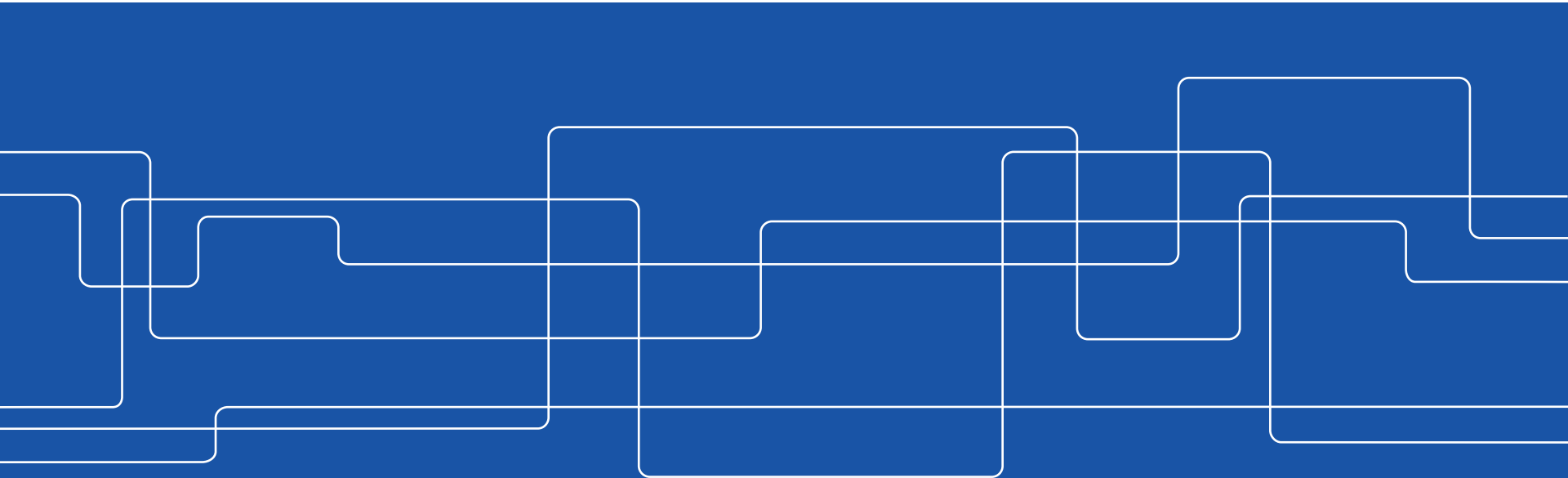




Transboundary River Basin Nexus Assessment Methodology

**Draft Methodology for the Nexus Assessment for
discussion , version August 2014**

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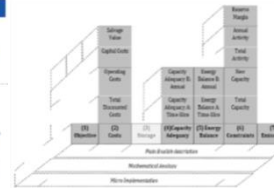
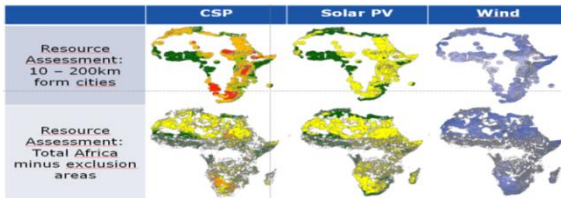
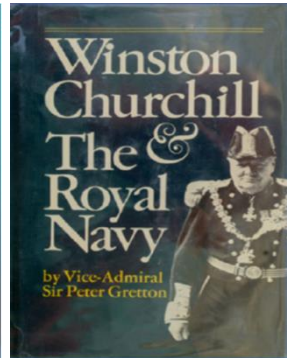
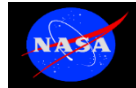




The Royal Institute of Technology, KTH

dESA: division of Energy Systems Analysis

Modelling of energy and related resources systems
to support decision makers.



OSeMOSYS the Open Source Energy Modelling System



The Need for Inter Sector, Trans-Boundary Planning

Food, water and energy services:

- Billions of people are without secure/affordable/safe access
- Demands are growing but resources are limited
- Traded on global markets
- Rely on:
 - Resources: land, energy, water & Infrastructure:
 - Man made (dams, farms, etc.)
 - Natural (ecosystems: terrestrial, aquatic etc.)
- Resources > infrastructure > service chains are inter-related
- They are managed and analyzed in silos
- The transverse: scale, sector and countries
- They are affected by and affect climate change

Making resource go further ...

- Typically traditional approaches assume related sector scenarios are constant:
 - *Feedbacks are ignored*
 - *Stresses are not considered through all sector futures*
 - *Normally do not look beyond specific linkages*
- Significant threats if inter-relations are ignored
 - Especially where demand are growing and resources are limited
 - And Geopolitical and climate change uncertainties are emerging
- Significant gains if inter-relations are embraced
- *The Trans-boundary, River Basin Nexus Assessment (TRBNA) approach is to identify and justify where new inter-sector, trans-boundary coordination is needed.*

Water as an entry point

- In the context of trans-boundary basins, water provides a useful point of entry to a nexus analysis.
- Water resources are used by almost all economic sectors and the society for different purposes and by different users.
- The physical link it creates between countries calls for trans-boundary coordination. As such, the TRBNA approach can be seen as a subsequent (or even parallel) step to IWRM.
- It is made for the purpose of strengthening trans-boundary cooperation by actively involving all sectors whose action can improve synergies.



Principals

Participatory process - Participation of representatives of the countries sharing the basin and the active sectors for ownership and takes into account the views of all the relevant stakeholders.

Knowledge mobilization - using to the maximum possible degree the expertise available in the basins assessed.

Sound scientific analysis – it complements the process and draws from past experiences to ensure high quality in the assessment outcome.

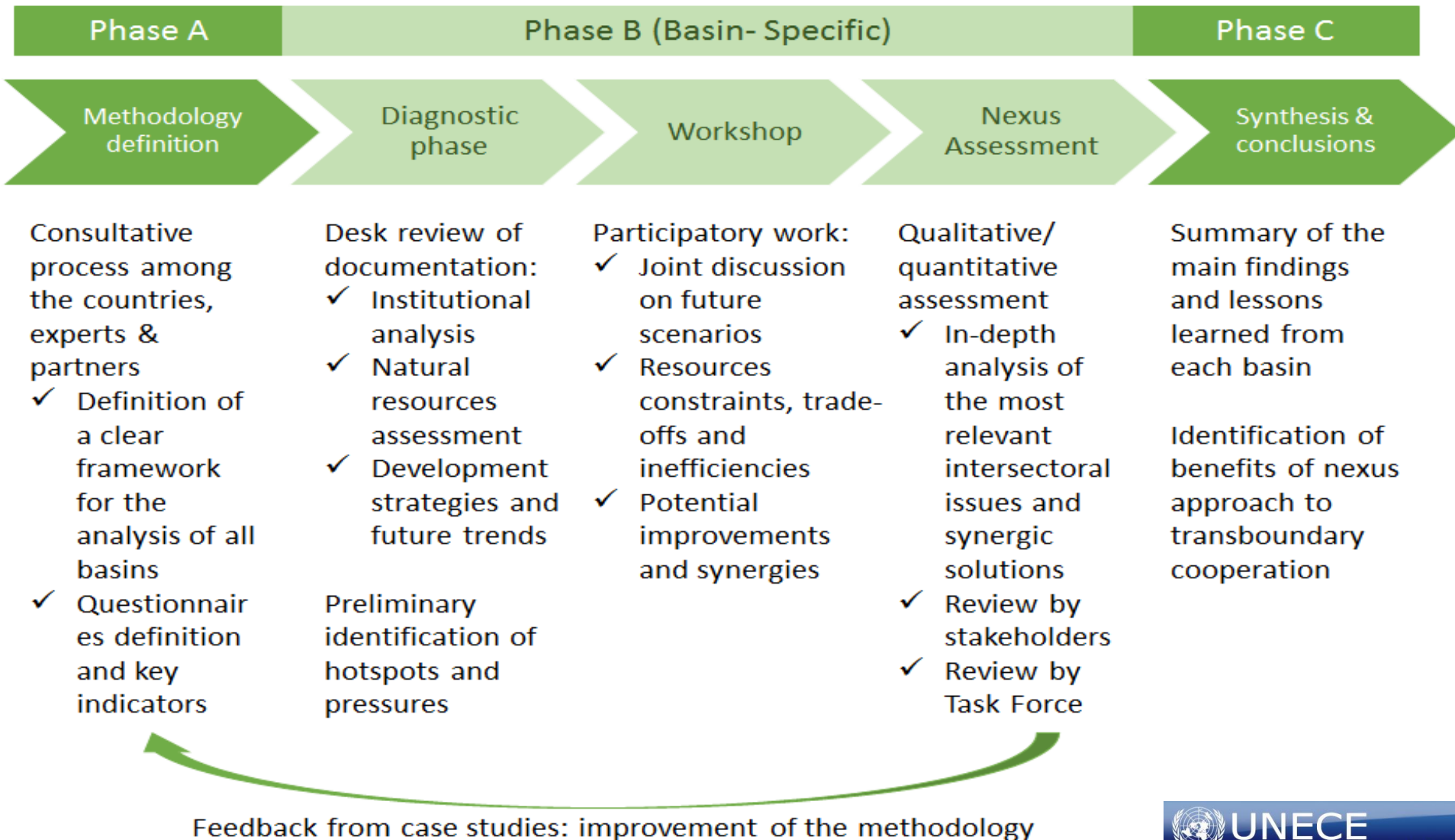
Capacity building - the process will help all parties gaining experience in efficient management of natural resources by sharing examples, promoting constructive discussion across states and sectors, and providing the tools required to address nexus issues at the basin level.

Collective effort - the outcome of the nexus assessment will reflect the broad range of views and expertise involved throughout the procedure, including both Parties to the Water Convention and non-Parties.

Outcomes

- An improved knowledge base about linkages between sectors, to support decision-making at national, basin and transboundary levels;
- Joint identification of opportunities for benefits and of solutions for capitalizing on the synergies, addressing trade-offs and reconciling different resource uses;
- Promotion of dialogue between the different sectors from the riparian countries at the basin level; bring together authorities, private sector, civil society
- Exchange of good practices across countries and between basins;
- Capacity building through workshops, exchanges, self-assessments and knowledge mobilization during the assessment process;
- Creation or increase of awareness and stimulation for further action on cross-sectoral issues.

Phases of work



TRBNA Methodology

	Step	Actors	Location
1	Identification of basin conditions and its socio economic context	Analysts.	Desk study
2	Identifying the economic sectors to be included	Analysts. Authorities	Desk study
3	Sector analysis	Analysts. Authorities	Desk study/Workshop
4	Intersectoral mapping	Stakeholders	Workshop
5	Nexus dialogue	Stakeholders	Workshop
6	Identification of synergies	Stakeholders and analysts	Workshop/Desk study

Step 1

TRBNA Methodology - *Identification of basin conditions and its socio economic. context*

Characterize:

- the needs of the population living in the basin area,
- national needs that rely on the basin for their fulfillment.

(e.g. meeting basic human needs (such as water, food, energy and environmental security), or serving as the regional 'breadbasket', 'water-tank' etc.)

Alazani/Ganikh examples

i. lack of access to safe water in rural areas, ii. polluting household biomass fuel burning, iii. expensive modern fuels, iv. Water quality degradation and salination, v. hydropower growth potential, vi. agricultural growth potential, vii. deforestation, viii. land degradation, ix. flood protection etc.

Step 2

TRBNA Methodology - *Identifying the economic sectors to be included*

The needs identified are associated to the sectors and institutions with corresponding mandates

Practically feasible inclusions of national and local government institutions (most commonly energy, water and agriculture sectors, environmental protection authorities, local communities, private sector and civil society)

iv, vi and viii were mapped to the included agriculture sector with a specific sub-sector focus on wine production; *ii, iii and v* were mapped to the energy sector ; *i, iv, v, viii and ix* were mapped to the water sector management for needs *vii* to forestry and environment ; *ix* to disaster management sector

Step 3

TRBNA Methodology – *Sector analysis*

Next, considering each sector we identify the following:

- a. Drivers: i. Incentives, ii. Policies and Programs
- b. Socio economic relevance and impacts
- c. Setting: i. Physical flows, ii. Institutions and governance, iii scale
- d. Sector strategies and scenarios

a. Households in part of the basin area could not afford clean energy, they burn wood.

b. This causes indoor air pollution and affects health

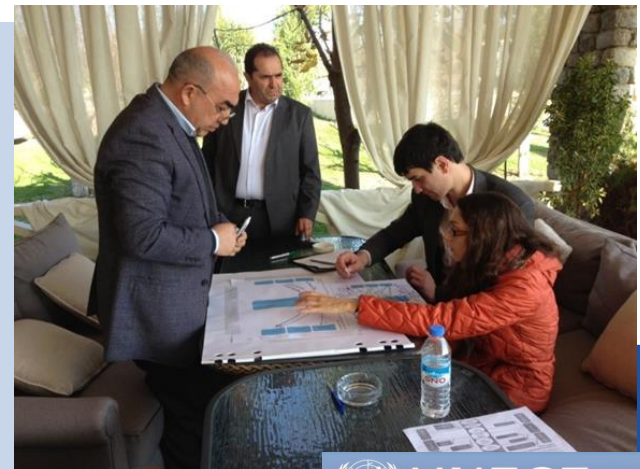
c. Wood is harvested, it is unregulated and is prevalent in upstream

Step 4

TRBNA Methodology – *Inter sector mapping*

Taking sector growth plans (desk study and workshop presentations)
An opinion based questionnaire on the level of inter-sector integration
Inter-sector linkages are mapped.
Consider perspectives (a)-(e).

*Fuelwood is harvested from forests
Forests provide important ecosystem services: Flood control, CO2 sink etc.
Down stream flooding results in expenditure on infrastructure*

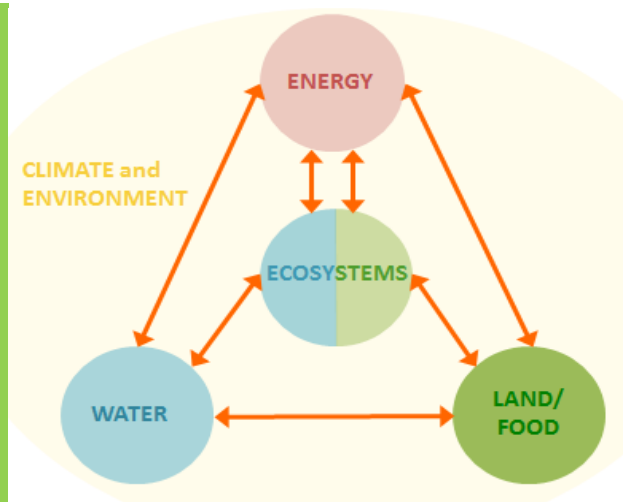


Step 5

TRBNA Methodology – *The nexus dialogue*

Mixed sector groups

- Development of each sector simultaneously capturing common:
 - ‘impacts’ (e.g. climate change)
 - Indirect and feedback effects



People continue to burn fuel-wood

Fuel wood is harvested.

Forests are depleted.

Water is not retained upstream (Georgia)

Flooding impacts are propagated down stream.

Step 6

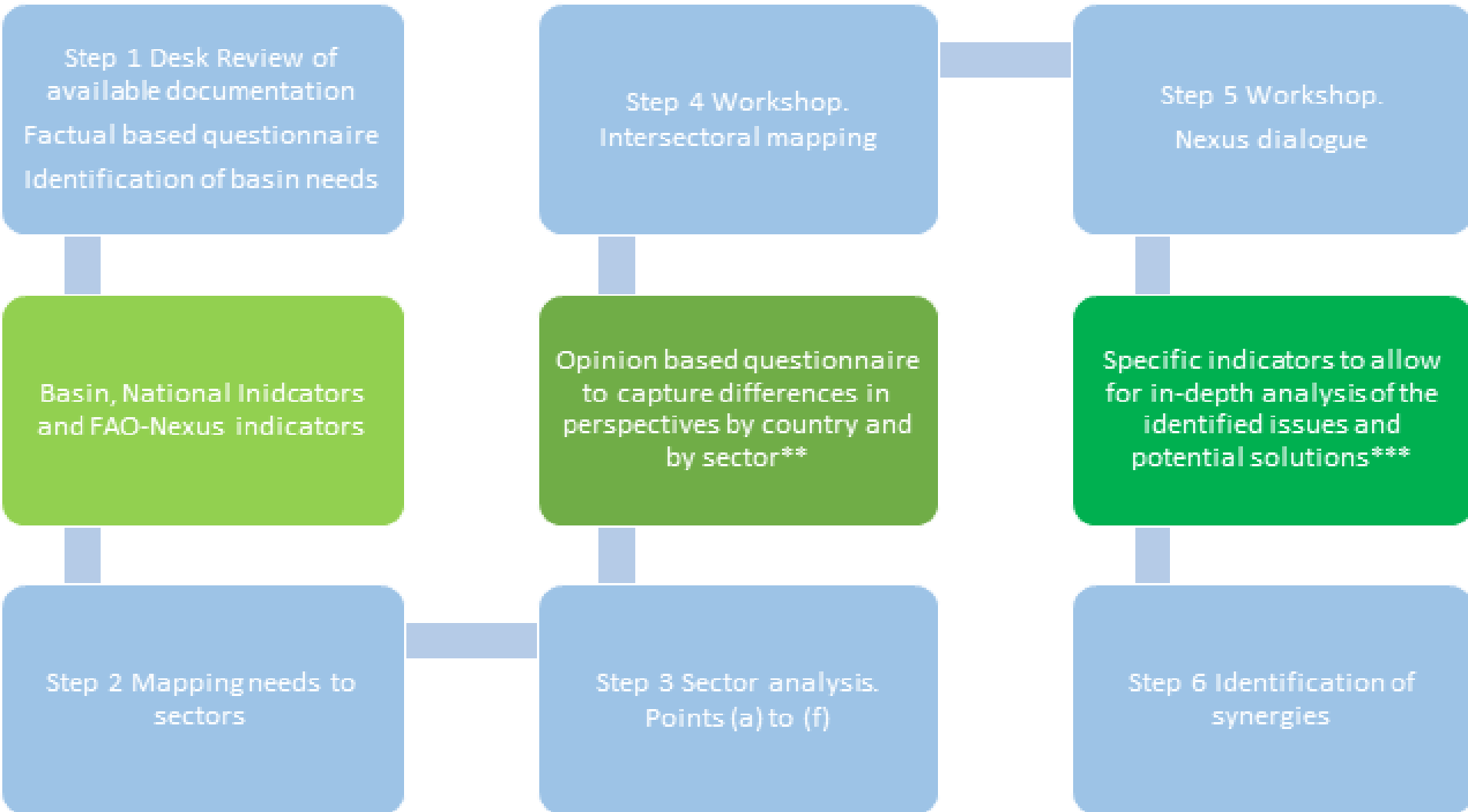
TRBNA Methodology – *Synergies across countries and sectors*

Possible solutions are identified:

- Changes in policies and measures
- Infrastructure operation
- Trans-boundary cross sector coordination
- Etc.

Alazani, a transboundary nexus action. It is transboundary -> required in Georgia and has impacts in Azerbaijan. It relies on nexus relationships. -> action in the energy sector that propagates through the environment to the water sector. It is a local action with national implications. The action is fuelwood substitution in the Georgian side of the Alazani.

Information flows





Thank you (!)