

# Transboundary implications of energy infrastructure on water resources: considerations and approaches

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Convention of the Protection and Use of Transboundary Watercourses and International Lakes

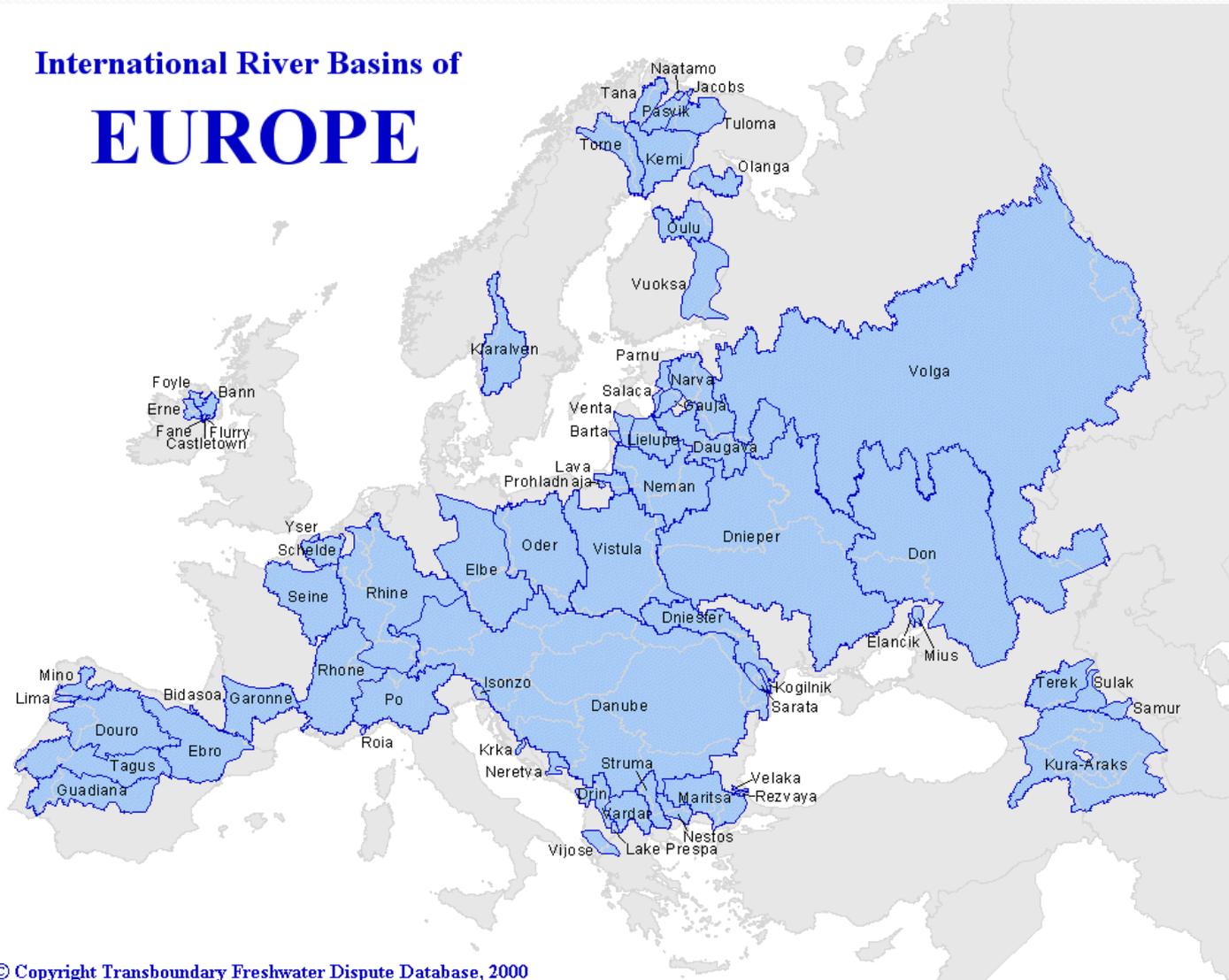


UNECE

# Transboundary basins: extensive coverage

International River Basins of

## EUROPE



# Possible effects of energy infrastructure — propagating across borders

Depending on the form of energy — hydropower, thermoelectric etc. — Changes in:

- flow regime (seasonal use, navigation, fish migration)
- water levels, flooding
- water quality (sediment load)
- Sediment distribution, erosion
- Dependent ecosystems
- Temperature
- Land use
- ...

# Balancing between various uses and protection of the resource, addressing the trade offs and increase synergies: Transboundary cooperation opportunities

- Sharing information to ensure a solid basis for planning
- Notification and consultation on development plans, coordination of management measures
- Impact assessment (EIA)
- Adjustments to design to accommodate other uses
- Joint investments, participation in operation and maintenance costs
- Sharing access, transmission infrastructure
- Electricity trading; compensation arrangements
- Early warning to support operation and protection of infrastructure (procedures, contacts etc.)
- Better catchment management adds to the longevity and performance of the infrastructure

# Some transboundary risks to businesses

- Even if the host country considers the EIA of a project adequate or downstream impacts negligible, downstream riparian(s) may not agree -> risk of significant delays to permitting when differences arise
- **Water availability or quality may change** vary unexpectedly due to upstream developments -> ensuring necessary flows/conditions requires coordination and cooperation
- **Common agreement about priority projects** and river sections for infrastructure development or no-go zones reduces the risk of investing into projects that are not perspective
- Risks of **political instability** from disputes

# Energy infrastructure development on shared rivers and international water law

- Instruments of international water law do not prevent the development; they provide **clear, transparent and consultative procedures to achieve better-informed decisions, to prevent disputes and to lead to better development paths.**
- Key principles apply well to the construction of new e.g. hydropower facilities as well as to operation and maintenance : **equitable and reasonable utilization, prevention of significant transboundary impact, and the obligation of cooperation.**
- More specific : obligation to take all necessary measures, : e.g. to maintain and protect installations, and facilities at international watercourses, and to **notify and consult** on the planned measures.



## Key instruments

- Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention, 1992; amended for global opening)
- Convention on the Law of the Non-Navigational Uses of International Watercourses (UN Watercourses Convention, 1997)
- Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention, 1991; amended for global opening)



# Relevance of legal and institutional frameworks

- Legal frameworks in a transboundary basin: framework conventions, specific agreements
- Joint institutions for transboundary cooperation can foster dialogue between different interests, supporting harmonization etc.
  - Can add value e.g. in coordinating development of joint/integrated plans & establishment of integrated information systems
  - Having energy sector/expertise represented facilitates taking related needs into account in water management
  - Facilitate the assessment of impacts (transboundary and inter-sectoral) from developments, and looking for an agreement about them between the riparians. providing a framework for monitoring the long-term impacts (e.g. infrastructure)



# Insights from an on-going integrated assessment under UNECE Water Convention: improved intersectoral understanding in transboundary basins

1. **Preliminary identification of pressures and hotspots** — a desk study
2. **Recognizing the different sectoral perceptions** — A questionnaire
3. **Identification of the inter-sectoral linkages and trade-offs, increased understanding through dialogue, Identifying possible synergic actions** — A **participatory workshop** at transboundary level
4. **Understanding the importance of the trade-offs and opportunities** (Indicator based analysis. Limited quantification).
5. **How favourable the legal and institutional setting is to intersectoral integration and coordination** — Governance analysis
6. **Considering nexus in the future** — development options; Qualitative future scenarios (trends, climate change);
7. **Identification of potential solutions, policy recommendations**
8. **Wide dissemination for awareness** — nexus assessment report

Methodology  
definition

Diagnostic  
phase

Workshop

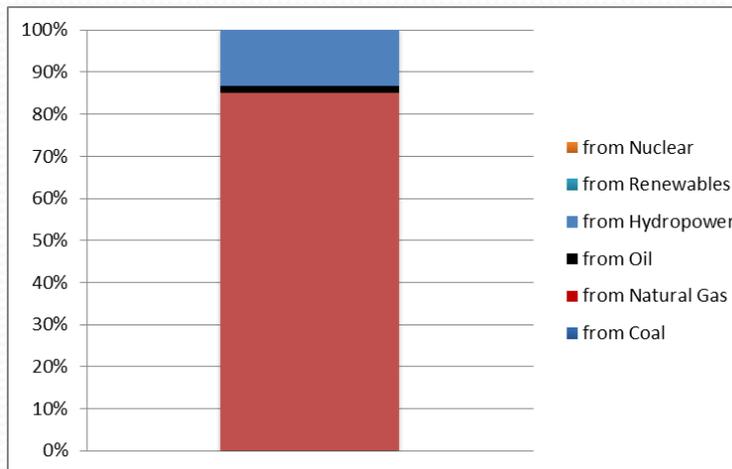
Nexus  
Assessment

Synthesis &  
conclusions

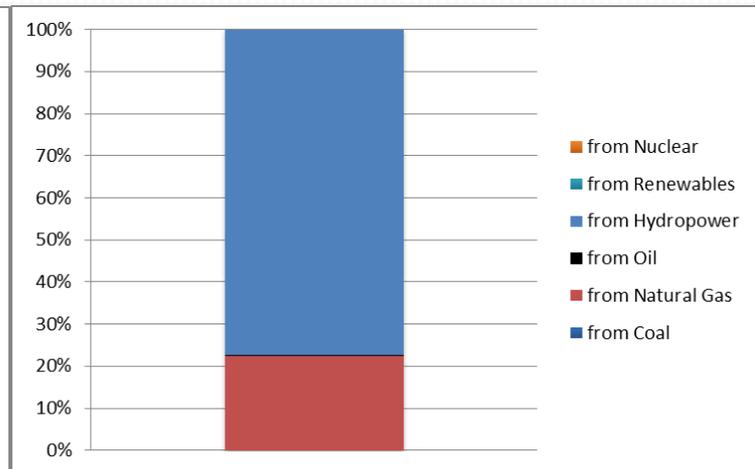
# Alazani/Ganikh Basin: understanding the implications of energy policies and complementarity of resource bases

## ***Electricity production***

### Azerbaijan



### Georgia



\* Source: World Bank, 2014

### **Azerbaijan**

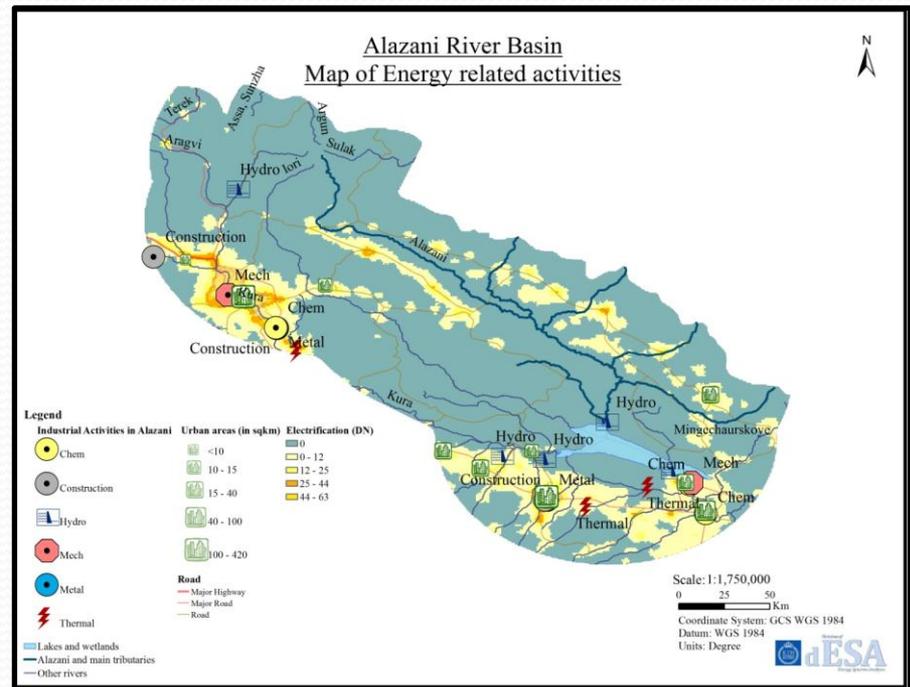
- 85% of electricity production comes from Natural Gas
- Energy productivity reaches 8,7 Billion USD/Mtoe

### **Georgia**

- 77% of electricity production comes from Hydropower
- Energy productivity reaches 4,8 Billion USD/Mtoe

# Alazani/Ganikh transboundary basin: responses

- **Wood use** for household consumption contributes to deforestation aggravating land degradation and adds to sediment loads
  - *Deforestation plan, new energy policy, improving access to modern fuel supplies in rural areas (gasification, kerosene), improving viability of agriculture & developing agro-industries*
- **Hydropower development** increasing; How to increase sustainability?
  - *apply good practices and guidelines (e.g. of the Alpine countries) to minimise impacts on environment & other uses*



# Conclusions: elements to approach more effectively water-energy nexus in transboundary settings

- Need to think about solutions broadly : It is not just about developing new infrastructure but also how the existing is used — does it support multiple uses?
- International conventions contribute to strengthening the legal & institutional basis, to getting the procedures right
- some means to alleviate the negative in the water-energy nexus at transboundary level
  - Appropriately broad representation of sectors in joint bodies
  - Guidelines and their observance/application
  - Assessments (e.g. EIA), monitoring, exchange of information
  - Communication and coordination arrangements
  - Considering alternative projects, modified designs, mixed infrastructure (incl. natural)
  - Mechanisms for participation

