Convention of the Protection and Use of
Transboundary Watercourses and International Lakes
Task Force on the Water-Food-Energy-Ecosystems Nexus

Fifth meeting

Geneva, Switzerland, 18 October 2017

REVISED GOVERNANCE METHODOLOGY FOR ASSESSING THE WATER-FOOD-ENERGY-ECOSYSTEMS NEXUS[1]

Introduction

The "Revised Governance Methodology," or "RGM" consists of a revision of the governance component of the nexus methodology, specifically developed for transboundary basins (surface water basins and aquifers), applied in several river basins in the region of the United Nations Economic Commission for Europe (UNECE) under the 2013-15 work programme of the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention). The author of the present report participated in the nexus assessment of the Sava River Basin under this project, and is currently (as of early 2017) participating in the nexus assessment of the Drina River Basin. The nexus methodology, developed under the UNECE Water Convention, major expertise provided by KTH with contributions from other experts, is described in greater detail in:

- *UNECE, Reconciling resource uses in transboundary basins: assessment of the water-food-energy-ecosystems nexus (ECE/MP.WAT/46) (UN, 2015) – including a description of work from Phase A (methodology development), to Phase B (implementation of the methodology - basin specific) and Phase C (stocktaking exercise, revision of the methodology).*
- *Lucia de Strasser, Annukka Lipponen, Mark Howells, Stephen Stec and Christian Bréthaut, "A methodology to assess the water energy food ecosystems nexus in transboundary river basins," Water* ***2016,*** *8, 59. – a step-by-step description of Phase B, referred to herein as a Transboundary River Basin Nexus Approach (TRBNA) methodology.*

The TRBNA methodology acknowledges that nexus assessment is a relatively new area of work which nevertheless has already triggered various efforts.[2] It has come a long way since the 2011 Bonn Conference on The Water, Energy and Food Security Nexus when attention was brought to governance as means for guiding investments and innovation, and to enable horizontal and vertical policy coherence (SEI, 2011).

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[1] *This report has been produced by Stephen Stec under a consultancy contract.*

[2] *Some nexus initiatives of transboundary relevance as well as assessment approaches are described in the report of the Global stock-taking workshop on assessments of the water-food-energy-ecosystems nexus and response measures in transboundary basins (Geneva, 6-7 December 2016), available at: http://www.unece.org/index.php?id=43626*

The current exercise in revising the governance aspects of nexus assessment is an example of this process. The purpose of nexus assessment is to support policy making and coherence between sectoral policies by investigating how the governance setting supports coordinated resource management, including addressing intersectoral issues and accounting for the environment. The findings could, for example, help refine and synchronize development plans in key sectors and resolve conflicts. The TRBNA methodology expanded beyond early forms of nexus assessment that focused on water-energy-food security to include ecosystems and other sectors, such as tourism, transport and navigation, depending upon the characteristics of each particular river basin.

In the Water Convention context, nexus assessment has the following objectives:

- *To foster transboundary cooperation by identifying intersectoral synergies that could be further explored and utilized, and by determining policy measures and actions that could alleviate tensions or conflict related to the multiple uses of and needs for common resources;*
- *To assist countries in optimizing their use of resources, to increase efficiency and to ensure greater policy coherence and co-management;*
- *To build capacity to assess and address intersectoral impacts.*

(UNECE, 2015). The TRBNA methodology is thus aimed at supporting the work of policy and decision makers, and seeks to assist in having a dialogue about intersectoral issues in resource management in transboundary basins and subsequently in prioritization of policy recommendations and outcomes. The process includes the close involvement of national focal points from the governments of the states within the relevant geographical area, and includes a procedure of review by authorities and key stakeholders. The methodology therefore differs in some key aspects from a pure research methodology. Furthermore, the methodology was progressively developed and improved as a collective effort upon application in different transboundary basins.

Applying a nexus approach involves taking account of potential conflicts and synergies across sectors and boundaries. It makes use of a series of technical analyses. The technical analyses in turn often assume perfect implementation. However, governance factors within sectors and at all levels of authority introduce uncertainty about the level of actual implementation of a particular policy solution. Technical analyses, while illustrative, do not integrate this uncertainty. Proper appreciation of the governance aspects of a particular policy outcome, moreover, can ensure that a particular result is achievable and socially supportable. The governance analysis within nexus assessment looks at the policy, legislative, and institutional frameworks of relevant sectors (including water, energy, agriculture/land management and ecosystems) at the local, national, basin, transboundary, regional and global levels. It assesses the level of practical implementation including economic and other measures and instruments, and

evaluates the level of coordination and coherence across sectors and at various geographical scales.[3] Of course there are non-governance factors that influence implementation as well, such as political risk, resource limitations, external economic conditions and leadership, which are beyond the scope of the governance assessment, but addressing governance deficits can help to increase the likelihood that a particular agreed policy outcome could be effectively carried out.

The objectives of the governance assessment are complementary to the technical analysis. If the overall nexus methodology aims at identification of potential conflicting objectives of sectoral policies, the governance assessment recognizes that not only the objectives themselves, but also the shortcomings in administrative practice and in administrative philosophy that interfere with resolution of such conflicts are critical considerations in order to reach practical and implementable solutions. It is particularly important to have a clear understanding of existing practices, since one of the major outcomes of the assessment is to make recommendations for improvement.

Thus the goals of governance assessment can be described as: to gain a better understanding of the context in which nexus sectors of activity operate; to generate understanding of instruments, actors and institutions relevant for sustainable integration of decision-making relevant to the resources (or sectors managing them) in focus in the nexus; and to determine opportunities for interventions based upon a realistic assessment of performance, strengths and weaknesses in governance at different scales and entry points.

Governance is an issue at several steps of the TRBNA methodology. The governance framework covers the institutional arrangements for international cooperation and domestic implementation in each area. The system of governance within each relevant sector is an important consideration in understanding policymaking and decision-making processes and means of implementation. Overall governance performance is a key factor in the ability of countries to effectively apply nexus assessment, to develop robust and reliable solutions, and to build upon the outcomes of nexus assessment through transparent and cooperative measures.

To give examples of where the results of the technical and governance aspects of nexus assessment feed into each other:

- The early stages of the governance analysis may identify gaps in institutional frameworks or structures that can already be considered as priority issues at an early stage as background for the technical analysis.

- The early stages of the technical analysis may identify potential present or future resource use conflicts as possible policy drivers. The technical analysts can then consult with the governance analysts about the qualities of the existing institutional

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[3] *Where ownership over nexus assessment is taken up by the affected countries, it is possible to deepen governance assessment over time, including through analysis of various performance factors relating to the frameworks, including extent, coherence, robustness, and flexibility.*

frameworks or structures and their preparedness for supporting the implementation of policy solutions. For example, if small hydropower development is determined to be a future solution, it raises questions whether the institutional background is ready to support sustainable hydropower and which actors should play a role.

- Understanding overall performance and competitiveness in terms of how governance helps to define effective and implementable measures and to plan how to implement them.

The governance component of the TRBNA methodology was based upon several sources, including the informal paper, "A draft methodology for assessing governance aspects of the water-food- energy-ecosystems nexus," prepared by Dr. Christian Bréthaut, University of Geneva,[4] constructed and tested within a research project regarding the Rhone River basin,[5] several sections of the UNECE report "Reconciling resource uses in transboundary basins: assessment of the water-food-energy-ecosystems nexus"[6] (particularly, the chapter on "Nexus assessment methodology and its development process" and Annex V: "Guide to the Governance Analysis"), and the further elaboration of the methodology in the aforementioned *Water* article by de Strasser et al. These sources are considered building blocks of the RGM and are incorporated to varying degrees. Full acknowledgment is therefore hereby given to the earlier papers for a large part of the content of this RGM.

Dr. Bréthaut's methodology included four parts: The first part briefly presented the concept of the nexus, the second part explained why there is a need for an analysis of institutions and governance structures within the nexus, the third part presented how the methodology should be structured and finally, the fourth part concentrated on the implementation of the methodology. The first part of Dr. Bréthaut's methodology is now largely included in the overall TRBNA methodology, so does not form a part of the governance methodology. The other three parts have been integrated into the current RGM.

The UNECE (2015) report described the broader frame of the Water Convention's nexus assessment methodology development involving several steps (figure 1), moving from methodology development (Phase A), to a complex diagnostic phase with a desk study for each basin, including a first workshop, initial nexus analysis and report production, second workshop, and final report (Phase B). The application of nexus assessment in three river basins has been followed by Phase C,

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[4] *Bréthaut (2014). The document is available from: http://www.unece.org/fileadmin/DAM/env/documents/2014/WAT/09Sept_8-9_Geneva/UNECE_governance_assessment_methodology_forTaskForce_forWeb.pdf*

[5] *The research project « GOUVRHONE, Gouvernance du Rhône du Léman à Lyon » was conducted at the Institute for environmental sciences at the University of Geneva.*

[6] UNECE 2015. *Available from: http://www.unece.org/env/water/publications/pub.html*

consisting of the revision of the methodology through a stocktaking exercise as envisioned in the UNECE report.

The current methodology takes the approach that the methodological approach to the governance aspects can be gradually improved and may need to be adapted somewhat to the specific characteristics of each river basin. This more detailed methodology corresponds to the Phase C, "methodology revision" stage, and is a step in revising the TRBNA methodology developed in Phases A and B.

Rationale[7]

It is well accepted and recognised that resource use must be achieved through the careful and equitable management of social, environmental and economical dimensions. However, in order to achieve sustainability the nexus calls for an understanding of the challenges and complex tradeoffs that inevitably face traditional frameworks and that governments have to arbitrate.

As mentioned by the World Economic Forum (2011): *"The challenges of natural resource scarcity – food, water and energy – are closely interlinked, and policy and other attempted solutions must take this into account. But taking an integrated view of such issues is highly challenging to most institutions, given the complexity and cross-sectoral approach required. The political commitment necessary to take bold action is often hard to muster"*. Therefore, a nexus perspective allows the consideration of various complex interlinkages between different sectors and encourages the initiation of a transversal overview of related policies and stakeholders.

The nexus approach recognises the importance of the analysis of institutions and their regulations in order to understand the main issues, the main actors and the main tensions between parties. In particular it focuses on the role played by institutions in coordinating the different resource uses and to arbitrate the potential trade-offs existing between water, energy, food and ecosystems.

The different sectors of activity within the nexus include a great number of institutions and actors, complex policy and regulatory frameworks and many different types of instruments. The linkages between several - sometimes four or more – sectors of activity[8] tend to increase the level of complexity and to blur the main issues of such interdependencies. The transboundary nature of interactions when examining shared natural resources has the effect of both multiplying the complexity and of focusing the inquiry, since nexus assessment prioritizes those issues that have transboundary relevance.

The ultimate aim of the governance component of the nexus assessment is to support the development of a full governance "infrastructure" in order to facilitate

[7] This section is based in part upon Bréthaut.
[8] *Winpenny 1992*

the development of robust outcomes from nexus analytical processes. Nexus assessment is an ongoing process, and requires that high standards of governance are applied throughout.

Governance for purposes of the assessment means "an inclusive system of institutions and norms that establishes responsibility and accountability, and builds trust and capacity to cooperate in policymaking, decision-making and implementation of measures."

Governance can apply to decision-making in all its forms and at all levels. Institutions can consist of formally established bodies as well as informal networks and communities operating according to systems of norms.

The international and national policy context for governance generally includes elements such as intersectoral coordination, integration, transparency, accountability and participation. Governance involves mechanisms of accountability to ensure that science is not corrupted towards special interests, and that hubris in science and policy outcomes does not go unchallenged.

Governance includes formal rules that depend on public and private law; it entails varying consideration regarding the structure and mandates of public administration (such as varying degrees of centralized or self-organized configurations) and different combinations of actors and interlinkages that rely on formal and informal agreements. A governance analysis helps to generate a better understanding of the extent to which conditions are being met in order to achieve coherent (and sustainable) integration of different sectors.

In line with the objectives of the assessment, the governance analysis includes the water, energy, food/land and environmental sectors and it considers different scales: regional, national and local. Focuses of the governance analysis are the following aspects:

(1) Policy framework—strategies and other policy documents, instruments *etc.*;

(2) Legal and regulatory framework—rules and regulations;

(3) Organizations and actors—mandates, responsibilities, administration.

Conducting an analysis of institutions helps to gain a better understanding of the context in which the different sectors of activity operate. This context is composed of the following elements: rules dependent on public or private law; different combinations of actors (such as varying degrees of centralised configurations where the government has an impact, or self-organised configuration where actors (often private) have some degree of liberty to negotiate and conclude agreements on resource exchanges) and, last but not least, by varying rivalries between different uses competing for a limited amount of resources. An analysis of institutions and other governance structures helps to generate understanding of the extent to which

conditions are being met in order to achieve sustainable integration of different sectors. An analysis also helps to achieve a better understanding of a system that is often complex and to identify its strengths and weaknesses at the local, regional, national and transboundary scale of governance.

While the basin is the appropriate level for consideration of water resources management issues, other geographical scales are appropriate in relation to other sectors. For example, energy security is usually determined according to strict political boundaries. Cultures of decision-making and administration, and relationships among stakeholders may also be quite different from sector to sector, making comparisons difficult.

Assumptions

The main assumptions of the model include:

A. The Science-Policy Interface

1. Resource use is essentially a value-laden process. Science and policy have distinct roles. Science cannot substitute for value discussions but is often used as a proxy. The public is often skeptical of scientific formulations.

2. Science advisory systems are most effective when acting as knowledge-based brokers rather than advocates for particular solutions. These systems must account for consensus, caveats, inferential gaps, social and other implications, and tradeoffs. Thus, nexus assessment is most valuable as an "assessment of robustness" of current policy choices.

3. Ultimately, it is better for solutions to be "informed" rather than "based on evidence." Therefore, good governance promotes one of the principles of science advising: that is, to ensure a trustworthy, independent process.

4. The failure to account for inequities arising from political choices coupled with the resulting grievances and social tensions are the biggest threat to sustainability. Governments, publics and media all have an important role to play in addressing inequities.

5. On an international level, science advisory systems must be well connected to international cooperation mechanisms, building upon the international connectedness of science on the national level.

B. Nexus in a governance context

1. Nexus differs from IWRM and other earlier integration exercises in that its aim is increasing resilience across sectors. Nexus is about flows – not just water, but also energy, food, biodiversity, etc.

2. Nexus is a value-laden process involving adaptive management of risk.

3. Nexus is oriented towards support to the SDGs and the 2030 Agenda, which themselves are value-laden processes involving political choices.

C. Governance in the Nexus context.

1. Governance is a means for taking into account science in order to reach social solutions within politically acceptable levels of risk. Governance helps to achieve the objectives of nexus analysis at the interface between technical analysis and society, between science and policy.

2. Governance is also a mechanism for translating nexus outcomes into implementable solutions through trustworthy, cooperative frameworks.

3. Governance in nexus should be concerned with addressing the understanding gap related to the value added of nexus.

4. Governance in nexus takes into account differences in scales, including the partnership level (regional/transboundary), the coherence level (coherent national policies), and the planning and integration level (including local level). At each level there are governance considerations.

5. The multi-centric perspective of Nexus presents serious challenges from the point of view of governance. Each of the relevant sectors has its own governance context, including the jurisdictional one. Relevant decisionmaking may take place at any of a number of levels, including the river basin level resembling an ecosystem approach with transboundary aspects, a national security level according to strict political boundaries as in energy security, a community level as in agriculture, etc. These differences will naturally result in imbalances in governance.

6. States employ various approaches to governance. In some countries market forces play a greater role and economic instruments are used. Other countries are more state-centric in their approach, and may make use of market interventions or eschew markets entirely. Governance analysis needs to take such differences into account.

7. Participation of stakeholders throughout nexus assessment is a fundamental requirement. It is assumed that the set of stakeholders involved in the participatory process is sufficiently representative of the relevant sectors and interests to identify the main intersectoral issues and possible solutions. However, in practice, the choice of stakeholders can be influenced by many factors. The methodology relies upon government administrations as a source to identify the stakeholders. Some areas of expertise or interests may be underrepresented. Stakeholders should ideally be selected after identification of key actors (Step 2 in Figure 2 and Table 1).

Main entry points for governance in TRBNA methodology

The main steps of the UNECE nexus assessment and TRBNA methodology are illustrated in Figures 1 and 2, and Table 2. Figure 1 presents three phases of work - where Phase B corresponds to the TRBNA methodology. Figure 2 presents a schematic of the TRBNA methodology applied in a particular river basin.

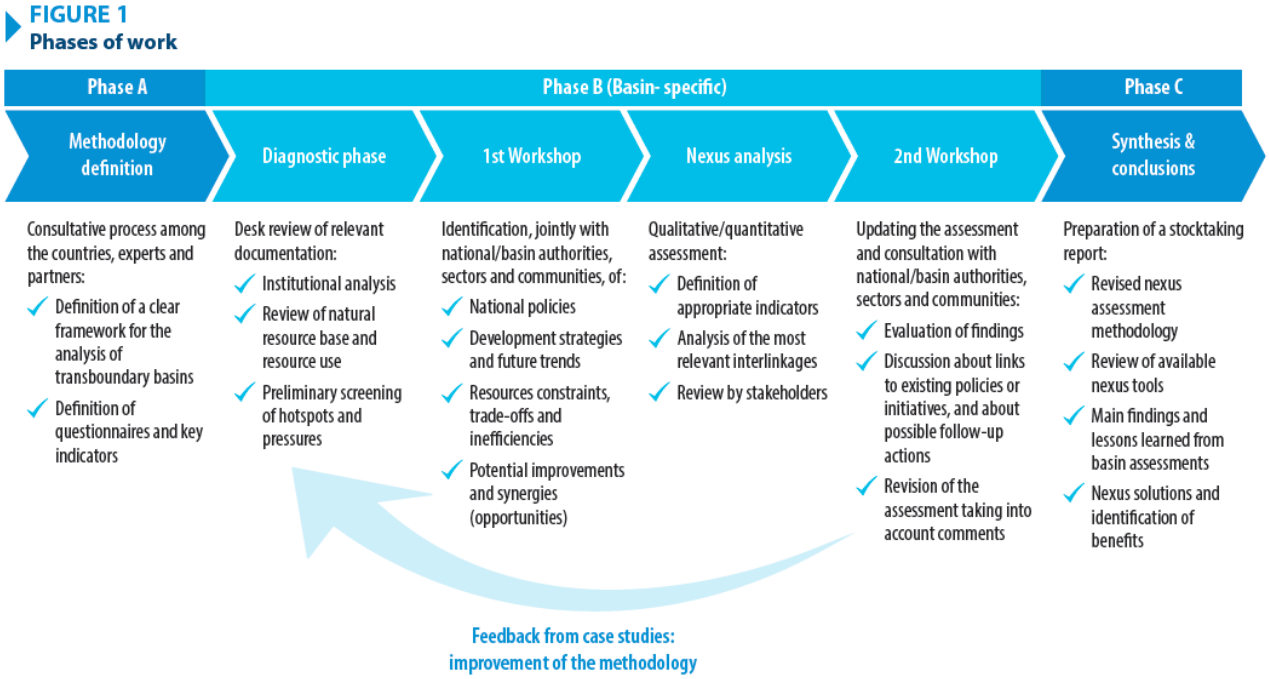

Figure 1. Methodology Used in UNECE Nexus Assessments (source: UNECE 2015)

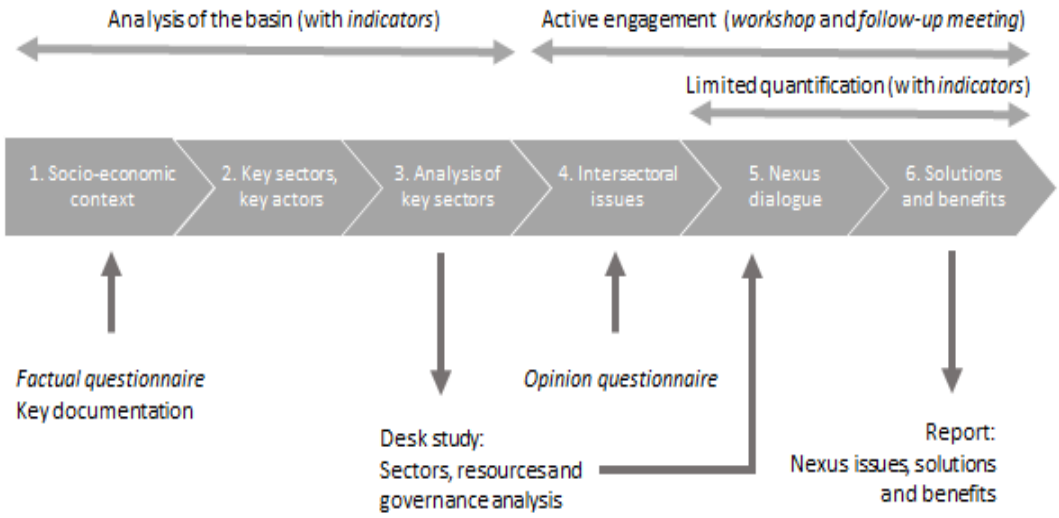

Figure 2. Schematic of the TRBNA methodology with milestones from de Strasser et al.

The TRBNA methodology is further broken down into six steps. Steps 1, 2, and 3 are mostly analytical, and produce a desk study that informs the following steps, which are more participatory. Notably, the UNECE envisions that the desk study will take place in the "Diagnostic phase" of Phase B, consisting of two parts: a "technical analysis of natural resources," and a governance analysis.[9]

[9] *UNECE 2015C, p 15.*

TABLE 2
Steps of the nexus assessment of a basin

Step	Actors	Location	Sectors
1. Identification of basin conditions and the socioeconomic context	Analysts	Desk study	General. Information normally used to underpin sectoral planning. Key elements include general socioeconomic goals and targets.
2. Identification of key sectors and stakeholders to be included in the assessment	Analysts and authorities	Desk study	General. Requires expert judgment and understanding of local context and governance.
3. Analysis of the key sectors	Analysts and authorities	Desk study/ first workshop	Individual sector experts and plans. Key elements include identification of the resource base and uses, as well as institutional mapping.
4. Identification of intersectoral issues	Stakeholders	First workshop	Sectoral group discussion on interlinkages (input needs, impacts and trade-offs), and discussion on sectoral plans.
5. Nexus dialogue and future developments	Stakeholders	First workshop	Agree on a prioritization of main interlinkages, including how they are expected to change, according to jointly identified development trends, noting key uncertainties and most important drivers.
6. Identification of opportunities for improvement (across the sectors and countries)	Stakeholders and analysts	Desk study, first and second workshops	Identification of solutions with multiple impacts between sectors, scales and boundaries. Such solutions could eventually be integrated into policies and programmes in the countries/basins.

Table 1. Steps in Phase B of the Nexus Methodology (source: UNECE 2015)

Another representation of the same methodology in the context of a specific sub-basin (the Drina River Basin) is presented in Figure 3.

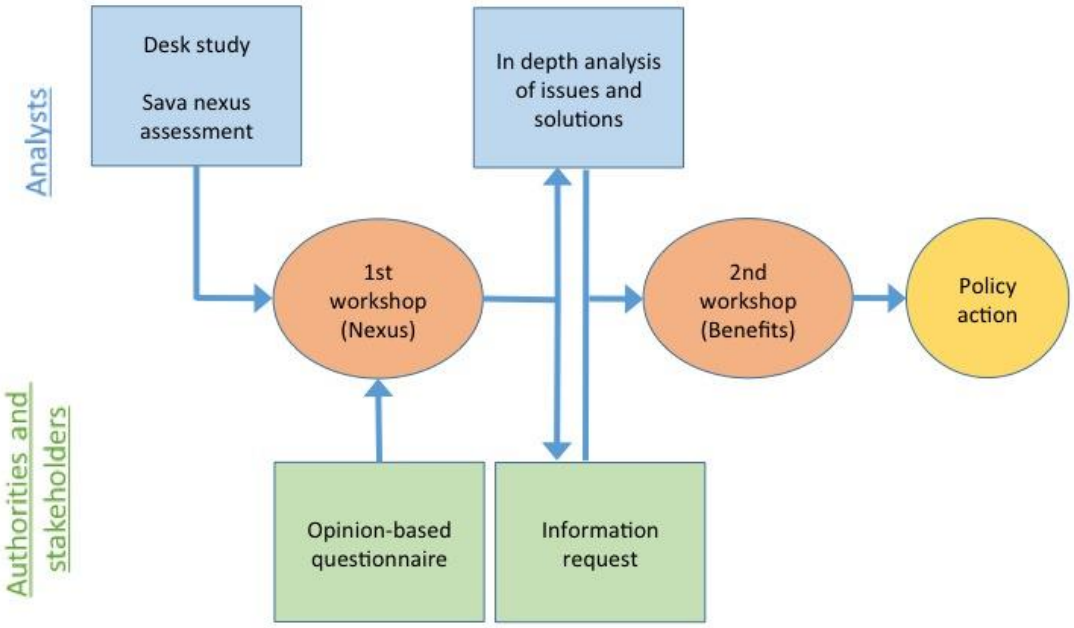

Figure 3 Drina River Basin nexus assessment (DRAFT)

Governance assessment in nexus is relevant to the various steps of the overall nexus assessment process, as its technical and governance components work hand in hand. On one hand, the resource analysis establishes availability and quality of the resources available, as well as the mechanisms (demands, supply, trade *etc.*) that link them to their uses. On the other, the governance analysis explains how actors and rules determine the management of those resources.

Governance assessment includes the identification of:

- Specific international or transboundary cooperation mechanisms relevant to cross-sectoral matters such as sustainable development and climate change, or to any specific involved sector. These can include global, regional, basin-level, or bilateral/multilateral policy frameworks and mechanisms.
- Relevant policies, strategies and legislation on the national level relevant to the same subject matters mentioned above
- Institutional mapping

- Practical examples of implementation and practice in connection with the respective policies, strategies and legislation
- Identification of gaps and conflicts
- Basic elements of governance cultures (national and sectoral), including conditions of governance (effective institutions, rule of law, corruption, transparency, capacities, participation and engagement)

Governance analysis requires a specific context, such as policymaking and decision-making in a particular sector, or implementation and financing. There is still very little experience with governance mechanisms in complex, multi-sectoral, multi-use frameworks. Decision-making involving trade-offs between sectors are usually at a high political level. Consequently, the kinds of platforms, institutional arrangements, and development of practice over time that are characteristic of sectoral processes are largely absent in a nexus context. Governance analysis therefore involves assessment of parallel governance contexts sector by sector and the existing intersectoral processes.

In its various stages, governance assessment makes use of desk studies, questionnaires and surveys, interviews, and review processes including commenting by governments and the broader stakeholder community. In the process of assessment, an essential element is a broad stakeholder engagement process. Taking into account language and other barriers, nexus assessment will generally be accomplished through the nomination of national focal points by the involved countries, and the appointment of independent national experts as needed. These experts may assist in the governance analysis through additional research related to policies, legislation and actors on the national level.

Step 1 – Socio-economic Context

As each resource base, river basin, etc. is unique, nexus analysis (particularly its governance aspects) has to be adjusted based upon the outcomes of each step. While some preliminary information-gathering can take place upon commencement of nexus assessment, the substantial beginning of governance assessment can only begin following the initial scoping phase.

Step 1 of the TRBNA methodology involves scoping in relation to the geographical area and the particular resources covered, based upon a factual questionnaire. This enables an understanding of the structure of the nexus (what kind of sectors are involved? What kind of resources are used?). This step includes scoping of the existing uses, identification of key sectors and macroeconomic factors, the broad political context, and the transboundary frameworks related to the foregoing. Using river basins as a typical subject of nexus, the water, energy, food and environment sectors would typically be involved, but depending on the particular characteristics of the basin, other sectors may be of major importance, including transportation, commerce, navigation, culture or tourism.

Considering the river basin example, the socio-economic context would include statistics about water quantity and quality and consumption by use, plotted over time, according to political entity, and at an appropriate scale. The influence of economic trends including market forces should also be quantified, as well as international policy drivers.

Matters relevant to investigate in relation to particular sectors may include: energy production and distribution, regional energy markets, climate change mitigation and adaptation, water extraction and supply, water quality and levels of wastewater treatment, agricultural policy and food security, eco- and agri-tourism, shifts in land use, biodiversity protection, ecological flow regulation, transport and navigation policy.

The initial fact-finding is carried out by the overall project management team, which includes at this stage both technical and governance expertise. One of the outcomes of Step 1 will be the designation of the technical experts' responsibilities for assessment of particular key issues and rivalries. These technical experts will work in partnership with governance experts on developing the nexus assessment.

The desk study runs in two parts. The first is the technical analysis of natural resources, which examines the needs of the population, economic activities in the basin, and natural resource exploitation. In short, the technical analysts look "at the basin and its population from the perspective of the availability of and access to resources."[10] It can apply the "Driving forces-Pressures-State-Impacts-Responses (DPSIR) framework."[11]

Governance assessment: The second is a governance analysis, in which the analyst "begin[s] to define the institutional framework of the water, energy, agriculture/land use and ecosystems components of the nexus," by mapping key nexus sector actors at different scales, their interrelations with one another, and any existing conflicting sectoral policy objectives.[12] The analysts should cooperate. The information in the technical analysis would be invaluable to the governance analyst in identifying A) which sectors to consider, and B) which resource-related activities to focus on.

During Step 1, the desk study can commence following the general scoping with a general overview of the transboundary frameworks related to the identified sectors. Considerations include:

- Legal instruments – identification of relevant global, regional (including basin-level), multilateral and bilateral agreements or declarations, and their acceptance or adherence by the respective countries involved.

[10] *UNECE 2015, p 17.*
[11] *UNECE 2015, p 19.*
[12] *UNECE 2015, p 18.*

- Transboundary planning processes – such as River Basin Management Plans (to coordinate action between different water using sectors, energy and agricultural sectors), flood risk management plans (to coordinate action around flood retention areas and wetlands), commercial transport and navigation plans, etc.

- Regional integration and harmonization. In some geographical areas, political integration processes (e.g., EU accession and harmonization) drive policy development and play an important role in integrating policies and supporting investments in water management and beyond. These processes gradually contribute to harmonization of the national and transboundary legal bases and adoption of common standards.

Among the questions to be answered are whether there are any transboundary agreements regarding water management or other relevant uses, or related to other relevant sectors, such as energy production and distribution.

Security concerns may also be relevant in determining the scope of possible solutions within the geographical area. The history of conflicts and their relevance to the resource uses should be examined.

A key issue at this step is to begin the scoping of the relevant geographical scale for decision-making for each sector, the main processes and milestones at each level, planning cycles and other timing matters, and the governance mechanisms for each transboundary process.

Once the political scope of the assessment is determined, the general governance performance indicators for the respective political entities can also be researched.

This part of the assessment is conducted through a desk study.

Governance assessment outline (see Annex): Parts I-II, III.A.

Step 2 – Key sectors, key actors

Mapping the configuration of actors allows the analyst to identify, at a glance, the relationship and the nature of links between different parties. The diagram helps to answer a number of key questions such as:

Questions
1. *What is the relationship between transboundary instrumentalities and the national level?* 2. *What is the relationship between multi-sectoral (sustainable development, climate change) actors and sectoral ones?* 3. *What is the dominant geographical scale for decision-making in each sector?* 4. *What is the degree of centralisation?* 5. *What are the roles of particular public actors?* 6. *To what extent do uses of resources result from self-organisation among private actors?*

The identification of key actors is a shared responsibility between the technical experts and the governance expert. The technical experts should be aware of the most significant decision-making processes and types of actors relevant to the individual sector, while the governance expert will be able via a desk study to understand the policymaking processes and their governance aspects. This step essentially consists of a mapping exercise, and should be conducted in cooperation with the governments and other stakeholders, with the support of national experts.

Governance assessment: The mapping exercise describes what actors are involved (public authorities, private actors, users associations, NGOs, etc.) in the management of resources at the various levels of decision-making. It also aims to determine the nature of links between these identified actors (what kind of agreements are implemented? Are they private law agreements or public law agreements? Which institutional level is framing agreements?).

The mapping exercise begins with the outcomes of Step 1 with respect to transboundary arrangements, at the global, regional, basin and bilateral/multilateral level. These transboundary arrangements are often drivers of implementation measures on the national level.

Following the mapping of transboundary arrangements, the general areas of ministerial responsibility can be mapped out. Further detail on the national level is worked out through the use of questionnaires and surveys aimed at national focal points with the support of national experts. Following is an example of the types of questions that could be asked.

Questions
1. *What is the structure of the institutional framework (multi-sectoral and for each sector)?*
2. *What are the institutional levels (national, regional, local) relevant to policy and decision-making and/or regulating uses?*
3. *What are the authorities and/or institutions responsible for implementing policy, legislation, enforcement, etc. at each level?* Examples of public actors: ministries/environmental or water agency/regions authorities/local authorities/etc
4. *What are the main private or semi-public actors?* Examples of private actors: energy producers (hydropower, nuclear energy)/fishing companies/navigation companies/tourism professionals/farmers/water user associations
5. *What are the main NGOs, research institutes, etc.?*
6. *What is the nature of the links between the main actors (private law: contracts, arrangements etc./public law agreement: licensing, concessions, etc./informal agreements)?*

The mapping captures all the users operating within the actors' configuration. The drawing of the map must be adapted to each case. In a relatively simple example it may be possible to represent the links between actors by using arrows, showing the direction of interactions and the nature of the links. An example of the outcome of a simple mapping exercise involving two countries for a specific geographical perimeter (from Lake Geneva to the city of Lyon) that focuses on the transboundary scale is given at Figure 3. In the example, two main characteristics are clearly represented: public law agreements (the nature of links shows the level of agreements implementation) or private law agreements.

A more complex example focusing on authorities, involving three countries, one of which has multiple levels of authority, is given at Figure 4. It might be desirable in such complex situations to produce separate configurations for each specific sector in which the linkages are more clearly set forth.

If resources are available, a more in-depth assessment could include an examination of the functions, mandates and responsibilities of each identified actor.

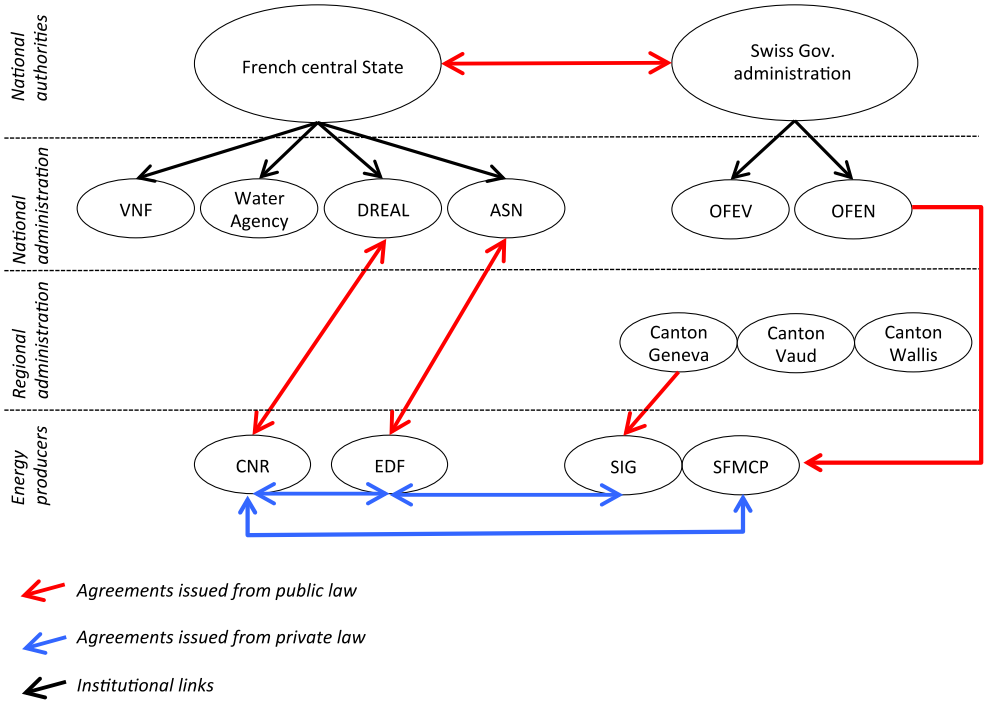

Figure 3. Cartography of the configuration of actors in the case of the Rhone River (Bréthaut & Pflieger 2013)

Global/ Regional level	Global Conventions/ UNECE/ European Union		
Subregional level	Energy Community		
	Danube Commission		
	International Commission for the Protection of the Danube River		
Basin level	International Sava River Basin Commission (sub-basin)		
	BOSNIA AND HERZEGOVINA	MONTENEGRO	SERBIA
	Ministry of Foreign Trade and Economic Relations	Ministry of Sustainable	Ministry of Agriculture and Environmental

	Ministry of Communications and Transport		Development and Tourism Ministry of Agriculture and Rural Development Ministry of Economy Inspectorate	Protection Ministry of Mining and Energy Ministry of Construction, Transport and Infrastructure Inspectorate
entity level (Bosnia and Herzegovina only)	Federation of Bosnia and Herzegovina Ministry of Environment and Tourism; Ministry of Energy, Mining and Industry; Ministry of Agriculture, Water Management and Forestry; Ministry of Spatial Planning; Ministry of Transport and Communications Inspectorate	Republika Srpska Ministry of Trade and Tourism; Ministry of Industry, Energy and Mining; Ministry of Agriculture, Forestry and Water Management; Ministry of Spatial Planning, Civil Engineering and Ecology; Ministry of Transport and Communications Inspectorate		
Committees and agencies	State Electricity Regulatory Commission		Energy Regulatory Agency	Environmental Protection Agency (SEPA)
	Entity level energy agencies Regulatory Commission for Energy in the Federation of Bosnia and Herzegovina Hydrometeorological Institute Environmental Protection Fund, Federation of Bosnia and Herzegovina	Entity level energy agencies Regulatory Commission for electricity of Republika Srpska Hydrometeorological Institute Environmental Protection Fund of Republika Srpska	Environmental Protection Agency	Energy Agency
			Water Directorate	Republic Hydrometeorological Service
			Institute for Hydro-meteorology and Seismology of Montenegro IHMS	*Institute for Nature Conservation*
Regional level	Regional Water(shed) Agencies			*Provincial government*
	Federation of Bosnia and Herzegovina Sava River Watershed Agency situated in Sarajevo	Republika Srpska Public Utility "Vode Srpske" Regional office for DRB situated in Zvornik		Public Water Management Company "Srbijavode"
energy producers	Elektroprivreda BiH	Elektroprivreda Republika Srpska	Elektroprivreda Crne Gore	Elektroprivreda Srbije

Local level	Canton relevant ministries and local government water supply and sewage enterprises	Local government water supply and sewage enterprises	Local government	Local government, water supply and sewage enterprises

Figure 4 Diagram of the configuration of actors in the case of the Drina River (Drina River Basin nexus assessment DRAFT)

The above types of institutional mapping can be supplemented with the mapping of civil society engagement, including points of contact and enumeration of major relevant organizations or groups.

Governance assessment outline: Part III.C.i.

This part of the assessment can be accomplished through a desk study with respect to the transboundary arrangements and general matters on the national level (e.g., ministerial responsibilities), and questionnaires and surveys involving national focal points and national experts for greater detail on the national level.

Step 3 – Analysis of key sectors

Steps 3 and 4 of the TRBNA methodology are closely related. Step 3 follows the output of Step 2 regarding key sectors, to identify main policies, strategies and legal instruments in each sector. Step 4 examines how intersectoral processes work, e.g., sustainability planning, climate change mitigation and adaptation, integrated permitting and interministerial working bodies, and their adequacy to address nexus-related issues. In the past, public administration was organized along sectoral lines to a large degree, but the trend over the last few decades has been towards greater integration. An initial inquiry therefore is the extent to which the subject area has followed this trend.

Steps 3 and 4 are also distinguished by their timing. Step 3 is more strongly weighted towards the desk study, while Step 4 largely takes place in the participatory phase (although some information gathering about intersectoral processes can take place in the desk study).

In the final nexus assessment the discussion of mechanisms for intersectoral coordination will often be presented before the sectoral analysis, but in the TRBNA methodology the gathering of information for the basis of the intersectoral analysis generally comes after the sectoral study. This is because a full assessment of intersectoral coordination mechanisms can only come after a full understanding of the involved sectors, since nexus analysis focuses on priority issues. For example, mechanisms for coordination between tourism and nature protection regimes would only be analyzed once the sectoral analysis determines that this issue is a significant one for the nexus analysis.

The analysis of key sectors in Step 3 of the TRBNA methodology involves both technical analysis and governance analysis. Besides analysis of uses by economic sector, it is important to consider also conservation needs, including ecological flows.

Governance assessment: The analysis of key sectors from a governance perspective begins with an overview of the relevant policy documents and legislation relevant to the sectors, beginning with those that relate to over-arching, multi-sectoral policies, such as those in the fields of climate change or sustainability, and including the major policies and legislation in each sector. The analysis includes the dynamic arrangements between the various transboundary levels (global, regional, basin, multilateral, bilateral) and the national level (including relevant sub-national levels). Areas covered in a basin-level assessment would include water, energy, agriculture and environment, as well as other priority issues depending on the river basin characteristics, including, e.g., tourism, transport and navigation.

Special consideration must be given to mechanisms for civil society engagement and capacity building at various levels. To the extent possible, the comparison of governance across sectors should address common elements and address the strategic advantages of each sector, in areas such as transparency and accountability, institutional mandates and reform, policy development, implementation plans and strategies, and institutional development including institutional learning.

This step of the governance assessment covers the following main questions:

Questions
1. *Set forth all relevant development plans, policies or programmes (multi-sectoral, e.g., sustainable development, climate change adaptation) and related implementation and action plans, at each level of government*
2. *Set forth all relevant sectoral plans, policies or programmes (e.g., water, energy, land use, environmental management) and related implementation and action plans, at each level of government*
3. *For each of the above, what are the dates covered (planning cycles)?*
4. *Set forth all relevant legislation (multi-sectoral, e.g., sustainable development, climate change adaptation), at each level of government*
5. *List all relevant legislation, at each level of government, relevant to the particular sectors, for example:* • *Legislation regarding water management and protection* • *Legislation regarding land management and protection* • *Legislation regarding energy* • *Legislation regarding nature protection*
6. *List all relevant legislation, at each level of government, aimed at integrated decision-making, including integrated permitting, SEA, EIA, and other forms of integrated assessment*
7. *Give practice examples related to the above. How much are these instruments used?*
8. *What matters are left to self-organization by private actors?*
9. *What mechanisms are used by private actors for self-organization?*
10. *What is the governance culture in relevant decision-making? What mechanisms ensure transparency? Are stakeholders engaged in decision-making? How?*
11. *Can any potential conflicts between objectives from different sectors be identified?*

Analysis of the policy and legislative framework takes into account four analytical variables: extent, coherence, robustness and flexibility (see Box 1). Two of them – coherence and robustness – have aspects relevant to intersectoral coordination and other multi-sectoral or cross-sectoral processes, and so are discussed also under Step 4.

BOX 1. DEFINITION OF ANALYTICAL VARIABLES (adapted from Bréthaut)**:**

These variables result from a review of several publications on environmental policies and on the study of Institutional Regime for Natural and Infrastructural Resources. For more information: Knoepfel et al. 2007 / Gerber et al. 2009. Checklists for each variable are set forth in tables below.

Extent:

The extent of regulations allows the study of how the applied public policies regulate the different uses. The more the regulatory framework is characterised by its density (a high number of public policies or property rights that shows the capacity of the state to regulate the different uses), the more we can consider the extent as important. Here, the analyst will have to look at the different sectors of activity and on how these different uses are effectively regulated. The analyst will have to evaluate if there is a need for specific regulations (for example the case where a use is unregulated or suffers from poor regulation with the resulting uncontrolled intakes) or if the rules are able to effectively frame the different uses.

For example, the analyst will check if uses of the different sectors within the nexus are regulated to the same extent: is there always withdrawal authorisation process? Is there always an attribution of land use or construction permits? Is there always a public inquiry before permission is granted? Is there any procedure or legal norms used in order to allow the granting of permission? From what administrative levels are permits issued?

Coherence:

This second analytical variable helps the analyst to understand the level of coherence between policies and regulation. The more that legal dispositions are complementary, well-articulated and not counter-productive, the more the legal framework can be considered as coherent. Policies can be coherent across sectors, but regulation may not be coherent with the policy, or with regulations under other policy frameworks.

Another aspect of coherence is coherence between the different objectives intended by public policies across sectors. This aspect of coherence requires evaluation of the degree of coordination involved. As this is mostly relevant to Step 4, Intersectoral Issues, it is discussed in more detail there.

Robustness:

Robustness should be understood as the capacity of the regulatory framework to effectively control the different uses. The degree of robustness results from the combination of the Extent and Coherence analysis, and also involves cross-sectoral coordination (and is therefore also mentioned in Step 4). The more the regulatory framework is extended and coherent, the more it will be robust (or, in other words, integrated). In connection with Step 3, the analyst has to evaluate the relationship between the first two variables in terms of the robustness of the regulatory framework over individual sectors. In Step 4, the analyst will also evaluate the relationship between the first two variables in terms of the robustness of the overall governance of the nexus across sectors.

Flexibility:

Flexibility represents the room for manoeuver, which actors have in order to self-organise. This variable depends on the gaps found in the regulatory frameworks - gaps generally used by actors to produce institutional arrangements in their favour. Such arrangement can be translated by private law agreements or informal arrangements between different users/sectors of activity. For example, in the case of the Rhone River, the transfer of water regarding the cooling of nuclear plants results mainly from water exchanges between private actors. Here the exchanges depend on private law agreements (contracts) that have been decided and implemented by energy producers directly. The state is not directly involved and does not hold an important steering role in the process.

From a governance perspective, flexibility is a two-edged sword. Room for maneuver can foster innovation in societies where good governance is in force. However, where governance is poor, the same degree of flexibility can provide room for corruption.

To examine the variables or factors mentioned above, the following questions could be answered:

(a) Where does the institutional framework lack coherence (e.g. gaps or overlaps of mandates or responsibilities, diverging objectives)?

(b) Are there conflicts between institutions at different geographical scales/levels?

(c) Is there a proper separation of functions (e.g., regulators are not operators)?

(d) What are the potentially conflicting objectives of sectoral policies, including shortcomings in the regulatory basis, administrative practice and

the administrative philosophy that may present obstacles to the resolution of such conflicts?

(e) Does the implementation of measures and regulations have the desired effect from a sectoral point of view?

(f) What opportunities are there for administrative cooperation, dispute resolution, expert input, the participation of stakeholders, etc.?

(g) What is the scope of transboundary cooperation in relation to resource uses in the basin, and what aspects may hinder it?

A sample checklist for evaluation of the Extent of the policy and legislative framework in certain key sectors follows.

Extent of the policy and legislative framework
Water
Implementation of the polluter pays principle
Water user pricing schemes/subsidies, including differences across sectors
Definition of water protection maps
Definition of flood management plans
Submission for approval for all water withdrawals in river, lake or groundwater
Definition of minimal flows for any river intakes
Legal obligation of used water treatment before reintroduction in hydrological cycle
Definition of instruments regarding rain water treatment/evacuation plans
Legal obligation of connecting buildings to urban water networks
Prohibition of discharge without treatment of pollutants
Establishment of a management scheme at the river basin scale (at the national or hydrological level)
Legal disposition regarding the consideration of all water resource users within the nexus
Land
Existence of a land register
Land allocation schemes
Definition of land use planning instruments
Requirement of construction permits
Definition of duties regarding the implementation of land use planning instruments
Energy

Energy pricing schemes/subsidies
Legal provisions framing concession contracts regarding the operation of electricity production infrastructures (definition of rights and duties for involved parties)
Legal provisions regarding energy production and its impacts on ecosystems (definition of water flows, regulation of water temperature, etc.)
Nature protection
Provisions regarding natural habitats, wildlife and flora protection
Definition of minimal environmental flows
Implementation of environmental mitigation mechanisms (construction of fish ladders for example)
Definition of emission limit value/immission limit value
Definition of user rights, licensing, concessions
Economic valuation of environmental services
Legal obligation for public inquiry regarding any project (public or private) potentially affecting the environment
Legal provisions regarding energy production and its impacts on ecosystems (definition of water flows, regulation of water temperature, etc.)
Integrated Decisionmaking and Governance in General
Access to information
Legal obligation for public inquiry regarding any project (public or private) potentially affecting the environment
Strategic Environmental Assessment
Environmental Impact Assessment
Other forms of impact assessment
Integrated permitting

The evaluation of the Coherence of the policy and legislative framework in Step 3 considers the following:

Coherence of the policy and legislative framework (per sector)
Consistency between policy goals and legislative actions in the sector
Coordinated implementation of legal dispositions throughout the different institutional levels
Action undertaken in a coordinated manner by the different state services

Robustness, as previously mentioned, involves a combination of Extent and Coherence, while the evaluation of Flexibility requires a detailed examination of available measures for implementation of policies and legislation.

Step 3 gives an overview the relevant legal and policy frameworks. A distinction can be made between various options for governance analysis in this Step, based upon available resources. One aspect of the information gathering that requires careful planning is the involvement of local expertise. The use of local experts may be critical especially in the case where a larger proportion of relevant information is available only in local languages. While the involvement of local experts may be highly beneficial, it is important to allow for the additional time, effort and resources that are needed for coordination as the project's complexity increases.

Where the nexus assessment is based largely upon a desk study, limited input from national focal points, and limited questionnaires and is conducted primarily in English, the level of evaluation at this stage will consist of an inventory of relevant laws and policies, and their superficial analysis. To the extent that greater resources are available on the national level, including in-depth engagement of local experts working in local languages across all countries involved in the assessment, more detailed assessment of the legal and policy frameworks as to the specific performance factors can be achieved.

Even if one has a clear picture of the policy, regulations and institutions, then it is still necessary to understand what opportunities there are for administrative cooperation, for dispute resolution, for expert input, etc.

Governance culture – Another component of the analysis of key sectors under Step 3 is an evaluation of each sector's governance culture. Elements of the governance culture in a particular setting include whether decisions are made through formal or informal processes, whether decision-making is top-down or bottom-up, the extent to which consultation is implemented, the measurement of processes according to performance indicators, and where processes stand on a range from authoritarian to cooperative.

An evaluation of specific approaches or measures can be made at this stage. The self-organization of private actors (under the Flexibility analytical variable) is one component of the governance arrangements. When analyzing measures and instruments, it is important to include the point of view of the regulated communities, for example, farmers or their cooperative organizations, water users and utilities, energy users. Another set of considerations involves application of economic instruments such as subsidies that may affect or alter governance relationships (see Box).

Box. Subsidies can be particularly relevant for the technical analysis of resource use. Incentives may promote efficiency, or they may be adopted for other reasons such as social welfare or economic stability. To this end, it could be useful to ask, for each sector and each set of users:

(a) What kinds of subsidies are in place in the particular sector and what are the intended effects of the subsidies (e.g., are subsidies provided for growing certain crops and not others)? What impacts do they have? Do they achieve the desired goals? If not, why not?

(b) What other forms of economic measures (e.g., tax incentives, pricing, licensing, metering, auctions, other payments) are employed to encourage specific outcomes in each particular sector (e.g., is non-market pricing used to encourage energy use from certain sources)?

(c) What institutions are responsible for overseeing implementation of these instruments?

(d) What mechanisms if any are there to reduce impacts on vulnerable groups from changes in pricing, technology or regulation? This inquiry would also include gender-specific impacts where appropriate.

Other components of the governance culture include the following (per sector). Specific questions can be elaborated on the basis of existing models for performance assessment in areas such as access to information, public participation in decision-making and access to justice, using, for example, the Bali Guidelines on Rio Principle 10, or, particularly in the pan-European region, the Aarhus Convention.

Governance culture (by sector)
Provision and availability of relevant information to the public
Designation of authorities responsible for public relations
Processes and procedures in which affected publics, communities and stakeholders can participate
Authorities are required to take into account public comments in decision-making
Frequency of such processes and procedures
Opportunities for review and appeal
Active and engaged civil society organizations exist
Governments provide support and capacity-building to civil society to participate

The governance expert will work together with the technical experts that are drafting technical chapters of the draft report. At an appropriate stage in the drafting, the governance expert should review the drafts of the technical chapters with the aim of extracting examples related to governance, advising on the consideration of governance issues relevant to the technical issues, and ensuring cohesion and making linkages between the governance chapter and the technical chapters.

Governance assessment outline: Part III.C.ii, iii; Annex. The governance expert will also review and provide input to the technical chapters.

Workshop preparation

Step 3 of the assessment is carried out partly through a desk study and partly through the administration of questionnaires and surveys directed to national focal points and national experts. The subsequent steps in the methodology are more participatory and take place during one or more workshops.

Ad-hoc material to facilitate the discussion at the workshop, including where applicable basin maps, policy drivers, socioeconomic and climatic trends, is prepared as part of the desk study, including surveys and questionnaires.

During Step 3, the governance expert will work together with the technical experts that are drafting technical chapters of the draft report. At an appropriate stage in the drafting, the governance expert should review the drafts of the technical chapters with the aim of extracting examples related to governance, advising on the consideration of governance issues relevant to the technical issues, and ensuring cohesion and making linkages between the governance chapter and the technical chapters.

Examples of sectoral points of entry for governance include the following:

Energy: renewable energy/energy mix, power sector development plans

Water: climate change scenario planning, extraction scenarios, ecological flows

Agriculture: investments and productivity increases/rural development plans

Tourism: sustainable tourism policies/plans

Spatial planning: geographical scale of land use plans

Environment: EIA/SEA

Integrated permitting

These elements should be taken into account in workshop planning by the project management team. The following checklist covers the goals and targets to be achieved during Workshop 1 with respect to the governance assessment.

Questions
1. *Review and comment on the draft outcome of the desk study for Parts I-IV* 2. *Review and comment on the draft outcome of the institutional mapping exercise* 3. *Review and comment on the draft inventory of policies and legislation* 4. *Identify gaps and secure partner commitments for filling gaps (with timelines)* 5. *Discuss governance characteristics of any identified rivalries and potential conflicts*

Further details on Workshop 1 can be found in the TRBNA methodology. At the same time, Workshop 1 includes agenda items aimed at making progress on the governance assessment.

Step 4 – Intersectoral issues

The technical analysis will have identified specific issues for individual sectors, as the foundation of the analysis of multiple sectors and rivalries. By working together with local actors on the identification of issues, etc., the cross-sectoral and transboundary dimensions become actual confrontation and dialogue. Identified rivalries in turn should be compared and evaluated on several bases – for example, their potential to rise to the level of use conflicts, the potential degree of harm or disruption that can result, or the ease with which they can be addressed through technical and/or governance mitigation mechanisms. The process leads to a prioritization of issues (Steps 4 and 5) and a joint investigation of solutions (Step 6).

The analysis of intersectoral issues in Step 4 is essentially a participatory exercise that establishes the context for the review of potential rivalries and the setting of priorities. While some preparation can take place during the desk study, the actual analysis of intersectoral issues takes place during Workshop 1. The mechanism for undertaking this analysis can follow different design options, but a key element is for the discussions to take place in working groups divided according to sector, with participants coming from different stakeholders and levels of governance within the respective sector.

The main inquiry in this step is the identification of policies that may target objectives that conflict with the objectives of other policies in different sectors, across borders or within a particular country. An example in the transboundary context would be where the priorities of the upstream user (e.g., hydropower, water retention) conflict with the priorities of the downstream user (e.g., flood control, irrigation, recreation). An example in the national context would be the case of a public policy aimed at protecting high quality aquatic ecosystems as opposed to a public policy protecting residential areas from flooding.

Governance assessment: Integration of decision-making through consideration of issues that in the past may have belonged to a single sector, improved understanding and means of communication, and shifts in institutional design and

procedures have all contributed to a more inclusive, complex and sophisticated governance context. Institutional arrangements, whether public regulations or systems of private contracts, are important in distribution of use rights as a means of addressing rivalries so that they do not lead to conflicts. Transparency, participatory rights, and access to review procedures are often important elements to be employed in addressing rivalries.

The outcomes from Step 3 relating to policy documents and legislation relevant to over-arching, multi-sectoral policies, such as those in the fields of climate change or sustainability, are relevant to Step 4. They are one starting point for the consideration of the effectiveness of mechanisms for resolving conflicts across sectors. As in Step 3, one of the measures taken during the governance analysis is Coherence, but in contrast to Step 3 where coherence was examined in terms of the integrity of governance within a single sector, in Step 4 the coherence inquiry involves integrity of governance across sectors.

Based on the outcome of the discussions in the Workshop, the governance expert can examine the sectoral viewpoints with respect to obstacles and conflicts across sectors to evaluate governance aspects within the affected sector as well as those sectors that give rise to obstacles and conflicts.

The transboundary level may be relevant to this examination. Transboundary relations may be drivers of coherence across sectors, for example, where coherence is strongly integrated into a regional or global framework (such as the global climate change regime or the body of EU law).

The evaluation of the Coherence of the policy and legislative framework in Step 4 considers the following:

Coherence of the policy and legislative framework (across sectors)
Existing bodies with responsibilities for cross-sectoral coordination and their powers and responsibilities
Impact of cross-sectoral/global policies on sectoral policies, legislation etc.
Coordinated implementation of legal dispositions throughout the different institutional levels
Consistency between policy goals and legislative actions between each set of sectors
Coordination of planning cycles across sectors and impact of differences in planning cycles
Coordination of objectives targeted by the different public policies
Consistency in the definition of target audiences regarding the objectives of public policies
Coordination between actions implemented within the river basin
Action undertaken in a coordinated manner by the different state services

Among the questions that could be answered are the following:

(a) Are there institutional arrangements in place to support intersectoral dialogue/cooperation?

(b) What are the barriers to coordination/cooperation across sectors?

(c) Are there mechanisms in place to solve conflicts related to suboptimal resource allocation?

(d) What differences are there in these factors at different geographical scales?

This is also the step at which the differences among governance cultures across sectors can be analyzed, and the challenges arising therefrom can be identified. A well-functioning governance system will ensure transparency and help to resolve conflicts within a sector. If there is an imbalance in governance across sectors, the full range of interests and values will be represented to a different extent, and interactions through a nexus process might reveal weaknesses in the perceived consensus in a sector with relatively poor governance. Governance in the "weaker" sector may be improved thereby, but it should also be recognized that existing power structures may not welcome such changes.

Governance assessment outline: Part III.B. The governance expert will also review and provide input to the technical chapters.

This part of the assessment builds upon the desk study and the administration of questionnaires and surveys directed to national focal points and national experts, but takes part mostly in the form of exercises conducted during Workshop 1.

Step 5 – Nexus dialogue

The "Nexus dialogue" also takes place at Workshop 1 according to the TRBNA methodology.

It is important for the participants in the dialogue to be motivated through an understanding of the benefits of Nexus assessment. Consequently, a discussion on the benefits of Nexus assessment should be included as a key preliminary element to be addressed in the workshops. Sufficient time should be allowed for the benefits discussion to achieve a broad consensus. It is suggested that this discussion could take place between Steps 4 and 5.

For the Nexus dialogue in Step 5, an important characteristic is that participants are no longer separated by sector, but are grouped to include representatives of all sectors. This may involve constitution of new small groups, or discussions may take place in plenary. The interlinkages identified in Step 4 are discussed and "Nexus storylines" emerge. As stated in de Strasser et al.:

> "Interlinkages (such as multiple uses of resources, negative impacts, trade-offs and dependencies between sectors) are discussed together with the

existing obstacles to overcome them, to establish a shared understanding of intersectoral challenges—e.g., diverging objectives and priorities for development, gaps/overlaps of responsibilities and mandates *etc.* Next, the relevant future tendencies (climate change, socio-economic trends) are identified jointly with participants and the effects that these will have on intersectoral issues are discussed."

Through the analysis of resource uses, the configuration of actors and the main regulations, the nexus assessment will identify rivalries at different institutional levels (local, national, transboundary). The Workshop participants should concentrate on major uses rivalries / tensions / use conflicts occurring with respect to the resource. The discussion focuses on the main use rivalries between actors and tries to assess how these tensions are regulated. The rivalries in turn highlight the strengths and weaknesses of the existing policy and legislative frameworks and raise further governance issues.

Some potential sources of information that a rivalry exists can be set forth as follows:

Criteria for the selection of potential rivalries
Intersectoral rivalries observed in the nexus
Latent tensions between different sectors: - *Press articles* - *Legal complaints* - *Concerns within administration, etc.*
Proven tensions between various sectors (signs of open conflicts): - *Press articles* - *Judgments* - *Arbitration, etc.*
Tensions/difficulties within the configuration of actors (including stakeholders)
Difficulties regarding the functioning of one sector because of the actions undertaken by other sectors
Increase of intersectoral tensions in times of extreme events (flooding or droughts)
Consultation mechanism regarding coordination between the different sectors within the Nexus

For the Workshop, the technical and governance experts will propose descriptions of rivalries including case studies based on previous assessments and, as far as possible, the outcomes of Steps 3 and 4. The analysts identify the needs of each sector of activity, how specific rivalries emerged, the reasons for the rivalry and the action taken (by the government, by the actors themselves, etc.), if any, to regulate the conflict. Through the discussion the strengths and weaknesses of the associated institutional framework should be revealed.

However, the validation of the rivalries is a joint effort among the various technical experts for the particular sectors, the government representatives and other stakeholders.

Some examples of rivalries typical to river basins can be found in the following Table.

Table. *Examples* of rivalries occurring between different sectors within the nexus

Sector *x*	Sector *y*	Types of rivalry
Thermal/nuclear energy	Hydropower	Upstream retention of water for hydropower production purposes versus downstream need for water for cooling of thermal and/or nuclear plants
Hydropower	Ecosystems	Upstream retention of water for hydropower production purposes versus downstream minimal flows for aquatic ecosystem
Drinking water	Agriculture	Intakes of water to produce drinking water versus diffuse pollution depending on agricultural fertilizers
Industry	Agriculture	Intakes of groundwater to support industrial processes versus intakes of groundwater to supply irrigation
Nuclear energy	Ecosystems	Water uses to cool down nuclear plants versus effects of temperature increase due to water rejection after cooling on surrounding ecosystems
Water sanitation	Ecosystems	Polluted water discharges without treatment versus pollution of environment

Governance assessment: The discussion of rivalries will go into depth about the governance arrangements for the selected case studies. In terms of the policy and regulatory frameworks, the analysis of a specific case will enable the application of the analytical variables of Extent, Coherence, Robustness and Flexibility at different levels (see Step 3). The degree of intersectoral coordination will also be examined at different levels, with particular attention to Coherence (see Step 4).

While governance is an inseparable part of the rivalries discussion, it is mainly incumbent upon the governance expert at this stage to raise governance concerns, take careful note of the discussion and prepare for the analysis in which the outcomes of the Nexus dialogue are digested and will give rise to solutions and benefits in Step 6.

Governance assessment outline: N/A

This part of the methodology is carried out through the Workshop. Workshop outcomes will be collected and analyzed.

Step 6 – Solutions and benefits

<u>Workshop 1</u>

The discussion of solutions and benefits begins during Workshop 1. In developing the topics for discussion, the TRBNA methodology uses a working definition of "candidate solutions." A candidate solution must benefit at least two sectors and have a clear transboundary dimension. They can be of two kinds:

(a) Synergetic: when two or more sectors actually cooperate on actions and projects that create multiple benefits.

(b) Sectoral: when the action of one sector has side benefits on other sectors or at least minimizes the negative impact on other sectors.

Technical solutions as well as policy interventions are considered. Further information about solutions and interventions can be found in the TRBNA methodology.

The analysis relevant to developing solutions is structured according to the following general categories:

1. *Description of the Challenges*
2. *Suggested Action Package (Solutions)*
3. *Implementing the Action Package*

The "Suggested Action Package (Solutions)" furthermore applies the "Five I's" framework, i.e.: Institutions, Information, Instruments, Infrastructure, International Coordination and Cooperation.

<u>Report drafting</u>

Following the preliminary identification and elucidation of solutions at the Workshop, the analysts explore the identified interlinkages and associated benefits. The technical analysis utilizes various methods including quantitative methods and integrated modelling.

After Workshop 1, the technical and governance experts complete the drafting of the nexus assessment report. The nexus assessment concludes with "potential beneficial actions" rather than "recommendations."

The draft report is circulated in two separate rounds for commenting. The first round of commenting involves governments only, and the second round includes various stakeholders. The experts revise the report based upon the comments received.

<u>Workshop 2</u>

The TRBNA methodology includes a workshop (Workshop 2) during the final stage of the assessment. A follow-up meeting with key stakeholders is needed to make sure that solutions are translated into feasible actions, ideally linked to actual policies or projects on the agendas of national governments or relevant transboundary processes, such as basin organizations. In exceptional cases, a third workshop may be conducted. This may be the case where the consideration of solutions requires additional consultations in more than one step.

In the course of Workshop 2 the results of the nexus assessment are presented and discussed. These results should point clearly at beneficial actions and benefits that have been identified.

Workshop 2 includes a presentation of the proposed solutions followed by a plenary discussion, and review and testing of proposed solutions through intensive discussion in small working groups.

Final report

Comments are taken into account in the finalization of the report. At a minimum an executive summary with key conclusions and outcomes should be produced in local languages for wide distribution.

Governance assessment: Both at the Workshop and subsequently, governance aspects of proposed solutions are explored. Solutions must be practical and implementable, taking into account the existing governance context.

A clear understanding of the possibilities for nexus analysis to feed into decisionmaking and policymaking should be reached. Where such mechanisms for practical application of nexus analysis are lacking, reforms to governance structures need to be explored.

Governance aspects of proposed solutions come in two forms:

1. *Cross-sectoral, multi-sectoral or other technical solutions shall be examined with attention to governance aspects, particularly with the aim of reaching solutions that are practical and implementable.*
2. *The overall framework for cooperation across borders and across sectors shall be examined for gaps, with the aim of proposing a way forward to improve overall governance of the resource based on nexus analysis.*

The existing sectoral, intersectoral and governance analyses at all levels provide the background for the analysis of proposed solutions. These analyses will describe the decisionmaking and policymaking bodies, processes, etc where nexus analysis can come into play. On the transboundary level, ways to close gaps in geographical, subject-matter or temporal terms will be analyzed and proposed. On the national level, SDG-related processes such as National SD Strategies will be one possible example. In any case, whether processes can take advantage of nexus assessment depends on various factors, including the powers of bodies involved in policymaking and decision-making, their scope of autonomy, the limits of discretion, and the relationships between various processes and authorities.

While it may be impractical for the governance expert to participate in all sessions during Workshop 1, the instructions to workshop participants will include reminders to consider governance aspects in the elaboration of solutions. Immediately following Workshop 1, the technical and governance experts shall hold consultations to debrief the outcomes and develop a drafting plan.

Among the questions to be addressed are the following:

> Does a nexus (intersectoral) point of view highlight the need to change existing policies, legislation or institutions, or to better coordinate them?
>
> Can transboundary cooperation help to address the issues identified and, if so, how?

When each technical expert (or team) produces a reviewable draft of each section, he/she/they shall organize a run-through of the draft with the governance expert, in order to ensure that governance issues are handled and addressed as required. Ideally the run-through is conducted through a face-to-face meeting but it can also be conducted electronically. This process may need to be repeated, depending on the complexity of drafting.

In parallel, the governance expert proposes specific solutions related to governance *per se,* including, e.g., filling gaps in existing platforms for cooperation, proposing new institutional arrangements, improving coordination mechanisms on transboundary and national level, ensuring high standards for the knowledge base throughout the affected area, improving stakeholder engagement, and advising national governments on capacity-related issues or on filling legislative or policy gaps.

The nexus assessment may also produce storylines and proposals that require follow-up analytical exercises to study the applicability of solutions. These may include risk assessments, cost and benefit analyses, integrated modelling of (climatic, socio-economic) scenarios, action planning, policies and plans for stakeholder engagement and other governance aspects. Any such follow-up activities should include an element on governance.

Workshop 2 includes a presentation of the proposed solutions followed by a plenary discussion, and review and testing of proposed solutions through intensive discussion in small working groups. The governance analyst will follow the presentation of technical solutions with a brief overview of the governance context related to each technical solution. This will ensure that the review of the proposed solutions will lead towards the development of action items or an action plan aimed at practical implementation measures.

Separately, the governance analyst will present the proposed solutions relevant to future cooperation and coordination frameworks and other governance-related issues. The aim of the discussions on governance in Workshop 2 is to validate the conclusions reached through the analysis and to examine practical steps in the short and long term for implementation of solutions.

Governance assessment outline: Part IV.

This part of the assessment is carried out through group exercises during Workshop 1, a collaborative drafting process, and participatory review during two commenting rounds and one (Workshop 2) or more follow-up workshops.

Annex: Governance Assessment in Nexus - Outline

Example

[NOTE – in a full nexus assessment, Sections I-III may be grouped into an introductory chapter on the governance context, while Section IV may consist of a separate chapter placed together with other chapters proposing solutions (i.e., technical solutions); the inventory of policies and legislation would appear in an Annex to the report.]

I. Background and Introduction (see Methodology)

A. The Science-Policy Interface

B. Governance

C. Nexus in a governance context

D. Governance in the Nexus context

E. Entry Points for Governance in Nexus

II. Transboundary Nexus Governance

A. Relevant global standards and regional regimes

A. Global standards for governance

B. Regional regimes for governance

C. Norms, institutions for governance on the Basin level

D. Relevant bilateral/multilateral agreements

B. State acceptance of the above – ratification of instruments, reporting, implementation

C. Guidance to the state level - including examples of initiatives and projects related to the above

[C-bis. Special considerations, such as Regional Economic Integration Organizations]

D. Basin-level governance

i. Water governance at the basin level

ii. Cross-sectoral governance at the basin level

E. International relations between basin countries (bilateral/multilateral)

F. Transboundary/Regional cooperation in the energy sector

G. Transboundary/Regional cooperation in the agriculture sector

H. Transboundary/Regional cooperation on environment

I. Transboundary/Regional cooperation on other relevant matters [transport, tourism, navigation, etc.]

III. Norms and institutions for governance on the national level

A. Worldwide Governance Indicator rankings for each country

i. Law Enforcement

ii. Corruption and transparency

iii. Other (e.g., regional) governance assessments

B. Intersectoral coordination on the national level – this may include mechanisms for integrated policymaking and decision-making such as EIA, SEA, other integrated assessment processes, integrated permitting

C. Sectoral analysis – including energy (e.g., renewable energy/energy mix, power sector development plans); water (e.g., climate change scenario planning, extraction scenarios, ecological flows; agriculture (e.g., investments and productivity increases/rural development plans, farmer-based organizations); tourism (e.g., sustainable tourism policies/plans); land use/spatial planning; environment (e.g., forestry/nature management plans)

i. Overview of Nexus-related institutional frameworks (map of actors)

ii. Policy instruments and planning cycles – this includes a discussion of relevant administrative practices and considerations such as the subsidiarity principle

iii. Governance cultures in individual sectors – e.g., civil society engagement

IV. Solutions and policy packages

A. Governance analysis related to specific priority issues [this analysis can be integrated into specific chapters of the technical analysis, with cross-references]

B. Broadening and strengthening the scope of cooperation: Measures aimed at enhancing transboundary governance of Nexus-related processes

i. Description of governance challenges – these can relate, inter alia, to gaps in the geographical or subject-matter scope of existing cooperative arrangements, power imbalances between or among different existing arrangements, differences in planning cycles, differences in stakeholder engagement and governance culture, differences in capacities between countries or between sectors in a country, lack of intersectoral coordination.

ii. Suggested action packages (solutions) – these are responsive to the issues identified under (i).

iii. Implementing the policy packages – concrete, action-oriented measures with milestones and stocktaking to carry out the identified solutions. The measures should be undertaken according to processes that pay attention to governance concerns throughout.

ANNEX to the Report

Inventory of legislation and instruments on country level

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