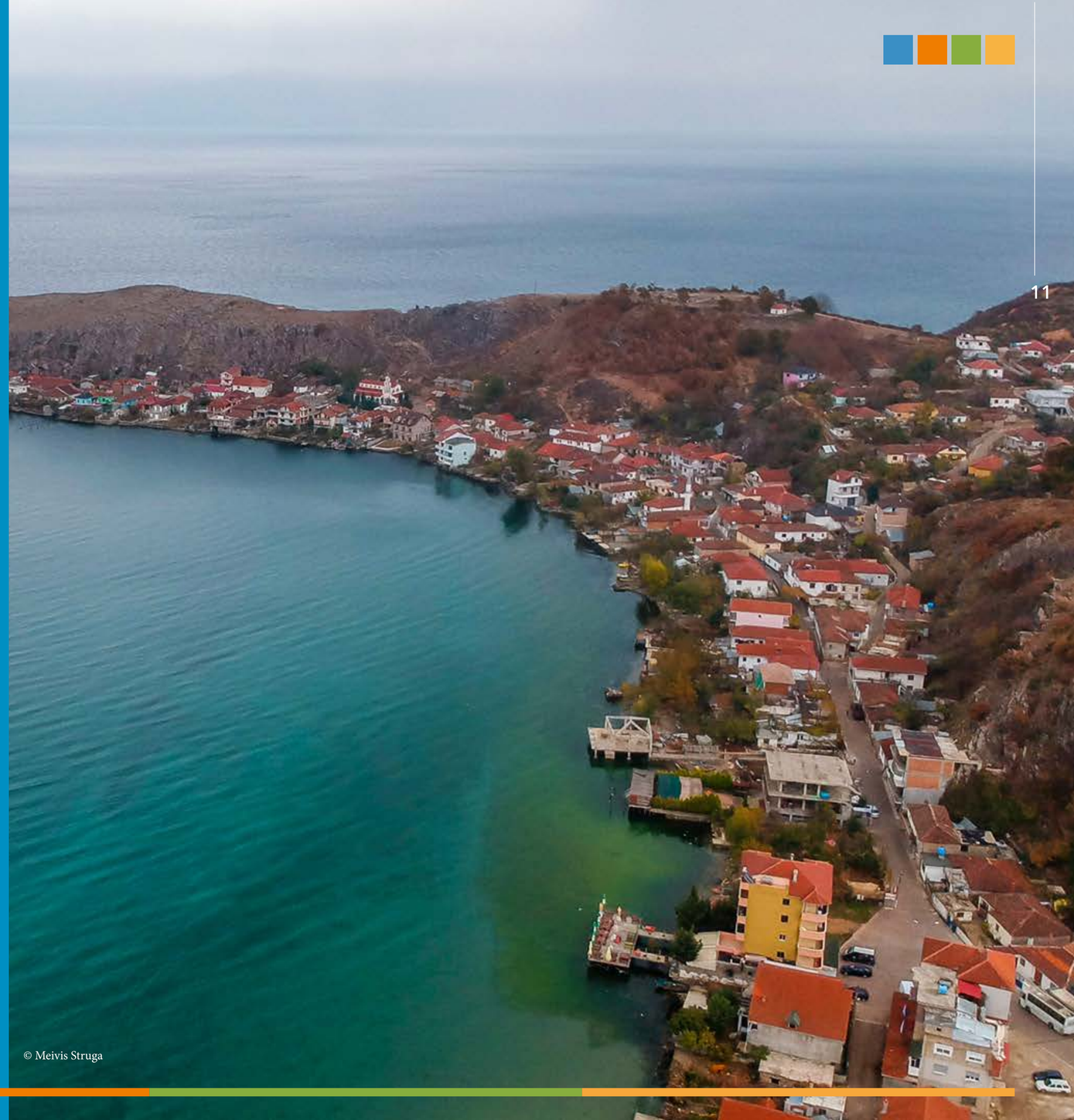
The report also explores the following three interlinkages in great detail, identifying key barriers and suggesting mitigation measures with cross-sectoral benefits:

THE INTERFACE OF HYDROPOWER OPERATIONS AND FLOOD MANAGEMENT

In Albania, large downstream areas are flood-prone, and the absence of proper and strong regulation of Hydropower Plants (HPPs) and related water flows could potentially aggravate the problem of floods.

The Institute of Geoscience, Energy, Water and Environment (IGJEUM) is in charge of collecting regular data on precipitations and water flows in river basins in Albania, is part of the Advisory Technical Committee for minimisation of hazardous risks, established under the National Agency of Civil Protection, and provides data to the government in flooding situations. Effective collaboration and coordination between IGJEUM and KESH – the power utility operating the HPPs – could provide significant benefits in flood management through adjustments in the operation of the dams.



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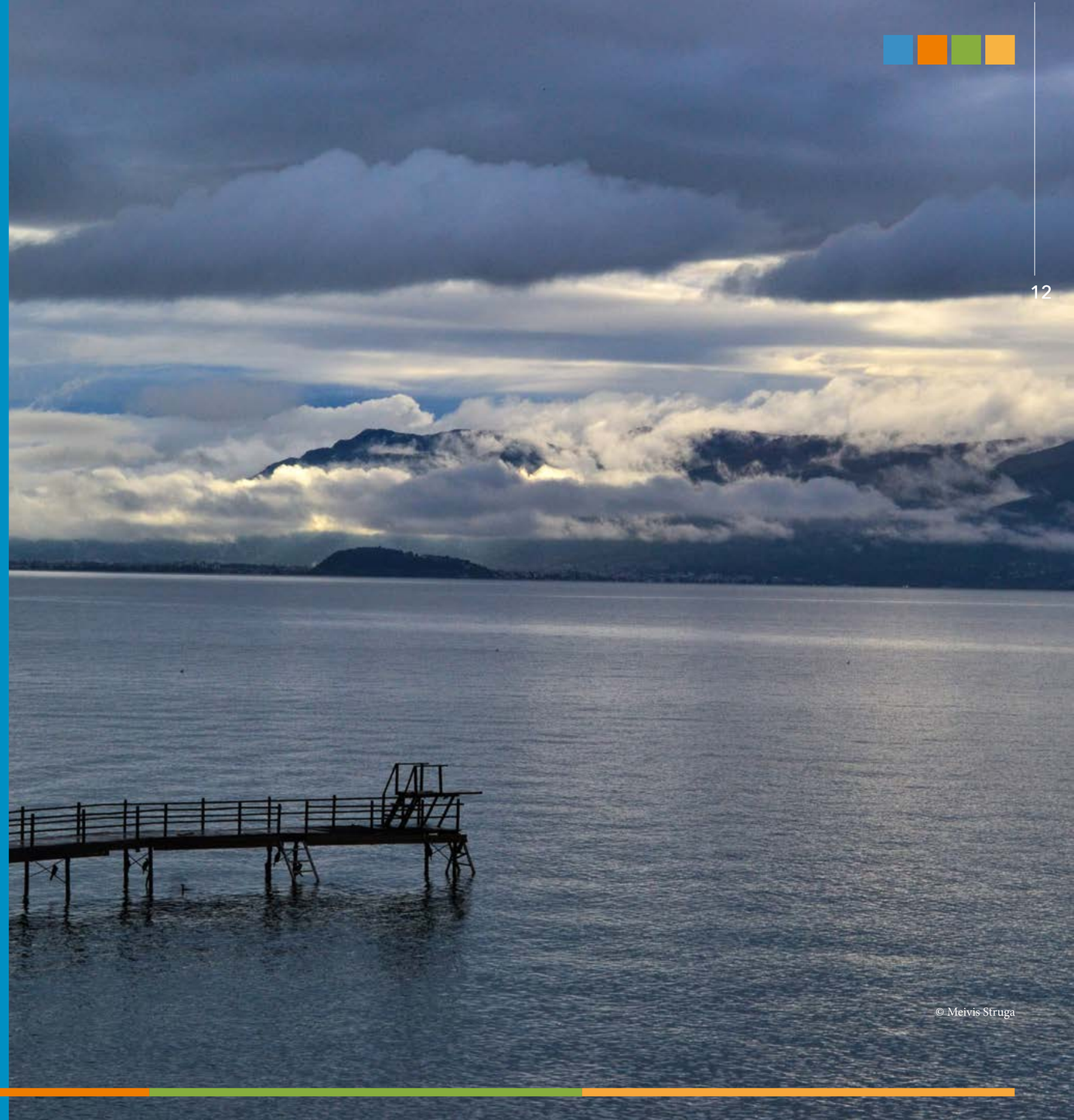
This interface is primarily evident in the Drin Basin where three large HPPs are located. Their operation is regulated by the “Regulation on discharge of water plots in Drin-river HPPs”. This regulation is quite old and does not envisage or require KESH to have any data on short-term weather forecast. An updated regulation that would require better institutional coordination and data-informed operation of the HPPs could provide significant benefits in flood management. The Flood Forecasting System for the whole Drin River Basin that has been prepared by GIZ could be instrumental in that regard.

Under the Nexus Assessment for the Drin Basin (also in the framework of the SEE Nexus Project) an integrated water-energy model was used to analyse scenarios regarding the operation of HPPs on the Drin also in relation to flood management. A key insight from the analysis is that changing the operational rules of the HPPs to accommodate floods (increasing the buffer volume of reservoirs by 20% in the wet season) has a minor impact on the security of electricity supply but a potentially significant impact on flood control and the reduction of related damages downstream, especially in the cases of up to medium flood events.

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INCREASING WATER AND ENERGY EFFICIENCY IN IRRIGATION AND DRAINAGE

The backbone of irrigation infrastructure in Albania is its water reservoirs and open concrete canals, which were built many decades ago and are in need of rehabilitation, for security reasons and to increase capacity. At the same time, drainage pumps are also outdated and require high energy consumption.

The local authorities are the bodies responsible for operating the irrigation and drainage infrastructure. However, they often have limited financial resources, technical skills or equipment, and this hinders the necessary investment in this sector.

Options to address this issue include:

- A new role for local Water Users Organisations (WUOs), in decision-making and possibly also in managing secondary canals
- Improved coordination between central and regional institutions, including WUOs
- Action plans and feasibility studies for improving the type of irrigation (focusing on drip irrigation) that would reduce water consumption, make more resources available and reduce the need for additional infrastructure
- Capturing energy synergies through, for example, replacement of inefficient pumps, the installation of floating solar panels in irrigation reservoirs, agro-photovoltaics, or even – if applicable – opportunities for small hydropower installations to operate outside the irrigation season.


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NATURE-BASED SOLUTIONS TO ADDRESS EROSION AFFECTING AGRICULTURE AND DAMS

In Albania, deforestation and indiscriminate human interventions have exacerbated the problem of erosion, resulting in sedimentation in dams (irrigation and HPP) and reducing their available capacity, while also reducing available agricultural lands.

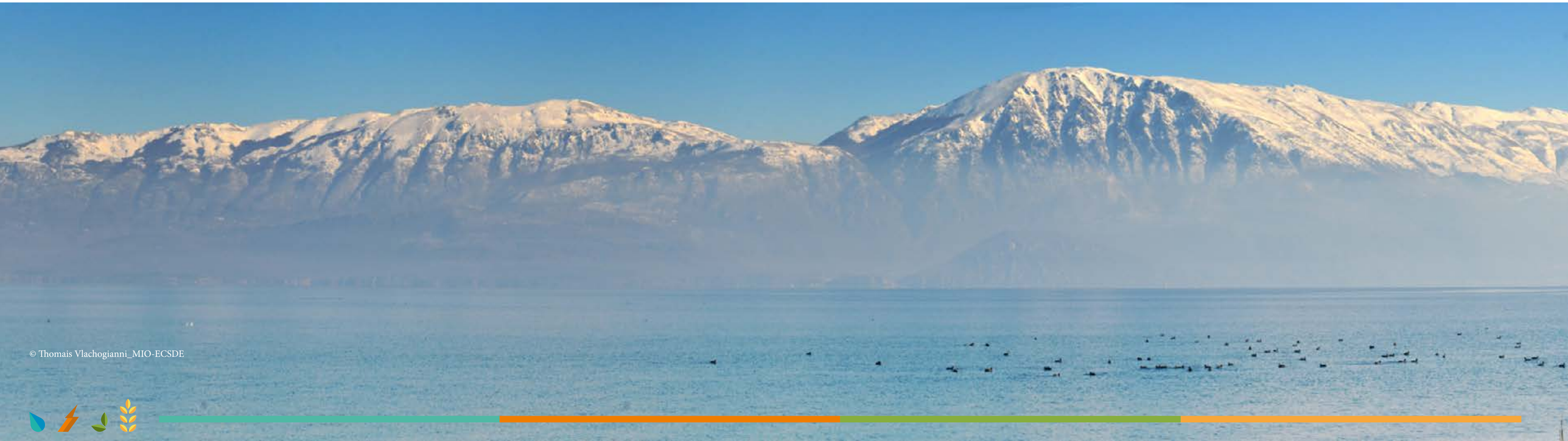
Low-cost and multifunctional Nature-Based Solutions (NBS) can be used as innovative measures with a positive impact on soil quality, erosion processes, generation and transport of sediment, floodwaters and storm waters, while delivering parallel benefits in biodiversity, human health, rural development and employment.

Such solutions include natural and artificial reforestation, the installation of engineered ponds in the riverbed to slow the velocity of water and facilitate the deposition of suspended materials, submerged stone barriers on the stream bed, etc.

In this regard, enhanced forest management practices are required, as well as improved coordination between central and local authorities, and technical and administrative institutions.

CONCLUSION

For Albania, further enhancing the coordination of different sectors, the integration of their policy objectives and the mainstreaming of joint management practices and infrastructure planning through a Nexus perspective, could significantly reduce costs, increase efficiencies, assist in ensuring security of supply, and contribute to the country’s economic growth, human prosperity and healthy ecosystems.



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The **"Assessment of the Water-Energy-Food-Ecosystems Nexus in Albania"** was prepared within the framework of the project "Promoting the Sustainable Management of Natural Resources in Southeastern Europe, through the use of the Nexus approach" financed by the Austrian Development Agency (ADA), the operational unit of Austrian Development Cooperation, and implemented by Global Water Partnership-Mediterranean (GWP-Med) in partnership with the United Nations Economic Commission for Europe (UNECE).