

Basin Report:

Questionnaire + Addendum

To review case study basins

with regard to their water governance regime, context and
performance

Norrström Basin

Case Study from the TWINBAS project

About this questionnaire

This questionnaire was developed within the scope of the Twin2Go project. It serves to record case study data about a river basin's water governance regime, its context and its performance. An explanation of the indicators, pre-defined scores and potential data sources is provided in the guidance on this questionnaire. (Twin2Go, Guidance on the Questionnaire of the Twin2Go - Case Study Review Workshops. 13/03/10).

Scores to each of the indicators are assigned according the suggested score scheme proposed in the guidance. In the case of numerical indicators like indices, the numerical values are added in brackets after the score, e.g. "B (0.178)" or "C (12,534)". For a better understanding of the recorded issue, additional information is added in the "comments" column.

- ❖ If not specified differently, the indicators refer to the national part of the basin of interest. The report only considers the national part of the basin.
- ❖ In general, you should check the GWP toolbox for papers, reports, etc. as data sources of your region, especially with regard to the water governance regime.

The questionnaire was completed by Twin2Go staff in collaboration with local experts previously involved in TwinBas.

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	Environmental Code (main water law, includes water quality, nature preservation, responsibilities for emissions and procedures for different operator to get licenses, and inspection and control) Planning and building act (includes land and water planning) Water-service act (includes water supply and sewage water treatment, responsibilities and financing)
2.	Domestic Water Law: Public character of water and legal status of water use rights	A/B	Environmental regulation is possible, but it also relates to present conditions of water resources and quality, and therefore is not used to a large extent everywhere.
3.	Domestic Water Law: Explicit recognition of traditional and indigenous water uses	C	Historically important buildings such as old hydro power plants and dams are protected by law to some extent
4.	Domestic Water Law: On flow availability, third party rights and ecological requirements	A	Water supply and hydro power plants and other water users needs in general permissions to use water. Most permits were given prior to the current legislation in Sweden, when ecological values were not taken into consideration.
5.	Integration of domestic water legislation	A	Fully integrated in law. Activities under other laws needs to support environmental quality according to the Environmental Code, and/or get permits according to the Environmental Code
6.	Multilevel structure of domestic water legislation and subsidiarity	A	Sweden has a multilevel law system with laws (Parliament), Ordinances (Government) and Regulations (Central Agencies).

No.	Indicator	Score	Comments
7.	Existence of formal domestic administrative structure for water governance	A	Sweden has a multilevel administrative structure for water issues, which mainly follows the general administrative structure – and all organizations have a environment/water responsibility. Parliament and Government overall responsibility for legislation and financing, several National Agencies responsible for different water issues, 5 regional water authorities responsible for setting objectives for water quality and programme of measures, 21 regional County Administrative Boards which are responsible for certain regional water issues, and 290 municipalities responsible for local waters.
8.	National basin organisation or comparable arrangement	B	5 regional water authorities responsible for setting objectives for water quality and programme of measures. (also see above)
9.	Formalised transboundary coordination organisation		Not relevant
10.	Formal institution (legislation) that prescribes the basin management principle	A	Parliament and Government overall responsibility for legislation and financing, National Agencies responsible for different water issues, 5 regional water authorities responsible for setting objectives for water quality and programme of measures.
11.	Water (basin) strategies, programmes and plans	B	5 regional water authorities have established formal objectives for water quality, programme of measures and River Basin Management plan, according to the EU Water Framework Directive.
12.	Financing mechanisms: Degree of investment from private sector/ public/ other sources (e.g. international)	A	Parliament and Government responsibility for state financing, 290 municipalities responsible for local financing, house-holds finance water and sewage services, companies/private finance their own water operations
13.	Economic instruments Is water for irrigation priced?	C	The Environmental Code and other laws sets the objectives and defines polluter/users pay principle, i.e. companies/private finance their own water operations. It also means that irrigation is paid for by the user. In general no subsidies exists, except for EU Common Agriculture Policy.
14.	Economic instruments Is water for households priced in urban areas?	B	Yes, the charged price corresponds to the cost for treatment of fresh water and waste water and their environmental effects.

No.	Indicator	Score	Comments
15.	Economic instruments Is water for industry priced?	B	Yes, the charged price corresponds to the cost for treatment of fresh water and waste water and their environmental effects, and if they are water operator of themselves, the pay for all their installations, permits and environmental effects.
16.	Tradable permits related to water abstraction/use	C	It is possible to buy a permit from permit-holder (usually a part of an estate or a company), but there is not really a market for this (except for hydro-power).
17.	Polluter pays principle (related to water)	B	The Environmental Code defines the polluter/users pay principle, and it is widely used for water-related issues
18.	Environmental subsidies (related to water)	A	In general no subsidies exists, except for EU Common Agriculture Policy.
19.	Payment for ecosystem services (related to water)	C	The Environmental Code defines water quality objectives, but ecosystem services is not fully defined and implemented.
20.	Tradable permits (related to water quality, maximum, allowable loads etc.)	C	The Environmental Code allows permits which can be handle as an "emission-bubble" for several operators, but these hardly exists in Sweden
21.	Environmental tax (related to water)	C	No specific taxes are implemented for water, instead PPP according to the Environmental Code defines the full financing responsibility for the operator
22.	Presence of substituting informal institutions for management of water	A	Several Universities and Institutions support Agencies, regional and local authorities with information
23.	Presence of complementary informal institutions for water management	B	Local water organizations exists for about 75% of the Swedish river basins
23.a	<i>Case-specific indicator(s)...</i>		
b) Formalisation of IWRM principles & Millennium Development Goals			
24.	Formalised IWRM principles	A	EU Water Framework Directive
25.	State of implementation of IWRM principles	A	Fully implemented

No.	Indicator	Score	Comments
26.	Capacity to implement IWRM	B	Fully implemented in the Swedish administrative structure
27.	Is universal and non-discriminatory access to safe drinking water and sanitation a goal?	A	Yes, and it is more or less fully implemented. Note that rural households are responsible for their own water and sewage service.
28.	Integration of wetlands in IWRM and IRBM*	B	Not fully implemented in Sweden since wetlands are numerous and covers extensive areas in Sweden
28.a	<i>Case-specific indicator(s)...</i>		
c) Decision making regarding uncertainties			
29.	General practices for dealing with uncertainties	A	By using different models for water flow/floods, emission transport and water quality, in combination with long-term monitoring and different quality parameters the overall uncertainties can be analyzed
30.	Dealing with uncertainties: Reversible and flexible options	A	
31.	Dealing with uncertainties: Safety margins	A	
32.	Are scenarios used for decision making?	A	Yes, for some parts
33.	Climate risks: Climate variability and change	C	Climate risks models have been established and are under development, general trends and scenarios are described but uncertainties in data on regional and local level are high.
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)	B	In general, vertical coordination is high in the governmental organizations with frequent communication, but communication with the local level (municipalities) are not always efficient (depending on that the municipalities have very different capacity)

No.	Indicator	Score	Comments
35.	Horizontal coordination (governmental)	A	Water issues are not fully recognized in other political areas
36.	Role of local governments	B	the local level (municipalities) are important in the Swedish administrative organization with several roles in water management, however the municipalities have very different capacity
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	Management to a high degree knowledge based, but still need fore more ecosystem analysis
38.	Access to information => about expert knowledge and management plans	A/B	All public data are public accessible for all citizens, and all water management information are accessible on internet
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	
40.	Degree of centralisation	B	Sweden is in general decentralized with defined responsibilities according to the laws
41.	Technical capacity and economies of scale	A	High
42.	Legal obligations and responsibility	A	Well defined in the laws
42.a	<i>Case-specific indicator(s)...</i>		

B) Context

No.	Indicator	Score	Comments
I) Societal dimension			
43.	Proportion of the population living in rural areas	15.7	Source: United Nations Population Division (2008): World Urbanization Prospects: The 2007 revision Population Database, http://esa.un.org/unup/ Values for 2005
44.	State of societal development	A (0.963)	Human Development Index Source: UNDP: Human Development Report Values for 2009 http://hdrstats.undp.org/en/countries/country_fact_sheets/cty_fs_SWE.html
45.	Social sustainability (Gini Index)	A (25)	Gini Index Source: UNDP: Human Development Report 2009, http://hdr.undp.org/en/media/HDR_2009_EN_Complete.pdf - Values were calculated based on data by World Bank (2009d)
46.	Economic sustainability (e.g. GDP)	A (31,995)	GDP per capita (US-\$, PPP-corrected) Source: World Bank, http://siteresources.worldbank.org/ICPINT/Resources/icp-final-tables.pdf Values for 2005 Gini Index Source: UNDP: Human Development Report 2009, http://hdr.undp.org/en/media/HDR_2009_EN_Complete.pdf - Values were calculated based on data by World Bank (2009d) GDP per capita (US-\$, PPP-corrected) Source: World Bank, http://siteresources.worldbank.org/ICPINT/Resources/icp-final-tables.pdf Values for 2005

No.	Indicator	Score	Comments
47.	Effectiveness of formal institutions	A (9.2)	Corruption Perception Index Source: Transparency International, http://www.transparency.org/policy_research/surveys_indices/cpi/2009/cpi_2009_table Values for 2009
48.	Trustworthiness of economic institutional setting - degree of risk for foreign direct investment	A (AAA)	Rating by the rating agency "Standards & Poor Source: The Guardian (article from 22.05.2009), http://www.guardian.co.uk/business/2009/may/22/recession-government-borrowing#zoomed-picture
49.	Presence of avenues of dissent – press freedom, freedom of speech	A (0,00)	Press Freedom Index Source: Reporters without Borders, http://www.rsf.org/en-classement1003-2009.html Values for 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	Public hearings are a custom in Sweden for planning and environment, and open for all citizens comments before decisions
51.	Transparency regarding water allocation	A	Open and transparent information, but allocation is not common problem in Sweden
52.	Effectiveness and efficiency regarding decision making in the water sector	A	Efficient and high for issues dealt with within one organization, but harder to handle on River basin level
53.	Equitable and inclusive	A	High
54.	Predictability – with regard to IWRM and climate change	B	IWRM are implemented in the law and partly Climate Change issues, since it has to be considered in the Planning and building act
54.a	<i>Case-specific indicator(s)...</i>		

No.	Indicator	Score	Comments
III) Environmental dimension			
55.	Köppen-Geiger climate classification (river basin)	Cfb	Source: Kottek, M., J. Grieser, C. Beck, B. Rudolf, and F. Rubel (2006), http://koeppen-geiger.vu-wien.ac.at/present.htm#maps
56.	Climate Moisture Index	H	Source: GWSP Digital Water Atlas (2008), GWSP Digital Water Atlas (2008), http://atlas.gwsp.org/index.php?option=com_wrapper&Itemid=53&id_desc=98&itemId_desc=63&id_ds=146&itemId_ds=52&header=Climate%20Moisture%20Index&site=b1_cmi_anWSAG1_0
57.	Climate Moisture Index Coefficient of Variation	B	Source: GWSP atlas (2008), http://atlas.gwsp.org/index.php?option=com_wrapper&Itemid=53&id_desc=126&itemId_desc=63&id_ds=171&itemId_ds=52&header=Coefficient%20of%20Variation%20for%20Climate%20Moisture%20Index&site=b2_cmi_annual_cv
58.	Per Capita Equivalent of TARWA	B (19,580)	Source: UNESCO, UN World Water Development Report, http://www.greenfacts.org/en/water-resources/figtableboxes/3.htm Values for 2005
59.	Average water availability at the river basin level (1995)	B (100)	Source: University of Kassel, WaterGAP 2.0, http://www.env-edu.gr/Documents/World%20Water%20in%202025.pdf
60.	Annual renewable water supply per person by river basin (1995)	A (> 10,000)	Source: World Resources Institute, EarthTrends 2001, http://earthtrends.wri.org/pdf_library/maps/2-4_m_WaterSupply1995.pdf
61.	Projected annual renewable water supply per person by river basin (2025)	A	Source: World Resources Institute, EarthTrends 2001, http://earthtrends.wri.org/pdf_library/maps/2-4_m_WaterSupply2025.pdf
62.	Relative Water Stress Index	B	Source: UNESCO, World Water Development Report II, http://wwdrii.sr.unh.edu/download.html
63.	Climate Vulnerability Index	A	Source: Oxford Centre for Water Research (OCWR), 2008-2010, http://ocwr.ouce.ox.ac.uk/research/wmpg/cvi/

No.	Indicator	Score	Comments
64.	Degree to which water quality status restricts usability of users' types	A	WFD RBMP
65.	Extent of flow and channel modification	B	Many rivers have regulated flows and physical modifications, many of them have effect on the water quality
66.	Impact of land-use changes on hydrological processes	B	Land-use has a great impact on water quality
67.	Uncertainty associated to climate change predictions regarding precipitation for the basin	A	Source: Illustration from MAGICC-SCENGEN
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	Source: WHO & UNICEF (2008), Progress on Drinking Water and Sanitation: Special Focus on Sanitation, http://www.wssinfo.org/en/40_MDG2008.html Values for 2006
69.	Proportion of population with access to improved drinking water	A (100%)	Source: UN statistics of MDG progress, http://mdgs.un.org/unsd/mdg/Data.aspx Values for 2006
70.	Proportion of rural population with access to improved drinking water	A (100%)	Source: UN statistics of MDG progress, http://mdgs.un.org/unsd/mdg/Data.aspx Values for 2006
71.	Progress towards sustainable access to basic sanitation (MDG sanitation target)	A	Source: WHO & UNICEF (2008), Progress on Drinking Water and Sanitation: Special Focus on Sanitation, http://www.wssinfo.org/en/40_MDG2008.html Values for 2006
72.	Proportion of population with access to improved sanitation facilities	A (100%)	Source: UN statistics of MDG progress, http://mdgs.un.org/unsd/mdg/Data.aspx Values for 2006
73.	Proportion of rural population with access to improved sanitation facilities	A (100%)	Source: UN statistics of MDG progress, http://mdgs.un.org/unsd/mdg/Data.aspx Values for 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	C	Public hearings are a custom in Sweden for planning and environment, and open for all citizens comments before decisions

No.	Indicator	Score	Comments
75.	Transparency regarding water allocation	A	Open and transparent information, but allocation is not common problem in Sweden
76.	Effectiveness and efficiency regarding decision making in the water sector	A	Efficient and high for issues dealt with within one organization, but harder to handle on River basin level
77.	Equitable and inclusive	A	High
78.	Predictability – with regard to IWRM and climate change	C	IWRM are implemented in the law and partly Climate Change issues, since it has to be considered in the Planning and building act
78.a	<i>Case-specific indicator(s)...</i>		
III) Stakeholder participation			
79.	Deliberative engagement opportunities	A	High
80.	Inclusiveness of stakeholder participation	A	High
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	Climate risks models have been established and are under development, general trends and scenarios are described but uncertainties in data on regional and local level are high.
82.	Availability of specific knowledge enabling adaptation	D	Climate risks models are under development for different river basins
83.	Awareness of water managers regarding adaptation to climate change	B	High
84.	Coordinated implementation process regarding adaptation to climate change: Program / Plan of activities and measures	A	River Basin Management plan and several other plans and programs are in progress focusing on effects of climate change

No.	Indicator	Score	Comments
85.	Operational activities (measures)	C	Mapping and planning are in progress
86.	Ways to deal with climate variability (floods and droughts)	A	Mapping and planning are in progress, municipalities have the main responsibility for planning and adaptation
86.a	<i>Case-specific indicator(s)...</i>		

Addendum - Context

No.	Indicator	Score	Comments
I) Basin Characteristics			
67a	Sub-Basin Size		Norrstrom is a national River Basin approx 23000 km2, (including coastal waters approx 26000 km2)
67b	Transboundary		Norrstrom is a swedish River Basin

Addendum - Performance

No.	Indicator	Score	Comments
I) Environmental sustainability			
a) State of the water resources and the environment			
87	Aquatic biodiversity	A	Most species are still in the area, but populations are altered
88	Invasive exotic species	B	An expert judgement is hard since it depends on definitions of invasive species and impact, but in general there is a minor impact. However, introduction of the American signal crayfish have a strong impact on the normal Swedish crayfish, but it does not change the ecosystem.
89	Surface and groundwater quality	C	About 70-80 % of the surface waters do not reach the environmental objectives of the EU Water Framework Directive. Only about 2 % of the groundwaters do not reach the environmental objectives of the EU Water Framework Directive.
90	Groundwater use	A	Groundwater abstraction are in balance with recharge for both large and small aquifers.

No.	Indicator	Score	Comments
91	Water Exploitation Index (WEI)		Total water abstraction is approx 10% av yearly total water flow
b) Management practices			
92	Water allocated for aquatic ecosystem	A/B	Some hydropower plants are not managed in accordance with requirements for aquatic ecosystems, but in other areas it is not a problem.
93	Water pollution incidents	A	The environmental and rescue organizations are well organized for these issues
94	Water quality monitoring	A	In general, monitoring stations covers the whole area
95	Hydrometeorological monitoring – levels	A	In general, monitoring stations covers the whole area
96	Level of understanding of groundwater resources	A	In general, sufficient understanding of the groundwater resources