

Coordinating twinning partnerships towards more  
adaptive governance in river basins

## Basin Report:

Questionnaire + Addendum

To review case study basins with regard to their water  
governance regime, context and performance

## Guadiana Basin

With focus on the Upper Guadiana part

Case Study Review Workshop for the NeWater project

Berlin, 05.-07.05.2010

The questionnaire was post-processed after the workshop.

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## About this questionnaire

### 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, i.e. the Spanish part of the Guadiana basin.

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The questionnaire was sent to the invited experts prior to the Case Study Review Workshop in Berlin (May 5-7 2010). The experts prepared themselves by studying the questionnaire intensively. Some questions were answered before the actual workshop started and they noted ambiguities and misunderstandings regarding certain questions. Most of them could be answered during the plenary session at the beginning at the workshop.

Prefilled questionnaires were discussed and completed in workgroup sessions during the workshop. Difficulties concerning indicators were discussed in the plenum.

The Guadiana questionnaire was completed by the end of the workshop. Nonetheless, some questions concerning economical tools were difficult to answer due to the specific situation in the Guadiana basin (question 13-16). The high number of illegal wells and associated uncertainties regarding the pumping rates make it difficult to provide statements or measure results about the efficiency of economic instruments. The question number 21 – the only one – was left out, since the experts were not able to answer this question.

Further the experts outlined additional specific case-study indicators:

- Instruments for groundwater-surface water conjunctive use
- Degree of transparency of the linkages between water use (quantity) and economic activities (value); this indicator is able to describe the benefit of individual farmers as well as of the socio-economic sector of the Guadiana Basin
- Degree of implementation; to which extent are formal and informal institutions applied/implemented on the ground?

The general focus of this case study was given to the Upper Guadiana Basin, since the experts experience are related to this specific area.

After the workshop, another case study expert was involved in the post-processing of the Guadiana questionnaire.

Based on the preliminary synthesis results and discussion during the Twin2Go synthesis workshop (Stockholm, September 1-2 2010) an addendum was made with some additional parameters.

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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](http://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
<b>I) Characteristics of environmental governance regimes</b>			
<b>a) Water policy, institutional &amp; legal framework (formal and informal)</b>			
1.	<b>Domestic water legislation (laws, by-laws, etc.) in place?</b>	A	The <b>Water Law (1985)</b> ( <i>Ley de Aguas</i> ) replaced the <b>1886 Water Law</b> and forms the core of water legislation in present day in Spain. It laid down the water planning principles, consolidated a financial regime for water users which delivered them important benefits, consolidated the institutional role of the basin agencies, granting them autonomy, financial resources and personnel to become the actual decision makers in all water issues within the basin boundaries, defined a model of co-decision making in which direct water users and interested administrations have had an active role in all water planning and management at basin level. The <b>1999 Water Law Reform</b> amended the 1985 Water Law (e.g. regulation of the exchange of water rights, Public cooperations building water works and recouping the costs by means of sounder financial arrangements, desalinated and reused water belong to the public domain). <b>The WFD (2000)</b> is maybe the most relevant water policy initiative of the last 20 years in Europe (including Spain). It includes the following issues: water pricing, ecological objectives, political processes, public participation and new approaches to water planning.
2.	<b>Domestic Water Law: Public character of water and legal status of water use rights</b>	A	Since 1985 water resources were considered public domain, saving a few exceptions of groundwater use.
3.	<b>Domestic Water Law: Explicit recognition of traditional and indigenous water uses</b>	A	No indigenous uses. Traditional uses could be identified as private groundwater rights reminiscent of the 1886/1985 laws, which are still operational

No.	Indicator	Score	Comments
4.	<b>Domestic Water Law: On flow availability, third party rights and ecological requirements</b>	A	Overall there is a nation-wide prioritisation of uses based on water availability (urban supply-irrigation-nature) At the Upper Guadiana basin scale, not really implemented regarding environmental flows due to the absence of control mechanisms on groundwater abstraction
5.	<b>Integration of domestic water legislation</b>	A	
6.	<b>Multilevel structure of domestic water legislation and subsidiarity</b>	A	The Water Authority is responsible for most planning and management functions. Other actors, such as the Water User Associations, have their own attributions.
7.	<b>Existence of formal domestic administrative structure for water governance</b>	A	Water Authorities, such as the Guadiana Water Authority are largely autonomous for their everyday functioning, but ultimately respond to the Ministry for the Environment.
8.	<b>National basin organisation or comparable arrangement</b>	A-	The Guadiana Water Authority is a catchment management entity in charge of managing water in the basin There's sufficient funding to fulfil every day tasks. The Upper Guadiana Plan, however, requires very significant funding (€5.500 million) and is experiencing financial difficulties associated to the economic crisis. <u>Post-processing comment:</u> The score was changed from "A/B" to "A-", because according to the comments, the basin organisation is normally equipped with sufficient financial means.
9.	<b>Formalised transboundary coordination organisation</b>	A	The "CONVENIO DE ALBUFEIRA" regulates the relations between Spain and Portugal in terms of water. However, transboundary issues are largely irrelevant in the context of this subbasin.
10.	<b>Formal institution (legislation) that prescribes the basin management principle</b>	A	Spanish law prescribes the basin management principle since at least the first half of the 20 <sup>th</sup> century. Some Catchment Authorities exist since the 1920s. The Guadiana Water Authority is a catchment management entity in charge of managing water in the basin
11.	<b>Water (basin) strategies, programmes and plans</b>	B	There have been different plans in the past to recover wetland ecosystems (EU/national funding). However, these have traditionally been poorly implemented (very limited control over groundwater extractions, etc).

No.	Indicator	Score	Comments
12.	<b>Financing mechanisms: Degree of investment from private sector/ public/ other sources (e.g. international)</b>	B	<p>Water Authority-driven plans: Public funds mostly</p> <p>Individual users (well owners): Private funds</p> <p>There are some private water supply companies.</p>
13.	<b>Economic instruments Is water for irrigation priced?</b>	B	<p>Surface and groundwater are priced in the Guadiana Basin (but groundwater is not priced by the River Basin Authority).</p> <p>The dams and channels are charged and farmers who are using the infrastructure for irrigation purposes have to pay for water, both surface and groundwater. If farmers are using their own water infrastructure they do not have to pay for it. Groundwater is a 'self service', but the investment in wells is priced. 30% of the entire price is charged by the River Basin Authority. 70% are the costs of the users themselves.</p>
14.	<b>Economic instruments Is water for households priced in urban areas?</b>	B	<p>About 60% of the population is served by private water companies which operate under concession contracts with municipalities. 92% of Spanish cities used increasing-block tariffs, i.e. the tariff per cubic meter increases as consumption increases calculated of the average consumption. Many cities had a large fixed fee that included a consumption of between 60 and 180 cubic meter per year, thus providing no financial incentive to save water below this level. The River Basin Authority is only charging the municipalities according to the infrastructures (channels). 5 cent / m<sup>3</sup> for mixed water from different sources.</p> <p>The Ministry of Environment estimates the cost recovery for water supply and sanitation at "between 50% and 90%". However, independent sources estimate it to be as low as 30%</p> <p>It is estimated that the average tariff for water supply and sanitation accounts 1.50/m<sup>3</sup> Euro</p> <p><u>Post-processing comment:</u> The score was changed from "A/B" to "B", because according to the comments, the water price does not reflect the real cost of water in most cases.</p>

No.	Indicator	Score	Comments
15.	<b>Economic instruments Is water for industry priced?</b>	B+	Yes, the water for the industrial sector is priced (fixed charge = volumetric charge). The industry pays more for water consumption than households. Industrial users pay 1.81/m <sup>3</sup> Euro. (This is one of the lowest water tariffs in the EU) <u>Post-processing comment:</u> The score was changed from “A/B” to “B+”, because according to the comments on this indicator and on indicator 14, the water price does normally not reflect the real cost of water, even though it is higher than for urban households.
16.	<b>Tradable permits related to water abstraction/use</b>	C	No trading between individuals. The Water Authority currently buys rights off farmers to redistribute them and recover the aquifer/wetlands. A water exchange centre is currently being put into place for the reallocation of water rights.
17.	<b>Polluter pays principle (related to water)</b>	B	Irrigation: It existed in the past, conditioning subsidies (wetland recovery plans), not sure it does now beyond codes of good practices Industrial: principle partly applies (“canones de vertidos”, etc)
18.	<b>Environmental subsidies (related to water )</b>	A	Different subsidies have existed over the years, and have mostly attempted to save water to restores the wetlands (wetland plans, etc). The upper Guadiana Water plan allows for the possibility of subsidizing the substitution of crop land for forests.
19.	<b>Payment for ecosystem services (related to water)</b>	C	Farmers have traditionally been paid to limit pumping in the context of different management plans (most notably the “Plan de Compensación de Rentas” it was a program from the EU). At present, the Water Authority is purchasing water rights off farmers to set up a center for the exchange of water rights. Was successful, but not for long. Buying irrigation land to take them out of agriculture business and to protect the wetlands
20.	<b>Tradable permits (related to water quality, maximum, allowable loads etc.)</b>	C	No tradable permits based on water quality
21.	<b>Environmental tax (related to water)</b>	C	No tax. Related to water in other river basins. e.g. Catalans



No.	Indicator	Score	Comments
22.	Presence of substituting informal institutions for management of water	C	Illegal water use is widespread throughout the sub basin. Illegal use is not often denounced
23.	Presence of complementary informal institutions for water management	A	Illegal water use is widespread throughout the sub basin. Illegal use is not often denounced
23.a	<i>Case-specific indicator(s)...</i>		
<b>b) Formalisation of IWRM principles &amp; Millennium Development Goals</b>			
24.	Formalised IWRM principles	A	No explicit mention is made to the Global Water Partnership. No explicit mention to IWRM, but it is included in as much as it is in the WFD
25.	State of implementation of IWRM principles	B	Basin management plan under implementation. No explicit mention to IWRM, but it is included in as much as it is in the WFD
26.	Capacity to implement IWRM	B	Groundwater development is not sufficiently controlled, but steps are taken in that direction (remote sensing, installation of metering devices, etc)
27.	Is universal and non-discriminatory access to safe drinking water and sanitation a goal?	A	Yes, everyone has access to safe drinking water
28.	Integration of wetlands in IWRM and IRBM*	A	Wetland restoration has been a key goal in most basin-scale plans and normative for the last two decades. Wetland restorations goals have not been met, however.
28.a	<i>Case-specific indicator(s)...</i>		
<b>c) Decision making regarding uncertainties</b>			
29.	General practices for dealing with uncertainties	A-	E.g. guidance document related to the EU WFD Giving flexibility for water managers. In Spain are consistent of certain priorities on water. <u>Post-processing comment:</u> The score was changed from “A/B” to “A-”, because different kinds of uncertainties are obviously taken into account according to the original score.

No.	Indicator	Score	Comments
30.	Dealing with uncertainties: Reversible and flexible options	A	Yes.
31.	Dealing with uncertainties: Safety margins	A	Yes, with huge safety margins. According to the dams and floods and capacity of the dams.
32.	Are scenarios used for decision making?	A	Different institutions are responsible for drafting scenarios (i.e. Universidad de Castilla-La Mancha underpins climate change scenarios)
33.	Climate risks: Climate variability and change	B+	A is incipient. B is traditional practice. <u>Post-processing comment:</u> The score was changed from “A/B” to “B+”, because according to the comment, the stronger consideration of climate is in an early stage, which means that it has hardly affected the regime’s performance.
<i>33.a</i>	<i>Case-specific indicator(s)...</i>		
<b>II) Actor networks with emphasis on the role and interactions of state and non-state actors and power relationships</b>			
<b>a) Cooperation and coordination structures</b>			

No.	Indicator	Score	Comments
34.	<b>Vertical coordination (governmental)</b>	A	<p>Spain in general: the Ministry of Environment is in charge of water resources management and the Ministry of Health is in charge of drinking water quality monitoring.</p> <p>River Basin Authorities (<i>Confederaciones de Cuencas Hidrográficas</i>) are in charge of planning, constructing and operating major water infrastructure such as dams; elaborating basin plans; setting water quality targets, as well as monitoring and enforcing them; granting permits to use water, as well as inspecting water facilities for which permits were granted; undertaking hydrological studies; and to provide advisory services to other entities at their request. Basin Agencies are headed by a President who is nominated by the Cabinet at the proposal of the Minister of Environment.</p> <p>The water in Spain is management in a hierarchical system. The Water Authorities are largely autonomous, but responds to the Ministry for the Environment. Water User Associations and other stakeholders have a say in policy formulation, although the final decision rests with the Water Authorities. Regional governments are very important in terms of building infrastructure, but are until now not included in important management planning and decision processes.</p> <p>Currently, Spain is on its way to become a federal state.</p>
35.	<b>Horizontal coordination (governmental)</b>	B	<p>Regarding the current SPUG there is cooperation between the Agriculture Dept of the Regional Government and the Water Authority. Even though the boundaries are different, agriculture is key to appropriate water management. In the past this cooperation has often been non existent.</p> <p><u>Post-processing comment:</u> The score was changed from “B (now) /D (past)” to “B”, because according to the comment, coordination is common now.</p>

No.	Indicator	Score	Comments
36.	Role of local governments	B	By law local governments are responsible for water and sanitation services in urban areas. They take care of diverse water issues but do not provide the water services themselves. For big cities they have supply and planning companies and they often sub-contract companies to deliver the service. According to prices and taxes of water it is very difficult for local governments to influence them.
36.a	<i>Case-specific indicator(s)...</i>		
<b>b) Information sharing via formal rules, dependency relationships etc.</b>			
37.	Kinds of knowledge included => Role of experts/ science, local/traditional knowledge	A	Most water management issues and planning is 'expert led' in Spain. The River Basin Authorities are very much in touch with these experts and the expert water plans must be approved by the River Basin Authority. This is a process of public consultations. There are still many debates of getting more engagement by local knowledge of stakeholders.
38.	Access to information => about expert knowledge and management plans	C	A lot of information is accessible, but some other bits are currently missing (groundwater level evolution, etc)
38.a	<i>Case-specific indicator(s)...</i>		
<b>III) Multi-level interactions across administrative boundaries and vertical integration across levels and horizontal integration across sectors</b>			
<b>a) Centralisation</b>			
39.	One level one actor?	B	The Water Authority has the ultimate say in water management decisions. Stakeholders are consulted but their opinion is not binding.
40.	Degree of centralisation	C	Basin Authority rules over the other actors. Other actors do have a say in decisions.
41.	Technical capacity and economies of scale	A	Yes regarding technical capacity vs decentralization. Not enough knowledge to provide an opinion on economies of scale

No.	Indicator	Score	Comments
42.	Legal obligations and responsibility	A	The obligations and responsibilities of water user associations are clearly established by the law
42.a	<i>Case-specific indicator(s)...</i>		

## B) Context

No.	Indicator	Score	Comments
<b>I) Societal dimension</b>			
43.	<b>Proportion of the population living in rural areas</b>	23,3%	Source: United Nations Population Division (2008): World Urbanization Prospects: The 2007 Revision Population Database, <a href="http://esa.un.org/unup/">http://esa.un.org/unup/</a> Values for 2005
44.	<b>State of societal development</b>	(A): 0,955	Human Development Index Source: UNDP: Human Development Report, online at <a href="http://hdr.undp.org/en/statistics/">http://hdr.undp.org/en/statistics/</a> Values for 2007
45.	<b>Social sustainability (Gini Index)</b>	(B): 34,7	Gini Index Source: UNDP: Human Development Report 2009, <a href="http://hdr.undp.org/en/media/HDR_2009_EN_Complete.pdf">http://hdr.undp.org/en/media/HDR_2009_EN_Complete.pdf</a> - Values were calculated based on data by World Bank (2009d)
46.	<b>Economic sustainability (e.g. GDP)</b>	(A): 27,270 \$	GDP per capita (US-\$, PPP-corrected) Source: World Bank, <a href="http://siteresources.worldbank.org/ICPINT/Resources/icp-final-tables.pdf">http://siteresources.worldbank.org/ICPINT/Resources/icp-final-tables.pdf</a> Values for 2005
47.	<b>Effectiveness of formal institutions</b>	(C): 6,1	Corruption Perception Index Source: Transparency International, <a href="http://www.transparency.org/policy_research/surveys_indices/cpi/2009/cpi_2009_table">http://www.transparency.org/policy_research/surveys_indices/cpi/2009/cpi_2009_table</a> Values for 2009

No.	Indicator	Score	Comments
48.	<b>Trustworthiness of economic institutional setting - degree of risk for foreign direct investment</b>	(A): AAA	Rating by the rating agency "Standards & Poor Source: The Guardian (article from 22.05.2009), <a href="http://www.guardian.co.uk/business/2009/may/22/recession-government-borrowing#zoomed-picture">http://www.guardian.co.uk/business/2009/may/22/recession-government-borrowing#zoomed-picture</a>
49.	<b>Presence of avenues of dissent – press freedom, freedom of speech</b>	(B): 11,00	Press Freedom Index Source: Reporters without Borders, <a href="http://www.rsf.org/en-classement1003-2009.html">http://www.rsf.org/en-classement1003-2009.html</a> Values for 2009
49.a	<i>Case-specific indicator(s)...</i>		
<b>II) Good Governance Principles at the national level – legal basis at the national level</b>			
50.	<b>Participatory regarding decision making in the water sector</b>	A	River Basin Authorities have a specific participation entity, whose aim is to consult stakeholders regarding water management aspects. RBA are participatory, since the stakeholder themselves create them. River assembly and different management organisations (e.g. each dam has a management organisation). According to the WFD (legal basis) participatory and the involvement of stakeholders is explicitly related to planning processes.

No.	Indicator	Score	Comments
51.	<b>Transparency regarding water allocation</b>	B	<p>Not all relevant data is openly available on the internet. Take for instance the evolution of groundwater levels or groundwater quality.</p> <p>This is related to the 1985 Water Law where groundwater was declared as public domain and water authorities starting to register the allocation. It was and still is difficult to change user rights. This constitutes an important context factor for the water management in Spain.</p> <p>Process of groundwater planning and management becomes more important and rights and has been progressing very well - also according to the protection of the wetlands in the Upper Guadiana Basin. In terms of water allocations and registrations of water pumping in Spain the Government makes huge effort to put all water rights and allocation in electronic version. 90% should be done.</p>
52.	<b>Effectiveness and efficiency regarding decision making in the water sector</b>	B	<p>Control over groundwater abstraction is traditionally weak. Steps have been taken recently to improve the situation (water metering devices, remote sensing). The effect of such measures is yet to be felt.</p> <p>Groundwater control and monitoring becomes very challenging, not because of a lack of human or financial capacity or willingness of the River Basin Authorities, rather because of governmental economy interest (=corruption, strong agriculture lobby).</p>
53.	<b>Equitable and inclusive</b>	A	<p>For poor people the charges are very low. The average is 20 cent per day for 170 liter per person.</p>
54.	<b>Predictability – with regard to IWRM and climate change</b>	B	<p>The law does not explicitly include climate change. There exists a Secretariat for climate change, whose reports are underpinned by scientific institutions.</p> <p>The water management plans include IWRM principles. The River Basin management include important section in terms of climate change issues.</p>
54.a	<i>Case-specific indicator(s)...</i>		



No.	Indicator	Score	Comments
<b>III) Environmental dimension</b>			
55.	<b>Köppen-Geiger climate classification (river basin)</b>	Csa	Source: Kottek, M., J. Grieser, C. Beck, B. Rudolf, and F. Rubel (2006), <a href="http://koeppen-geiger.vu-wien.ac.at/present.htm#maps">http://koeppen-geiger.vu-wien.ac.at/present.htm#maps</a> For period from 1951 to 2000 Values are ordered from the source to the mouth
56.	<b>Climate Moisture Index</b>	(SA): 0,6-0	Source: GWSP Digital Water Atlas (2008), GWSP Digital Water Atlas (2008), <a href="http://atlas.gwsp.org/index.php?option=com_wrapper&amp;Itemid=53&amp;id_desc=98&amp;itemId_desc=63&amp;id_ds=146&amp;itemId_ds=52&amp;header=Climate%20Moisture%20Index&amp;site=b1_cmi_anWSAG1_0">http://atlas.gwsp.org/index.php?option=com_wrapper&amp;Itemid=53&amp;id_desc=98&amp;itemId_desc=63&amp;id_ds=146&amp;itemId_ds=52&amp;header=Climate%20Moisture%20Index&amp;site=b1_cmi_anWSAG1_0</a>
57.	<b>Climate Moisture Index Coefficient of Variation</b>	(A): low and (B): moderate	Source: GWSP atlas (2008), <a href="http://atlas.gwsp.org/index.php?option=com_wrapper&amp;Itemid=53&amp;id_desc=126&amp;itemId_desc=63&amp;id_ds=171&amp;itemId_ds=52&amp;header=Coefficient%20of%20Variation%20for%20Climate%20Moisture%20Index&amp;site=b2_cmi_annual_cv">http://atlas.gwsp.org/index.php?option=com_wrapper&amp;Itemid=53&amp;id_desc=126&amp;itemId_desc=63&amp;id_ds=171&amp;itemId_ds=52&amp;header=Coefficient%20of%20Variation%20for%20Climate%20Moisture%20Index&amp;site=b2_cmi_annual_cv</a>
58.	<b>Per Capita Equivalent of TARWA</b>	(D): 2,710m <sup>3</sup> /yr	Source: UNESCO, UN World Water Development Report, <a href="http://www.greenfacts.org/en/water-resources/figtableboxes/3.htm">http://www.greenfacts.org/en/water-resources/figtableboxes/3.htm</a> Values for 2005
59.	<b>Average water availability at the river basin level (1995)</b>	(C)-(B): 25-400 mm/yr	Source: University of Kassel, WaterGAP 2.0, <a href="http://www.env-edu.gr/Documents/World%20Water%20in%202025.pdf">http://www.env-edu.gr/Documents/World%20Water%20in%202025.pdf</a>
60.	<b>Annual renewable water supply per person by river basin (1995)</b>	(B): 1,700-4,000m <sup>3</sup> /pers./yr	Source: World Resources Institute, EarthTrends 2001, <a href="http://earthtrends.wri.org/pdf_library/maps/2-4_m_WaterSupply1995.pdf">http://earthtrends.wri.org/pdf_library/maps/2-4_m_WaterSupply1995.pdf</a>
61.	<b>Projected annual renewable water supply per person by river basin (2025)</b>	(B): 1,700-4,000m <sup>3</sup> /pers./yr	Source: World Resources Institute, EarthTrends 2001, <a href="http://earthtrends.wri.org/pdf_library/maps/2-4_m_WaterSupply1995.pdf">http://earthtrends.wri.org/pdf_library/maps/2-4_m_WaterSupply1995.pdf</a>

No.	Indicator	Score	Comments
62.	Relative Water Stress Index	(C): medium 0,4-1 and (D): high >1	Source: UNESCO, World Water Development Report II, <a href="http://wwdrii.sr.unh.edu/download.html">http://wwdrii.sr.unh.edu/download.html</a> The illustration (I4) has bad quality. Please check if the judgement is appropriate.
63.	Climate Vulnerability Index	(B): medium low 28-35,9	Source: Oxford Centre for Water Research (OCWR), 2008-2010, <a href="http://ocwr.ouce.ox.ac.uk/research/wmpg/cvi/">http://ocwr.ouce.ox.ac.uk/research/wmpg/cvi/</a>
64.	Degree to which water quality status restricts usability of users' types	B)	Some parts of the aquifer are not fulfilling the standards of the WFD; In some areas nitrate pollution is major concern due to agriculture Waste from urban pollution coming into the wetlands and into the sinkholes (aquifers)
65.	Extent of flow and channel modification	C)	Channel the rivers, artificial wetlands (dried up), dams (upstream)
66.	Impact of land-use changes on hydrological processes	C)	Rivers and wetlands no longer exists, flora and fauna changes or disappeared due to pumping for irrigation. Upstream dams condition the flow of inflowing rivers (Guadiana, Azuer), and hence aquifer recharge processes.
67.	Uncertainty associated to climate change predictions regarding precipitation for the basin	(E): 0,00-0,20 (Spain 0,05)	Source: Illustration from MAGICC-SCENGEN tool at the end of the guidance document
67.a	Case-specific indicator(s)...		

## C) Performance

No.	Indicator	Score	Comments
<b>I) Progress towards stated Goals</b>			
68.	<b>Progress towards sustainable access to safe drinking water (MDG drinking water target)</b>	(A): on track	Source: WHO & UNICEF (2008), Progress on Drinking Water and Sanitation: Special Focus on Sanitation, <a href="http://www.wssinfo.org/en/40_MDG2008.html">http://www.wssinfo.org/en/40_MDG2008.html</a> Values for 2006
69.	<b>Proportion of population with access to improved drinking water</b>	(A): 100% total; (A): 100% rural	Source: UN statistics of MDG progress, <a href="http://mdgs.un.org/unsd/mdg/Data.aspx">http://mdgs.un.org/unsd/mdg/Data.aspx</a> Values for 2006
70.	<b>Proportion of rural population with access to improved drinking water</b>	(B): 91-99% total; (B): 91-99% rural	Source: UN statistics of MDG progress, <a href="http://mdgs.un.org/unsd/mdg/Data.aspx">http://mdgs.un.org/unsd/mdg/Data.aspx</a> Values for 2006
71.	<b>Progress towards sustainable access to basic sanitation (MDG sanitation target)</b>	(A): on track	Source: WHO & UNICEF (2008), Progress on Drinking Water and Sanitation: Special Focus on Sanitation, <a href="http://www.wssinfo.org/en/40_MDG2008.html">http://www.wssinfo.org/en/40_MDG2008.html</a> Values for 2006
72.	<b>Proportion of population with access to improved sanitation facilities</b>	(A): 100% total; (A): 100% rural	Source: UN statistics of MDG progress, <a href="http://mdgs.un.org/unsd/mdg/Data.aspx">http://mdgs.un.org/unsd/mdg/Data.aspx</a> Values for 2006
73.	<b>Proportion of rural population with access to improved sanitation facilities</b>	(B): 91-99% total; (B): 91-99% rural	Source: UN statistics of MDG progress, <a href="http://mdgs.un.org/unsd/mdg/Data.aspx">http://mdgs.un.org/unsd/mdg/Data.aspx</a> Values for 2006
73.a	<i>Case-specific indicator(s)...</i>		
<b>II) Good governance principles as indicators for the process dimension</b>			

No.	Indicator	Score	Comments
74.	<b>Participatory regarding decision making in the water sector</b>	B+	<p>Formally the Water basin Authority has to consider participation (consultation level) in decision processes; The results of the consultation are not binding. However, since relatively recent times the WA is willing to negotiate (as opposed to consult), because they know that long-term management goals can only be met if all actors are on side.</p> <p><u>Post-processing comment:</u> The score was changed from “A/B” to B+, because an “A” should only be given if this judgement is really clear.</p>
75.	<b>Transparency regarding water allocation</b>	A	<p>On paper it is clear how much water users (irrigators) are allocated, but people can exceed their allocated pumping quota because there is still little control.</p>
76.	<b>Effectiveness and efficiency regarding decision making in the water sector</b>	B	<p>Basic goals like supplying water to the population is achieved, health standards; But regarding the recovery of the aquifers goals have not been achieved. It depends on the goals (broad description of several issues of interest)</p> <p><u>Post-processing comment:</u> The score was changed from “A; but also C)” to “B”, because according to the comment, most goals are achieved, but at the expense of ecological goals =&gt; not efficient.</p>
77.	<b>Equitable and inclusive</b>	A	

No.	Indicator	Score	Comments
78.	<b>Predictability – with regard to IWRM and climate change</b>	B	<p><b>(Question addressed two issues - should perhaps be separated into two questions).</b> The Special Plan deals with several aspects of the problem (ecological, economic, social) but makes limited provisions in terms of climate change. This is because CC is not perceived as the most pressing issue in the Guadiana basin. Issues such as the reforms of the Common Agricultural Policy (particularly regarding the wine industry) could have a much more significant impact the long-term climate variations.</p> <p>Besides, climate change estimates suggest that summers are likely to get warmer with less rain, while winter periods will be wetter, Since recharge basically takes place in winter, climate change may actually help recover the wetlands quicker. A potential downside to this argument is the fact that crop water needs may also increase due to increased evapotranspiration. By how much is yet to be assessed.</p> <p><u>Post-processing comment:</u> The score was changed from “A (IWRM) and C (CC)” to “B”, because if the two policy fields are regarded together, the medium of “all/most” and “few/no” is “several”.</p>
78.a	<i>Case-specific indicator(s)...</i>		
<b>III) Stakeholder participation</b>			
79.	<b>Deliberative engagement opportunities</b>	A	Not particularly important before the year 2000. Now these are provided in different consultation processes. RBA are the only participatory institutions (political process).
80.	<b>Inclusiveness of stakeholder participation</b>	A	Some actors have a stronger voice or influence since they're potentially more vulnerable (farmers). Farmer lobbies have a strong presence in the regional political scene.
80.a	<i>Case-specific indicator(s)...</i>		
<b>IV) Response to climate change</b>			

No.	Indicator	Score	Comments
81.	<b>Strategy for adaptation to climate change in the water sector</b>	B	An adaptation strategy is being worked out at the national level. It is not yet transferred/only partly transferred to basin level
82.	<b>Availability of specific knowledge enabling adaptation</b>	B	Arguably, all these are included in different reports by the Secretariat for Climate Change (source). <u>Post-processing comment:</u> The score was changed from “B, C, D” to “B”, because if all three kinds of knowledge are available, the highest level should be chosen as score.
83.	<b>Awareness of water managers regarding adaptation to climate change</b>	A	An awareness exists. However, as explained earlier other major concerns are often given priority. CC is not perceived as the key factor for change.
84.	<b>Coordinated implementation process regarding adaptation to climate change: Program / Plan of activities and measures</b>	A	Adaptation strategy at the national level, it is not yet transferred/only partly transferred to basin level
85.	<b>Operational activities (measures)</b>	C	Comprehensive measures are not yet implemented at basin level
86.	<b>Ways to deal with climate variability (floods and droughts)</b>	A	Early warning systems to deal with droughts. Action protocols for dealing with floods and droughts.
<i>86.a</i>	<i>Case-specific indicator(s)...</i>		

## Additional case-specific indicators

Please briefly define all case-specific indicators, which you have added, in the following table.

No.	Indicator	Definition	Hypothesis/ statement on relationship	Scoring scheme	How to assign scores (i.e. which indicators/ on which basis are scores allocated)	Comment on data source
	<i>Case-specific indicator 1</i>	Groundwater-Surface conjunctive management		- A	(A)	
	<i>Case-specific indicator 2</i>	Transparency of the linkages between water use (quantity) and economic activities (value)		- A	(A)	
	<i>Case-specific indicator 3</i>	To what extent are measures on paper applied in practice?		- A	(A) Legislation in place is fulfilled in practice on basin scale (B) Is partly fulfilled (C) Is not fulfilled	
	<i>Case-specific Indicator 4</i>			- A	(A)	
	<i>Case-specific Indicator 5</i>			- A	(A)	

## Addendum - Context

No.	Indicator	Score	Comments
<b>I) Basin Characteristics</b>			
67a	Sub-Basin Size	16.000 km <sup>2</sup> (Upper Guadiana)	Guadiana Basin: 67,133 km <sup>2</sup>
67b	Transboundary	Yes	Spain and Portugal 81.9% of its basin is in Spain (55,513 km <sup>2</sup> ), and 17.1% is in Portugal (11,620 km <sup>2</sup> ).

## Addendum - Performance

No.	Indicator	Score	Comments
<b>I) Environmental sustainability</b>			
<b>a) State of the water resources and the environment</b>			
87	Aquatic biodiversity	D	Since most of the wetlands and rivers are not available or existing during most time of the year (especially during the hot summer month) the original native fish species are not there
88	Invasive exotic species	B	No (expert) information available for the Upper Guadiana. The middle and lower part of the Guadiana have some problems.
89	Surface and groundwater quality	C	Now the river starts to receive water from the treatment plans. But no freshwater is going into the wetland – no interaction between groundwater, surface water and the wetland systems



No.	Indicator	Score	Comments
90	Groundwater use	D	No sustainable patterns at all. The aquifers (especially in the Upper Guadiana) are clearly over-exploited.
91	Water Exploitation Index (WEI)	C (48%)	Score at basin level (national part). Data reported by Spain to the EU Commission for the "Scarcity and Drought, 2. Interim report", 2010.
<b>b) Management practices</b>			
92	Water allocated for aquatic ecosystem	C	Current infrastructure and the development of future infrastructure (e.g. water transfers) do not take into account ecosystems and the water requirements.
93	Water pollution incidents	B	A) for urban areas and C) for agriculture sector and the rural areas <u>Post-processing comment:</u> The score was changed from "A and C" to "B". According to the comments, the score is "A" for urban and "C" for rural areas, which means that sound response happens at "some places/times", which is an overall score of "B".
94	Water quality monitoring	A	The monitoring is done by the Guadiana River Basin Authority
95	Hydrometeorological monitoring – levels	A	
96	Level of understanding of groundwater resources	A-	Usually the knowledge and information is fully available, but the expert points out, that there is always more information and data someone can gather. <u>Post-processing comment:</u> The score was changed from "A-B" to "A-". As the comment states that "[u]sually the knowledge and information is fully available", the overall score should be rather "A" than "B".