

Basin Report:

Questionnaire + Addendum

To review case study basins

with regard to their water governance regime, context and
performance

Nepal

Case study from the BRAHMATWINN project

About this questionnaire

1. Introduction

This questionnaire was developed within the consortium of the **Twin2Go** EC-project based on research case studies from numerous macro-scale river basins. The aim of the questionnaire is to investigate and document professional know-how about the process of implementing integrated water resources management (IWRM) in river basins studied in various EC-projects of the 6th EC Framework Program (FP6), a worldwide perspective with respect to impacts of climate change.

The Upper Brahmaputra River Basin (UBRB) was one of the twinning basins in the **BRAHMATWINN** EC-project has been identified as a representative case study for further investigation in the Himalaya mountain region and became part of the **Twin2Go** EC-project. The results achieved by discussing and filling in this questionnaire therefore are not only of regional relevance but will also contribute to better understand the challenges and constraints for implementing IWRM as defined by the GWP in a global perspective.

The **Twin2Go** questionnaire is based on the case study results provided by the BRAHMATWINN EC-project and complement them with information about the basins' water governance regime, its context and performance. An explanation of the indicators, the scoring system applied and potential data sources is provided in the guidance document associated with the questionnaire.

2. Objectives

The objectives of the questionnaire are threefold:

- (i) To provide a comprehensive professional expert assessment of the status of IWRM implementation by local actors (LA) in the UBRB.
- (ii) To quantify the **Twin2Go** indicators related to issues of the basins' water governance regime, its context and performance and to specify the reasons identified by the LA for the applied indicator scoring.
- (iii) Evaluate the usefulness of the indicators identified by **Twin2Go** and specify complement ones that add to the basin assessment both in a regional and generic perspective.

3. How to fill in the questionnaire

The questionnaire has been worked out during a two day workshop that took place between June 3rd and 4th, 2010 in Guwahati, Assam, NE-India by invited professional experts. The process of filling in the questionnaire was a group effort and at the end of the workshop we had final questionnaires filled in jointly by the national experts groups from Nepal, Bhutan and NE-India.

Filling of the indicator table followed the following procedure:

- (i) Each participant of the workshop should read through the indicator description of the guiding document carefully and understand their meaning for the IWRM implementation assessment. This will provide sufficient information about the indicator meaning and will support the respective national group efforts to complete the questionnaire during the workshop.
- (ii) Assign a score to each of the indicators as described in the guiding document, i.e. "B". In the case of numerical indicators like indices, you should add the numerical value in brackets after the score, e.g. "B (0.178)" or "C (12,534)".

- (iii) The reasons for the scoring have to be explained in brief in the column “comments” and should be both comprehensive and descriptive for evaluation purposes. This column can also be used to specify if the given scoring was controversially discussed, to document data sources required or missing or to add further information that you find relevant for a better understanding of the topic addressed.
- (iv) Based on the preliminary synthesis results and discussion during the Twin2Go synthesis workshop (Stockholm, 01-02/09/10) an addendum was made with some additional parameters. This addendum has been filled by the same experts.

The resulting data will be post-processed and added to the Twin2Go database. Should you feel these scores do not reflect the situation of the basin accurately, or want to contest any of the information included, you may contact the project organisers.

Contact information as well as additional information regarding the project and the results can be found on www.twin2go.eu.

Names of participating experts have been removed for confidentiality purposes.

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A) Water governance regime

No.	Indicator	Score	Comments
I) Characteristics of environmental governance regimes			
a) Water policy, institutional & legal framework (formal and informal)			
1.	Domestic water legislation (laws, by-laws, etc.) in place?	A	Water Resources Act and Regulation (1992) - Umbrella legislation for hydropower, Irrigation, drinking water and other water use Electricity Act and Regulation (1992) - Legislation of Power sector emphasizing Hydropower Regulations under Water Resources Act -Drinking Water Supply Regulation and Irrigation Regulation Nepal Water Supply Corporation Act, 1989 Water Supply Management Board Act, 2007.- drinking water in urban areas Environmental Protection Act, 1996 <i>(Thapa 2009).</i> <i>Nepal does not have a National Water Policy Document (Mirza 2007).</i>
2.	Domestic Water Law: Public character of water and legal status of water use rights	B	<i>the laws for the exercise of public character of water are in place; water is declared as state property</i>
3.	Domestic Water Law: Explicit recognition of traditional and indigenous water uses	B	Local people water rights are protected
4.	Domestic Water Law: On flow availability, third party rights and ecological requirements	C	Just based on availability, water management is informal <i>Opinion of another stakeholder from the region is A, A comes from the water rights are prioritised based upon the use of water resources, and also the protection of downstream ecology are taken into account. For example, in hydropower, 10% downstream flow is mandatory to maintain downstream ecology.</i>
5.	Integration of domestic water legislation	A	Water Resources Act integrates all

No.	Indicator	Score	Comments
6.	Multilevel structure of domestic water legislation and subsidiarity	A	3 Levels: Central government, DDC (district development community)- district water resources committee, municipality or village development committee- local water user communities,
7.	Existence of formal domestic administrative structure for water governance	C	Everything guided by water resources act
8.	National basin organisation or comparable arrangement	B	Water and Energy Commission as national basin organization as member of NABO <i>water management assumed an institutional form in 1981 when created its Water and Energy Commission Secretariat (WECS) as the coordinating arm of the Water and Energy Commission, establishment of River Basin Management Offices(RMBO): Koshi, Narayani and Karnali; RBMO to be responsible for allocating waters (Thapa 2009).</i>
9.	Formalised transboundary coordination organisation	D	There are transboundary issue with India and China .Need of a coordination organization.
10.	Formal institution (legislation) that prescribes the basin management principle	B	National Water Plan, formulated in 2005
11.	Water (basin) strategies, programmes and plans	A	National WR strategy of 2002 and national water plan 2005 <i>Opinion of another stakeholder is B, thinks that water strategies and plan (2002 and 2005) are existed but not fully implemented. For example, the national water plan targets to increase hydropower by certain MW by this date, but not achieved so far. So difficult to agree that it is fully implemented.</i>
12.	Financing mechanisms: Degree of investment from private sector/ public/ other sources (e.g. international)	B	Dominant source -Public sector
13.	Economic instruments Is water for irrigation priced?	C	
14.	Economic instruments Is water for households priced in urban areas?	B	Public Sector: with regards to project costs price charged too low, with regards to user price charged too high
15.	Economic instruments Is water for industry priced?	C	Industry draw water directly in their own without any charged , not so much industry
16.	Tradable permits related to water abstraction/use	C	No permits exist

No.	Indicator	Score	Comments
17.	Polluter pays principle (related to water)	C	
18.	Environmental subsidies (related to water)	C	
19.	Payment for ecosystem services (related to water)	C	No pricing, 10% of mean monthly flow released for environmental services <i>It is considered: "Payment for Ecosystem Services: Developing Forest Carbon Projects in Nepal" as example of how forest carbon credits and payment for other ecosystem services (biodiversity, water, soil quality, etc.) could be pursued; example: PES Mechanism in Kulekhani Watershed (ongoing project), Sellers: Communities, Buyers: Hydroelectric power facility</i>
20.	Tradable permits (related to water quality, maximum, allowable loads etc.)	C	
21.	Environmental tax (related to water)	B	Example: Petroleum product charged 1 Rupee per litre for pollution; Currently Rs 0.5 per liter tax imposed on petrol and diesel for pollution control.
22.	Presence of substituting informal institutions for management of water	B	In practice informal system, e.g farmer managed irrigation system but formal system also exists
23.	Presence of complementary informal institutions for water management	A	Water management based on informal institutions <i>existing water allocations across the sectors are mostly governed by customary water law, based on the informal traditions and need-based allocations. The local customary law provides priority to irrigation needs, because of the agricultural-based livelihoods of the communities. Because of growing competition water allocations are wished to become more transparent and formal, which would protect water rights during the water-scarce periods (IWMI 2002).</i>
23.a	<i>Case-specific indicator(s)...</i>	-	
b) Formalisation of IWRM principles & Millennium Development Goals			
24.	Formalised IWRM principles	C	Water plan is there, has not been implemented, process of formulating water resources policy
25.	State of implementation of IWRM principles	C	See above, it is in process
26.	Capacity to implement IWRM	C	Institutional organisation has to be re-structure <i>Another stakeholder says B: believes efforts are made to increase IWRM capacity, for example, university is launching master programs in IWRM, trainings etc.</i>

No.	Indicator	Score	Comments
27.	Is universal and non-discriminatory access to safe drinking water and sanitation a goal?	A	By 2017 goal to provide safe drinking water to all population (MDG connected)
28.	Integration of wetlands in IWRM and IRBM*	B	<i>WEC - Water and Energy Commission- as Apex Level institution in Water Sector (Thapa 2009); National Wetland Policy 2003</i>
28.a	<i>Case-specific indicator(s)...</i>		
c) Decision making regarding uncertainties			
29.	General practices for dealing with uncertainties	A	
30.	Dealing with uncertainties: Reversible and flexible options	B	
31.	Dealing with uncertainties: Safety margins	B	
32.	Are scenarios used for decision making?	B	Plan and Rescue,... floods, landslides
33.	Climate risks: Climate variability and change	C	Is considered but not in Ministry, Climate Change council, chair by prime minister
33.a	<i>Case-specific indicator(s)...</i>		
II) Actor networks with emphasis on the role and interactions of state and non-state actors and power relationships			
a) Cooperation and coordination structures			
34.	Vertical coordination (governmental)	A	3 levels <i>Another stakeholder agrees that there clear allocation of task in policies and plans' but can't agree that its fully coordinated./the coordination is poor.</i>

No.	Indicator	Score	Comments
35.	Horizontal coordination (governmental)	C	Some overlap <i>lack of coordination among various local institutional stakeholders, for managing the water resources in the basin. Some of the local-level formal stakeholders are the District Water Resources Committee (DWRC), the District Development Committee (DDC), the Village Development Committee (VDC), Non Governmental Organizations (NGOs), and other water user groups, and the Farmer Managed Irrigation Systems (FMIS). The statutory roles and functions of these local stakeholders on the allocation of water resources are not clearly defined in the National Water Resources Act (1993), resulting in conflicts among them. The National Water Resources Act (1993) has given the DWRC greater authority on decision (IWMI2002).</i>
36.	Role of local governments	C	<i>Other opinion is B Local government is not fully restricted. For example, while implementing hydropower, the local government, Village development Committee and district development committee are consulted and formal written document in favour of project is required from these local government authorities.</i>
36.a	<i>Case-specific indicator(s)...</i>		
b) Information sharing via formal rules, dependency relationships etc.			
37.	Kinds of knowledge included => Role of experts/ science, local/traditional knowledge	A	
38.	Access to information => about expert knowledge and management plans	C	Water information dissemination depends on request and not all information published in the web or somewhere else
38.a	<i>Case-specific indicator(s)...</i>		
III) Multi-level interactions across administrative boundaries and vertical integration across levels and horizontal integration across sectors			
a) Centralisation			
39.	One level one actor?	A	

No.	Indicator	Score	Comments
40.	Degree of centralisation	C	Centralized <i>implementation is decentralised. For example, in hydropower, during implementation the local authorities are seriously consulted. Another example, the land acquisition is carried out with consultation from local authorities.</i>
41.	Technical capacity and economies of scale	B	
42.	Legal obligations and responsibility	A	Local self governance act 1999
<i>42.a</i>	<i>Case-specific indicator(s)...</i>		

B) Context

No.	Indicator	Score	Comments
I) Societal dimension			
43.	Proportion of the population living in rural areas	84,24 %	22 824 000 (http://esa.un.org/unup/p2k0data.asp) (2005)
44.	State of societal development	C	Medium high development for all (http://hdr.undp.org/en/statistics/) (2009)
45.	Social sustainability (Gini Index)	C	47,3 http://hdr.undp.org/en/media/HDR_2009_EN_Complete.pdf (2009)
46.	Economic sustainability (e.g. GDP)	E	1,081 (343 \$) (http://siteresources.worldbank.org/ICPINT/Resources/icp-final-tables.pdf) (2005)
47.	Effectiveness of formal institutions	E	2,3 (corruption perception index) http://www.transparency.org/policy_research/surveys_indices/cpi/2009/cpi_2009_table (2009)
48.	Trustworthiness of economic institutional setting - degree of risk for foreign direct investment	n/a	http://www.guardian.co.uk/business/2009/may/22/recession-government-borrowing#zoomed-picture (2009)
49.	Presence of avenues of dissent – press freedom, freedom of speech	D	35.63 low (D) press freedom http://en.rsf.org/press-freedom-index-2009.1001.html (2009)
49.a	<i>Case-specific indicator(s)...</i>		
II) Good Governance Principles at the national level – legal basis at the national level			
50.	Participatory regarding decision making in the water sector	A	All SH groups are considered, public hearing, actively motivated to contribute

No.	Indicator	Score	Comments
51.	Transparency regarding water allocation	B	Depends on requirement
52.	Effectiveness and efficiency regarding decision making in the water sector	B	Control mechanism are in law, but monitoring and enforcement is weak
53.	Equitable and inclusive	A	
54.	Predictability – with regard to IWRM and climate change	C	Under formulation <i>somehow this issue are considered, for example GLOF and climate change, flood etc.</i>
54.a	<i>Case-specific indicator(s)...</i>		
III) Environmental dimension			
55.	Köppen-Geiger climate classification (river basin)	Cwa-Cwb	Cwa: Temperate – dry winter – hot summer
56.	Climate Moisture Index	H	0,25 -1 humid, in Nepal partly sub humid and semi arid areas (2008)
57.	Climate Moisture Index Coefficient of Variation	A	0 – 0,25 (low variability) http://atlas.gwsp.org (2008)
58.	Per Capita Equivalent of TARWR	C	8 170 m ³ /yr (http://www.greenfacts.org/en/water-resources/figtableboxes/3.htm) (per capita 2005)
59.	Average water availability at the river basin level (1995)	A	1000 mm/yr http://www.env-edu.gr/Documents/World%20Water%20in%202025.pdf
60.	Annual renewable water supply per person by river basin (1995)	B	1700-4000 m ³ /person/yr http://earthtrends.wri.org/pdf_library/maps/2-4_m_WaterSupply1995.pdf Probably too old to be reliable
61.	Projected annual renewable water supply per person by river basin (2025)	B	1700-4000 m ³ /person/yr http://earthtrends.wri.org/pdf_library/maps/2-4_m_WaterSupply2025.pdf
62.	Relative Water Stress Index	B	< 0,2 (low RWSI) http://wwdrii.sr.unh.edu/download.html (1995)
63.	Climate Vulnerability Index	D	Medium high (44 – 51,9) http://ocwr.ouce.ox.ac.uk/research/wmpg/cvi/ (2008-2010)

No.	Indicator	Score	Comments
64.	Degree to which water quality status restricts usability of users' types	B/C	The degree of quality is not specified for water uses <i>Well, the choice C particularly refers to the Urban environment. But if we consider total watershed, for example Kosi, which is less affected by pollution, the answer B fits more</i>
65.	Extent of flow and channel modification	A	Natural river courses <i>Depends upon cases/river basins, in refers to Kosi, there is small scale river trainings and channel modification can be found.</i>
66.	Impact of land-use changes on hydrological processes	B	Sinking groundwater levels due to expanding city and agricultural areas, more water needs to be extracted, shifting of crops
67.	Uncertainty associated to climate change predictions regarding precipitation for the basin	B	0,6- 0,8 (simulation 2050)
67.a	<i>Case-specific indicator(s)...</i>	-	

C) Performance

No.	Indicator	Score	Comments
I) Progress towards stated Goals			
68.	Progress towards sustainable access to safe drinking water (MDG drinking water target)	A	On track World Health Organization & UNICEF (2010): Progress on Sanitation and Drinking-water: 2010 Update. http://www.wssinfo.org/en/40_MDG2008.html
69.	Proportion of population with access to improved drinking water	C (76-90)	89% http://mdgs.un.org/unsd/mdg/Data.aspx (2006)
70.	Proportion of rural population with access to improved drinking water	C (76-90)	88% http://mdgs.un.org/unsd/mdg/Data.aspx (2006)
71.	Progress towards sustainable access to basic sanitation (MDG sanitation target)	C	Not on track, 46% actually, in rural areas very limited World Health Organization & UNICEF (2010): Progress on Sanitation and Drinking-water: 2010 Update. http://www.wssinfo.org/en/40_MDG2008.html
72.	Proportion of population with access to improved sanitation facilities	E (<50%)	27% (http://mdgs.un.org/unsd/mdg/Data.aspx) (2006)
73.	Proportion of rural population with access to improved sanitation facilities	E (<50%)	24% (http://mdgs.un.org/unsd/mdg/Data.aspx) (2006)
73.a	<i>Case-specific indicator(s)...</i>		
II) Good governance principles as indicators for the process dimension			
74.	Participatory regarding decision making in the water sector	A	Public hearing, user committees and round tables <i>Other SH: B, would not consider this Perfect 'A'. The participation is good but not perfect. Otherwise the present water crisis for example, Melamchi water supply and conflicts with local stakeholders would not have occurred.</i>

No.	Indicator	Score	Comments
75.	Transparency regarding water allocation	A	Provision of detailed information of new projects in the newspaper, contains information to quantity and quality of water
76.	Effectiveness and efficiency regarding decision making in the water sector	C	Goals set up by government not achieved, only goals in drinking water sector are achieved
77.	Equitable and inclusive	B	Progress in law, e.g participation of minimum of one woman
78.	Predictability – with regard to IWRM and climate change	C	Planned to consider in future planning activities
78.a	<i>Case-specific indicator(s)...</i>		
III) Stakeholder participation			
79.	Deliberative engagement opportunities	B	e.g. in terms of hydropower, protests from the population can change governmental decisions
80.	Inclusiveness of stakeholder participation	B	Public hearing (mandatory by law) for each project contributes to consider all SH groups (for project affected people), government tries to fulfil demands of SH
80.a	<i>Case-specific indicator(s)...</i>		
IV) Response to climate change			
81.	Strategy for adaptation to climate change in the water sector	B	NAPA each country is supposed to prepare plan for adaption to climate change, water as one of six sectors, Nepal is in process of preparing plan
82.	Availability of specific knowledge enabling adaptation	E	
83.	Awareness of water managers regarding adaptation to climate change	C	Not considered Climate change has to be assessed, is not in the priority of the government <i>Other SH: there is broad awareness of climate change and adaptation.</i>

No.	Indicator	Score	Comments
84.	Coordinated implementation process regarding adaptation to climate change: Program / Plan of activities and measures	A	NAPA is being prepared
85.	Operational activities (measures)	E	<i>Other SH: C Difficult to believe that there is no measures taken place. Some examples include; flood channelling, river training work, awareness activities, regulation of some of the potentially dangerous glacial lake.</i>
86.	Ways to deal with climate variability (floods and droughts)	B	Try to put in place for some cases, e.g. GLOFS, one warning system was implemented but is actually not working
86.a	<i>Case-specific indicator(s)...</i>		

Addendum - Context

No.	Indicator	Score	Comments
I) Basin Characteristics			
67a	Sub-Basin Size		147,181 km ² (entire area of Nepal is part of the Ganges Basin), special focus on Kosi River: Nepalese part is 30,700 km ²
67b	Transboundary		Yes

Addendum - Performance

No.	Indicator	Score	Comments
I) Environmental sustainability			
a) State of the water resources and the environment			
87	Aquatic biodiversity	B	
88	Invasive exotic species	B	
89	Surface and groundwater quality	B	
90	Groundwater use	C	
91	Water Exploitation Index (WEI)	C	given a Number C considering the whole nepal scenario. Lower part of Nepal called Terai below the churiya range areas are in water stress due to over exploitation and deforestation. Similarly flow in the major rivers of Nepal are showing the decreasing trend (May be the reason of climate change still the matter of research). Major cities of Nepal and rural area are facing a water scarcity.

No.	Indicator	Score	Comments
b) Management practices			
92	Water allocated for aquatic ecosystem	B	By law in some infrastructure (eg hydropower) development provision about to release the water for aquatic ecosystem.
93	Water pollution incidents	B	
94	Water quality monitoring	B	
95	Hydrometeorological monitoring – levels	C	
96	Level of understanding of groundwater resources	C	