



Turn Down the Heat III: Early findings for Western Balkans

Philippe Ambrosi
Sr. Environmental Economist



This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

Examples of WBG Support to Climate and Environment

Sustainable Energy: EE & RE

- Policy and regulatory frameworks
- Building institutional capacity
- Financing models/mechanisms
- Diversification and regional connectivity
- Support by World Bank, IFC and MIGA

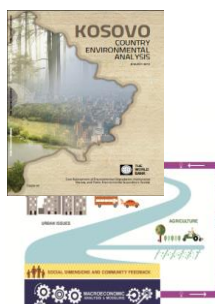


Water- Agri- Forest- Land

- **Albania:** Natural resources and ecosystem services, integrated water resource management
- **BiH:** Sustainable forest and landscape management
- **Serbia:** Drainage and flood control
- **Regional:** NERETVA/TREBISNJICA RIVER BASIN; Lake Shkoder

Waste & Pollution Management

- **Albania:** Hot-spot clean up, regional landfill construction
- **BiH:** Improving solid waste management services
- **Montenegro:** Solid waste collection and disposal in coastal areas
- **Kosovo:** Remediation of environmental legacies of lignite power production



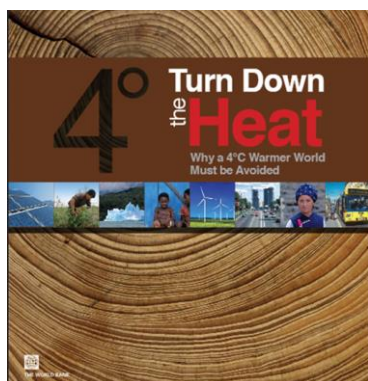
Knowledge generation & sharing

EU leadership in the environment and climate agenda and collaboration with WBG have been critical for these programs

Disaster Risk Management

- **Regional:** Catastrophe Risk Insurance Facility (CRIF)

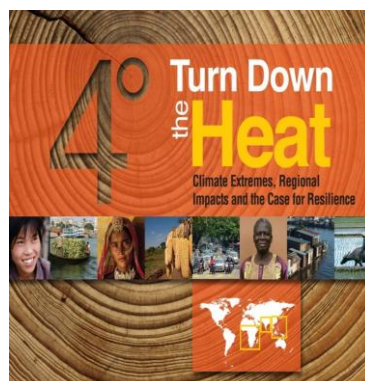
A fundamental threat to development in our lifetime



Launched November
2012



This Project is funded by the European Union

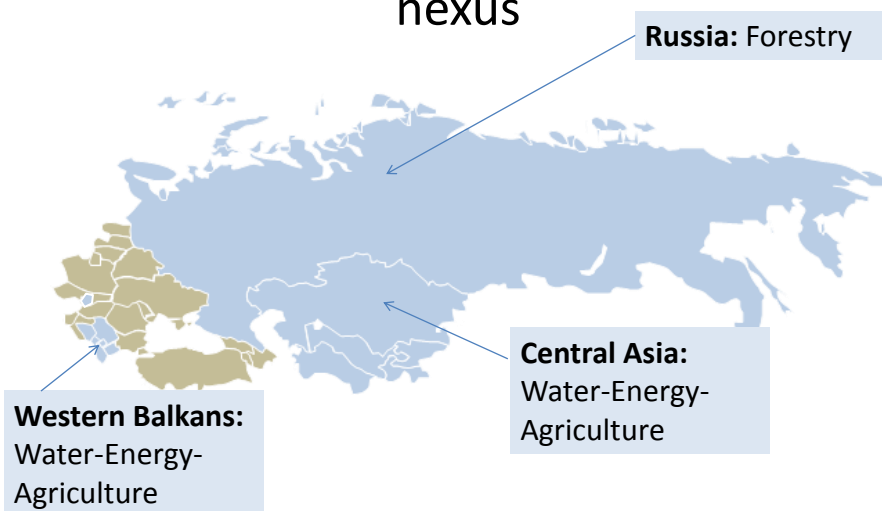


Launched June 2013



Project implemented by Human Dynamics Consortium

Three sub-regions, different sectoral nexus



This Project is funded by the European Union

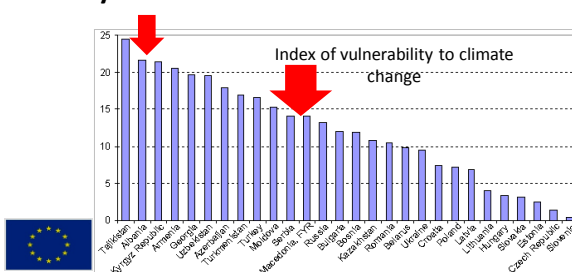


Project implemented by Human Dynamics Consortium

Western Balkans: Already vulnerable to climate change

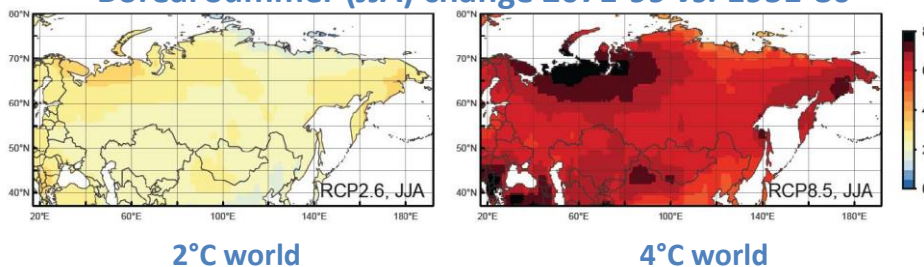
Urgent need to strengthen resilience and adaptation infrastructure

- **Serbia and BiH** – high human and economic costs, May 2014
- **Albania** – fiscal shock due to hydro dams depletion in 2012; two major floods in 2010; variability projected to worsen
- **fYR of Macedonia** – increasing competition for water and seasonal scarcity must inform **today's** investment decisions



Climate change: warmer than global average

Boreal Summer (JJA) change 2071-99 vs. 1951-80



- In a 2°C world, 20-30% of summer months will be “unusually hot” and 5-10% “exceptionally hot”
- In a 4°C world, 80% of summer months will be “unusually hot” and 40-50% “exceptionally hot”



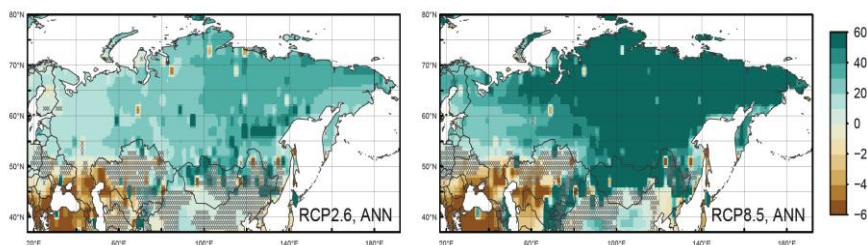
This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

Climate change: water extremes

Percentage change in the aridity index, 2071-99 vs.
1951-80



- Glaciers to disappear completely, lower river run-off on long-term
- Western Balkans emerge as warming hot spots and drought-prone areas, especially in summer
- Higher risk of extreme riverine floods in some parts of the Balkans (Sava, Danube and Tisza rivers) in winter and early spring



This Project is funded by the European Union

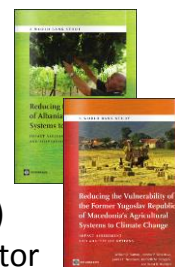


Project implemented by Human Dynamics Consortium

7

Climate change: Agriculture at risk

- Already impacted by floods and droughts
- Projected impacts:
 - Intensification of drought & flood risks
 - Mixed impact on yields: + (wheat, unless pest disease); - (grape and olive); moderate (other)
 - Future availability of irrigation water a key factor
 - Grape production in the Balkans is likely to suffer from decreased water availability
- Adaptation measures have significant potential, e.g., more efficient water use, improved drainage, Hydromet info sharing, extension services, new crop varieties



This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

Climate change: Impacts on energy systems

Scenario / Projected reduction in usable capacity	KW _{max} reduction > 25% (in mean number of days per year)	KW _{max} reduction > 50% (in mean number of days per year)	KW _{max} reduction > 90% (in mean number of days per year)
Once-through or combination cooling thermal power plants			
1971-2000	64	31	0.5
B1 (2031-2060)	84	44	1.4
A2 (2031-2060)	90	50	1.5
Recirculation (tower) cooling thermal power plants			
1971-2000	14	9	0.02
B1 (2031-2060)	18	10	0.09
A2 (2031-2060)	19	11	0.08

Reduction in usable capacity (expressed in KW_{max}) of thermal power plants in Europe; Source: van Vliet et al., 2012

- **Capacity of nuclear and fossil-fuelled power plants could decrease from 6.3 to 19% in Europe period 2031 to 2060 (2040s) compared to the production levels observed between 1971 and 2000**
- **Energy generation from hydropower plants could decrease between 15 and 35 % by the end of the 21st century (in the scenario IPCC A2) – example of Croatia, but likely similar situation in other Balkan countries**




This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

9

Vulnerability of energy systems in Albania



Climate Change Vulnerability, Risk, and Adaptation Assessment of Albania's Energy Sector

Helping Countries Prepare an Effective Energy Sector Response

Water resources are a national asset: The River Drin provides about 90% of Albania's domestic electricity to local industry and households.

High dependence on hydropower brings challenges: Electricity production can vary from almost 6,000 GWh to less than half that amount in very dry years.

Climate change looks likely to make matters worse: By 2050, annual average electricity output from Albania's large hydropower plants could reduce by about 15% and from small hydropower plants by around 20%.

Action today can help Albania adapt to climate variability and change:

- Improved monitoring, forecasting, and dissemination of information on meteorological and hydro-meteorological conditions
- Improved energy efficiency
- Energy supply diversification, domestically and through trade
- Integrated and sustainable management and development of water resources together with energy, agriculture, water supply and sanitation, and cross-border users
- Build climate resilience into all new investments



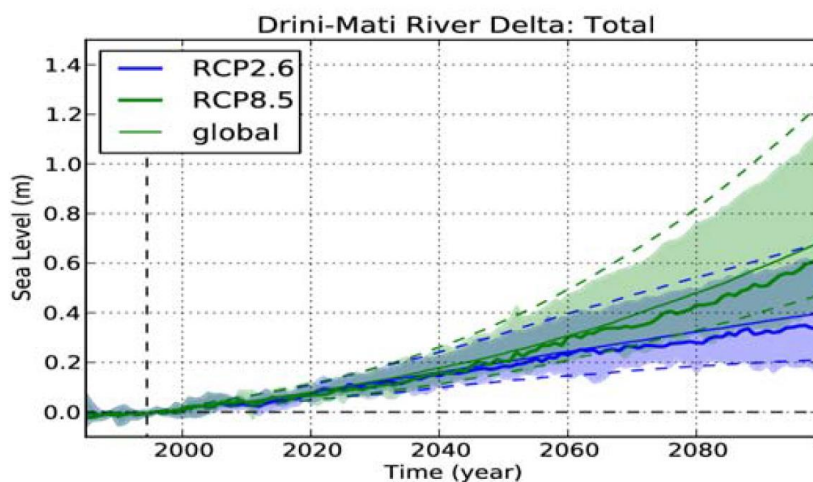
This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

10

SLR projections for Western Balkans



Does **NOT** include vertical land movement (post-glacial rebound, tectonics)



This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

Can regional collaboration enhance resilience?

- Western Balkans face common climate challenges, even more though given interconnections in geographic and economic systems
- Concerted action around regional solutions could enhance national response to climate change, through
 - Complementarity
 - Economy of scale
 - Experience sharing
 - Strategic planning and financing



This Project is funded by the European Union



Project implemented by Human Dynamics Consortium