

# Assessment of the Water-Food-Energy-Ecosystems Nexus in the Alazani/Ganykh River Basin: towards a broader understanding of benefits of transboundary cooperation

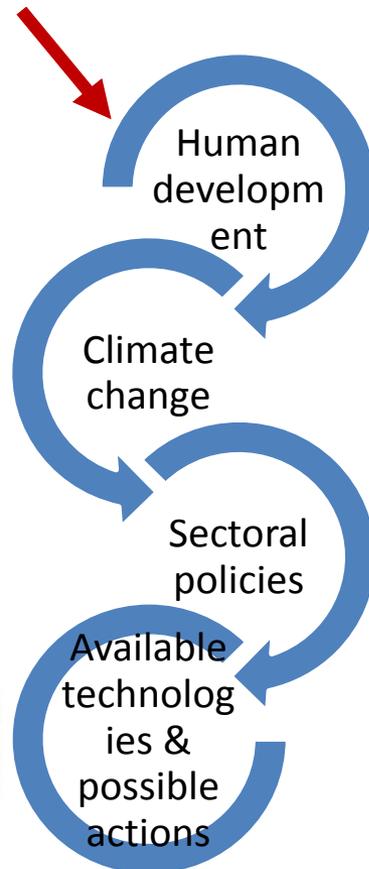
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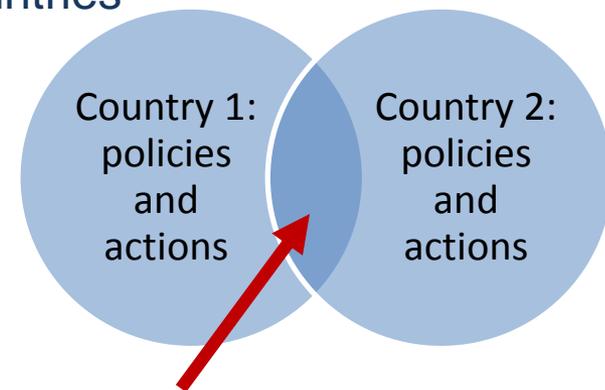
# Why a Water-Food-Energy-Ecosystems Nexus in transboundary river basins?

## Water-Food-Energy-Ecosystems Nexus



Need to integrate/coordinate:

1. A better understanding of inter-sector and inter-resources dynamics allows accounting for impacts & more effective resource management
2. To make policies and actions more coherent across sectors and countries



Communication, collaboration and joint action!



# Why is assessing inter-sectoral links the Alazani/Ganykh basin timely?

- Good collaboration between Georgia and Azerbaijan – good network
- Major support from UNDP-GEF Kura project: IWRM plans developed in Georgia and in Azerbaijan, Strategic Action
- Need for economic development: inter-sectoral considerations timely to limit economic externalities & environmental impacts
- Existing effort to reduce environmental degradation from both sides
- Opportunities from new energy policy efforts and modernizing agriculture
- Agreement on transboundary waters being negotiated (AZ-GE); multi-sector representation from the countries

# Substantive elements of the approach

1. A survey with a factual **questionnaire** for a preliminary identification of the main pressures and hotspots
  2. A **desk review** of the available documentation
  3. A **participatory workshop** at transboundary level, with the economic sectors and other stakeholders to identify the inter-sectoral linkages and trade-offs & possible synergic actions
  4. **Indicator based analysis**. Limited quantification. Institutional analysis
  5. Preparation of **nexus assessment report** with the analysis i.e. Sectoral characteristics including development options; Inter-sectoral linkages and priority issues; **Qualitative future scenarios** (trends, climate change); **Potential solutions** identified, policy **recommendations**
- => basis for a later quantitative trade-off analysis (depending on the countries interest & availability of donor funding)

Methodology  
definition

Diagnostic  
phase

Workshop

Nexus  
Assessment

Synthesis &  
conclusions

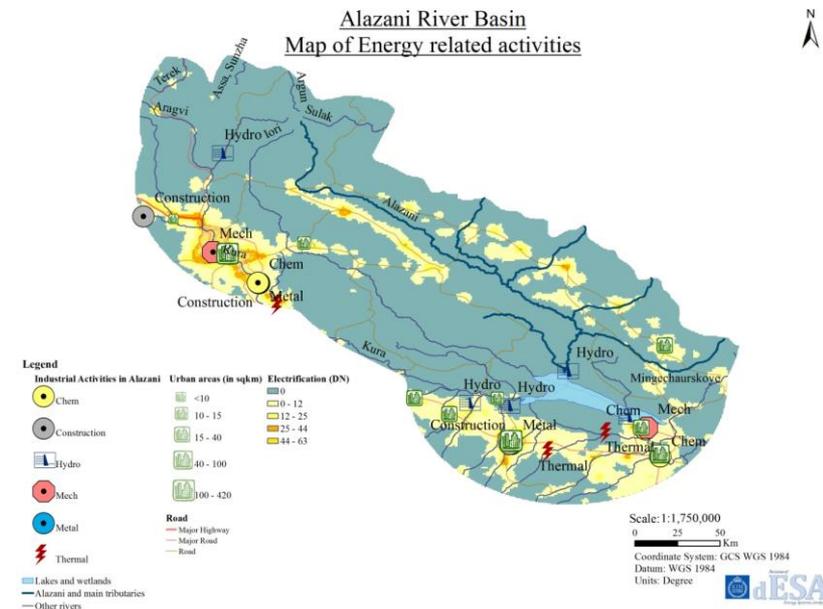
# Nexus Workshop in Kachreti, Georgia

25-27 November 2013

Organised in cooperation with:  
UNDP/GEF project “Reducing  
Transboundary Degradation in the  
Kura Aras River Basin” and the  
Ministry of Environment  
Protection and Natural Resources  
of Georgia



Among the participants:  
ministries of environment,  
energy, agriculture,  
emergency situations,  
communities, agencies,  
companies, civil society



# Work in groups and in plenary discussions

## 1. Nexus issues specific to the basin highlighted

What the countries plan? Are the plans of the different sectors compatible? What do changing drivers & the climate outlook mean for the nexus? How to better reconcile the different uses?

## 2. Sectoral and national plans shared

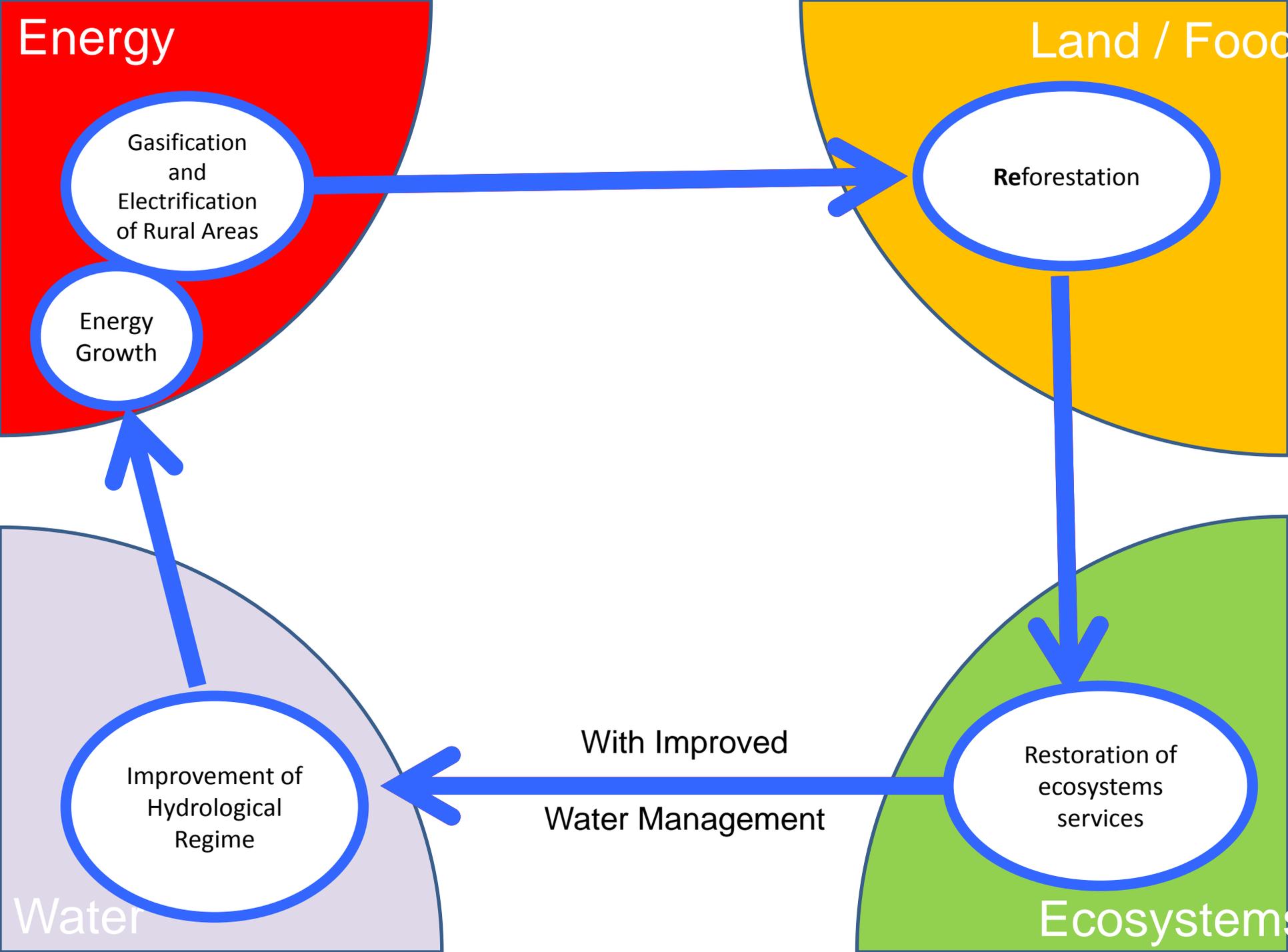
What opportunities there are to reduce negative intersectoral impacts and enhance synergy?  
Institutional arrangements at transboundary level conducive to intersectoral coordination?

## 3. Potential solutions identified

Changes to policies, new policies, management and measures practices, institutional arrangements, ways the infrastructure is operated

...







### Nexus Alazani basin

Top agricultural commodities (in million US\$)

Dairy and meat  
 Fruits and nuts  
 Grains, potatoes  
 Vegetables

#### Azerbaijan



1 209

Source: FAO/Geo, 2012 data



306



186



174

#### Georgia



280



140



48



23

#### Hydropower facilities

Installed capacity (MW)



Existing hydropower plant  
 Projected hydropower plant

#### Landcover

Forest  
 Agriculture  
 Irrigated agriculture

#### Other issues

Inadequate wastewater treatment in urban areas

#### Population of major cities and municipalities

More than 50 000 inhabitants  
 20 000 – 50 000 inhabitants  
 10 000 – 20 000 inhabitants  
 Less than 10 000 inhabitants

# Indicators Alazani/Ganikh basin



## Georgia

## Azerbaijan

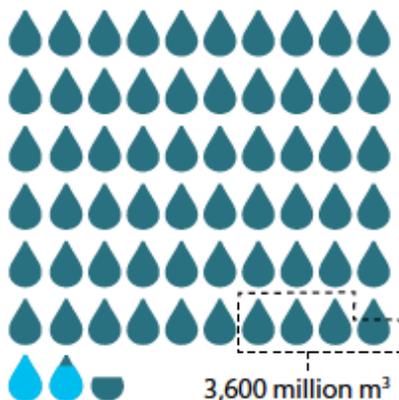
### Internal renewable freshwater resources

62,517 million m<sup>3</sup>

1,813 million m<sup>3</sup>

\*Water withdrawal

Agricultural 58.2%  
Industrial 22.1%  
Municipal 19.7%

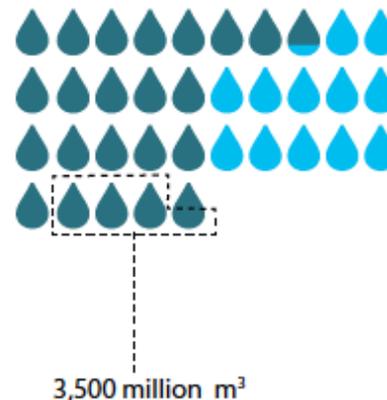


35,089 million m<sup>3</sup>

12,211 million m<sup>3</sup>

\*Water withdrawal

Agricultural 76.4%  
Industrial 19.3%  
Municipal 4.3%



# Indicators Alazani/Ganikh basin



Georgia

Azerbaijan

## Electricity – installed generating capacity & Hydropower

4,538 million kW

2,850 million kW  
\*Hydropower

Fossil Fuel 37.2%  
Hydroelectrical 62.8%  
Nuclear 0%  
Renewable 0%



6,392 million kW

0,984 million kW  
\*Hydropower

Fossil Fuel 84.5%  
Hydroelectrical 15.4%  
Nuclear 0%  
Renewable 0.1%

0.4 million ha



196,237 ha

## Area used for agriculture

1.9 million ha



# Indicators Alazani/Ganikh basin



Georgia

Azerbaijan

15.7 billion

\$\$\$  
\$\$\$

GDP

\$\$\$  
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66.6 billion

6.2 million

5 million

|||||

405,000

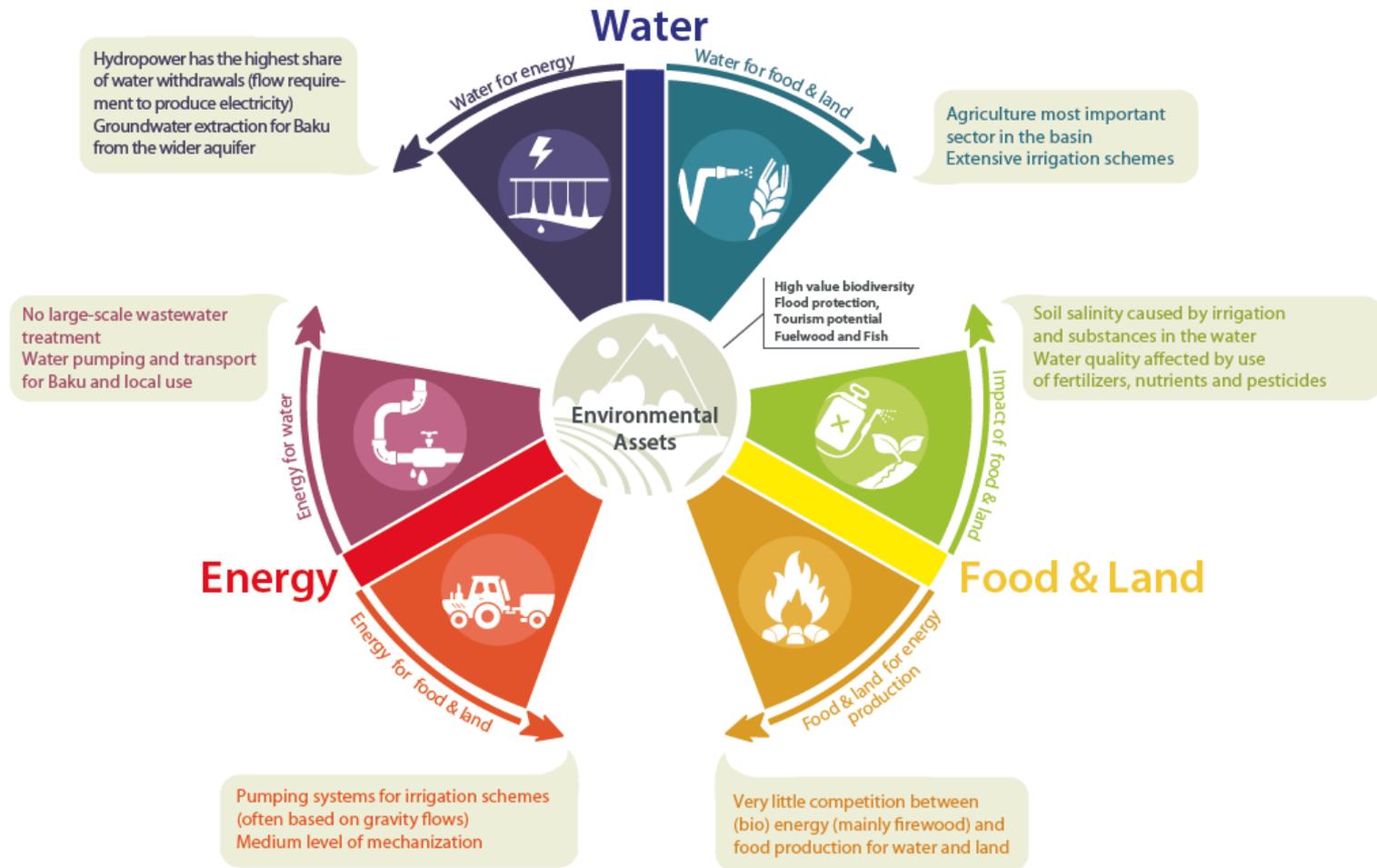
Population

|||||

447,400

9 million

# NEXUS for the Alazani/Ganikh basin: Status





## Some intersectoral challenges and opportunities

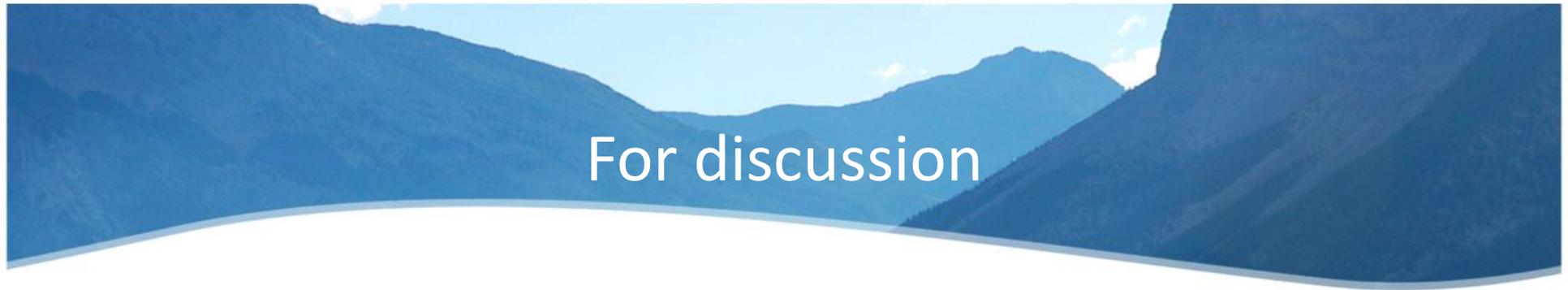
- **Wood use** for household consumption contributes to deforestation aggravating land degradation and adds to sediment loads
  - *Reforestation plan, new energy policy, improving access to modern fuel supplies in rural areas (gasification, kerosene), improving viability of agriculture & developing agro-industries*
- **Flooding** damages the different sectors and sectors' plans (e.g. land management)
  - *Improved planning and coordination of measures (important to do it at transboundary level); addressing the problem of deforestation*



## Some intersectoral challenges and opportunities (...)

- Main sources of water **pollution** into the river are wastewaters and agricultural return waters (impact also on groundwaters)
  - *New wastewater treatment facilities and improvement of agricultural practices (as well as reclamation of illegal landfills)*
- Water **infrastructure** is aged and commonly in degraded condition, **water use efficiency** could be improved especially in the agricultural sector
  - *Improved regulation of water use, pricing and other economic instruments and new investments in infrastructure*
- **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*

**It is essential that policy incentives, economic instruments and other supportive measures are well addressed to support not just development of good practices, but also to consider wider intersectoral impacts**



## For discussion

- Is it feasible and useful to include some of the findings/recommendations of nexus assessments into Azerbaijan's new draft Water Strategy and development plan for the regions, Georgia's new Energy Strategy and the new Water Law and/or the bilateral agreement on water cooperation? If yes, through which process, by whom and when?
- Some possible joint actions identified. Who could take action?
- Follow-up activities? Impacts of some policies or joint actions could be assessed in detail
- What can be done with the support of UNDP-GEF Kura project's continuation?
- Can some of the findings be reflected in the national IWRM plans?

# Some concluding points

- To effectively address the nexus, legal and institutional basis and coordination need to be strengthened
- Value of strategic planning in locating infrastructure projects, consideration of multiple uses
- Ensuring relevant sectors' representation and consultation also in institutions for transboundary cooperation
- For reconciling different sectoral water uses, useful to: 1) Look beyond the basin, at appropriate scales, 2) identify potential additional benefits from co-management and coordination as opportunities for cooperation, and 3) conduct (policy) dialogue, building understanding and trust between stakeholders
- A nexus assessment can disclose benefits for transboundary cooperation!