

Bridging the gap in the Nexus science/policy interface

Experience from the Nexus Assessment in the Drin basin

Nexus Consultation Meeting in Lebanon, 24-25 August 2022

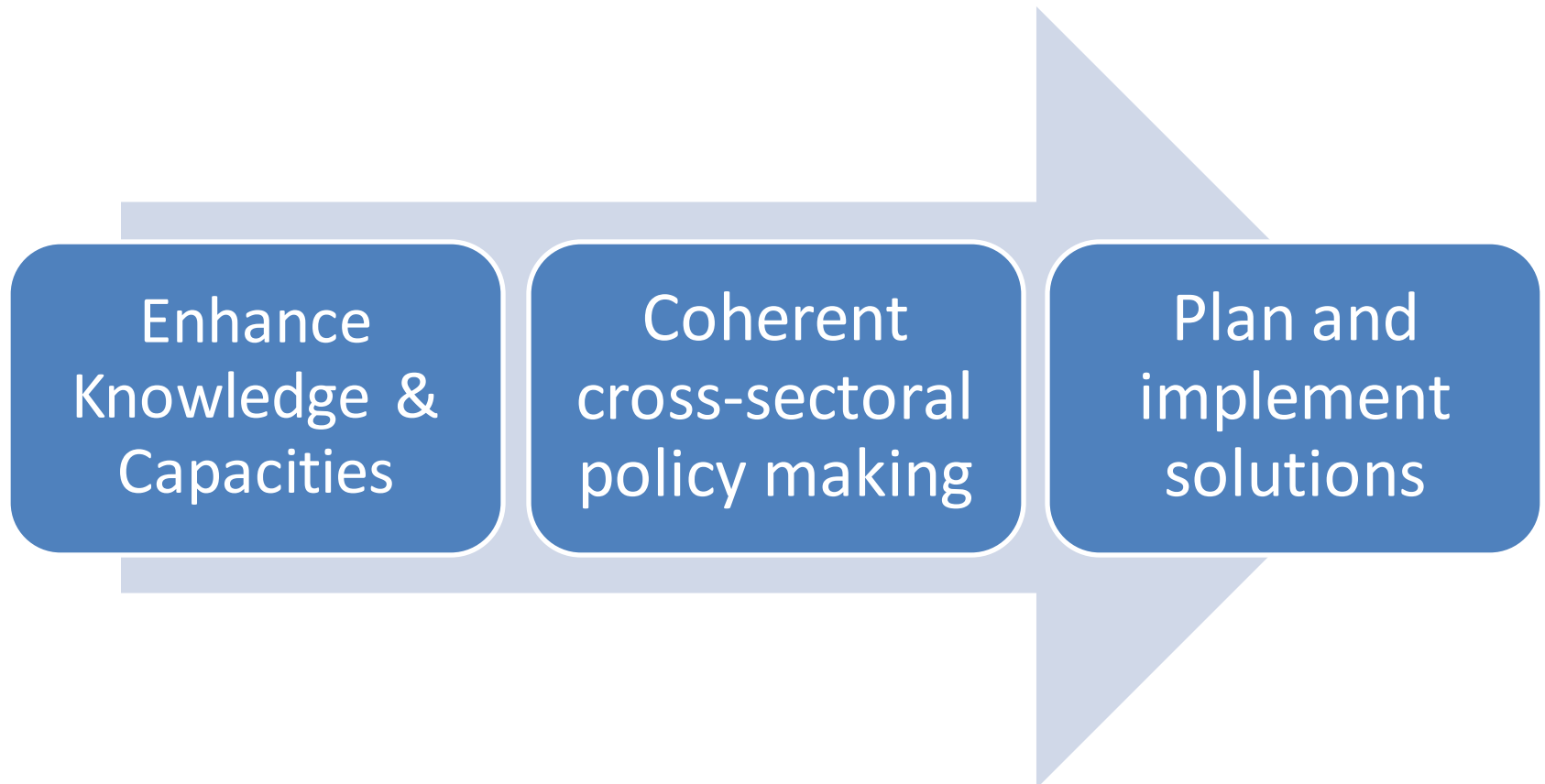
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From knowledge to policy-making (& solutions)

- Generic pathway for a Nexus approach





The Nexus Assessment in the Drin basin

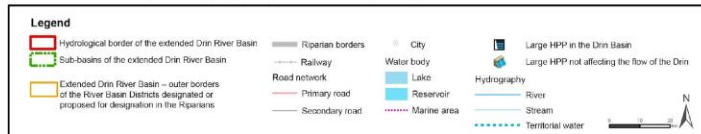
- In framework of the ADA-funded SEE Nexus Project
 - Implemented by GWP-Med in partnership with UNECE
 - Parallel activities in Drina basin and Albania
- Under the Drin Coordinated Action Process
 - Linked to Drin TDA & SAP
- Integrated water-energy modelling to explore the HPPs/floods interface
 - Regional Electricity model linked to the basin's hydrological model to explore effects under different scenarios



Hydropower and floods in the Drin basin



Map of Large Hydropower Plants (HPPs) in the Drin River Basin



- 2 HPPs in N. Macedonia, 3 in Albania
- HPPs operation driven mostly by the objective of maximising electricity production
- Practically no cross-border coordination
- Need for “multi-purpose” use of reservoirs to both store energy and regulate river levels & flood risk

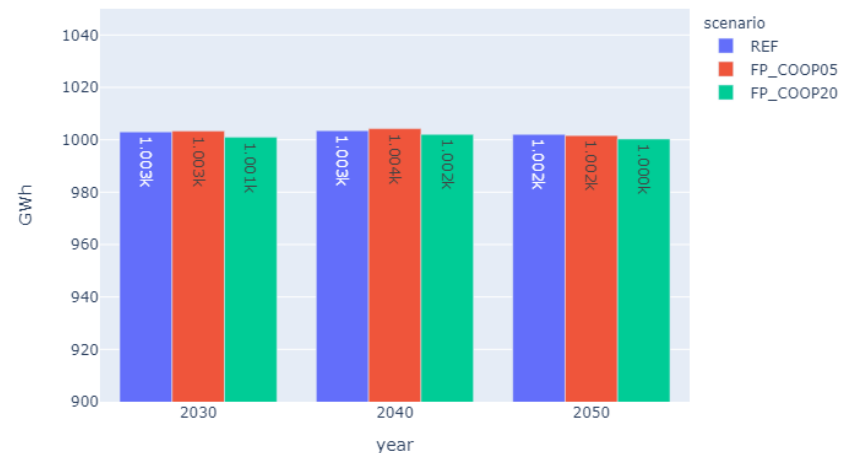


Results from the “flood-smart” scenario

- Explore the impact of increasing the buffer volume by 5-20% in key reservoirs on:
 - Electricity generation from HPPs
 - Flooded area downstream and related damages
- Impact on electricity generation:

Dam	Spilje		Fierza	
Scenario	+5%	+20%	+5%	+20%
Mean annual change in generation (GWh)	- 5	- 8	- 5.4	- 34
% change in generation	- 1.7 %	- 2.7 %	- 0.3 %	- 1.9 %

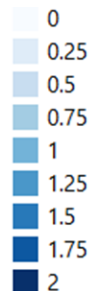
FP scenario - Change in electricity generation from the 5 large HPPs in Drin B:





Comparing Flooded areas across scenarios

- Flood maps for 10yrp flood events under 2 scenarios:
 - Current operations
 - 20% increase in buffer volumes of 2 largest HPPs



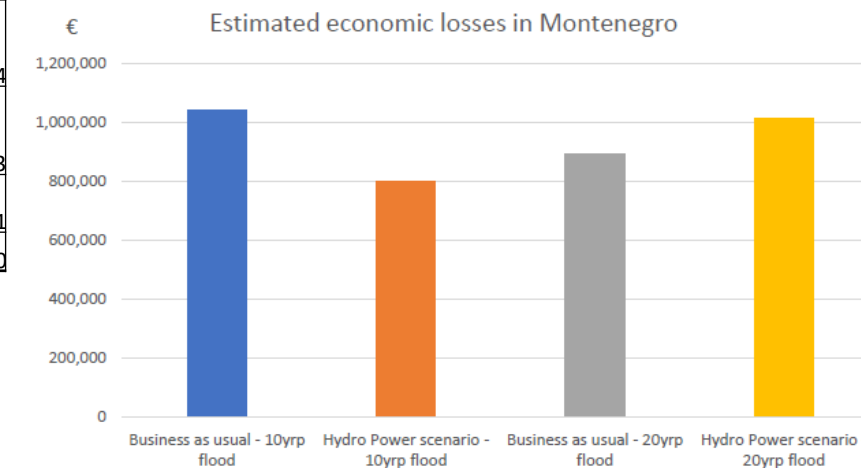
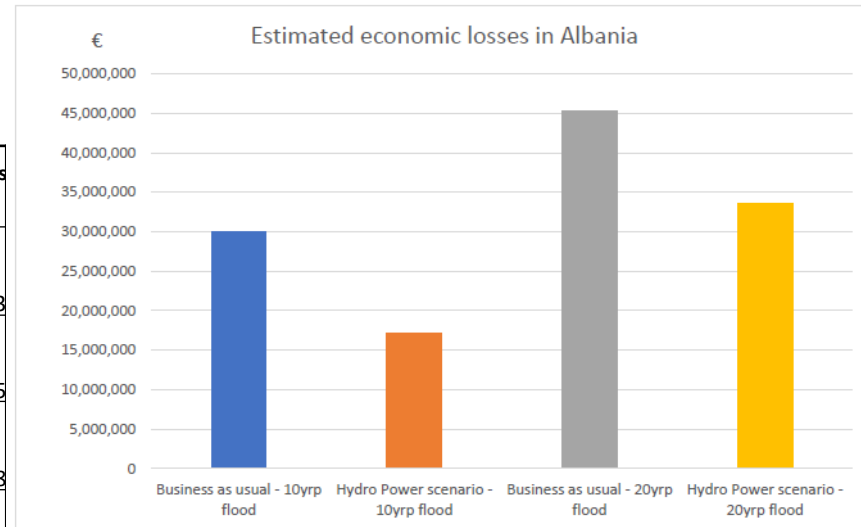


Comparing estimated economic damages

Loss type	BAU-10yrp	BAU-20yrp	HP-10yrp	HP-20yrp	BAU-10yrp vs HP-10yrp	BAU-20yrp vs HP-2
Building structure (€)	14,491,814	26,895,007	5,156,529	16,854,414	-9,335,285	-10,040,593
Building movable (€)	7,487,219	13,794,372	2,730,085	8,718,737	-4,757,134	-5,075,635
Building damages (structure + movable) (€)	21,979,033	40,689,379	7,886,614	25,573,151	-14,092,419	-15,116,228
Agricultural (€)	5,038,987	6,029,962	2,966,198	5,268,291	-2,072,789	-761,671
Roads (€)	2,969,765	3,243,634	1,601,321	2,762,230	-1,368,444	-481,404
All economical loss summary (€)	29,987,785	49,962,975	12,454,133	33,603,672	-17,533,652	-16,359,303
People in danger (Persons)	205	244	141	213	-64	-31
Loss of life (Persons)	6	6	4	6	-2	0

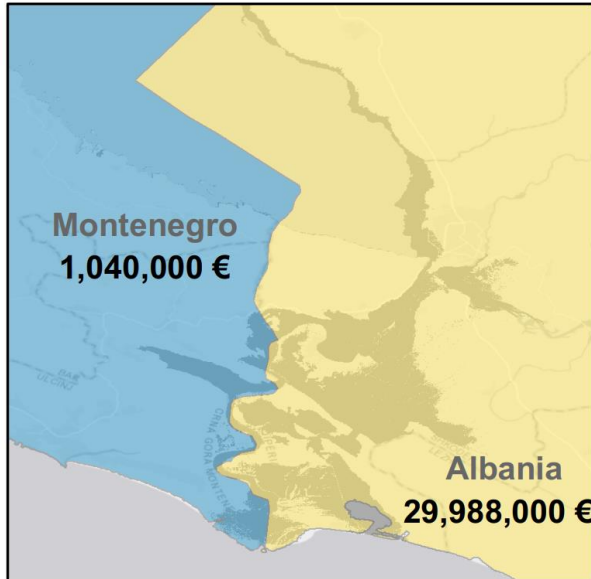
Summary table of loss calculation results for Albania

Source: DHI Assessment

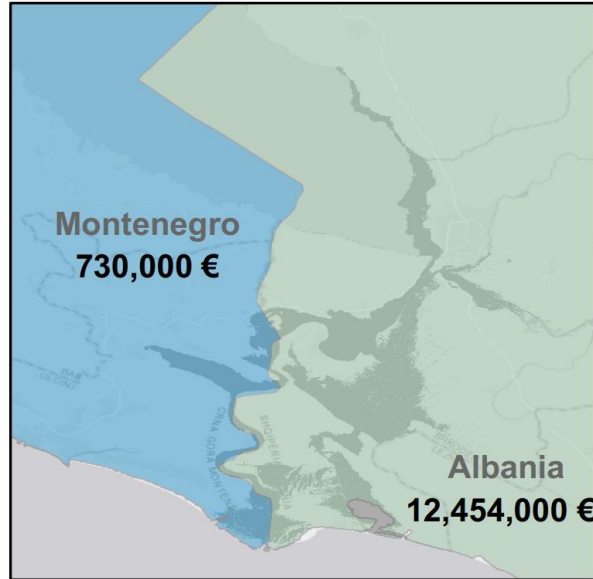




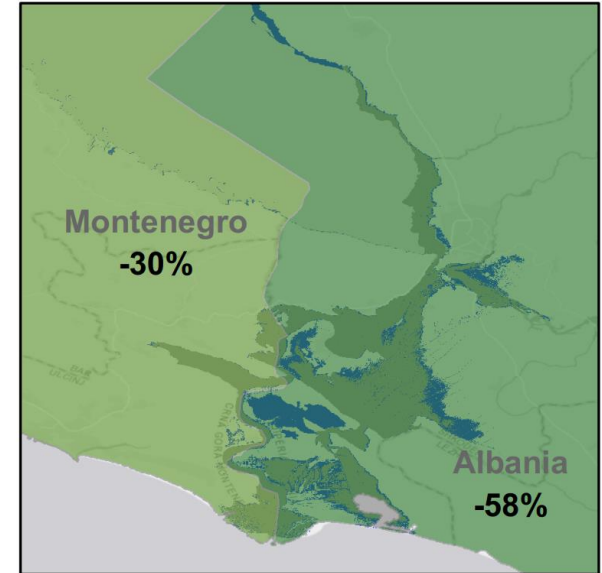
Comparing estimated economic losses



Damages of 10-year return period flood event
BAU scenario



Damages of 10-year return period flood event
HP scenario



Difference in the estimated damages between
the 10-yrp BAU and the 10-yrp HP scenarios

Estimates of economic damages

Source: DHI Assessment



Turning knowledge to changes in policies

- Findings from the analysis reveal need to:
 - Update rules of operation and Regulation on discharges to consider flood management
 - Improve institutional coordination and data-informed operation of HPPs with the Flood Forecasting System in the basin
 - Enhance cross-border coordination
- Activities in new GEF project in Drin basin
 - Initiate dialogue among DCG, the governments of Albania and North Macedonia, and the power utilities



Thank you for your attention!