Twin2Go

Coordinating twinning partnerships towards more adaptive governance in river basins

WP3 Deliverable 3.2

Best Practices in Water Governance

Report from Four Regional Workshops

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Adaptive governance in river basins

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1 Introductory remarks

1.1 Overview

Following the development of the methodology for assessment of best practices and tools (BP&T) in water governance, Twin2Go hosted four regional best practices workshops for Africa, Russia/NIS, South-East Asia and Latin America. A series of regional workshops was organised in parallel according to the common agenda. Their major goal was to discuss and exchange lessons learned with the invited experts from the regions about major challenges, opportunities and constraints for best practices application in river basins and for their transfer across countries and regions.

During the two-month period between December 2010 and February 2011, over seven dozen invited experts took part in the workshops' brain-storming exercise and provided extremely valuable data and practical advise from 33 examples of best practices that are implemented in 22 basins in 21 countries worldwide (Table 1.1).

Table 1.1. **Summary for Four Best Practices Regional Workshops**

NN	Region	Countries		Basins		BP&T stories	Work-shop partici-pants	Work-shop venue
		Number	Name	Number	Name			
1	**Africa**	8	Angola, Botswana, Kenya, Lesotho, Mozambique, Namibia, Zimbabwe, South Africa	5	Limpopo, Niger, Okavango, Orange-Senqu, Victoria lake	6	16	Johannesburg, South Africa 31.01-02.02. 2011
2	**Russia/NIS**	2	Russia, Uzbekistan	3	Amu Darya, Vetluga, Volga	9	18	Berlin, Germany 15-17 Jan. 2011
3	**South-East Asia**	4	India, Nepal, Thailand, Vietnam	6	Bagmati, Bangpakong, Brahmaputra, Koshi, Prachinburi, Red	9	20	Guwahati, India 17-19.01 2011
4	**Latin America**	7	Bolivia, Brazil, Chile, Colombia, Ecuador, Peru, Uruguay	8	Alto Cauca, Baker, Biobio, Catamayo-Chira, Guayas, Quarai, Quarai-Cuareim, Titicaca lake	9	18	Lima, Peru,9-10.12. 2010
	Total:	**21**		**22**		**33**	**72**	

These four regional workshops brought together a mix of local and international experts, both scientists and practitioners, representing various stakeholders from the regions – government authorities at various levels, river basin organisations, business, civil society, households, non-

governmental organisations and international organisations, as well as Twin2Go team members. The aim was to discuss together the best practices, problems of practical implementation of water governance regimes and their effectiveness. Many among invited experts were those directly engaged in promoting in practice, or studying water governance regimes and their implementation in river basins. Practitioners with their valuable knowledge and experiences about the application of BP&T and about their exchange across countries, river basins and stakeholder groups were encouraged to discuss major lessons learned with decision-makers and scholars. We invited experts to the workshops to engage in new thinking, envision broader possibilities, exchange and identify innovative instruments to expand up-take of knowledge and BP&T in the implementation of adaptive water governance.

Among the important practical outcomes of the four regional workshops is the compilation of the unique dataset - *Twin2Go Best Practices and Tools Inventory*. It contains the compatible qualitative data and results of expert assessment of the fifteen basic parameters for best practices and tools applied in water basins worldwide, including the BP&T rationale, participating stakeholders, context for its implementation and major opportunities and barriers, characteristics of its performance and effectiveness, and its export-import transfer across countries and basins. The inventory of BP&T in water governance was based on expert opinions as well as on data from twinning projects provided by project partners. The major focus of experts had been on the national parts of either transborder watersheds, or domestic basins inside a country.

Through such comparative analysis of a variety of best practices in water governance currently applied in different basins and countries and by different stakeholders, the Twin2Go project gains new insights into adaptive governance and can initiate dialogues for mutual learning between these basins and between decision-makers and practitioners involved in water management. It also contributes to consolidating an interface between science and practice. The combination of regions, countries and river basins under survey at each workshop provided a robust first test of the methodological framework and triggered comparisons between a variety of BP&T applied. The results of the best practices regional workshops serve as a solid basis for formulating policy guidelines with supporting recommendations for action for decision-makers, which are to be formulated during the following phases of Twin2Go.

Because of the different backgrounds and professional experience of participants, the exchange of knowledge and lessons learned included research results as well as messages about the implementation of concrete best practices. This exchange of lessons from existing every-day practices by stakeholders showed that a diverse set of adaptive water governance options are either considered or are already in place in water basins under survey.

The methodological framework gave participants a solid basis for the comparative work, encouraged rich discussions and provided a set of messages that drew on the varied experiences and expertise. *First*, the common questionnaire for experts aiming at inventory of BP&T in water governance was applied by each of the four regional workshops, thus allowing structured comparisons between expert stories, basins and regions (see section 1.2.3). It was sent to all experts about two weeks before the workshop in order to ensure the necessary data collection and generating thoughtful insights to be presented and exchanged during the workshop. *Second*, the summary of the key messages from expert brain-storming in the working groups during each workshop was compiled according to the common format, and it serves for aggregation of results on BP&T application in river basins in each of the four regions and for developing policy guidelines. *Third*, basing on the brain-storming exercise each workshop formulated the recommendations for decision-makers from the region.

Twin2Go acknowledges active participation and interest of invited experts and appreciates their valuable contributions; without their inputs and thoughtful practical guidelines our progress towards the stated goals has been slightly possible.

1.2 Methodology

1.2.1 Background

Diversified domestic laws and institutions in water management in the countries or in the water basins, which are under study by Twin2Go, is the key, but not sufficient condition for good water governance. Particularly important for its success is the process of functioning of institutions, implementation of their provisions and rules in every-day practices by multiple stakeholders, as well as overcoming the existing constraints and benefiting from challenging opportunities. Identifying both general and context-specific BP&T that promote adaptive water governance and participatory IWRM is in the core of our quest. How to better transfer such practices across basins, regions or stakeholder groups and what drivers and barriers accompany this process is crucial for our assessment.

The current phase of our inquiry is rooted in the Twin2Go triangle “water governance regime – context - performance”, but now it focuses on the next stage of assessment – *context* and *performance* of BP&T in adaptive water governance. It evaluates the implementation process, practices by stakeholders and effectiveness of best practices applied by them, although the assessment of the latter is not always easy, because certain evidence and results gained over time are essential. Existing designs in water governance regimes and their peculiarities in the regions

significantly destine the BP&T implementation process. The context – existing economic, social, political, cultural, religious, environmental and sustainable development frameworks and perceptions in the regions or in the river basins – affects BP&T application and channels its outcomes. Opportunities and constraints for BP&T effectiveness are often rooted in the context specifics and in the so-called 'situational factors' at national, regional and local levels.

BP&T in water governance, and specifically in adaptive water governance, is the red thread of our assessment. However, we are aware that sometimes while analysing the performance and implementation process it is difficult to distinguish in practice between 'water governance' in river basins and 'adaptive water governance' in river basins. Adaptive capacity and potential at various levels of the targeted regions is another point of our interest.

Within this broad area of best practices applied in the targeted regions and building on the results already gained by Twin2Go, during the regional workshops we concentrated on three major foci in the assessment of BP&T:

- **Focus 1:** application of national water governance frameworks in river basins
- **Focus 2:** engagement and coordination among actors and forms of interaction/partnerships
- **Focus 3:** enabling learning and building adaptive capacity in water governance

What BP&T in water governance are used in the region? How and to what extent do they enhance capacity building, awareness raising, stakeholder participation and partnerships? What domestic incentives are provided to stakeholders to stimulate the application of BP&T? What are the priority goals, interests and capacities of stakeholders in that respect? What are the visions of adaptive strategies in river basins? These and other questions were discussed during the regional best practices workshops.

Transfer of BP&T across countries and across river basins is also in the core of discussion with experts. Why is it not always possible to directly transfer good practices to other river basins and countries? Why their adaptation to local/regional contexts and situational specifics is often needed? How to better adapt them, and why it is not very easy? What are the major barriers and constraints to BP&T transfer and adaptation?

Each regional workshop has the 'standard' goal to identify *challenges and obstacles* to the implementation of BP&T in water governance in the regions and to provide expert vision how to benefit from opportunities and how to overcome barriers in this domain.

1.2.2 Goals

The regional best practices workshops had the following three common goals:

- Review and synthesise innovative BP&T in water governance and participatory IWRM in river basins of the four targeted regions
- Exchange experiences and lessons learned about transfer and adaptation of BP&T across river basins and countries
- Develop a dialogue on major problems, possibilities and constraints for the application of BP&T and knowledge with authorities, stakeholders and end-users in the region, and identify their interests, needs and capacities in implementing innovative practices in adaptive water governance

These goals were addressed through discussion with the invited experts from the regions of their BP&T stories and practical experiences, through BP&T inventory by experts and results learned from the Twin2Go twinning projects and through joint brainstorming in working groups during the workshops. Workshops promoted the dialogue and experience exchange between experts from twinning projects and authorities, stakeholders and end-users in the targeted regions. Exchange of lessons learned about success and failures in the application and dissemination of BP&T, and how to better overcome existing barriers and policy-practice gaps within the implementation process was among the practical outcomes of such interactive dialogue. Key messages relevant for the targeted regions and strategic visions for BP&T dissemination were explored. Plenary discussion of Twin2Go provisional findings and its visions was regarded by experts as a useful approach to the organisation of the regional workshops.

To promote the free discussion between experts the workshops were held under the Chatham House rules: there was no attribution of ideas or positions of participating experts.

1.2.3 BP&T inventory: Format and questionnaire

Twin2Go developed a methodological framework for inventory and assessment of best practices in water governance allowing to 1) compile according to a common format the qualitative data and assessments of BP&T applied in water basins in the four targeted regions, 2) provide a summary of key messages about BP&T implementation in the targeted regions. The formats for *BP&T questionnaire* (Format-1) and *BP&T summary* (Format-2) and an accompanying guidance document (see Twin2Go D 3.1) serve to compile the Twin2Go BP&T Inventory, to compare the key messages from water basins in the four targeted regions and to aggregate major findings about BP&T implementation.

The *BP&T questionnaire* structures and records the expert opinion and data about the implementation of water governance regimes and practices used for that purpose. It assembles the details of expert stories and examples from the regions, river basins or stakeholder groups about the *application* of BP&T in water governance, about the *context* affecting their use and about *performance* outcomes. It was sent to experts about two weeks prior to the workshop.

The questionnaire comprises 15 qualitative questions in four sections: (1) BP&T applied, (2) Context for its implementation, (3) Performance and effectiveness, (4) BP&T transfer. The section *BP&T applied* focuses on specific properties of BP&T in basin water governance presented by a particular expert story. It deals with the description and purposes of particular practice, actors involved in its implementation and incentive/enforcement mechanisms applied in its support. The *Context* section serves to examine the opportunities and drivers for BP&T application, general socio-economic, political and cultural barriers, as well as constraints attributed to existing water governance systems. The section *Performance and effectiveness* inquires about the success or failure in BP&T application in a basin, progress towards further development of administrative capacity, changes in the behaviour of stakeholders and its contribution to problem-solving. Finally, the *Transfer* section covers the examples of practices transferred across countries, basins and stakeholder groups, adaptation to local context, opportunities and barriers for transfer and adaptation and 'external' influence of donors within this process. In total, 33 questionnaires containing BP&T stories were filled-in by the invited experts from the four targeted regions (Annex 3).

The *BP&T summary* registers the key messages from expert stories discussed during the workshops. The aggregated data is structured according to the three major foci: (1) application of national water governance frameworks in river basins, (2) engagement and coordination among actors and forms of interaction/partnerships, (3) enabling learning and building adaptive capacity in water governance. Within each focus the key messages about BP&T application, context (opportunities, barriers), performance (success stories, problems encountered) are crystallised. Four

summary tables from the targeted regions with key messages about BP&T application are presented in Annex 3.

1.2.4 Comparison and synthesis of BP&T results

Aggregation of findings from expert assessment for the targeted region and identifying the key strategic visions for BP&T in adaptive water governance and lessons learned was the subject for the final plenary discussion during each regional workshop. In particular it concentrated on major messages from the working group sessions about: 1) lessons learned from experts' stories on the application of BP&T; 2) stakeholder roles; 3) specifics in socio-economic context (barriers and drivers) for BP&T application; 4) opportunities and constraints for BP&T transfer across countries, river basins and stakeholder groups; 5) core challenges for the region and recommendations for problem solving. They were used as a basis for the follow-up analysis by Twin2Go and for the development of policy guidelines.

The BP&T questionnaire and BP&T summary serve to collect data from various basins during a series of four regional best practices workshops. After the workshop series, Twin2Go is to undertake the analyses of the data collected. Comparative analyses with further aggregation of findings serve for developing the policy guidelines with supporting recommendations and actions for decision-makers about the application of BP&T in river basins in the four targeted regions (Twin2Go deliverable 3.3).

All results of the four Regional Best-Practice Workshops will be aggregated and used by Twin2Go to formulate best practice guidelines and tools for knowledge transfer and the implementation of adaptive governance in river basins worldwide. The product will be disseminated among participating experts. On the basis of regional workshops, Twin2Go envisions to support and expand the international expert networks and cooperation between them.

All papers and results are made available for the wide public. These are sent to all participants and also are downloadable at the Twin2Go website (www.twin2go.eu).

2 Workshop report: AFRICA
Johannesburg, South Africa, 31.01-02.02.2011

2.1 Introduction

The Twin2Go Regional Best Practice Workshop for Africa was hosted in Johannesburg in South Africa during 31 January - 02 February 2011. Sixteen national and international experts representing the major stakeholder groups – government, science, business, NGOs and international organisations – took part in expert discussions and exchange about BP&T in water governance. The workshop programme and participants list are provided in Annex 1 and 2.

During the workshop the BP&T in water governance were analysed according to the methodology developed by Twin2Go. In total, six examples were collected by experts from the Niger river basin, Lake Victoria, Okavango river basin, Limpopo river basin and Orange-Senqu river basin. The results of the BP&T Inventory are presented in Annex 3.

Table 2.1: **Africa: Best practices and tools in water governance**

AFRICA **Best Practices and Tools in Water Governance**				
No.	**BP&T**	**River basin/Province/ Country**	**Region**	**Foci**
1	*Compensation for restoring and maintaining ecosystem services especially in times of food insecurities*	Niger river basin	Africa	№1
2	*Leveraging national water priorities to support transboundary cooperation*	Lake Victoria Basin/ Kenya	Africa	№1
3	*Bottom-up approach for stakeholder participation in transboundary river basins*	Orange-Senqu river basin/ Botswana, Lesotho, Namibia and South Africa	Africa	№2
4	*Early stakeholder mapping for improved operationalisation of the Limpopo Agreement*	Limpopo river basin/South Africa, Botswana, Zimbabwe, Mozambique	Africa	№2
5	*Creating an enabling environment through inclusive and equitable knowledge and capacity building*	Orange-Senqu river basin/ Botswana, Lesotho, Namibia and South Africa	Africa	№3
6	*Establish initially a research based basin-wide knowledge system to focus the work of the basin commission on real issues and provide a learning process based on the use of the research base and platform established*	Okavango river basin/Angola, Botswana, Namibia	Africa	№3

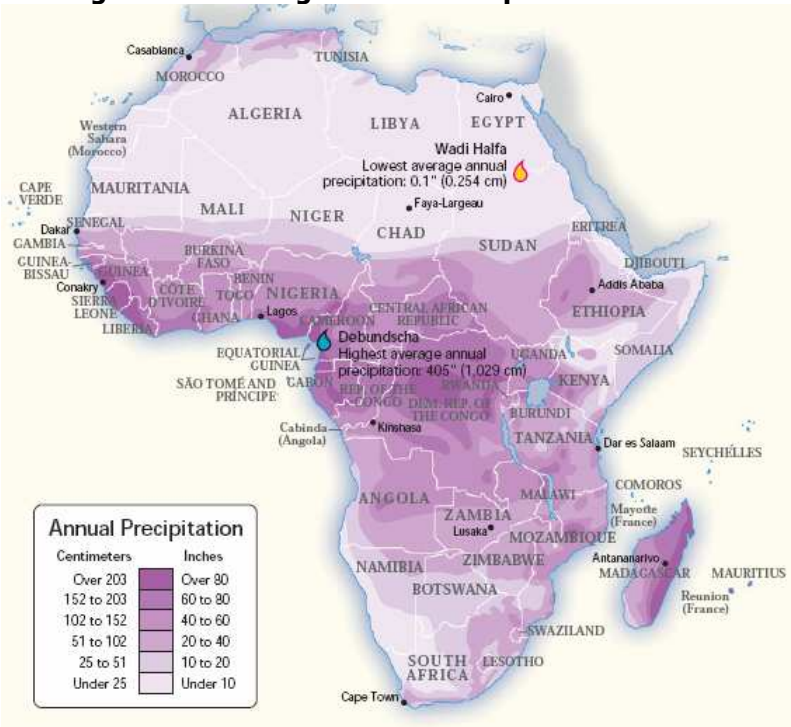
2.2 Characteristics of the region

2.2.1 Climate Change and Water Resources in Africa

The climate of Africa is naturally highly variable and it is characterised by a wide range of systems - from humid equatorial, through seasonally arid tropical, to sub-tropical Mediterranean. While the continent as a whole has an abundance of water resources, they are not evenly distributed throughout the continent and not located where demand is greatest (Goulden et al. 2008:4).

As figure 2.1 illustrates, the disparities in precipitation rates between countries and regions in Africa are significant. For example, with more than 7500 km3/year, the central region receives 37% of all precipitation in an area that accounts for just 11% of the total population (Fredkin 2005:13-21). According to Goulden et al. (2008), the intermediate regime (>40 <100 cm/yr) covering 25% of the continent attracts greater concern than the other regimes, as changes in precipitation would seriously affect surface water supply. The intermediate regime shows high seasonality and includes three densely populated regions: Southern Africa, most of East Africa, and the East-West band stretching from Senegal to Sudan. These regions include a number of important river basins (Goulden et al. 2008:3).

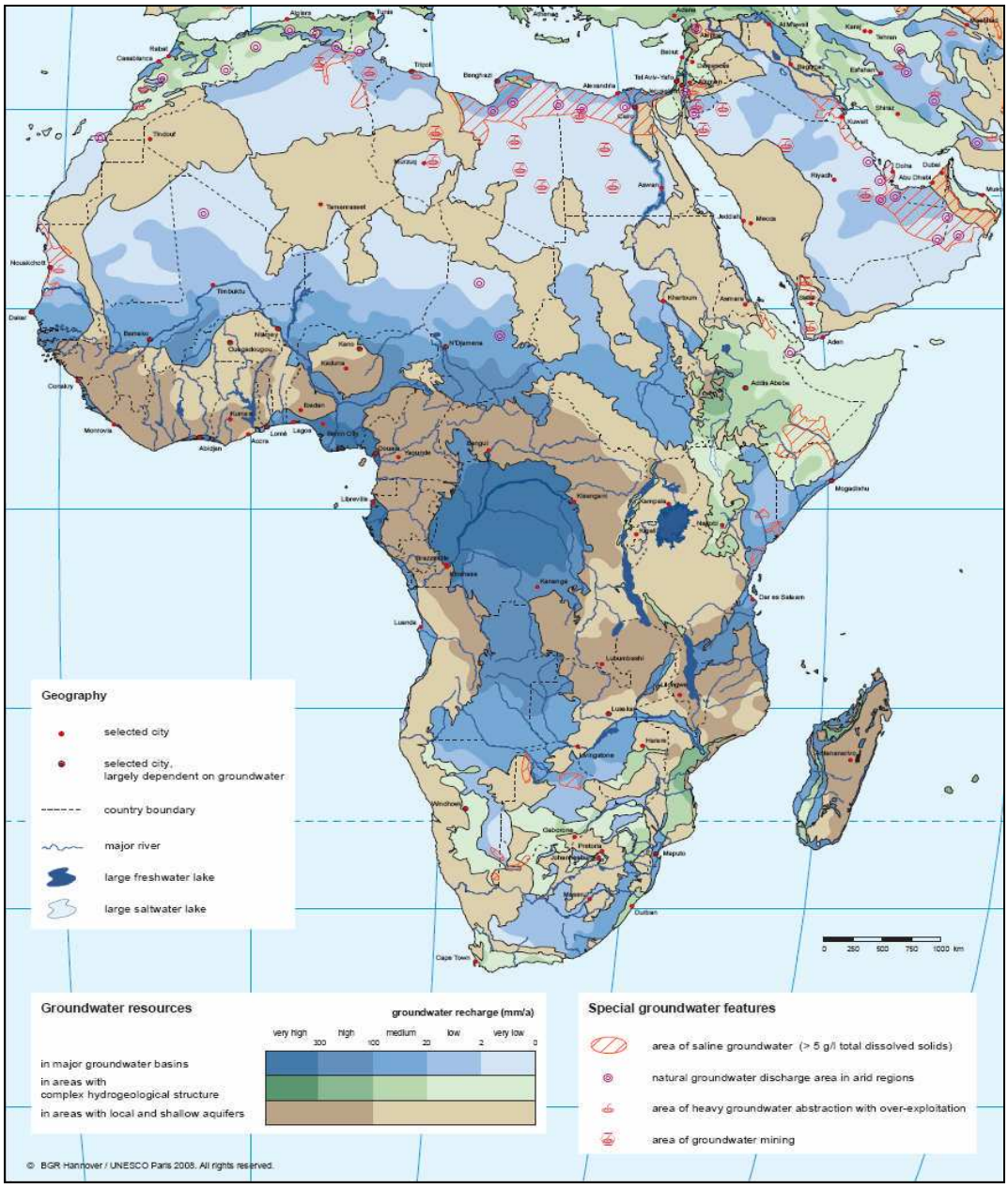
Figure 2.1: Average Annual Precipitation in Africa



Source: GeoNova Thematic Maps (2007)

As can be seen in figure 2.2, the groundwater resources in Africa also show spatial variability and broadly follow the general patterns of precipitation. While databases such as FAO's Aquastat contain information on water availability and extraction, there is a general paucity of information on groundwater resources in Africa. Despite the importance of groundwater resources, surprisingly little attention is given to them in comparison with lakes and river basins. The "Groundwater and Climate in Africa - International Conference" that took place in Kampala in 2008 also highlighted this situation. While steps are being taken (e.g. UNESCO's GRAPHIC (Groundwater Resources Assessment under the Pressures of Humanity and Climate Changes)) much more needs to be done to fill the knowledge gaps.

Figure 2.2: Groundwater Resources in Africa



Between today and the 2080s conservative estimates predict temperature increases ranging from an approximate average of +3.2℃ to +3.6℃ (Christense n et al. 2007). This increase threatens to put further pressure on water resources due to an increase in evaporation and transpiration. Furthermore, climate forecasts predict a possible increase in the already high variability (space and time) in rainfall and river flows in some of the most populous regions; as well as an increase in extreme events, although projections remain uncertain (Christensen et al. 2007).

The expected net result of this situation is that some areas will become drier, whilst others will become wetter (Kundzewicz et al. 2007). Table 2.2 illustrates some of the expected changes that researchers have predicted between now and the end of the century.

Table 2.2: Summary of Studies on Climate Change Impacts on Surface Water Resources in Africa

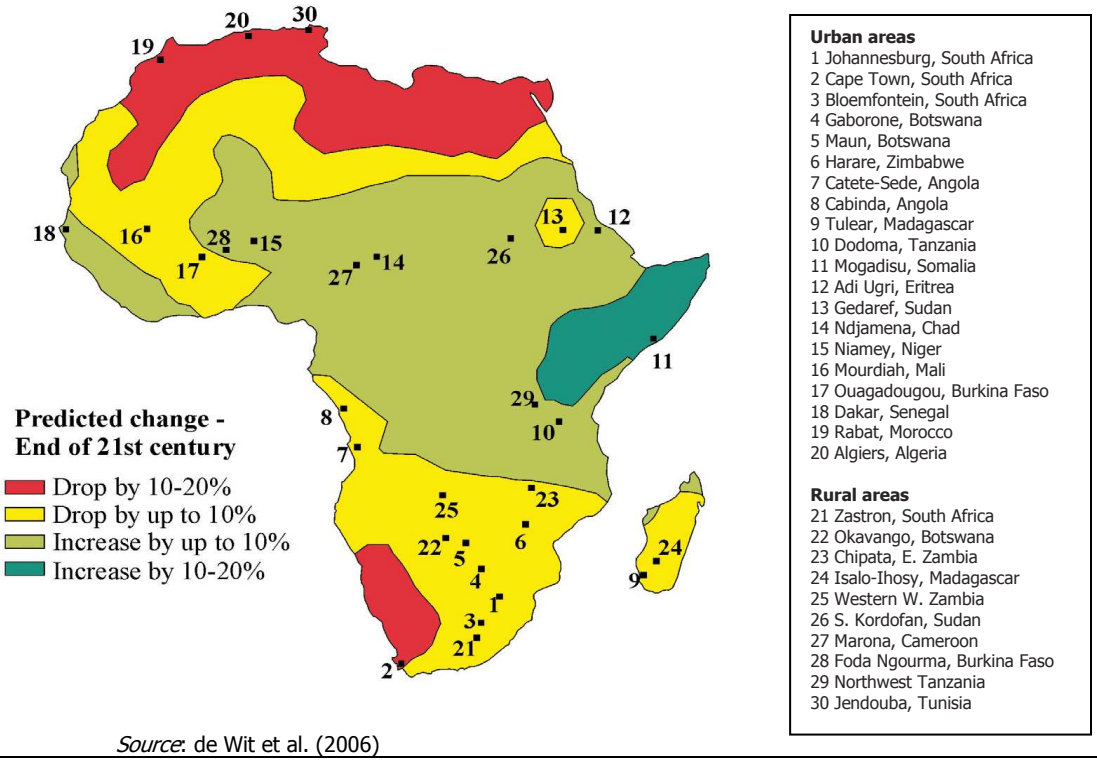
Region	Projected changes in water resources[5]	Authors
Africa	By 2050, water stress will increase over 62.0–75.8% of total river basin area and will decrease over 19.7–29.0% of this area.	Alcamo *et al.*, 2007
	Decrease in perennial drainage will significantly affect present surface water access across 25% of Africa by 2100.	de Wit & Stankiewicz, 2006
East Africa	Runoff in Eastern Africa is projected to possibly increase by 2050.	Arnell, 2003; Strzepek & McCluskey, 2006
	Increase in runoff of 20 to 40% by 2050 in Eastern equatorial Africa.	Milly *et al.*, 2005
	Except during the 2001-2005 period, the total average annual inflow volume of the **Lake Ziway** might decline up to 19.47% for A2a- and 27.43% for B2a-scenarios.	Abraham, 2006
	Future **Nile** discharge (up to 2100) will decrease slightly (-2%) or will remain relatively stable compared to the current situation (average over 1750–2000 AD).	Aerts *et al.*, 2006
	Lake Tana: if the temperature is increased by 2°C and: 1) no change in rainfall → decrease in annual flow by 11.3%; 2) decrease in rainfall by 10% to 20% → decrease in runoff by 29.3% to 44.6%; 3) increase in rainfall by 10% to 20% → increase in runoff by 6.6% to 32.5%.	Tarekegn, 2000
	Reduction in runoff in **Nile** by 2050 (around 3%)	Manabe *et al.*, 2004
	Increase in water withdrawals in the **Nile** by 2025 mainly because of population and economic growth (Application to a business-as-usual scenario)	Alcamo *et al.*, 2003
Southern Africa	Decrease in runoff of 10 to 30% by 2050 in Southern Africa.	Arnell, 2003; Milly *et al.*, 2005
	Change in discharge relatively small in the **Zambezi** by 2050.	Manabe *et al.*, 2004
	Increase in water withdrawals in the **Limpopo** mainly because of population and economic growth (for a business-as-usual scenario).	Alcamo *et al.*, 2003
	Decrease in annual mean water flow in **Okavango** River by 14% (B2 scenario) or 20% (A2 scenario)	Andersson *et al.*, 2006
North Africa	Runoff is projected to possibly decrease by 2050.	Arnell, 2003
	Most of North Africa: stabilization or decrease in water withdrawals between 1995 and 2025.	Alcamo *et al.*, 2003
Central Africa	Runoff is projected to possibly decrease by 2050.	Arnell, 2003
	Increase in runoff of 12% in **Congo** by 2099 compared to the recent discharge values.	Aerts *et al.*, 2006
	Increase in water withdrawals in the **Congo** mainly because of population and economic growth (for a business-as-usual scenario).	Alcamo *et al.*, 2003
West Africa	Significant increase in runoff in regions of heavy rainfall (e.g. coastal region of Africa around the Gulf of Guinea) by 2050.	Manabe *et al.*, 2004
	Increase in runoff of 61% in **Volta** by 2099 compared to the recent discharge values.	Aerts *et al.*, 2006

N.B. These studies use a number of different climate change scenarios

Source: Goulden et al. (2008)

Figure 2.3 illustrates the predicted results in terms of surface water supply by the end of the century. These results are broadly in line with nearly all climate models (Goulden et al. 2008:6)[1].

Figure 2.3: Changes in Surface Water Supply Across Africa with Predicted Climate Change



Source: de Wit et al. (2006)

However, while there is general consensus that drier conditions will prevail in Southern and Northern Africa and wetter conditions in East Africa including the Horn of Africa, over much of the rest of Africa, including the Sahel, there is much uncertainty about how rainfall will evolve. Furthermore, it is important to stress that these are large-scale predictions, which provide a poor guide to local climates. For example, even though as predicted in figure 2.3 Southern Africa is generally expected to become drier, an empirical downscaled model for South Africa indicates increasing summer rainfall in the eastern part of the country (Hewitson et al. 2006).

[1] Although there is no clear signal of future rainfall patterns in the Sahel.

2.2.2 Policy Response

While the science of water resources assessment and climatic modelling, including more complex calculations and higher resolution mapping is constantly improving, the reality is that knowledge of climatic impacts remains weak.

Policy responses will depend upon local conditions, although it is important that water resources management procedures and adaptation are mainstreamed and integrated into the broader development context where challenges such as economic and social development, natural resource management and ecosystem protection are addressed.

A number of African basins were assessed in the Twin2Go Work-package 2 including Okavango (Namibia), Orange (South Africa), Olifants (South Africa), Niger (Inner Niger Delta, Mali) and the Upper White Nile (Uganda).

2.3 Summary of presentations and discussions

Presentation of one of the case basins, which was analysed in Twin2Go

A presentation of the status of work and in particular the results of the Transboundary Diagnostic Analysis and governance framework in Okavango (Southern Africa) provided important insights and inspiration for the workshop participants. The presentation also led into the discussion of Best Practices as they were applied in the OKACOM cooperation framework as presented in BP&T - 6.

Discussion of WP2 results

The participants discussed the results of the Twin2Go aggregated water governance data from 29 river basins worldwide and assessed trends in adaptive water governance and participatory integrated water resources management.

Main general issues of discussion of the WP 2 results at the Workshop were:

- The participants advised to use less scientific words/phrases when presenting governance issues to water managers and practitioners
- The focus made by Twin2Go on the national parts of the transboundary basins made the participants argue that transboundary issues cannot be limited to the national level but need to take into account the diversity of countries and issues of transboundary nature

- Related to the WP2 presentation: the correlation and linkages between 'good governance regime' and 'state of ecosystem' were discussed. According to the synthesis there is a weak and seldom correlation, which was surprising to the participants
- The participants discussed 'good water governance regimes' and how this should be interpreted.

2.4 Description of work done

Prior to the workshop participants had been introduced to the Twin2Go programme and the goals of the regional workshop, i.e. reviewing BP&T, exchange experiences about the transfer and adaptation of BP&T and to identify major challenges and opportunities. Information about the Twin2Go programme and its current status has been given to the participants through background material.

The participants had been encouraged to contribute to the workshop with key note presentations and BP&T examples from the river basins in which they are engaged. However, the BP&T inventories presented in Annex 3 have been elaborated based on references and documents received from the participants during the workshop.

Before starting the work in the working groups, the participants discussed and agreed on:

- A clarification of the definition of differences between Best practice/tool and method

- What should characterise a BP&T. Should it be what the participants agree on or is it considered as a BP&T just if the BP&T continues after the project, i.e. that the outputs are sustained?

Based on the result of the discussion it was agreed that a BP&T was considered as a practice, tool and method comprising elements of adaptive management.

2.5 Results from the BP&T inventories by experts

The regional workshop concentrated on the three major foci in the assessment of BP&T: (1) application of national water governance frameworks in river basins; (2) engagement and coordination among actors and forms of interaction/partnerships; (3) enabling learning and building adaptive capacity in water governance.

Based on this understanding the participants developed a long list of nine Best Practices and Tools. Six of these were further elaborated. Finally, their potential to be transferred across river basins and countries was discussed and summarised.

The Best Practices and Tools developed were:

1. Compensation for restoring and maintaining ecosystem services, especially in times of food insecurities, based on experiences from the Niger River Delta
2. Leveraging national water priorities to support transboundary cooperation, based on experiences from Kenya
3. Bottom-up approach for stakeholder participation in transboundary river basins, based on experiences from the Okavango River Basin
4. Early stakeholder mapping for improved operationalisation of agreements, based on the experiences with the Limpopo Agreement
5. Creating an enabling environment through inclusive and equitable knowledge and capacity building, based on experiences from Orange-Senqu River Basin
6. Establish initially a research based basin-wide knowledge system - to focus the work of the Okavango River Basin Commission on real issues and provide a learning process based on the use of the research base and platform established. BP&T is based on experiences from Okavango River Basin

Three additional BP&Ts were developed to some extent, but not finalised during the workshop due to lack of time:

- National development planning in Zambia that linked water resources management programmes from the national IWRM planning
- Lake Victoria Basin Commission – institutional development of the commission as a comprehensive basin development and management agency
- GTZ country exchange programme.

One participant offered to put additional work into finalising the BP&T on the Victoria basin after the workshop and to forward this to DHI for further development.

2.5.1 Best Practices and Tools: Cases and stories of experts

The long list of nine BP&T developed by the participants led to the in-depth elaboration of the following six BP&T; two cases in each of the three major foci that frame the workshop.

BP&T – 1: Compensation for restoring and maintaining ecosystem services especially in times of food insecurities (Inner Niger Delta)

The BP&T is part of the Wetlands International's demonstration project that works with local communities and authorities to improve management and restoration of the natural resources of the area. The project works with 'bio-rights approach'; Wetlands International's approach to using microcredit to pay for environmental services. This approach aims to provide poor rural people with access to finance in order to improve their livelihoods and promote biodiversity conservation.

The BP&T is a micro-project supported by loan. Community members in villages established grain banks. The loans for the grain banks were obtained through the exchange for work to protect and restore fishponds by digging canals to connect fishponds to the River Niger. The grain bank was initiated by Wetlands International and involved local communities and municipalities. Three national microcredit institutions handled the loan programme.

The BP&T catalysed the return of native species in the project area. Food security increased through the establishment of grain banks and reduced overuse of resources during low production seasons.

BP&T – 2: Leveraging national water priorities to support transboundary cooperation (Kenya)

The major purpose of the BP&T was the development of catchments management plans in order to address floods, droughts and food security. Increased water availability without compromising the net basin supply was another major objective. The strategy was to break the IWRM plan into specific catchment plans and subsequently bring transboundary issues on board.

Actors involved in the implementation of the BP&T included ministries for water, ministries for economic planning, regional development authorities, Lake Victoria Basin Commission, the World Meteorological Organisation WMO and the Global Water Partnership GWP (as facilitators).

The BP&T helped increase the visibility of the Lake Victoria Basin Commission as an important regional mediator agency in the basin. Programmes were revived and performance improved. This facilitated an increasing food production and improved livelihood in local communities. The riparian countries created a data sharing protocol.

Lack of capacity in terms of human resources at the catchments' management agency as well as competition from other government departments were considered as constraints for the implementation of the BP&T.

BP&T – 3: Bottom-up approach for stakeholder participation in transboundary river basins

The goal of the BP&T was to establish a governance structure that enables community participation in basin management, planning and decision-making. The chair of the basin-wide forum sits in the Okavango River Basin Commission (OKACOM) thus being well informed and consulted in the decision-making process as opposed to directly having a vote. The BP&T was applied by the Association for Environmental Conservation and Rural Development (ACADIR), Kalahari Conservation Society (KCS) and Namibia Nature Foundation (NNF). Stakeholders are the community representatives, NGOs and CBOs from each country in the basin.

The project has been a success. Communities have been capacitated to manage their resources sustainably as well as to take effectively part in decision-making on matters related to the development of the Okavango River Basin. The BP&T resulted in a range of education material, tools and programs and created mechanisms for community participation and community led action in natural resource decision-making and management.

BP&T - 4: Early stakeholder mapping for improved operationalisation of the Limpopo Agreement

The BP&T is part of the process to promote stakeholder participation in the management of water resources in the transboundary Limpopo River basin (South Africa, Botswana, Zimbabwe and Mozambique). The BP&T the first step of a rapid assessment of stakeholder mapping within the four riparian countries as basis to further develop the stakeholder integration strategy. The outcomes of the rapid mapping process were presented to the Limpopo Watercourse Commission (LIMCOM), which is committed to the principles of Integrated Water Resources Management.

The BP&T was applied by the Limpopo Basin Permanent Technical Committee and the water sector in all four riparian countries. River Basin Organisations, National Government, Local Governments, NGOs and CBOs were involved in the activity.

The major constraint encountered was the poor water management upstream that did not consider the environmental flow in the wetland. Also the management of the river basins in dry seasons as

wells the sustainability of the project in the long term have been barriers to the BP&T. In terms of water laws and regulations the major constraints were:

- *Botswana:* A need for decentralisation of decision-making in order to improve direct stakeholder participation
- *Mozambique:* Limited experience in participation of beneficiaries in water resources management.
- *Zimbabwe:* New Water Act created stakeholder platforms where all identified stakeholders could participate in the management. However, these new institutions faced numerous challenges
- *South Africa:* National-level legal and institutional frameworks, structures and procedures for stakeholder participation are in place, there remain challenges to effective implementation, and many existing stakeholder structures are not operational.

BP&T – 5: Creating an enabling environment through inclusive and equitable knowledge and capacity building

The purpose of the BP&T was to promote trust, increase transparency and establish a common understanding of the river as a unit among stakeholders. Decision support systems were established for the river basin, and joint basis surveys (water quality and quantity) were carried out. Afterwards an initiative to facilitate the availability of information and the accessibility of information was initiated.

Among the barriers for implementation of BP&T are the potential inefficient use of resources as compared to targeted knowledge and capacity building efforts. The BP&T also requires the availability and continuity for participation in river basins management by authorities and stakeholders. The BP&T was implemented by government officials.

BP&T – 6: Establish initially a research based basin-wide knowledge system, to focus the work of the basin commission on real issues and provide a learning process based on the use of the research base and platform established

OKACOM designed the Environmental Protection and Sustainable Management of the Okavango River Basin (EPSMO) Project to evaluate the condition of the river basin, to identify possible threats posed by increasing demands on the benefits of the river system and to develop a program of policy, legal and institutional reforms – a Strategic Action Plan (SAP) to meet and manage these demands. The major BP&T goals were to create a base of reliable information to be used in the Commission's decision-making. The goal of the SAP was to establish a common understanding of the river basin

as a unit through the establishment of a formalised network of basin researchers. The SAP was informed by a Transboundary Diagnostic Analysis (TDA), a scientific and technical fact-finding analysis in order to identify the causal chains and root causes of problems affecting the Okavango River Basin.

The actors involved were three riparian states, OKACOM, research institutions, regional and local authorities, NGO's. Linkages were established with research institutions outside the basin but within southern Africa.

The project experienced limited data availability in the Angolan upper catchment as well as a limited accessibility of ground terrain in Angola due to landmines and infrastructure. Opportunities to build on were among others the existence of already established research institutions within the basin and riparian states including the existence of the transboundary river basin organisation. The SADC Protocol on shared water courses supported the implementation as a regulatory incentive.

The project created a trans-country and interdisciplinary research network and strengthened the existing basin research institutions. To support the integration and strengthen the research network a science-policy learning cycle to improve each party's feedback on knowledge and policy needs was established.

2.5.2 Export-Import of Best Practices and Tools

The workshop experts analysed opportunities for the use of the Best Practices and Tools in other basins and in the African region as such – the latter when this was considered relevant. The summaries of opportunities and barriers for each of the six BP&T are given below.

BP&T – 1: Compensation for restoring and maintaining ecosystem services especially in times of food insecurities

Opportunities: "Hot spot" approach in sensitive environments under pressure from development and climate change effects. Could have a role in increasing resilience and food security as well as in the restoration and maintenance of particularly sensitive ecosystems.

Barriers: Has mostly been applied successfully at rural local hot spots (the poorest of the poor living in sensitive environments), and there are potentially high transaction costs. Implementing the BP&T requires access to microcredit, but also women's limited access to land and water rights are key barriers.

Recommendations: It is possible to up-scale and broaden the BP&T. However, a strong monitoring and feedback mechanisms are required for the actual implementation. Further, it needs political support and strong national and local management frameworks.

BP&T – 2: Leveraging national water priorities to support transboundary cooperation (Kenya)

Transboundary cooperation *helps* alleviate issues that are difficult to solve at national level, by increasing exploration of basin available resources and benefits from mutual utilisation of such resources; it also increases efficient utilisation of basin resources.

The major *challenges* rest in harmonising different national interests in the transboundary context (e.g. upstream irrigation versus downstream wetlands conservation); difficulties in developing a joint investment strategy across the basin to generate the best return on investment with an acceptable benefit sharing model.

It is *recommended* that:

- National interests need to see the interest in supporting transboundary cooperation, national policies and programs to address transboundary waters. RBO need to understand the role of water in economic development in a national, transboundary and regional context.
- Taking ahead the national interests through transboundary water cooperation.
- Establishing regional cooperation frameworks for transboundary water cooperation (e.g. SADC)
- RBO need a platform for learning, exchange of ideas and advocacy (e.g. AMCOW; GWP and RECs).

BP&T – 3: Bottom-up approach for stakeholder participation in transboundary river basins

Other basins have shown an interest in replicating the project into the management of their basins. The BP&T has a potential to be used in smaller (number of countries and number of communities) transboundary basins to the very local voices heard at the transboundary level for e.g. large scheme developments. Existing community organisations or platforms like resource user groups can also be used to establish platforms for transboundary water governance. However, basins with a large number of riparian states might have difficulties in applying the BP&T, due to the potential number of communities to be involved and the diversity of local dependencies of water.

BP&T – 4: Early stakeholder mapping for improved operationalisation of Limpopo Agreement

The BP&T is a success story in terms of the establishment of platforms for countries to learn from each other. The River Basin Commission has been satisfied with the mapping outcomes and the improved stakeholder dynamics within each of the riparian states. So far, constraints have not been identified in the application of the BP&T.

BP&T – 5: Creating an enabling environment through inclusive and equitable knowledge and capacity building

Opportunities: Besides increasing capacity and knowledge for transboundary water management it can lead to increasing trust between involved countries and to a transparent basis for decision-making.

Challenges: Time consuming and expensive; respecting partners in cooperation based on an understanding of culture and history, differences of capacity among the countries (asymmetry), which are sharing the basin, needs to be well understood through targeted capacity assessments.

Recommendations: Using this BT&T builds a basis for levelling the platform for decision-making and can support the necessary trust and transparency needed for transboundary cooperation. In cases where the basin-wide information base is already there but capacity is lacking behind in some countries, capacity building could efficiently be focused on these countries.

BP&T – 6: Establish initially a research based basin-wide knowledge system to focus the work of the basin commission on real issues and provide a learning process based on the use of the research base and platform established

Opportunities: Existence of already established research institutions within the basin and riparian states to build on. The BP&T requires a basin management that is informed by sound knowledge and information, and the existence of an established commission. The BP&T can foster economic development and regional integration.

Challenges: Engaging researchers and coordination with research agendas; acceptance at political level of data sharing; governments need to have a cooperation and coordination framework with different ministries and researchers (cross-sectoral and trans-disciplinary research and integration)

Recommendations: Structured and intensified engagement of the water sector with Education and Research Ministries. Promote this through regional and continental platforms (e.g. AMCOST) and promote action research for concrete problem solving.

2.6 Discussion and comments on BP&T inventory results

Results of the workshop are as follows:

Focus 1. Application of national water governance frameworks in river basins

- River Basin Organisations need to understand the role of water in economic development in a national, transboundary and regional context
- In order to improve River Basin Organisations for a better water management, platforms for learning, exchange of ideas and advocacy should be established
- Transboundary water cooperation requires regional cooperation frameworks, and the national interests should be taken ahead through transboundary water cooperation.

Focus 2. Engagement and coordination among actors and forms of interaction/partnerships

- Community and local level representation in water management leads to better basin management, planning and decision-making for the benefit of all stakeholders
- An open-ended and flexible approach is suitable for the profound involvement of different types of stakeholders with different interests; not least the community and local level stakeholders
- Design and management of stakeholder engagement though an early identification of stakeholders and their characteristics ensure a more in-depth involvement of different interests in river basins
- A more in-depth involvement of different stakeholders helps shape the water governance frame and makes it more efficient
- Involvement of all stakeholders can contribute to problem solving and improve the common understanding of the situation and acceptance of development and conservation activities.

Focus 3. Enabling learning and building adaptive capacity in water governance

- Establishment of decision support systems for river basins, carrying out joint basin surveys and sharing and facilitating information availability and accessibility build a basis for levelling the platform for decision-making and can support the necessary trust and transparency needed for transboundary cooperation.
- In cases where the basin-wide information base is already there and capacity is lacking behind in some countries, capacity building could efficiently be focused on these countries.
- The water sector should intensify its engagement with ministries of research and education in order to improve a joint understanding and create knowledge bases of basin conditions, issues and trends in (transboundary basin management). It is recommended to promote this through regional and continental platforms.

2.7 General conclusions and recommendations for the region

The workshop agreed on the following overall recommendations to Twin2Go:

- The particular case studies can be developed further between Twin2Go and the workshop participants. It could be explored to establish a link between the GWP ToolBox web page and the Twin2Go web page.
- Twin2Go could have a stronger message on the present weaker status of water quality monitoring and management in transboundary basins. Sediment and ecosystem health monitoring is an important tool in transboundary basin management
- BP&T developed during the workshop may feed into project development in order to “test” the application of the BP&T´s in other basins
- Using the BP&T in Okavango as a “best practice case” could be used as a basis for increasing capacity on adaptive management and engaging Research and Education Ministries more closely in water management
- When all BP&T´s from the four Regional Best Practice Workshops of Twin2Go are developed it is needed to structure them according to the level of application in order to pinpoint policy recommendations to the right level.

The workshop also agreed on a list of **policy recommendations,** which could be brought forward to the Twin2Go WP 4 as outlined below for each of the BP&T:

BP&T – 1: Compensation for restoring and maintaining ecosystem services especially in times of food insecurities

Policy Recommendations: It is possible to up-scale and broaden the BP&T. However, strong monitoring and feedback mechanisms are required for the actual implementation. Further, it needs political support and strong national and local management frameworks.

BP&T – 2: Leveraging national water priorities to support transboundary cooperation (Kenya)

Policy Recommendations:

- National interests need to see the interest in supporting transboundary cooperation, national policies and programs to address transboundary waters. RBO need to understand the role of water in economic development in a national, transboundary and regional context.
- Taking ahead the national interests through transboundary water cooperation.
- Establishing regional cooperation frameworks for transboundary water cooperation (e.g. SADC)
- RBO needs a platform for learning, exchange of ideas and advocacy (e.g. AMCOW; GWP and RECs).

BP&T – 3: Bottom-up approach for stakeholder participation in transboundary river basins

Policy recommendations: Open up for community representation in transboundary water management, thus leading to better understanding of the situation and acceptance of development and conservation activities.

BP&T – 4: Early stakeholder mapping for improved operationalisation of Limpopo Agreement

Policy recommendations: To use, capacitate and empower existing community organisations or social structures like resource user groups to ensure more sustainable and efficient (inclusiveness) management for holistic water resources management.

Understanding and engaging the stakeholders early on after agreeing on cooperation frameworks helps shape the governance framework and supports its acceptance and implementation. Design and manage relevant stakeholder engagement to ensure an efficient governance framework.

BP&T – 5: Creating an enabling environment through inclusive and equitable knowledge and capacity building

Policy Recommendations: Using this BT&T builds a basis for levelling the platform for decision-making and can support the necessary trust and transparency needed for transboundary cooperation. In cases where the basin-wide information base is already there but capacity is lacking behind in some countries, capacity building could efficiently be focused on these countries.

BP&T – 6: Establish initially a research based basin-wide knowledge system to focus the work of the basin commission on real issues and provide a learning process based on the use of the research base and platform established

Policy Recommendations: Structured and intensified engagement of the water sector with Education and Research Ministries. Promote this through regional and continental platforms (e.g. AMCOST) and promote action research for concrete problem solving.

3 Workshop report: RUSSIA/NIS
Berlin, Germany, 15-17.01.2011

3.1 Introduction

The Regional Best Practice Workshop for Russia/NIS was held in Berlin, Germany during three days (15-17 January 2011) with participation of 18 international and regional experts representing various stakeholders from government organisations, research community and universities, private sector, environmental NGOs and international organisations. Many of them represent practitioners with their valuable knowledge and experiences about the application of BP&T. The workshop programme and participants list are provided in Annex 1 and 2.

During the regional workshop the BP&T in water governance were analysed according to the methodology developed by Twin2Go. They present nine stories of experts from the various locations in the Volga river basin in the European Russia and the Amy Darya river basin in Uzbekistan. The results of the BP&T Inventory are presented in Annex 3.

Table 3.1: **Russia/NIS: Best practices and tools in water governance**

Russia/NIS **Best Practices and Tools in Water Governance**				
No.	**BP&T**	**River basin/Province/Country**	**Region**	**Foci**
1	*Reprofiling of urban riverside territories from industrial to business-administrative sites*	Volga/Russia	Russia	№1
2	*Relaxation of procedures and removal of administrative barriers in issuing water use permits*	Russia	Russia	№1
3	*Introduction of integrated river basin management within Amu Darya river basin, Uzbekistan*	Amu Darya/ Uzbekistan	NIS	№1
4	*Vetluga river basin: Coordination practices in implementation of basin agreements at the local level (N.Novgorod, Kostroma oblasts, and Mary-El republic)*	Vetluga /Nizhegorodskaya oblast/Kostroma oblast/Mari-El republic/ Russia	Russia	№2
5	*Implementation of Environmental Development Strategy by Cherepovets Chemical Group FosAgro (Ammophos, Cherepovets Azot, Agro-Cherepovets)*	Vologda oblast/ Russia	Russia	№2
6	*Introduction of international environmental management system ISO 14001 by industrial enterprise*	Vologda oblast/ Russia	Russia	№2
7	*Flood monitoring and forecasting in Nizhegorodskaya oblast, Russia*	Volga/ Nizhegorodskaya oblast /Russia	Russia	№3
8	*Hydrodynamic GIS modeling of the Volga river basin (Tver-Cheboksay section)*	Volga/Russia	Russia	№3
9	*Enhancing dissemination of information on water supply of rural areas to decision-makers*	Yaroslavl oblast/ Russia	Russia	№3

3.2 Characteristics of the region

3.2.1 Russia: Climate Change and Water Resources

Climate change in the region is of a high variability, as the country is characterised by different geographic zones and 18 climate types; there are significant variations in water resources as well. Climate models forecast significant changes for the region during the 21st century (fig.3.1).

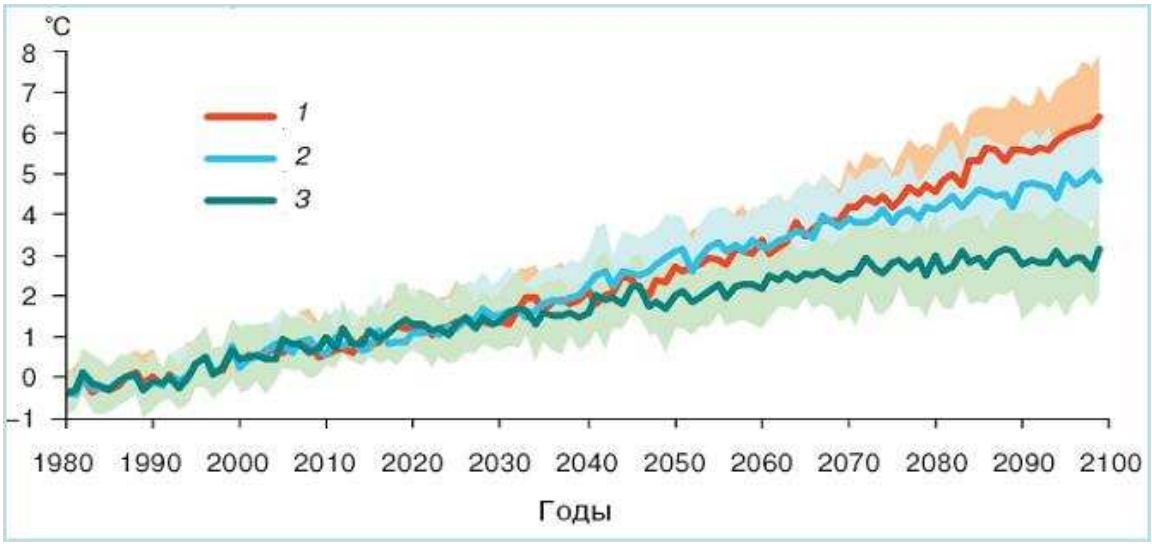


Figure 3.1. **Changes in annual air temperature (°C) in Russia in the 21 century (in comparison with the base period 1980-1999) according to three scenarios A2 (*1*), A1B (*2*) and B1 (*3*).**

Climate change monitoring results already indicate at the increase in temperatures during the cold seasons, increase in precipitation even under constant and declining levels of rainfall during the warm seasons, growth in the number of dry periods with simultaneous growth in intensity of extreme rainfalls, including those in the regions with increasing aridity.

Annual flow in large rivers is increasing (fig.3.2). The eastern regions of Russia face a growing frequency and magnitude of river floods caused by ice blocks. Recent changes in the seasonal river flow are characterised by growing water availability during winter periods across the whole country. Particular changes are registered in the rivers of the European Russia – from the upper N.Dvina to the lower flows of the Volga and the Don with positive trends in winter water flow. According to observations during last 20-25 years, for example, annual river flows in Siberia have increased – in the Lena, Irtysh and Tobol by as much as 20-30%. During the recent decade in some regions of the country, the highest freshet floods with the highest maximum water supply for the entire period of multi-year monitoring have been registered. Recently, the annual number of high and catastrophic floods in Russia increased by 15% against the last decade of the 20th century.

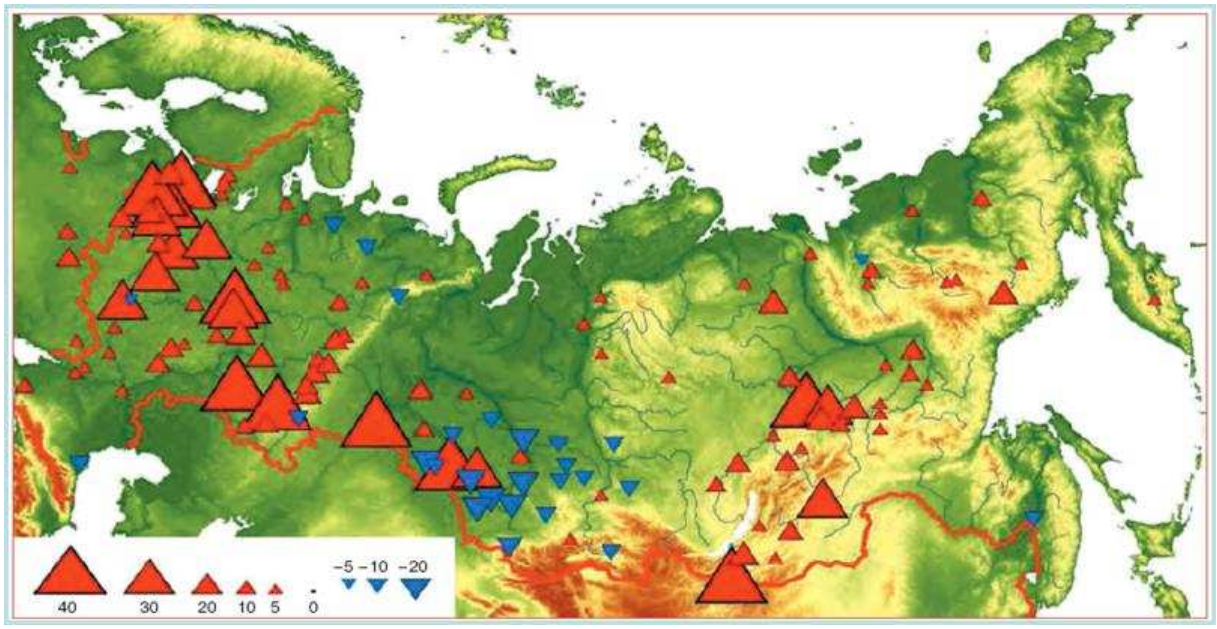


Figure 3.2. **Anomalies in average annual river flow, 1978–2005.**

An important feature of climate change hydrological impacts in Russia is the influence on the ice conditions across the country. Permafrost, which covers 64% territory of the country, is already affected by climate change. Several areas of kriolitozone show the increased temperatures in the upper permafrost layers and increase in the depth of seasonal thaws. Since the second half of the previous century, a decline in the area of marine ice cover in the North has been registered. Particularly rapid had been changes in the minimum seasonal (in September) ice cover sheet during the last three decades. Its minimum had been registered in 2007 (fig.3.3).

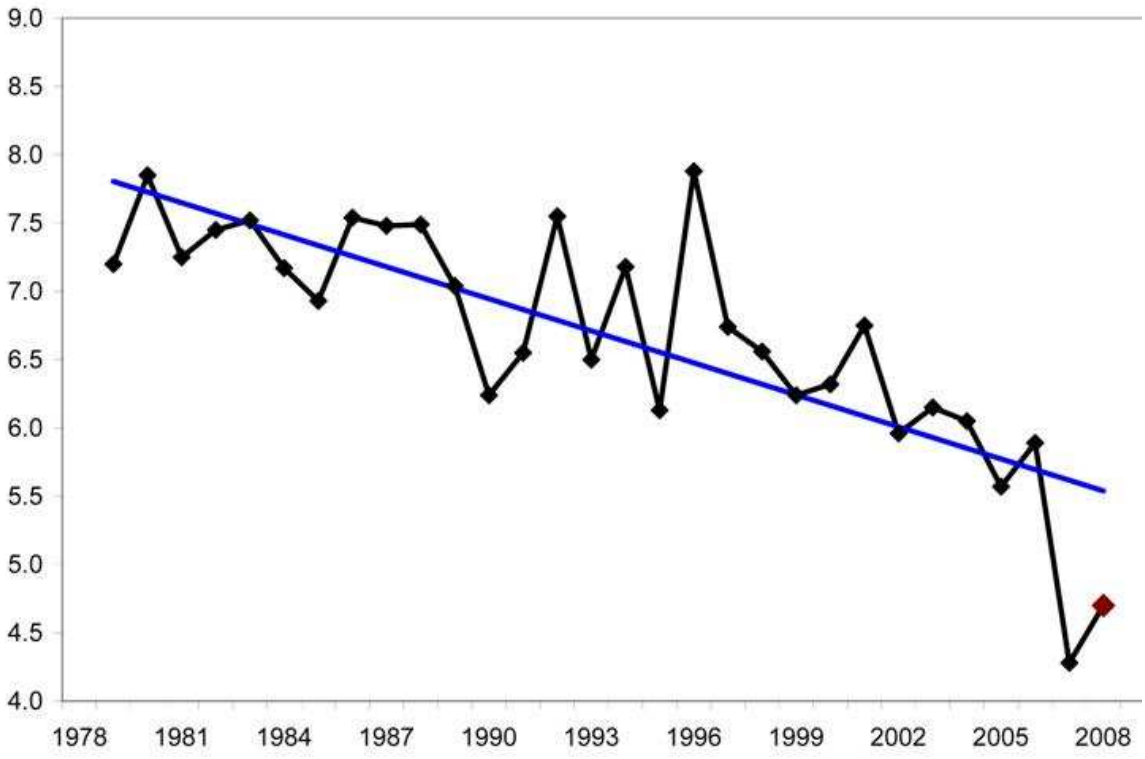


Figure 3.3. **Area of marine ice cover in September in the Northern Hemisphere (million sq.km).**

The number of dangerous hydrometeorological events demonstrates a growth trend (fig. 3.4). The annual damage is estimated at about 1-2 billion USD.

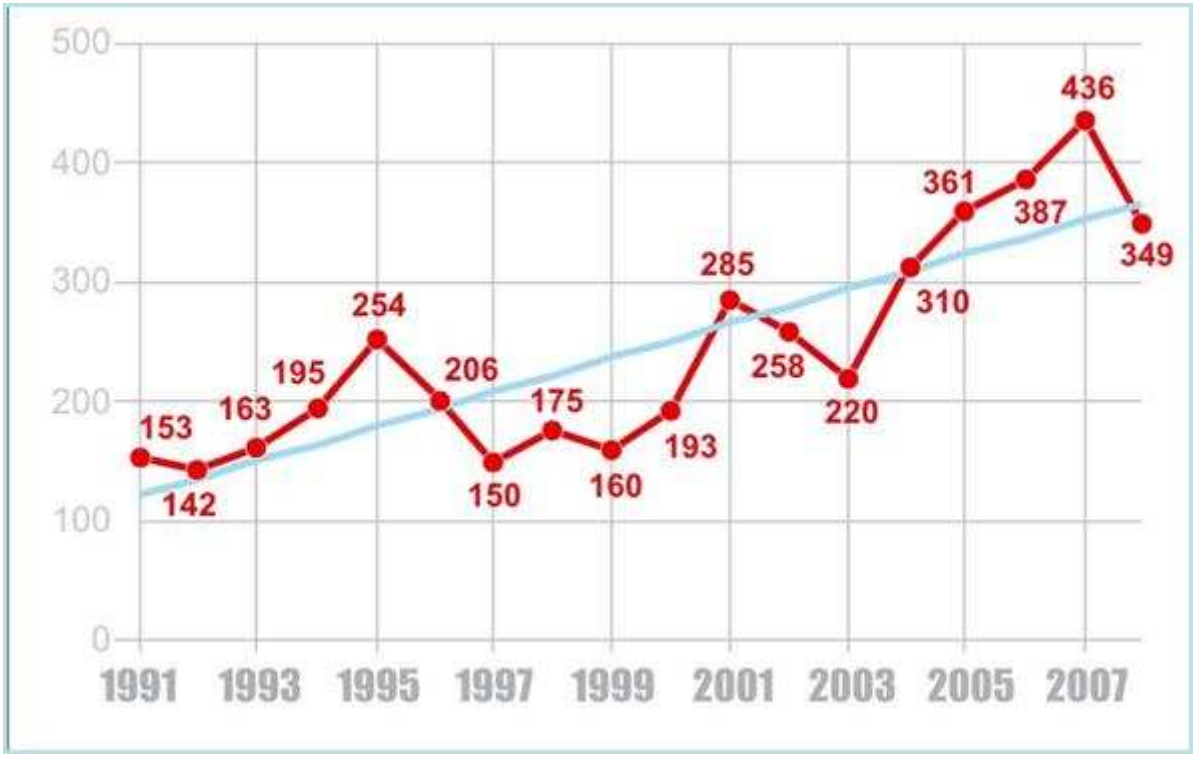


Figure 3.4. **Dynamics of dangerous hydrometeorological events in Russia, 1991–2008.**

The impacts of climate change on water resources in the region are expected to be accelerating in the future in their scales and intensity. In the 21st century, the annual air temperature will be growing. More intensive warming is forecasted for Siberia, and especially for the territories in the North. Under average warming the number of days with extremely high day temperatures as well as the duration of heat waves will be growing.

Increase in winter precipitation is expected across the country. In summer period, it will increase in mid-latitudes and in the North. In the South, the aridisation will be growing. At the same time in some arid regions, higher intensity of heavy rainfalls is predicted.

In the regions of Russia that are characterised by high levels of water resources and moistening further growth in water supply is predicted (fig.3.5). In Siberia, where solid precipitation is prevailing, an increase in the snow mass storage is expected. In combination with rapid spring snow melting the risk of floods is increasing.

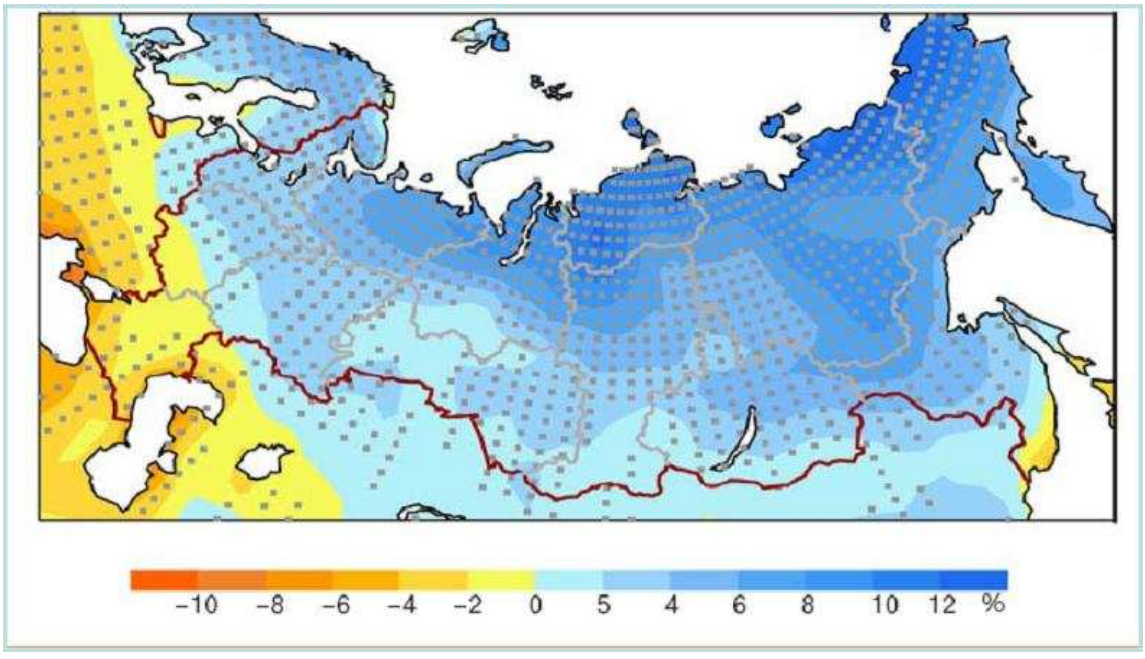


Figure 3.5. **Russia: Change in River Water Flow by 2050 (%,** *from 1980-1999***).**

Degradation of permafrost and decline in sea ice cover in the Arctic are forecasted in the 21st century, while according to some scenarios these territories might turn to be completely ice-free by the end of the century.

Climate change has significant impacts on society, which is particularly diversified in such a huge country as Russia. They will result in: 1) increase of dangerous hydrometeorological events, including floods, snow avalanches, mud-streams, storms and hurricanes, 2) aridisation, 3) changes in permafrost with negative impacts on constructions and infrastructure, 4) changes in water use 5) in agricultural production, 6) transport, 7) energy, 8) households, and 9) human health. It is evident that they have both negative and positive implications, while the former prevail. In this context adaptation to climate change is essential.

3.2.2 Policy Response

In Russia, there is a significant modification in official perceptions of the climate change issue, in general, and about adaptation to its impacts, in particular. Still there is a combination of polar approaches: from confirmation of general benefits and positive impacts of global warming on economy and society, to acknowledgement of a wide range of negative effects. Uncertainties in knowledge regarding national vulnerability to climate change were widely used in the Kyoto ratification debates. In 2008, the Hydromet Climate Change Assessment report was published, and the major part of perceptions regarding Russia's vulnerability to global warming, and hence adaptation strategies, was clarified.

So far, adaptive water governance is not well developed. It is fragmented at the moment, more coordination is needed. However, adaptive water governance potential is quite high for the future. There is growing recognition that climate change is becoming an additional stressor in water risk management in many regions, particularly in the context of other existing social and sustainable development problems. Adaptation options are now discussed more often, while during the last decade the major focus in climate policies had been on mitigation.

Today, adaptation to climate change in Russia is now incorporated in the national climate policy. It entered the national agenda only recently, and it becomes equally important along with the mitigation measures. There is even an impression that adaptation is drawn a comparatively stronger focus. Adaptation strategy is the red thread of the new RF Climate Change Doctrine, 2009. Particular emphasis is given to the evaluation of climate change impacts for various sectors, households and ecosystems. Regions and provinces are encouraged to develop their adaptation plans. One of the problems is that today many decision-makers suggest further research and monitoring on climate change and related risks as a priority. But, urgent response measures are already needed as well, including for example preparedness for floods and droughts, strengthening control over resource use in water deficit regions and periods, planting trees, reconstruction of infrastructure in permafrost

areas, modernisation of coastal constructions, assisting indigenous groups in their adaptation actions, etc. The role of BP&T in adaptive water governance significantly increases.

Significant institutional innovations that ensure successful application of BP&T in adaptive water governance have been underway in Russia during the last decade. New opportunities for effective water management are opened. The new 2006 Water Code establishes the enabling frameworks for BP&T implementation. It seals basin management and IWRM, vertical subsidiarity, establishes basin councils in rivers' sub-basins, encourages participation of multiple stakeholders.

3.3 Selected best practices and tools

Experts presented and discussed a thorough set of interesting stories on BP&T in water governance. Three groups of best practices and tools were discussed, and they cover the major foci (Table 3.1) predefined for the brainstorming exercise:

- *Focus 1:* Application of national water frameworks in river basins *(3 stories)*
- *Focus 2:* Engagement and coordination among actors, forms of interaction/partnerships *(3 stories)*
- *Focus 3:* Enabling learning and building adaptive capacity in water governance *(3 stories)*

The BP&T in water governance applied in Russia (with the focus on the Volga) and in Uzbekistan (with the focus on the Amu Darya) were under expert assessment. Thematically some practices concentrate on new innovative domestic tools that are applied by stakeholders in all river basins across the country (No. 2), or introduced in its major river basins (No. 3). Others deal with concrete practice with 'focal' implementation at particular sites along the river (No. 1). Engagement of stakeholders is illustrated by coordinated actions of locales in basin management (No. 4) and by business involvement in implementing sustainable development strategies, where water management is an integral part (No. 5, 6). Enhancing learning and dissemination of knowledge as a precondition for adaptive water governance is illustrated by BP&T on flood monitoring and forecasting (No. 7), application of hydrodynamic GIS modelling (No. 8), and dissemination of knowledge to decision-makers (No. 9). Most of them demonstrate both success and problems in performance. Engagement of all major stakeholder groups had been covered and discussed, including the government authorities, business, scientific community, public and international entities. The list of BP&T analysed by external experts for the Russia/NIS region is presented in Table 3.1.

3.4 Summary of presentations and discussions

Discussion of WP2 results

Aggregated findings, main messages about water governance in 29 river basins worldwide were presented, and trends in adaptive water governance and participatory IWRM were discussed with experts. The Twin2Go approach and synthesis method is based on data collection, analysis (hypothesis testing) about correlations between regime properties and performance in different contexts (qualitative examination of hypotheses, statistical modelling, cross tab interpretation) and related conclusions. Improvement of life-quality and enhancing human security should be in the core of any adaptive water governance strategies – this is the primary concern emphasised by experts. They also suggest that evaluation not only of 'positive' experience within performance of water governance regimes, but also 'negative' experiences and practices is equally valuable and might significantly enrich the assessment of nuances and trends in performance. Synergy between incentives/economic instruments and regulations is emphasised as important, but it is underestimated in the assessments, while these two clusters of tools should be coordinated and combined in any adaptive water governance scheme. Water governance regime performance and concrete practices need to be grouped according to various scales: transborder, national, basin/provincial, local. Otherwise, one might find confusing results while concentrating predominantly on national governance regimes. The identification of local traps in the performance of water governance institutions might provide additional important conclusions relevant to WP2 synthesis. Context assessments are not thoroughly executed, some universal conclusions might not work in the application to concrete countries and cases. For example, the predominant focus on corruption as a major barrier in good water governance might be misleading for Russia (although being a significant constraint). Deeper cross-basins comparisons and synthesis is encouraged by experts. Dynamics and major trends in performance of water governance institutions are not assessed while the analysis of their life-cycle over time is crucial.

Discussion of "A"-Scores method

The presentation of Twin2Go assessment results *"A"-Scores checking and analysis for Best Practices and Tools* provoked a vivid discussion among experts. "A"-Scores checks and BP&T analysis was carried out basing on the project questionnaire survey and results of score data table. It contains scores for 98 indicators reported in the questionnaire for 29 river basins worldwide. In case of total "A"-Scores the Thames river basin received the highest number, while the Amu Darya got the lowest. Several conclusions from "A"-Scores checks were presented for expert discussion. For example, it was indicated that there is a trend and correlation between water governance and its performance when all river basins under survey are taken into account. For the European river

basins, strong governance and performance levels were reported. For river basins in Africa, South-East Asia, and Latin America, no strong correlation is found between governance and performance. One of the issues might be that results reflect the existing problems and loopholes in the implementation process as such. Another reason might be of a methodology origin – because during the Questionnaire fill-in process weak attention was given to its comments section. Comments to "A"-Scores were only partially usable for the major sections of the Questionnaire: governance regime – 50%, context – 25%, performance – 31%, environmental sustainability – 50%. The weak result for the context section, for example, seems to be associated with the type of context indicators selected for assessment. The weak result for the performance indicators appears to be a bit surprising, as performance indicators are the essence of the questionnaire survey; the conclusion has been that further development of this method is an essential goal within future research.

Discussion of BP&T in water governance, WP3

The discussion of Twin2Go approaches to BP&T issues started with an overview of the major goals of brainstorming with external experts, including overview of innovative practices, lessons from their exchange and transfer, major problems, opportunities and barriers for their application in the Russia/NIS targeted region. Twin2Go inquires about BP&T applied by various stakeholders in (a) river basins/sub-basins, (b) locales, (c) provinces, (d) countries and (e) four targeted regions. Within the Twin2Go triangle "regime-context-performance", WP3 concentrates on BP&T performance and context for their application. Context-specific factors, especially societal, are evaluated by experts as one of the important conditions for the implementation of BP&T in transition economies, while context-specific factors might be not that crucial in 'stable' societies in the EU. That is why thorough assessment to identify opportunities and constraints is regarded as crucial.

While assessing effectiveness in BP&T implementation processes the answers to the following questions were sought from experts. What was the degree of success, or failure in BP&T application? Did application of BP&T result in further development of capacity (regulatory, administrative, human, etc.) for adaptive water governance in river basins? Did application of BP&T result in changes towards more adaptive behavior of stakeholders? Did application of BP&T contribute to problem-solving? Their transfer and adaptation is among the important issues of the WP3 inventory, and the key point of inquiry has been why the BP&T were not able just to be automatically exchanged and transferred worldwide. Detailed discussion of three major foci for BP&T assessment had positive response from experts, because they consider that such method allows to clearly structure the BP&T analysis and later to compare the results across basins. Joint discussion of detailed task-setting for brainstorming in the experts groups was useful; major challenges include

(a) BP&T insights and lessons learned, (b) BP&T export-import, (c) opportunities and constrains, (d) conclusions and recommendations. Insights from experts are used for drawing the analytical results.

Discussion of BP&T transfer and adaptation

Experts discussed the plenary presentation on BP&T export-import. It was indicated that during the 1990s a great deal of institutions had been imported from Europe and the USA. However, their recent assessment by the RF Ministry for natural resources showed that their record during the last 20 years showed that they appeared to be less effective than predicted. Many of them had been adapted to domestic specifics. Some adaptation to the local contexts and specifics is essential, but there is a danger to deform them significantly; so a cautious approach and control over limits in the process is essential, because transplanted institutions might be significantly altered as a result. There is a stable trend towards international unification and standardisation of water governance instruments and tools. Water governance practices can be transplanted from abroad and from the own history, which occurs not often, however. Careful selection of 'transplants' is crucial, as decisions made at the national level might interfere with local priorities and might face opposition; this is particularly important, as there is a need for consent and support for transplants from real 'implementers' at the bottom. An assessment of existing sets of formal and informal institutions is crucial: it cannot be regarded as adaptation process of the locales, but it can serve as a supplementary package, particularly its items that perform perfectly well under local contexts. There is a need for conflict analysis of those universal institutions (especially towards the local specifics) that are planned to be imported; compatibility of transplants with local institutions and context is necessary, as well as the assessment of those at the local level that might interfere and impede rooting of the new ones. A certain period for 'embedment' of transplants is essential. The geographical scale of the donor and recipient is equally important: for example the density of population in Holland and in Russia are very different; the river basins are different as well – for example, Tisza, Volga and Amur.

3.5 Description of work done

Organisation

The work of the Russia/NIS workshop was organised in plenaries and in expert groups (see workshop program). It provided a combination of general discussions, comparisons and generalisations and expert assessment and exchange about the application of concrete BP&T and related problems. It was very important for the success of the workshop that the organisers made some clear-cut introductory remarks about the a) 'theme' and goal of the workshop b) overview of Twin2Go findings, c) introduction to BP&T approaches and d) transfer and adaptation of BP&T.

After the opening plenary, the discussion was held in two expert groups. The size of each group was optimal, consisting of about 7-8 experts. It was a very sensible approach to mix national participants and international experts, because it permitted sharing of "internal" and "external" views on the issues and analysing domestic problems against the background of broader international trends. The workshop shows that it is essential to invite experts and representatives of various stakeholder groups – not only scholars, but also members of business community, government authorities, international bodies and NGOs. Such combination provides a significant synergetic effect.

In order to effectively discuss the major issues of interest and exchange the lessons from the application of BP&T all experts were asked to bring to the meeting their own stories about BP&T in water governance. To better structure the discussion and further thinking they were encouraged to answer 15 core questions of the BP&T Inventory Questionnaire, Form-1 (see Annex 3) illustrating the major specifics of their cases, particular instruments applied in practice and major problems they are facing. After detailed discussion of experts' stories in the expert groups the Summary Tables on BP&T and their transfer across river basins, countries and stakeholder groups were compiled (Annex 3).

Copies of formats of the BP&T Inventory Questionnaire and the BP&T Summary were circulated to participants three weeks prior to the workshop. Experts were encouraged to do their homework. Additional time was allocated to finalise the individual drafts of pre-filled Questionnaires. All experts presented their stories in the expert groups, and they were jointly discussed. Major lessons and findings were presented at the final plenary and there was a final round of discussions to verify the results.

BP&T inventory questionnaires and BP&T summaries were edited about a month after the workshop. All draft results were exchanged with experts for their comments, which were taken into account in the final versions. Information from these was then summarised to help compile this report.
The synthesis of workshop results involved the exchange with experts of all processed stories and presentation summaries. All presentations were sent to experts after the workshop; that allows to consolidate the expert network and to create the sense of engagement in the development of the project outcomes. Further synthesis of results is presented in the following sections of this report.

Russian has been the working language, so additional sequential translation was required during the workshop. All fact sheets filled in Russian were translated into English afterwards.

Achievements and Comments
The key messages from brainstorming on adaptive water governance were exchanged during the plenary, and general recommendations for the region were formulated. During the final plenary there has been a vivid discussion of Twin2Go analytical approaches and problems encountered by experts. A number of comments and recommendations about the analytical approach were suggested. They include:

- Twin2Go's methodologically valuable approach to the assessment of BP&T is highly acknowledged by experts. Particularly helpful and interesting is its methodology presented in the inventory questionnaire. The division of BP&T into three groups according to major foci helps immensely to structure the problem of BP&T implementation and to make comparisons between basins, scales and countries. Split into stakeholder groups and evaluation of their interests and capacities in implementing concrete BP is an important analytical tool

- The methodology to assess the transfer of BP&T across basins, countries, regions and stakeholder groups needs additional refinement. It relates to both research method and assessment of the major problems. The *transfer* practice is very important in itself. It should be clearly structured. It should be accompanied by best transfer examples and stories, as well as by evaluation of success and failures in this process. At the same time, the project's analytical approach on export-import of BP&T is a big merit of Twin2Go.

- The analytical approach of Twin2Go needs to be supplemented by constructing the 'tree of goals and problems' related to water governance institutions and context. On its basis the solutions for the problems – conclusions and recommendations for policy-makers – could be

formulated. It should be indicated what in particular is not known at the current moment, and what are major loopholes and uncertainties; it allows formulating possible solutions in adaptive water governance. In their turn, they could be discussed with the experts from the region.

- Analytical approaches envisage assessment of both barriers/constraints and opportunities for BP&T implementation and transfer. Experts suggest that evaluation not only of 'positive' experience within the BP&T theme, but also 'negative' experiences and practices is equally valuable and might significantly enrich the research method. For example, the picture after inventory of BP&T might appear much brighter than every-day reality, which might create a preconceived notion.

- The Twin2Go method should encompass more emphasis on the synergy between incentives/economic instruments and regulations. This item is underestimated at the moment. These two clusters of tools should be coordinated and combined in any adaptive water governance scheme. Twin2Go needs to acknowledge and elaborate this analytical approach more profoundly.

- Twin2Go's analytical method should make a clear distinction and clustering of BP&T in adaptive water governance and implemented institutional innovations that can be relevant to 1) locales, 2) basin level or provinces, 3) targeted regions, 4) universal dimension.

- Experts recommend some alterations in Twin2Go's planning of results, findings and conclusions. It is not wise to expect immediate results from the introduction of new institutional settings in adaptive water governance; all institutions have a significant life-cycle. As a result, some answers the project queries might be different in case the dynamics of institutional performance is taken into account.

- Although interesting trends and correlations in water governance had been already tracked by Twin2Go, further upgrades and development of Twin2Go research method is suggested within future joint studies; it particularly relates to a refinement of the questionnaire survey sections dealing with *context* and *performance*.

- Twin2Go's approach on the assessment of BP&T needs to contribute to enrich the GWP Technical Advisory System Toolbox. It is recommended to take additional efforts by project

partners in cooperation with external experts to provide several most interesting BP&T examples from the WP3 exercise.

3.6 Results from BP&T inventory by experts

3.6.1 Best practices and Tools: Cases and stories of experts

Nine expert stories on BP&T in water governance were discussed in detail during the workshop. All experts made their presentations in expert groups and then summarised the key messages at the plenary. While discussing the issue, experts concentrated on the main goal, participating actors, BP&T performance and effectiveness, context for its application with a special focus of opportunities and constraints. The filled-in BP&T Inventory by experts with answers to 15 standard questions and BP&T Summary are in the annex.

The following set of experts' stories about best practices implementation was analysed and discussed during the Russia/NIS workshop:

BP&T – 1: Reprofiling of urban riverside territories from industrial to business-administrative sites, Volga/Russia

The BP&T is in re-profiling of urban riverside areas from industrial to business administrative sites in N.Novrgorod (it is applied in other cities as well – Kazan, Khabarovsk). It is based on modern sustainable development and urban planning concepts and is aimed at enhancing the life quality standards in urban areas.

It is performed by municipal authorities and business community (owners of land sites under industrial enterprises and investors). The involvement of local population is much more limited in comparison with similar projects and campaigns in the EU river basins.

This is a new practice, and its application is widely encouraged by the RF Water Code. Recent increase of prices for the urban land sites, especially at the riverside areas serves as a strong incentive to close down or remove obsolete industrial plants. Increased tax revenues to municipal budget serves is a powerful factor for enhanced support for such projects by municipalities. Local society enjoys the upgraded landscapes. Business and construction companies are the major investors; however, shortages in funding and investments are among barriers for its active application.

Among negative impacts of its application are reductions in the number of jobs in the industrial sector, which results in social tensions. Sharp increase in urban land prices in the riverside areas is regarded as a negative by-product. Economic crisis represents a substantial barrier for its application. Industrial enterprises with urban-formation functions are usually difficult to be transferred. Lack of profound experience in the application of this practice is a barrier.

The removal of environmentally harmful industrial enterprises results in an amelioration of water quality and the ecological situation in general. It promotes more environmentally responsible behaviour. Local urban riverside landscapes are considerably upgraded. Better results are shown in larger cities where investment opportunities are broader.

BP&T – 2: Removal of administrative barriers in issuing water use permits, Russia

This BP&T is aimed at increasing the effectiveness of the national water governance system through reforms and simplification in the administration of water use permits; it is applied in all river basins across the country. It results in the removal of administrative barriers, counteracts corruption and lobbying, and results in the consolidation of transparent norms in the water sector.

Water Agencies of the RF Ministry for Natural Resources are the key players in the application of this practice. Water Basin Administrations conclude agreements with water users and fix the levels of water use for them and for particular territories. They fix limits for water use. Regional authorities pressure for water use norms reductions to stimulate investment projects in the territories. Equal requirements are established from now on for all type of enterprises, including the municipal ones.

The major barrier has been in bureaucratic practices. Corruption is regarded as an obstacle. This new practice needs to root, an additional transition period is required to test and verify procedures of its application, and its logic. Poor horizontal coordination hinders its effective application.

This BP&T can be regarded as a success story. However, its further adjustments are required while applying to SMEs. Water management systems become more transparent, clear and effective. The behaviour of water users becomes more responsible in terms of water savings and conservation. It has an effect on water pollution reduction, as municipal enterprises, which formerly had been the significant pollution source, need to change their behaviour. The unification of rules/norms for issuing water use permits across all federation subjects and water users is a challenge

BP&T – 3: Introduction of integrated river basin management within Amu Darya river basin, Amu Darya/Uzbekistan

Since 2003, transition from administrative-territorial to basin management (in irrigation systems) is underway. The number of administrative management units was reduced by 3-fold (from 237 to 73), new management organisations had been established.

Specific societal context significantly affects the implementation of this BP&T resulting in its certain distortions. State-centric, top-down governance approach, undeveloped water management institutions, administrative barriers in combination with little public participation, low life quality, qualified workforce drain and migration, financial shortages and low investment opportunities, no long-term strategic planning and other factors create specific context for its application.

Significant barriers for the application of this BP&T exist. A transition period for its implementation is required. Further reforms in the domestic water sector are needed, including the introduction of modern water legislation and enforcement procedures. Professional education and training is essential. Increase in control, transparency and accountability over financial flows is required. Modernisation of irrigation systems and increase in water conservation in arid zones is a must. Additional incentives for investments into upgrade of irrigation systems are necessary.

So far, its effectiveness is not high (versus its goals of introduction of market mechanisms in water-use, water saving technologies, policy coordination within river basin, ensure regular water supply to water users), but time is needed to monitor the results of its implementation. However, this BP&T is regarded as an important step forward in reforming domestic water governance regimes.

BP&T – 4: Vetluga river basin: Coordination practices in implementation of basin agreements at the local level (N.Novgorod, Kostroma oblasts, and Mary-El republic), Vetluga/Russia

The local basin agreement “Povetluzhye” within the Vetluga river basin concluded 15 years ago is aimed at promoting environmental protection, cultural and economic coordination and interactions at the local level. It is concluded between the regions of the Nizhegorodskaya and Kostromskaya oblasts, Mary-El republic in the north of the European Russia. Its goal is to enhance life quality at the local level in quite poor areas in the European Russia and to increase the effectiveness of water governance in the regions. Annual festivals, dialogues and joint campaigns are held. Local knowledge and traditions are maintained and disseminated. The local self-governance organs are

the key players in this agreement, the environmental efforts of municipalities in these provinces are coordinated, and its implementation is widely supported by the local public.

Among barriers for its implementation is the lack of horizontal coordination, inadequate attention to stimulating implementation of BP&T in the locales, financial shortages, poverty, deficit in jobs and migration of young people.

The application of this practice resulted in the development of stakeholder coordination and joint actions in the river basin, environmental conservation, in the restoration of local cultural traditions and handicrafts. The national park has been opened in the basin in 2008, and eco-tourism is promoted.

It was recommended to promote the development of legislation for horizontal coordination in IWRM at the local level; to enhance the role of self-governance organs in decision-making and implementation of BP&T in water governance.

BP&T – 5: Implementation of Environmental Development Strategy by Cherepovets Chemical Group FosAgro (Ammophos, Cherepovets Azot, Agro-Cherepovets), Vologda oblast/Russia

This BP&T is the internal corporate environmental program, which is implemented in the Volodga oblast. Enhancing the effectiveness of water management is its integral part. Since recently, environmental efforts are considered as a component of corporate development strategy. All industrial facilities of FosAgro in the Vologda oblast are involved in its implementation.

The implementation of this strategy envisages performance of a set of concrete measures, including water recycling, drinking water processing, development of water conservation and internal water balance, introduction of operational water quality control, reporting and forecasting of pollutants discharges, regular collaboration with scientists and environmental consultants, introduction of an international system of ecological management, constant environmental education and training of the staff, development of state-private partnerships in the Vologda oblast.

Poor national framework, guidelines and information for sustainable development strategies by large industrial companies are regarded as impediments for effective application of this BP&T. Too stringent domestic ecological standards that are unrealistic to comply with are a barrier (today, an enterprise has to discharge after use the water of a quality higher than it originally consumes from

the river). Limited government incentives for environmentally benign behaviour and for the introduction of adaptive water management hinder its effective application. Corruption and lobbying are regarded as a barrier.

Further progress in market economy, new investment opportunities, revival of domestic agricultural sector, issuing IPO and increasing international competitiveness of FosAgro are seen as opportunities for the implementation of its sustainable development strategy and adaptive water governance.

It was recommended to further consolidate state-private partnerships, to promote introduction of the government package of incentives for enterprises to actively implement their sustainable development strategies, to strengthen corporate perceptions that performance of such strategies is a necessary condition to enhancing corporate competitiveness at international markets.

BP&T – 6: Introduction of international environmental management system ISO 14000 by industrial enterprise, Vologda oblast/Russia

Since 2006, the international environmental management system has been voluntary introduced by the industrial enterprise Ammophos in the Vologda oblast. Environmental amelioration, enhancing water quality, ecological risk reduction, promoting sustainable development and environmental responsibilities are among its goals. Business and international certifying organisations are the major actors.

The international ISO 14000 system of environmental management standards is the major regulator. The industrial enterprise has an interest to increase its competitiveness, ensure access to international markets. There are socio-moral incentives – promote social and ecological responsibility.

Barriers include additional financial costs and training of staff for the development of the management system and its enforcement afterwards. Low incentives at domestic markets for the introduction of this environmental quality management standard are indicated.

Opportunities include a) expansion of markets and demand for companies, especially growth of demand from international markets, b) development and amelioration of the ‘green image‘, c)

environmental risks reduction. Russian business is developing, and it prefers to be law abiding, transparent, accountable, responsible and compliant with domestic rules.

The major success in its application is associated with reduced negative impact on water resources. It is attributed to the introduction of new technologies and development of partnerships with civil society. The social image of a company is improving, and positive attitude of the local public is registered. Ecological awareness both of its staff and of the local public is much higher today. Additional funding is granted for the reconstruction of purification facilities. The problem of water pollution of the river is being solved currently.

BP&T – 7: Flood monitoring and forecasting in Nizhegorodskaya oblast, Volga/Russia

Monitoring and forecasting of freshet floods in Nizhegorodskaya oblast. It is based on the processing of statistical data on all cases of flooding, taking into account information on water level, weather conditions and possible flooded areas. Modeling takes into account the information on local relief and expected water levels during flooding.

Its major goal is to prevent floods, reduce risks associated with high freshet floods through a system of counteractive measures. The selection of measures is based on forecast results. Operational response is provided in case of emergencies. A data set on all cases of flooding at the oblast level is created.

This BP is applied within the Emercom system. Hydromet, Upper Volga Basin Administration, and the government of the Nizhegorodslaya oblast are the major actors.

Products and results are provided to the government of the Nizhegorodskaya oblast and to the heads of the local self-governance organs. The BP is realised according to the national, oblast and internal ministry regulations.

Among the problems is the low effectiveness of its application by decision-makers. The major barrier is the unwillingness of oblast authorities to be involved in problem-solving.

Additional opportunities are associated with the possibility to assess water insecurities related to climate change and to develop related adaptation responses. Forecast results and the compilation of data on regularly flooded areas help the decision-makers in the Nizhegorodskaya oblast to assess

the flood situation and to define measures to reduce risks of floods and risks of possible pollutants inflow into water bodies.

BP&T – 8: Hydrodynamic GIS modeling of the Volga river basin (Tver-Cheboksay section), Volga/Russia

A hydrodynamic model of the Volga river for its section between Tver and Cheboksary is developed. It is a result of the cooperative research programme “Volga-Rhine” between the Karlsruhe University, Germany and N.Novgorod State University for Architecture and Civil Engineering. Its single- and bi-dimensional modifications are adapted also to the Volga tributaries. Testing of this model is undertaken during preparations for out-letting of high water flows through the Gorky-Cheboksary reservoir and during developing the design of the low-pressure dam near the Balakhna city. Authorities and water users are the key actors to apply the results of this practice.

A lack of system incentives for the introduction of such innovative products into the regular practice is the major barrier. There are internal bureaucratic barriers, associated with the application and dissemination of methodological and program products.

Application and implementation of mathematical modeling mode as an integral GIS component for the river basin is the main opportunity. Practical application is linked with the provision of safety of exploitation of hydro-technical facilities, as well as ensuring preparedness to extreme changes in river flow.

Testing of this model in practice indicated at high compatibility of calculation results, and in-situ changes indicated at its success. Problem-solving in ensuring safety for local population and hydro-technical facilities is linked to regular practices and the realisation of a set of integrated measures. This model serves as an instrument for meeting these purposes.

BP&T – 9: Enhancing dissemination of information on water supply of rural areas to decision-maker, Yaroslavl oblast/Russia

This practice is aimed to enhance information dissemination to decision-makers about the situation with water supply and means for its amelioration. This BP was applied in eight rural settlements in the Danilov region, Yaroslavskaya oblast. Enhancing water supply for rural areas and their population, increasing the effectiveness of rural water supplyers and meeting the long-term

requirements of rural households under market economy are among its tasks. The major question is to what extent the water management decisions are correct and sound, and if they correspond to local public perceptions in rural areas.

It is applied by nongovernmental non-commercial organisations, local self-governance organs, government authorities and water users in the Danilov region.

Existing high drinking water quality norms limit the diversification of the water sources. The local population is unwilling to pay for water, as during the Soviet period they had water supply for free. The reduction of possible conflicts between water users in households is an incentive for this BP application (Despite large water resources in the Yaroslavskaya oblast, a paradox situation is registered in the rural areas – there are shortages in water supply, because the old centralised system of water supply is almost completely ruined; after the removal of Soviet subsidies, the artesian wells were abandoned).

The major constraints for its application is low professionalism of managers and decision-makers regarding the provision of water services to rural areas; non-consideration of traditional knowledge; shortages in bottom-up initiatives (one of the reasons is that local people do not consider water as a commodity to be paid for).

Drivers for its application include a decline in government financing; no mechanisms for sustainable funding for support of the drinking water supply systems. Local authorities act according to ad-hoc decisions, responding mainly to currently emerging problems, without profound strategic visions and planning.

The effectiveness of its application is associated with the diversification of water supply at the local level and reduces the pressure on water resources, reduces water consumption levels, as well as risks of water shortages in water supply systems.

This BP is not widely and systematically applied, but some of its elements and measures were implemented by authorities and some by local stakeholders. The problem in particular villages is solved by local authorities – a program assessing the state of natural wells and old artesian sources is performed. However it did not have serious implications for the oblast. Expanding dissemination of information to local and oblast authorities, and to local population, resulted in the formation of better

perceptions about new economic market realities in the field. Stakeholder behaviour becomes more responsible in economic terms.

3.6.2 Export-Import of Best Practices and Tools

Experts discussed in detail the problem of transfer and adaptation of BP&T in water governance, with a focus on their cross-border export-import (Annex 3). The major problems and barriers were discussed, the source and origins of the BP&T transplant, the role of external influence and 'donors' assistance in a course of transplantation, and whether there is a necessity for adaptation of borrowed practices to existing domestic institutional and societal specifics. The following barriers and opportunities were identified, and recommendations on BP&T transferability formulated:

BP&T – 1: Reprofiling of urban riverside territories from industrial to business-administrative sites, Volga/Russia

Similar practices are used in the West, and foreign experiences were borrowed. External support was granted for professional education of the Russian specialists involved in this BP&T implementation.

Opportunities: This BP&T can be transferred to other river basins. It has already been successfully applied in Khabarovsk and Kazan. Better results in its application are demonstrated in large cities than in small towns, due to limited investment opportunities in the latter, due to economic crisis and social problems that are higher in marginalised areas.

Barriers: Different or even contradicting interest of actors within the riverside re-profiling process is the major barrier. Lack of experience in municipalities to supporting and motivating this practice and in enhancing public participation is considerable.

Recommendations: 1) Wide dissemination of information about this practice to decision-makers in municipalities, wider knowledge transfer and education. 2) Local public is to be involved.3) Ensure that lobbying from various businesses is excluded; equal opportunities and competitive conditions should be applied to all investors.

BP&T – 2: Removal of administrative barriers in issuing water use permits, Russia

This BP&T is borrowed from international and domestic experiences. It is part of a universal trend towards the removal of administrative barriers in water management.

Opportunities: it is applied to river basins across the country

Barriers: Bureaucratic procedures and remainders of 'old' institutional frameworks and approaches in water sector.

Recommendations: Further testing, verification, control over application in all river basins. Transition period for its embedment is essential. Unification of rules for its application by all federation subjects and water users.

BP&T – 3: Introduction of integrated river basin management within Amu Darya river basin, Amu Darya/Uzbekistan

This BP&T is a part of reforms in the water sector in Uzbekistan. It is borrowed from the West. European consultants promoted its application. Its trial test has been undertaken in the Fergana region together with Swiss partners.

The introduction of IWRM in Uzbekistan in 2003 was recognised as a major political event within water management. The facilitators of IWRM principles dissemination in Uzbekistan were international projects as well as the government of Uzbekistan. In some regions of the Republic of Uzbekistan international donors such as IWMI, ADB, USAID, and WB expanded their activities in the irrigation sector in the form of pilot projects. These pilot studies, which showed positive feedback from the participants, and other international and Central Asian experience, have contributed a lot to the introduction of IWRM and establishment of Water Users Associations (WUA) in Uzbekistan.

The Ministry of Agriculture and Water Resources organised a number of visits to Italy and Turkey in order to collect international experience in water management issues. Kyrgyz experience with its extraordinary reforming steps (land privatisation, market economy and introduction of WUA, etc.) is replicated in Uzbekistan. Experiences from Mexico and Indonesia were assessed by local experts. Experiences from China and Japan came up through some donors and cooperation with these countries. The donor activities are formed by educational programs and trainings abroad.

The joint project with IWMI suggested their IWRM strategy to the government of Uzbekistan. As result, in March 2003 a new wave of reforms in the agrarian sector of Uzbekistan started, based on the adopted and supplemented IWRM strategy.

Opportunities: Shift to a market economy. Development of international cooperation in the water sector.

Barriers: Old institutions and territorial principles in water management are combined in parallel with new institutional settings. Corruption, lobbying, old clan system, Shariat perception of no cost for water, bureaucratic and administrative barriers, lack of horizontal coordination are among barriers for its application.

Recommendations: This practice requires significant adaptation to local specifics, however strict supervision over the process is needed in order not distort it. So, this is a tricky task. BP&T approaches need to be extended and applied to other sustainable development priorities (drinking water quality, water supply to other water users, water conservation), but not only agricultural development.

BP&T – 4: Vetluga river basin: Coordination practices in implementation of basin agreements at the local level (N.Novgorod, Kostroma oblasts, and Mary-El republic), Vetluga/Russia

This practice is an internal initiative, and it is based on domestic traditions and perceptions. No influence from outside Russia. But, indirect social learning from similar coordination practices worldwide is present. It is a local initiative. International programs in the basin are not realised, and international cooperation is not sufficient.

Recommendations: Develop twinning partnerships with stakeholder associations in analogue river basins/sub-basins and locales in the EU. Development of eco-tourism in the basin, support for traditional handicrafts and exchange with other regions. Wider use of new market opportunities should be encouraged. It is recommended to increase the attention of international environmental organisations to the local level in Russia and support and disseminate interesting coordination initiatives and practices that are originating there.

BP&T – 5: Implementation of Environmental Development Strategy by Cherepovets Chemical Group FosAgro (Ammophos, Cherepovets Azot, Agro-Cherepovets), Vologda oblast/Russia

Internal corporate program. It indicates at the general trend towards worldwide 'standardisation' of universal practices in environmental management in general, with water governance being as an integral part of it. Lessons from standard environmental practices of industrial enterprises are taken into account.

Opportunities: promotes increase in corporate competitiveness, enhances the green image, wider opportunities after the introduction of new information systems (MES-System), ISO international systems, etc.

Barriers: institutional instability at the government level increases the risks for BP&T effective implementation and exchange; high social responsibility of the company at its location results in extra costs and the diversion of investments into environmental practices and wider application of internationally tested options

Recommendations: Assessment of possible strategic corporate adaptations and new compliance procedures under the entry into WTO, participation in REACH and OECD. Further development of corporate strategic environmental planning and adaptive water management based on international exchange of lessons from other leading companies in this industrial sector ('learning from others').

BP&T – 6: Introduction of international environmental management system ISO 14000 by industrial enterprise, Vologda oblast/Russia

It is totally based on international practices and experience.

Opportunities: International support as granted in the installation of this international management system. Russian standard was introduced to ensure compatibility between domestic and international requirements and procedures.

Barriers: No significant barriers are identified. Additional financial and human capacity resources were essential for the application of this system by the enterprise.

Recommendations: establish a solid regional environmental management system based on the certification of the major part of large enterprises in the region

BP&T – 7: Flood monitoring and forecasting in Nizhegorodskaya oblast, Volga/Russia

This practice is based on internal experience.

BP&T – 8: Hydrodynamic GIS modeling of the Volga river basin (Tver-Cheboksay section), Volga/Russia

This BP&T is a result of cooperative efforts between the N.Novgorod University for architecture and civil engineering and the Karlsruhe University, Germany. The model developed (applied to the Rhine) needs to be adapted to the Volga river hydrological regimes and specifics, including differences in river flow in comparison to the Rhine; cascade of the larger reservoirs in the Volga.

Opportunities: model application to larger segments of the Volga, including its tributaries.

Barriers: Lack of interest from government organisations and authorities in the application of this model in practice. Government authorities regard this project as a competitor. Administrative barriers are the major problem.

Recommendations: Need for ensuring early participation of representatives from government organisations in the development and application of such modeling products; Enhance the coordination of data processing between various organisations; Increase PR among government organisations to increase their interest and support; Expand efforts to show advantages of results, 'sell-out' the final product among practitioners and Basin Water Administrations; 'Brokerage' and intermediary actions between science and policy making might be useful

BP&T – 9: Enhancing dissemination of information on water supply of rural areas to decision-maker, Yaroslavl oblast/Russia

This is an internal domestic practice applied at the local level in the rural areas.

Recommendations: this practice is recommended for the application in rural territories with low density of population.

3.7 Discussion and comments on BP&T inventory results

The results of expert brainstorming and discussion of BP&T applied are the follows:

Focus 1. Application of national water governance frameworks in river basins

- Ongoing modernisation, diversification and further development of domestic water governance frameworks have direct practical implications for river basin management. The implementation of new water governance regimes includes the application of river basin management and IWRM principles, removal of administrative barriers, amelioration of riverside areas and attempts to coordinate interests of diverse water users. However, performance problems within locales and provinces are abundant.
- There is a need to shift from prevailing technocratic approaches to water management in river basins in order to incorporate broader governance models, taking into account the interactions between state and non-state actors. Horizontal coordination between the existing system of River Basin Administrations under the RF Ministry for natural resources and other governance agencies is essential.
- Further refinement of vertical coordination in the water sector needs to be more flexible to ensure the balance between functional competences and responsibilities of different levels of authority: currently, there are indications that top-down dissemination of broader competences to locales is accompanied by stricter controls over bottom-up resource flows, which results in complaints from locales.
- Situational factors in the provinces and locales – economic situation, socio-cultural traditions, specifics in institutional development, in political situation and democracy development in the regions – are very strong drivers and define to a high extent trends in water governance.
- Under globalisation the domestic water institutions in Russia are involved in the process of international unification of standard practices and norms. Coordination, for example, is underway within the OCED. Road maps for the harmonisation of national legislation, norms and transfer to new technologies are constructed. Russia's entry into the WTO is expected to affect certain water governance practices of stakeholders in river basins as well.

Focus 2. Engagement and coordination among actors and forms of interaction/partnerships

- Coordination and partnerships between various groups of actors in sustainable water management are a still weak practice in the Volga basin; local public involvement in decision-making is comparatively low. To a high extent it is the legacy of the Soviet past when the

state authorities had been the dominant actors, and environmental interests and initiatives of the public were subdued.

- Recently established River Basin Councils (RBC) should be more active in engaging the water end users and public in decision-making and concrete action; the currently prevailing trend of the RBCs' high functional dependence on river basin authorities should be reversed; reforms are essential at the very start
- Voluntary partnerships and basin coordination in locales is a new emerging trend, and they started to be developed during the last decade in some provinces of the Volga. Experience shows that such partnerships are more viable for the smaller river basins or sub-basins; they are more functional while establishing coordination between municipalities and locales, rather than involving the regional/provincial levels. Diversified support for such emerging initiatives is important.
- Building state-private partnerships for the performance of water governance policies in river basins is essential at the local and provincial levels; coordinated and diversified incentives for shifts towards water sustainable use and conservation are among effective practices and might provide fast-track results
- Local authorities have a societal responsibility not only to establish their broader accountability before the public in water management and water supply, they need to introduce frameworks for broader public and water users involvement in decision-making. With low public participation it is especially important to stimulate it through public hearings, forums, networking and dialogues. Engagement not only in decision-making, but also in concrete practical actions in water sector is a good recipe.
- Wise and sound policies should be applied by municipalities towards the local households under ongoing market reforms; recent 'rocketing' of end-user water prices, while the quality of water services remains to be quite poor might be the reason for social unrest. Ensuring control and transparency of numerous recently created water service companies is among prior functions of local authorities. It is especially important for 'marginalised' areas and small towns where the share of poor households and vulnerable social groups is high.
- Establishing river basin/sub-basin partnerships among the Russian provinces and their counterparts in the EU facing analogue water resource adaptation problems might be a useful tool; the exchange of lessons, experiences, knowledge and cooperative public action has a large potential; 'learning from each other' is the key for success

Focus 3. Enabling learning and building adaptive capacity in water governance

- Adaptive water governance is not well developed in the region. It is fragmented at the moment, more coordination is needed. However, its potential is quite high for the future
- Such situation is defined by prevailing perceptions about positive and negative impacts of climate change; it relates both to the state of scientific knowledge and public attitudes to the problem; dealing with risks associated with climate change is not among the priorities at the national or regional agendas
- Adaptation to climate change and formulating responses to global changes within the water sector gradually becomes the 'red thread' in domestic strategies planning only during the last 3-4 years; more data, knowledge and assessments are rapidly needed.
- The development of science-practice interface, 'brokerage' of scientific results and findings, their wide dissemination to policy makers, water-users and public in the provinces and locales is essential; it can be regarded as a 'must' in water resource planning
- Local responses to global problems: support by the scientific community to local decision-makers in the modernisation of water supply options in the locales under climate change is required; strategic vision and adjusting to perspective trends is a loophole in local policies; ensuring security and life quality of households and individual residents should be the key concern
- Special attention needs to be given to rapid enhancement of monitoring networks in river basins and processing its results to make them available to decision-makers in the regions; the practice of compiling data bases and forecasts for all types of flood events that are processed for certain segments of the Volga need to be expanded to the entire basin; their application in practice by local decision-makers should be enhanced.

3.8 General conclusions and recommendations for the region

The following conclusions and recommendations were formulated by experts for the targeted region Russia/NIS:

- Significant institutional innovations that ensure successful application of BP&T have been underway in Russia during the last decade. New opportunities for effective water management are opened. The new 2006 Water Code establishes the enabling frameworks for BP&T implementation. It seals basin management and IWRM, vertical subsidiarity, establishes basin councils in rivers' sub-basins, encourages participation of multiple stakeholders. Although it is an important step forward, the introduction of normative acts is

not enough for success in adaptive water governance, as the process for its performance is much deeper. Particularly important is its effectiveness in relation to target groups, i.e. how and to what extent various stakeholders change their behaviour in practice in response to and in compliance with the new rules. In many cases the core reason for failures is not in institutions or strategic program design, but is rooted in its performance in practice.

- Poor coordination is indicated among the major problems in the implementation of BP&T in adaptive water governance. Particularly it relates to problems in *horizontal* coordination – within all scales of governance. Deficiencies in horizontal coordination between stakeholder groups, including coordination of their interests and actions are among problems as well. Experts indicate that in Russia the major emphasis in current governance models is made on constructing vertical coordination; that it why it might be more difficult to shift the emphasis towards horizontal modes as it is being done today in Europe. In Russia, horizontal coordination is replaced to a high extent by horizontal competition of government agencies.

- Corruption, although regarded as a serious evil in transition post-communist societies, which up-surged especially during the 1990s under uncertainties within the transition period, is not regarded by experts as the major barrier for adaptive governance in the water sector. More powerful negative drivers are identified, including purely technocratic approaches of bureaucrats, deficiencies in their professional knowledge, lack of data and information (although the situation is being improved since recently). There is a strong need in highly qualified and professional managers that are able to take into account new local socio-economic frameworks and specifics. There is a strong need to shift from the technocratic to a governance approach, which is more 'human-oriented'.

- Socio-cultural traditions of societies and existing institutional settings really matter for the introduction of innovative water governance schemes. They need to be thoroughly assessed and taken into account. Some contemporary BP&T may not work or be not effective as expected in specific conditions of some former Soviet countries. For example, in Uzbekistan the current transition to integrated river basin management in the Amu Darya basin despite significant institutional innovations is facing a number of barriers: 1) old institutions and principles of territorial water management are still in force, 2) significant loopholes in water legislative frameworks, 3) within sustainable water management strategies the priority is irrigation and water supply for agriculture (cotton), while drinking water quality or equity in water distribution among sectors and water users are at the bottom of concerns, 4) socio-

cultural traditions – according to Shariat rules water cannot be priced, 5) so-called "socialist feudalism' is still in force in Uzbekistan, 6) the role of the state is dominant.

- Further removal of administrative barriers and bureaucratic traps for the performance of adaptive water governance system is essential for the targeted region. This recommendation derives directly and indirectly from most stories of experts. For example, it relates to the need of the relaxation of administrative procedures in water use permits (BP&T - 2). It also relates to the application in every-day practice by river basin authorities of the hydrodynamic models regulating river flow through reservoirs developed as a result of joint international research in the Volga basin (BP&T - 8). Today, it is constrained by existing bureaucratic ministerial barriers, and some regulations impede the innovative products application in practice. Among expert advice is the involvement of bureaucrats at the early stages of research project development/implementation to ensure their support at the later stages of products application in practice. Today, end-users do not participate regularly in product development.

- Public involvement in water management in Russia is not high in comparison with other European countries. Environmental awareness of the public and its responsibility to take water-related actions is low, and the public still heavily relies on 'paternalism' of the government authorities, inherited from the Soviet model. Recently, stratification of society is rapidly growing away from comparative equality under the Soviet regime; today, the middle class share is lower than desired, and marginalised social groups usually are not active actors in sustainable water management. Although public participation is enshrined in the 2006 RF Water Code (art. 3.6) and supported by regional legislation, there is still a big gap between formal rules and everyday practices. Despite the incorporation of public participatory right in water management into national and regional laws, people rarely participate. Decision-making regarding large infrastructure projects in the Volga remains an area where peoples' voice is rarely taken into final account. People have tiny say in cases when these projects have significant implications for their livelihoods' well-being: inhabitants are resettled from areas affected by infrastructural developments without profound public discussion. Experts indicate that public participation should not be regarded as a goal per se, but as a tool towards good water governance. With low public participation it is especially important to stimulate it through public hearings, forums, networking and dialogues.

- A significant number of modern water governance institutions and practices that are in place in Russia today has been borrowed from the West. The major of them had been transferred

from the EU, some from the USA. For example, many approaches of the new national water code and respective regional water legislation are similar to those of the Water Framework Directive (WFD). Another example is the polluter pays principle (PPP) introduced in Russia in a course of environmental reforms in the 1990s. International environmental management systems are applied by the private companies, especially by large export-oriented producers that are taking care about their international competitiveness and green image. There is a trend towards establishing internationally unified rules of the game, and Russia becomes an active player. Further international unification and standardisation of institutions and practices in adaptive water management is underway in Russia. IWRM and basin management principles, although used in the country earlier, are being refined basing on international experiences and lessons learned.

4 Workshop report: SOUTH-EAST ASIA
Guwahati, India, 17-19.01.2011

4.1 Introduction

The Twin2Go Regional Best Practice Workshop for South-East Asia was hosted in Guwahati, India during 17 – 19 January 2011. The region of South-East Asia was represented by experts from India, Nepal, Thailand and Vietnam, and cases of BP&T in water governance from river basins in these countries were discussed. Twenty national and international experts representing the major stakeholders – government at various levels, science, NGOs and international organisations – took part in discussions and exchange about BP&T in water governance. The workshop programme and participants list are provided in Annex 1 and 2.

During the Regional workshop the BP&T in water governance were analysed according to the methodology developed by Twin2Go. They present nine stories of experts from the various river basins in Nepal, India, Thailand and Vietnam. The results of the BP&T Inventory are presented in Annex 3.

Table 4.1: **South-East Asia: Best practices and tools in water governance**

South-East Asia **Best Practices and Tools in Water Governance**				
No.	**BP&T**	**River basin/Country**	**Region**	**Focus**
1	*Irrigated agriculture*	Brahmaputra River in Assam/ India	SE Asia	№1
2	*Safe drinking water*	Brahmaputra River in Assam/India	SE Asia	№1
3	*Water quality control in Prachinburi River basin*	Prachinburi River basin/Thailand	SE Asia	№1
4	*Climate Change Adaptation and Disaster Risk Reduction, Bagmati Basin*	Bagmati River/Nepal	SE Asia	№1
5	*Koshi River Basin Management Strategy*	Koshi River/Nepal	SE Asia	№1
6	*Implementing IWRM through RBO in Vietnam*	Red River/Vietnam	SE Asia	№1
7	*Flood control and river bank erosion in Assam*	Brahmaputra River in Assam/Inda	SE Asia	№2
8	*Hydropower in Assam*	Brahmaputra River in Assam/India	SE Asia	№2
9	*Participatory water allocation at Bangpakong and Prachinburi River basin*	Bangpakong and Prachinburi River basin/Thailand	SE Asia	№2

4.2 Goals and organisation

The overall goal of the workshop was to discuss and analyse a variety of current practices and tools in water governance in South-East Asia (SEA) in order to identify the best examples among them.

The possibility of the transfer of those practices across borders has been discussed. During the workshop the existing practices were analysed by the representatives of a broad community of stakeholders, coming from government organisations, NGOs and universities. During three days a lively exchange of views and experiences in water governance from different stakeholder groups and different countries was underway. Interesting discussions emerged, for example, between experts from Nepal and India as up- and downstream countries along the Brahmaputra-Ganges River Basin. The stakeholders from Thailand and Vietnam have shared and discussed their experiences in water governance in East Asia and their visions in water management.

Figure 4.1: **Guwahati: Group photo of workshop participants**

Most of the 18 participants have already attended the Twin2Go Case Study Review Workshop in spring/summer 2010, and they were familiar with the project activities and objectives. Also some new stakeholders took part in the workshop, and the Twin2Go project has been introduced in detail, especially the activities undertaken according to the questionnaire and the synthesis.

The segment of the project on best practices and tools was new for all participants. Twin2Go's idea of what a best practice is and the three different foci have been presented and discussed in the plenary. The selection of practices has been undertaken in working groups during the workshop. Participants joined the groups according their national interest. Finally, four groups (Nepal, India,

Thailand and Vietnam) have selected practices in a brainstorming process. After the assessment the transferability of practices was discussed, first within the group, and afterwards in the plenary.

4.3 Characteristics of the region

The SEA largest rivers have their origin in the Himalayas. This region is highly sensitive to climate change. Increasing temperatures lead to snow melt, glacier melt and permafrost retreat. The region of SEA is dominated by monsoon rainfalls in summer and a dry period in winter. High variability of precipitation leads to flooding and droughts. Moreover, erosion and sand siltation have to be mentioned as a major consequence.

Population is still growing in the Asian states, and this growth increases pressure on the water resources. On the one hand, more and more water is used to meet increasing water demands for domestic water supply, irrigated agriculture and industry, and this leads to shrinking water availability. On the other hand, insufficient waste disposal and untreated waste water decreases the quality of water resources.

For example, in India and Nepal "...water shortages have been attributed to rapid urbanisation and industrialisation, population growth and inefficient water use, which are aggravated by changing climate and its adverse impacts on demand, supply and water quality" (IPCC 2007). Climate change increases concern due to temperature growth and changing precipitation patterns in the region.

Table 4.2: **SEA: Overview of case studies**

Country	Total population (1000 inhab.) 2004	GDP per capita (constant USD 2000) 2004	Land area (1000 ha) 2002	Arable land and permanent crops (1000ha) 2002	Percent of forest cover 2005	Natural RWR 2002 (per capita m3)
India	1081229	538	297319	169800	22,8	1822
Nepal	25725	231	14300	2480	-	8703
Thailand	63465	2356	51089	19367	28,4	6371
Vietnam	82481	502	32549	8813	39,7	11109

RWR: renewable water resources.

Source: IPCC 2007

India: In the assessment of best practices and tools the focus was given on the Indian state Assam and the Upper Brahmaputra River in Assam. The population in the Brahmaputra valley in Assam suffers from such hazards as floods, flash floods, river bank erosion and sand casting. The river course changes frequently, and as a consequence settlements have to be displaced from time to time. Changing climate conditions and increasing water demands will cause a decline of water availability in the future. The IPCC (2007) projects a decrease of the gross per capita water availability from 1820 m^3/yr in 2001 to 1140 m^3/yr in 2050 in India. A major problem is that flood management is mainly based on structural measures and top-down decision making. Participation is low. Altogether the institutional framework is fragmented, not transparent and effective.

Nepal: The country has realised the importance of Integrated Water Resources Management (IWRM). It has adopted the IWRM principle in formulating the Water Resources Strategy 2002 and the National Water Plan 2005. Nepal is characterised by political instability complicating the implementation of laws. There is a lack of institutional set-up, and responsibilities of ministries highly overlap. The Kosi (or Koshi) is the largest river basin in Nepal. The river has caused widespread human suffering in the past through flooding and very frequent changes in its course. A fatal catastrophe occurred in 2008 – an embankment breach. Another problem in Nepal is the risk of GLOFs (Glacier Lake Outburst Floods) due to increasing volumes of melting waters.

Thailand: Thailand is characterised by a rainy season in summer months and a dry season in winter. In winter water demand exceeds the level of water availability. Therefore dams and reservoirs store the water. But nevertheless, a system for appropriate water allocation to different water users is needed to guarantee the water supply. In the country three major components of IWRM have been realised: enabling environment, institutional roles and management tools. IWRM is to be implemented basing on the National Water Vision and the National Water Plan. The vision states that “by the year 2025, Thailand will have sufficient water of good quality for all users through efficient management, and an organisational and legal system that will ensure equitable and sustainable use of water resources, with due consideration for the quality of life and the participation of all stakeholders” (FAO 2011). In Thailand, the River Basin Committees (RBCs) are responsible for the water management at the basin level. The committees consist of representatives from government agencies, stakeholders (water users) and scientists.

Vietnam: The Red River Basin is the second largest river basin in Vietnam. Many problems are caused by competitive water demands. River bed erosion and water pollution due to growing industry and urbanisation are major ecological problems. Hydropower is a conflicting topic in Vietnam, as it is

not highly concerned with the river environment and ecosystems. A policy reform was initiated in 2006 with the National Water Resources Strategy towards the year 2020. River Basin Organisations have been formalised, but without enough power to enforce adequate management of the water resources.

These four examples give a broad overview on water management and water governance in South-East Asia. All cases show that the term IWRM has been taken up in policies and laws. The necessity of an approach for appropriate water management is generally known. Many policies and laws deliver a good basis for IWRM.

In the region, national legislations and policies regarding water management and water governance are present, but no sufficient trans-boundary regulations exist. In SEA, there are no guidelines on the international level available for the region, as it is the case in Europe. In Europe, the Water Framework Directive (WFD) constitutes the solid basis for water management.

A major problem in water governance systems in SEA is the effective implementation of law. Here laws and policies provide a good foundation, but the successful implementation hampers. Among the reasons, for example, are the following:

- High Corruption Perception Index in these countries
- Unclear responsibilities and too little cooperation and communication
- Low participation of stakeholders in decision-making; politicians do not know the needs of the population
- Weak monitoring
- Lack of know-how and finance

4.4 Selected best practices and tools

A set of best practices has been discussed during the workshop. These practices have been selected according to three major foci:

Focus 1: Application of national water frameworks in river basins

This topic refers to the implementation of national strategies and institutional performance towards sustainable development of river basins, including enhancing *flood safety, water quality, water management under climate change, integrated water management*. During the workshop participants discussed what was done to apply laws and to transfer policy into practices.

Most practices selected by experts are included into this topic:

- Irrigated agriculture in Assam
- Safe drinking water in Assam
- Participatory water allocation in Thailand
- Climate change adaptation and disaster risk reduction in Nepal
- Kosi River Basin management strategy in Nepal
- Implementing IWRM through RBO in Vietnam

Focus 2: Engagement and coordination among actors and forms of interaction/partnerships

This topic focuses on joint actions and different types of partnerships and stakeholder engagement. By discussing this topic two practices applied in India have been selected by experts:

- Flood control and river bank erosion
- Hydropower

Focus 3: Enabling learning and building adaptive capacity in water governance

This topic focuses on knowledge and information management and bottom-up learning. Especially in times of climate change knowledge of adaptive strategies and measures is important.

The list of best practices, which have been discussed during the workshop, is aggregated in Table 4.1.

4.5 Summary of plenary discussion

The SEA workshop started with introductory presentations on the Twin2Go project, its activities and objectives. Following the project summary one representative from each region has given an overview about the water governance system and water management in a selected river basin. Such overviews allowed making the participants more familiar with the other stakeholders and the regions. These regional background presentations have stimulated lively discussions and the first round of exchange of experiences and opinions between experts.

A participant presented the situation in **India**: *Water induced hazards, climate change and adaptation in northeast India: Core issues and governance*. This presentation contains general information about major problems in the region, water governance and adaptation measures.

Insights from India:

- Major hazard is floods, but also sand siltation and groundwater quality; sand siltation is not given enough concern

- Adaptation: promote use of local resources for flood protection, e.g. bamboo; new embankments with geo-tube technology, people depend on traditional adaptation practices (houses on stilts), caste conflicts are the reason that some adaptation measures were not applied
- Governance lacks: neglect maintenance of embankments, movement against large dams, lack of policy and implementation of programs
- Flood management based on structural measures with decision-making being top-down and not participative enough
- Forecasting and early warning is not available at the right moment
- Proper implementation of existing policies is needed

Another expert gave a background presentation for **Nepal**: *From Policy to Practice: An experience in Kosi River Basin Management.* This program is a pilot project for managing water resources in Nepal to implement the basin principle.

Insights from Nepal:

- IWRM principle was applied in formulating Water Resources Strategy 2002 and National Water Plan 2005
- Challenges: concept is new, therefore there is a lack of public awareness, adequate planning and development capacity; institutional fragmentation, integration, coordination is among the major tasks; lack of institutional set-up and legal mechanisms; policy instability, financial constraints
- Opportunities: policy drivers, Millennium Development Goals (MDGs) commitment, the Kosi river is a river of regional concern, public awareness about climate change impact is augmenting
- Political instability in Nepal was mentioned as one of the major constraints for IWRM implementation.

Following the presentation about the Kosi River Basin Management Strategy a discussion about navigation in river systems was underway with the Indian colleagues. India would like to expand the navigation sector, but needs, therefore, a support from Bangladesh and Nepal.

A participant from **Thailand** gave an overview about water allocation in the Bang Pakong River Basin and the existing National Water Policy: *Bangpakong and Prachinburi River Basin*.
Insights from Thailand:

- In this policy the water resources management organisations/ National water resource committee play important role
- River basin committees consist of government agencies and non-government representatives (50/50)
- Obligations: formulation of management and financial plans, coordination with other RBC, public hearings and participation
- The project in Thailand was the first pilot study of an appropriate water allocation approach.

An expert gave a presentation on **Vietnam**: *Water Resources Management in Vietnam. Policy, legal and institutional reform.* His presentation had a focus on the Red River in Northern Vietnam.

Insights from Vietnam:

- National Water Resources Strategy towards 2020 (2006) is an important milestone
- Policy basis is good, but needs to be improved, strengthened and updated
- Lack of human and financial resources
- Law on water resources needs updates
- Needs: IWRM awareness raising and capacity building at the government level, e.g. in terms of water rights, environmental flows and protection of water resources
- Ecosystems have to be protected (hydropower discussion)
- Conflict in water allocation, water pollution
- Red-Thai Binh RBO established in 2002 is formalised but not functionalised
- RBO needs real power and appropriate functions, not only advisory function
- IWRM is not applied effectively
- Major problems include water pollution due to industry and urban use; erosion is an important topic.

The Mekong River Commission is the only example for a river basin organisation with a focus on transboundary issues in SEA, which consists of representatives of each riparian nation. Other river basin organisations in SEA just focus on their national part of a river system like the Red River Basin Commission in Vietnam.

During the discussions the water management in SEA was compared with that of Europe. The Water Framework Directive was introduced as a directive for the entire European region. Nothing comparable exists in SEA. The development of an overall directive or guidance document can be an option for the region.

Following the regional background presentations the uptake of research results and the role of science were discussed. Prof. Flügel introduced an upcoming project together with the government of Assam to improve flood protection. Only with the help of research colleagues from the region it was possible to get in contact with the local policy makers and to discuss cooperation activities. This is a great chance for the uptake of research results in Assam, and it serves as a good example for cooperation and partnerships across borders and between scientists and policy makers.

4.6 Summary of expert group discussions

In the working groups experts have discussed and evaluated practices that can be seen as best practices according the definition set up by the Twin2Go consortium: "A best practice is a technique, method, process, activity, incentive, or reward that is believed to be more effective at delivering a particular outcome than any other technique, method, process, etc. when applied to a particular condition or circumstance. Best practices can also be defined as the most efficient (least amount of effort) and effective (best results) way of accomplishing a task, based on repeatable procedures that have proven themselves over time for large numbers of people".

Between two and ten participants joined each working group. Finally the largest group (India - ten participants) has evaluated most practices. It is obvious that more persons can contribute with more examples and experiences. The experiences from the different stakeholders resulted in lively discussions.

At the beginning it was difficult for the participants to identify best practices, as it was not clear how best practices can look like. Therefore during the workshop some examples from the region have been described by the workshop facilitator to support the participants in their brainstorming on best practices.

4.7 Description of work done

In preparation to the workshop a couple of practices from the regions have been assessed. This work was done for two reasons:

1. To test the inventory format: It was necessary to check if questions cover all issues of interest and if they are clearly formulated and understandable
2. Preparation for the workshop: the facilitator of the workshop became familiar with water management practices in the region and was able to give some support and advice in the selection of best practices in the working groups.

Prior to the workshop, a lot of time was spent in the selection of participants to invite. The work on best practices in the region requires expert knowledge in various fields, while different institutions to gain different views and experiences. Finally we could invite representatives of government agencies and ministries, of non-governmental organisations and scientists. During the SEA workshop we had the great opportunity to invite experts from up- and downstream countries as Nepal and India, for example, and had lively discussions about conflicting topics like hydropower and navigation.

At the second day, the process of filling out the inventory format started. At the beginning, stakeholders had difficulties in selecting practices. Some support was given by the workshop facilitator with the help of examples for BP&T and ideas how a best practice can be characterised. Then the working groups started their brainstorming on practices in their region.

Some difficulties occurred due to differences in group size. The Indian group was quiet large with 10 stakeholders, while the Nepalese group consisted of two experts. The Indian group had some more intensive discussions justified due the huge amount of input by experts. This has led to a timely delay in finalising the inventory format. But finally, it was feasible to complete the inventory formats at the end of the second day, and good examples of best practices have been identified in all groups.

The workshop program has been modified to have the third day only for plenary discussions on best practice examples, possibilities for the transfer of BP&T and to identify general recommendations and conclusions. Therefore the BRAHMATWINN presentation planned for Day-2 was shifted to Day-1, and the inventory format could be filled during the second day (including the part of transferability). So the half day on 19th was used only for the presentation of BP&T and summary discussions.

The majority of the workshop participants already attended the first workshop, but also some new guests have been invited. This BP&T evaluation approach was appreciated by all workshop participants. Finally, most of them stated that this workshop was much more interesting and exciting than the first workshop. It was the first time that they sat around in such a group and discussed all together best practices applied in their regions. That was new for the stakeholders, and they have enjoyed this kind of activity. All stakeholders have worked intensively on the selection of best practices and contributed to a successful workshop.

During the workshop, practical insights have been shared, and regional interests, needs, and capacities in implementing innovative practices in adaptive water governance have been identified. Stakeholders were very interested in the experiences and lessons learnt from the other regions.

General and context-specific BP&T that promote adaptive water governance and participatory IWRM have been identified, analysed and discussed during the workshop. The context domain is influencing the application of BP&T very specifically. It includes e.g. the existing economic, social, political and environmental situation. For example, in Nepal the situational factor of political instability is influencing the successful implementation of water governance significantly.

4.8 Results from the BP&T inventory by experts

4.8.1 Best practices and Tools: Cases and stories of experts

The participants from **Thailand** have selected the example '*Participatory water allocation at Bangpakong and Prachinburi River basin'*. The idea was to manage the allocation of water with a tool for decision-making support, the WEAP (Water Evaluation and Allocation Program) model for reason of conflict management. A couple of problems have been identified in sub-basins, such as droughts. Involved in the project were the River Basin Committee, water users, local administration and international agencies like ADB and GWP. The project "... has led to a widening of awareness of government agencies concerned in coordinating with local stakeholders to solve some problems related to water management" (ADB 2009). Many data could be made available, and an information system has been set up. Some constraints and barriers came up, e.g. less motivation of politicians, lack of public awareness, inconsistent information systems and lack of technical knowledge. Problems could be solved by information sharing by different levels, raising awareness and acceptance through meetings and campaigns. The transfer of these practices across districts and river basins seems to be feasible.

The **Nepalese** guests have focused on two practices – on climate change adaptation and disaster reduction; and the Kosi River Basin management.

Regarding climate change adaptation and disaster risk reduction the practice '*Climate change monitoring and adaptation through efficient information flow for Bagmati River Basin'*, was presented. The Bagmati River is the river that crosses the capital Kathmandu. Data on the river's flow were made public in a database to prevent the local people from flooding and give a better basis for decision-making. Problems arose, because existing dissemination activities could not reach enough

community groups. Telephone and internet facilities were not available for the major part of the population. Meanwhile prices decreased, and the coverage of GSM (Global System of Mobile) increases rapidly. The spatial extension of the data base is limited because of the topography of the country and the information network was created by few local engineers. The project has been supported by the Danish Government, DANIDA and other international agencies. It was enforced based on the National Water Plan 2005 and the Disaster Management Strategy 2009.

The second practice in Nepal is the '*Kosi River Basin Management Strategy*'. It is a pilot program, initiated through the National Water Plan, to improve people´s livelihood and achieve a sustainable management of water resources in the Kosi River Basin. The project is driven by the Government of Nepal (WECS) and WWF Nepal. A major opportunity is that the river is of regional concern, people are aware of the problems and appreciate and support a sustainable management approach. The success of the program can be found in the good monitoring. With the document "From Policy to Practice" a detailed documentation of the program and its activities has been published.

In **Vietnam** the '*implementation of IWRM through RBO'* has been identified as best practice. The state has initiated a rearrangement of water resources management agencies by establishing RBOs. This policy reform aims to achieve a better coordination among ministries and local authorities. The development of river basin plans was used to implement the IWRM approach at the basin level. River basin committees monitor and coordinate the activities of ministries and sectors related to the implementation of river basin plans.

One problem underlined is that real appropriate power and responsibilities are not assigned to the RBO by the administrative system. The Red-Thai Binh RBO, for example, has been established in 2002 and can be seen as formalised but not functionalised. The RBOs need appropriate functions, mandate and real power. Therefore, the improvement of the legal framework is in progress.
Regarding the transfer of the selected practice many ideas have been imported from other regions. River basin planning focuses only on the national part of the river basin. The Red River Basin Commission is the only one in charge of the national part of the basin, and there is no cooperation with the upstream country China. Transboundary issues of the Red River System are not considered.

Participants from **India** have identified four practices in Assam, addressing different topics: floods, hydropower, water supply and irrigated agriculture.

Flood control and river bank erosion: The Brahmaputra is changing its river course frequently. Settlements have to be replaced, and fertile land gets lost. In India, it is intensively planned to force the flood and erosion problem with regional resources, e.g. bamboo, further flood dykes are used to dam the river. Barriers for the successful implementation of flood and erosion control measures are the lack of consensus and agreements between actors. There is no river basin authority that can support and coordinate such activities. Structures could be implemented successfully due to proper design and testing, but maintenance of the structures is neglected. The North Eastern Integrated Flood and Riverbank Erosion Management Project was proposed by the Government of Assam and the Government of India and gained support by the ADB (Ministry of Development of North Eastern Region 2007).

Hydropower: For upscaling economic activities and the electrification of rural areas a series of run-off-river hydro-electric (hydel) projects have been planned. This initiative has been applied by the Government of India and private developers. Problems occurred, because environmental activists have opposed the construction of large dams, and international agreements have not been set up. Through dialogue with stakeholders and public hearings these barriers have been overcome largely. The problem of power supply could be improved.

Safe drinking water: In Assam, people suffer from water born diseases. Water is polluted with fluoride and arsenic. The practice has been implemented to improve water management, treatment and supply in urban and rural areas. Funds were supplied by the Government of India. Municipal water treatment infrastructure has been improved, and licence regulations for private water suppliers have been introduced. Constraints are that costs are quiet high to connect people in disperse areas. Missing political will and bureaucracy are factors, which hamper the successful implementation.

Irrigated agriculture: Irrigation management in Assam needs improvement. Irrigation infrastructure and the allocation of irrigation water have to be improved to increase the stagnating agricultural economy, since farmers have no capital to invest in irrigation improvement. To solve these problems, state authorities and farmer associations have applied this best practice to tap shallow groundwater with tube wells and to distribute the water through community farmer associations. Support was given by the World Bank and Government of India. The activities were part of the Assam Rural Infrastructure and Agricultural Services Project (ARIASP). Barriers for the implementation were lack of political consensus and conflicts between big and small landholders. Through water user committees problems could be solved. Failures occurred in planning and engineering.

4.8.2 Aggregated findings from experts inventories, discussions and interviews

During the workshop a set of best practices has been identified. Those practices are embedded in different contexts and have been applied by different actors.

Some practices are not context-specific, e.g. the basic is the idea of an apex body for river basins. Ongoing with the policy reform it was foreseen to establish RBOs in Vietnam to manage water resources on the river basin level. Meanwhile, several RBOs have been established in Vietnam: Cuu Long & Dong Nai River Basin Organisation, Red River Basin Organisation, Day River Basin Organisation and Vu Gia Thubon River Basin Organisation. These river basin organisations need now the underlying legal framework, which assigns appropriate power. Having enough power to promote the implementation of IWRM is an urgent need for the RBOs to work target-oriented and efficient.

The Kosi River Basin Management Strategy in Nepal has been applied first as a pilot study for the management of water resources on the basin level. Later it is planned to extend the strategy to other river basins in Nepal. The river is of regional concern, and local people are interested in supporting and contributing to the implementation of IWRM.

The estimation for appropriate water allocation in the Bang Pakong River Basin in Thailand can be seen as a general practice. This practice has been extended to other districts and sub-basins in the region.

Context- specific are selected practices in Assam. The flood and erosion risk in Assam is unique, as the Brahmaputra is the largest river in the region carrying tons of suspended sediment. It changes its river course in the valley frequently, and flooding and river bank erosion are major problems affecting millions of people. Flood and erosion protection measures have been constructed with support by state government and stakeholders. Nevertheless, there is a lack of consensus and agreements. An apex river basin authority would help to implement strategies successfully.
Having a closer look to hydropower in Assam some environmental and social constraints regarding dam construction exist. But energy is needed to improve living standards and to drive forward the industrial development. Missing consensus among stakeholders is one barrier, and agreement has to be achieved through dialogue.

The safe drinking water supply is another burning issue in Assam, one of the poorest states in India. Bureaucracy barriers have to be overwhelmed, and political will has to be strengthened. Meanwhile the situation has improved, especially in rural areas.

4.8.3 Export-Import of Best Practices and Tools

Most of the workshop participants have gained experiences with the transfer of practices. In some cases water management on the river basin level has been implemented. This was realised by river basin organisations in Vietnam and the Kosi River Basin Management Strategy. It has been implemented based on the legal framework in the countries. In Nepal, the Water and Energy Commission Secretariat of the Government of Nepal (WECS) and WWF Nepal promote this strategy. All crosscutting sectors were getting involved in the management of the river basin. It is a first pilot study to apply the basin principle in Nepal and can be seen as a success. Next to Kosi there are only two other major river basins in Nepal.

In Vietnam, RBOs have been established to enhance IWRM and to react to major problems in Vietnam: degrading water resources and increasing water demand. RBOs have been established, but do not have appropriate power to promote the successful implementation of laws and strategies.

The participatory water allocation approach in Thailand has been extended to six districts within the sub-basin. An adaptation of the practice is required, e.g. in form of formulating a clearly conceptual framework and ideas how it can be transferred to the other river basins. A must for the success is the involvement of all actors.

Regarding context-specific practices a transfer is possible, but the practice needs to be adapted to local conditions and needs. For example, for flood and river bank erosion protection the transfer of data across NE Indian states is the basic requirement. It would be not easily feasible to transfer data across country borders, as there is some conflict potential between Nepal, India and Bangladesh, and data are often classified and not available.
During the workshop participants came to the conclusion that one of the major barriers for the uptake of practices from other regions is the raising of adequate funds and a lack of know-how and technical requirements, e.g. for setting up comprehensive data bases funds for hardware and software are needed. Projects have best chances for successful implementation if they are supported by international organisations like the World Bank (WB), the Asian Development Bank (ADB) and the European Commission (EC).

4.9 Discussion and comments on BP&T inventory results

The presentations of best practices in the region have initiated long discussions. Participants were very interested in experiences from other regions and have compared their results. Nearly all examples of best practices hold barriers in the implementation, which could be overwhelmed. Major barriers mentioned are low political will and lack of consensus between actors. Those barriers have been removed through meetings and dialogues.

The design of a river basin management approach as a best practice has been mentioned several times. All participants have the opinion that water management on the basin level is absolutely essential in the future. Some examples for the implementation were described during the workshop like the Kosi River in Nepal and river basins in Vietnam. It became clear that such an activity has to be well-planned and prepared. The apex authority responsible for the management of water resources within the basin needs enough power to enforce its tasks.

The possibility of the transfer of best practices was discussed in the working groups and in the plenary. In the discussion focusing on export and import of practices, major drivers and barriers have been identified.

Drivers:

- Stories of success (something has worked good somewhere else)
- Institutional set-up, policy initiated transfer (political will), agreements
- Needs
- Identification of alternative opportunities and livelihood options

Barriers:

- Different contexts and levels (scale problem)
- Lack of knowledge and dissemination, optimal solutions often only available within scientific community
- Costs
- Institutional fragmentation, sectoral approach of development and management
- Lack of knowledge about traditions, lack of dissemination of traditional knowledge
- Loss of opportunity
- Political commitment

Examples of best practices successfully transferred:

- Implementation of river basin organisations
- Environmental information systems

- Various regional and transboundary examples for transfer, networking, international agreements

4.10 General conclusions and recommendations for the region

Major challenges for the region SE Asia have been summarised in the plenary.

- Integration of different departments has to be improved
- Fragmented institutional set-up
- Unclear allocation of tasks
- More focus on sectoral development needed (hydropower, irrigation)
- Transboundary cooperation needs to be established (works only in Mekong River Basin)
- Regional cooperation between countries needs to be established
- Lack of enforcement/ implementation as a major issue

Based on former brainstorming and experiences exchange during the workshop long discussions about best practices emerged. In the plenary, major characteristics for best practices in adaptive water governance in SEA were identified. These characteristics can be seen as a set of indicators to classify a practice as best practice. Based on these characteristics, recommendations for the region can be outlined.

List of major characteristics:

- human and institutional capacity, scientific knowledge, practical knowledge for the specific regional setting
- modification of technology, use new approaches, new inventions
- mix of governmental organisations, NGOs, private parties, stakeholders, Community Based Organisations (complementary, cooperation)
- monitoring, evaluation, research (good governance)
- control mechanism
- set up feasible goals and detailed plan for achievement
- make use of regional resources (e.g. bamboo for flood protection)
- increase efficiency of institutions
- stakeholder participation needs to be a must
- address climate change, be sustainable
- adequate financial support (from government)
- political will, public awareness, advocacy
- distribution of knowledge, information sharing

- honesty
- bottom-up approach

The implementation of laws or existing policies is the major problem in the region. Detailed plans for the implementation of a practice need to be set up. A clear allocation of tasks and responsibilities needs to be done, and stakeholders, especially from those areas affected have to be involved in decision-making. As a recommendation an improved application of control mechanisms to overcome the corruption needs to be realised. A better monitoring is needed for better coordination and to avoid failures in an early state.

5 Workshop report: LATIN AMERICA
Lima, Peru, 09-10.12.2010

5.1 Introduction

The Twin2Go Regional Best Practice Workshop for Latin America was hosted in Lima, Peru during 09-10 December 2010. The region was represented by experts from seven countries of Latin America – Ecuador, Chile, Brazil, Colombia, Uruguay, Bolivia and Peru. Their stories about BP&T application in river basins in these countries were discussed. Eighteen local and international experts from science and practice took part in discussions and exchange about BP&T in water governance. The workshop programme and participants list are provided in Annex 1 and 2.

During the Latin-American workshop nine BP&T in water governance were analysed according to the methodology developed by Twin2Go. These examples of BP&T were collected from the regional workshop participants for the Quaraí-Cuareim Basin (Brazil, Uruguay) (2), the Titicaca Basin (Bolivia-Peru) (1), Baker and Biobio Basins (Chile) (3), Cauca Basin (Colombia) (1), Catamayo-Chira Basin (Ecuador-Peru) (1), and Guayas Basin (Ecuador) (1). The results of the BP&T Inventory are presented in Annex 3.

Table 5.1: **Latin America: Best practices and tools in water governance**

Latin America **Best Practices and Tools in Water Governance**				
No.	**BP&T**	**River basin/Country**	**Region**	**Focus**
1	*Integrated and participative planning with socio-environmental focus*	Guayas (Ecuador)	LAC	№1
2	*National strategy for integrated river basin management - pilot initiative for the Baker Basin*	Baker (Chile)	LAC	№1
3	*A "grassroots" initiative creating a River Basin Committee for the Brazilian part of the Quarai-Cuareim Basin*	Quarai (Brazil)	LAC	№2
4	*Joint Public-Private A Partnership for Water Quality Modelling, arising from international cooperation and given continuity & sustainability by means of a Public-Private Partnership*	Biobio (Chile)	LAC	№2
5	*Participative preparation of a Territorial Planning, Development and Management Plan for the Binational Basin*	Catamayo-Chira (Ecuador-Peru)	LAC	№2
6	*Multi-sectoral collective environmental diagnostic for the Basin*	Alto Cauca (Colombia)	LAC	№2
7	*Construction of a transboundary, basin-wide, shared, georeferenced database and modeling application for Decision Support*	Quarai-Cuareim (Brazil-Uruguay)	LAC	№3
8	*Capacity-building for irrigation canal users*	Biobio (Chile)	LAC	№3
9	*Binational coordinated effort to conduct a diagnostic analysis and participative planning involving all stakeholders*	Titicaca (Bolivia)	LAC	№3

5.2 Characteristics of the region

The Latin-American & Caribbean Region is highly heterogeneous in terms of natural (physical, biological, ecological), demographic, ethnical, cultural, political and socio-economical conditions. South America, for example, is generally considered as the wettest (sub)continent on the planet (in terms of the mean annual rainfall), while at the same time it hosts the driest desert in the world. In terms of political systems, the region hosts both countries that follow traditional and modern socialist approaches, whereas other countries have followed during decades some of the more extreme expressions of neo-liberalism. Extreme poverty and extreme wealth often occur side by side, and the region hosts both mega-cities with populations of many millions and exhibiting very high population densities, as it has vast expanses of territory with near-to-no population at all (predominantly urban). Ethnically, European, African and Asian descendents may be dominant in some areas or countries, while in others population will almost be completely composed of native ethnic groups.

It is therefore difficult to describe “a” or “the” characteristics of the region, besides that this region is characterised by enormous variety. This variety is also reflected in the context of the region’s water governance and water management systems. For this reason, limited information is directly provided under this section with regard to “regional water governance characteristics”, as it is believed that it is more useful to analyse the “Best Practices & Tools” collected from this region “case by case”. Even so, an attempt is be made in the following sections to extract some general recommendations, based on recurring features observed in the BP&T discussed at the Latin-American workshop (Annex 3).

A similar observation can be made with regard to climate change projections for the region: for certain parts of Latin-America, impacts from climate change are expected to be highly relevant, whereas for other areas less important impacts are currently projected. For a more specific description of these geographic patterns and projections, we believe it is wise to refer to the specialised literature (e.g. the corresponding sections in the IPCC’s Assessment Reports), rather than to provide an incomplete description in the context of this report.

5.3 Selected best practices and tools

The Best Practices and Tools that have been presented by the participants in the Regional Workshop cover the three different types of practices that had been suggested for analysis, i.e.: (1)

application of existing national frameworks at the basin level; (2) *involvement of, and coordination among stakeholders, and existing forms of association and interaction*; and (3) *facilitating the learning process and the construction of adaptive capacity in the context of water governance*. The list of BP&T is presented in Table 5.1.

5.4 Methodology

In general terms, the methodology followed the instructions provided in a draft version of the workshop briefing paper (Twin2Go deliverable 3.1), which is the version that was made available (in Spanish) by the time the workshop took place (the Latin-American workshop was the first workshop to be organised of this second series of regional workshops).

Besides some plenary presentations that were given by the organisation and some participants (incl. presentation on the general framework of Twin2Go, on a new case study brought by a guest participant and on the preliminary results from the work conducted on the outcome from the first regional workshops), the main features of the methodology were as follows:

- Illustration of the application of the inventory forms by means of a pre-existing practical example application from another region, which had been translated into Spanish for this purpose (and distributed to the participants prior to the workshop)

- Grouping of the participants to work pairwise on the application of the inventory form (attention was given during this process to ensure good coverage both in the geographic context as well as in the sense of the three focal areas, for which examples of BP&T were sought in the context of Twin2Go WP3)

- Plenary presentations by the participants of their BP&T to the group and highlighting the key aspects of their responses to the different issues raised.

- Plenary discussions among all participants regarding the presentations delivered by their peers.

5.5 Description of work done

As already mentioned above, the original methodology that had been communicated to the workshop organisation by the responsible consortium members has been followed at the workshop. However, this original methodology also contemplated the identification of opportunities and constraints for the transfer of the identified BP&T. As can be seen from the results in Annex 3, this aspect could only be partially covered at the workshop. The reasons are:

- Participants were highly enthusiastic about the opportunity that was given to discuss in group the different practices that had been presented, and to request and analyse more details. As retribution to the voluntary contributions from the participants to the workshop, we felt that this desire for additional discussion time expressed by the participants needed to be respected to a certain extent.

- From the perspective of the "presenters" of the BP&T, it is often difficult for those who implemented their BP&T to see up to what extent their BP&T can be a success (or a failure) in a different geographic, political, socio-economic or natural context. From the perspective of the "receivers", the opportunities, possibilities, constraints for transfer and needs for adaptation to local conditions very much vary case by case. It is therefore very difficult to extract generalised conclusions regarding very specific tools, beyond the more specific sub-aspects of these BP&T that can be more widely recognised as "being important" or "more broadly applicable". Such sub-aspects have been identified and are consequently described in the corresponding section of this report. We believe however that it is more important to document and distribute these BP&T that were presented at the workshop "as is": these descriptions of BP&T can then be referred to by potential future users, and their details can be analysed, so that required adaptations can then be evaluated and made for each specific context.

Considering the dependency of "success" of the given tools on local settings and conditions, we feel it is better for our purpose to speak of "**Good Practices & Tools**" (**GP&T**) rather than "Best", as the fact whether a practice or tool will be "the best" or *simply* "good" may be highly dependent on the context in which it becomes embedded. This is our general suggestion for the Twin2Go project.

5.6 Results from the BP&T inventories by experts

5.6.1 Best Practices and Tools: Cases and stories of experts

From the **Quaraí-Cuareim Basin** (Brazil-Uruguay), two BP&T were reported at the workshop:

- A first one focused on the establishment of a *River Basin Committee* for the Brazilian part of this relatively small and low-populated bi-national basin, which arose as a "*grassroots*" initiative from the urgent needs perceived by the local water users and as a consequence of the historic lack of attention and in-action of the higher levels of decision-making (Federal Water Authorities) in the country for this particular basin. The initiative succeeded at drawing the attention of the federal level, and a plan developed by the local stakeholders is now available to help steer the decision-makers of the more formally established platforms. Up to the level of expressing their needs in a consolidated and agreed-upon plan, the performance and effectiveness of the initiative has been very high. For further implementation purposes, the risk of lower-priority and need for (complicated) bi-national re-negotiations at the level of the corresponding Commission within the Ministries of Foreign Affairs still persist. Opportunities and constraints for the application of this BP&T in other contexts will very much depend on the capacity and drivenness (or urgent needs) of local stakeholder groups, on the presence of external opportunities and drivers that may catalyse and support such initiative (e.g. the EC-funded twinning projects) and the willingness of and possibilities for more formal institutions and higher-level decision-makers to embrace a grassroots initiative and to integrate it within the existing institutional and legal context.

- A second BP&T focused on the importance of the development (and maintenance in time) of a *shared/mutually compatible database* as an essential pre-condition for joint analyses and sound, knowledge and "basin-wide-coverage" information-based decision-making (more specifically, a modelling tool driven by the information contained in this database was applied in this specific case study context). Both the needs and opportunities for import/export of this BP&T are widespread (transboundary basins, incl. basins crossing political-administrative frontiers within a single country), and broad interest was expressed during workshop discussions by many of the participants. However, depending on the case, important constraints at legal, institutional, political or logistical levels may exist, and data generation and management protocols need to be made compatible.

Also for the **Biobío Basin** (Chile), two BP&T were reported:

- A first GP&T consists of a *long-term financially sustainable monitoring programme of the water quality* in the Biobio River network, which has been implemented in complete absence of any legal enforcement framework in this context, as a support tool for awareness raising, decision-making and "green marketing" (environmental certification of industrial processes and export products),... The monitoring programme, which is executed by an Academic Centre, was initiated in the context of international aid, but has been maintained in time through the financial support of private water users (industries). Opportunities for export/import offered by such public-private partnerships are great; however the direct financing mechanism by "polluters" that has been used here may constitute a constraint for widespread acceptance of monitoring results, due to an obvious, widely distributed perception of potential "conflicts of interest".

- The second example given by the local experts concerns a *sectoral capacity building initiative,* for the members of an association of (subsistence/smallholding) irrigation water users in a sub-sector of the Biobio Basin. The initiative was financed by a public entity depending on the Ministry of Agriculture with technical-scientific support from Academics and responded to a need for an institutional and environmental diagnostic in order to overcome failures in the existing irrigation management system (lack of local capacities, need for broader stakeholder participation). Although the initiative clearly contributed to an increase in the adaptive (management) capacity of the members of this local user association, the lack of a clear articulation (in the institutional and legal framework) and implementation in the field of the river basin principle makes a highly necessary better integration with other upstream and downstream activities difficult. Opportunities for export/import are evident, but chances for success in the broader context of integrated river basin management may depend very much on its articulation within the context of a more holistic river basin-level strategy.

For the bi-national **Catamayo-Chira Basin** (Ecuador-Peru), the BP&T example given by the experts at the workshop relates to the *participative preparation of a Territorial Planning, Development & Management Plan*. The POMD is the Plan for Land Use Planning, Management and Development of the Bi-national Catamayo-Chira Basin and is one of the main results of the Bi-national Catamayo-Chira project. It addresses socio-economic and environmental poverty in the basin, added to gender inequity, limited water endowment related to a poor water resource management and degraded ecosystems, the inter-institutional disarticulation to manage the basin in an integral way, and the lack of knowledge of stakeholders in the basin and of existing participation and representation

mechanisms. The plan was developed in the context of bilateral development aid. A key to success was the participatory approach, which has facilitated broad acceptance of the plan as a management tool among stakeholders, beyond a project or political period. However, for practical results a more specific uptake within the existing legal and institutional frameworks will be essential. Lessons learned from this BP&T hold high potential usefulness for other cases and are documented in a wide variety of reports that originated from this initiative.

An attempt at *integrated participative planning with socio-environmental focus* was documented for the **Guayas River Basin** (Ecuador), in the context of this workshop search for BP&T. This attempt conducted by a governmental regional development bureau introduced concepts innovative to the Ecuadorian context, such as participative planning, the use of Geographic Information Systems and the application of several IWRM principles. The attempt however failed due to a combination of factors. Factors that have been cited as being at the origin of this failure for this BP&T include: (i) lack of funds; (ii) lack of credibility of the regional implementing organisation among certain sectors of society, due to previous polemic developments in which stakeholder participation had been neglected; (iii) too strong technical focus of the implementing agency and lack of capacity to deal with the social aspects of the development process; (iv) conflict between (local/regional) economic and social power groups; (v) conflict of interest between national and regional authorities (decentralisation versus strive for maintaining certain levels of centralised control) and disarticulation between the regional initiative and the development at the national level of a legal and institutional framework for water management. Recent political changes have further taken away the potential bases for implementation, and the implementing agency (regional development bureau) has been completely disarticulated, as a new framework for water management is currently being built. Although the BP&T given for the Guayas River Basin was not a success, it has been included in this exercise, as it clearly illustrates the importance of several issues that may jeopardise the implementation of an initiative that looked promising from certain perspectives but that could finally not achieve its goals and may therefore provide important lessons for similar initiatives in other parts of the world.

For the wider **Titicaca hydrological system** (TDPS, Bolivia-Peru), a bi-national coordinated effort to conduct a *diagnostic analysis and participative planning process* was documented during the workshop. The need for this effort arose from the bad management, pollution problems, unbalanced offer and demand, environmental degradation and vulnerability due to climate change, with institutions not being able to respond to these problems. A participatory diagnostic process was undertaken to evaluate the state of water resources and environment and to conduct a strategic

planning departing from the national visions and combining and integrating the visions of both countries and including the strengthening of the national and bi-national management institutions. Transparency of the process as well as the used information and consultation mechanisms were cited as factors for success, whereas adverse political incidence and resistance to change have been important barriers for achieving considerable results in the field. The created awareness building enables stakeholders to go to local instances to prioritise projects and to conduct investments oriented towards adaption. This conscience is incipient, but present. Although the documented BP&T constitutes a first step, it is hoped that it may achieve major impacts in the future. A major critical condition however is local resistance to change (especially when introduced in a "top-down" approach), which is particularly important in this basin in which almost all population is indigenous and for whom traditional practice is very deeply rooted. This thus clearly calls for major attention to, and a better equilibrium between the "bottom-up" and "top-down" components of future approaches (with particular attention to stimulating local ownership).

The Colombian participants documented on a *multi-sectoral collective environmental diagnosis* made for the **Upper Cauca River Basin**, conducted as a joint inter-institutional intervention implemented under and triggered by the EC-funded Twinlatin project. The intervention was characterised by an integral vision, which overcame – through collaboration and integration of environmental, local and regional authorities – the traditional (territorial/jurisdictional) barriers of a range of government institutions to conduct an analysis at the level of a hydrologically functional territorial unit (the Upper Cauca River Basin). Besides the governmental institutions, the initiative also counted with the participation of the private sector, professional guilds, academia and the community. The BP&T clearly illustrated how even shorter-term project interventions financed by external sources can trigger important initiatives, which can then be taken as an example in the context of the institutionalisation of change (e.g. National IWRM Strategy) and replicate efforts in other parts of a country/region. The initiative led to the development of an action plan; implementation of the components of the plan is still depending on the collaboration of the stakeholders involved, but the participatory approach has stimulated ownership, an important prerequisite for ongoing support and implementation success.

Finally, the implementation of the *National Strategy for Integrated River Basin Management* to the **Baker Basin** in Southern Chile – one of three pilot initiatives for the country – was analysed. The strategy has as its objective: "protecting water resources, regarding their quality as well as quantity, to safeguard human consumption and harmonise objectives of conservation of ecosystems with the sustainable use of the resource for economic activities". In this context the National Environmental

Commission (CONAMA) and the General Water Directorate (DGA) formed an inter-institutional Technical Regional Secretary, assuming a coordinating role to induce local implementation. A Basin Organism was formed, integrated by representatives of the public sector, private sector and civil society, communal authorities, experts and NGOs. Each of these actors gave inputs from its personal experience in the territory to shape the first draft of this Management Plan, which tried to incorporate different views, considering the different points of convergence and divergence as the bases for integral action. The following phases were carried out: (1) establishment of baseline; (2) an integrated diagnosis; (3) development of a vision for the basin; and (4) the management plan as such. Several aspects such as the establishment of inter-institutional committees, baseline, diagnosis etc. definitely hold the potential for replication in other basins as well, and important lessons documented in materials from this basin exercise may be worth consultation by potential users. The strategy of implementing the pilot in a "less complex river basin" in terms of human occupation and problems related to water quality and availability, aimed at maximising "chances for success" among the pilot experiences, this as to strengthen the bases for ongoing support for implementation of this National Strategy.

5.7 General conclusions and recommendations for the region

- The analysis of BP&T through the organisation of a regional workshop in the context of the Twin2Go project has constituted a highly interesting exercise that has allowed throwing some lights on important aspects and potential factors for success related to (improving) adaptive water governance and management in the region and elsewhere. Logistic constraints however (limited amount of resources and time) do limit somewhat the possibilities for conducting more in-depth analyses within the context of this report. Even so, it should be stressed that, besides the more general interpretations that could be conducted and that are given below, the project leaves important documentation on BP&T that can be incorporated or set the basis for other, major, future initiatives.

- As indicated before, we have opted to adopt the term "Good" instead of "Best" Practices & Tools, as P&T that may be "best" under a given context, may not be "the best", but still very good under different contextual conditions.

- The more general conclusions that can be taken from the analyses of the BP&T for the Latin-American region are:

1. Context varies very much across the region, reason for which replicability, usefulness and chances for success of individual, specific BP&T will generally still need to be evaluated taking into consideration the different dimensions of local context, on a case-per-case basis – even if some general conclusions or recommendations can be provided.

2. Many BP&T consist of, or are a subpart of processes that achieve their impacts in terms of improved adaptive water governance and management only over or after larger periods of time. Drastic political changes may disrupt the successful implementation of such "BP&T processes". On the other hand, in many cases political reforms will often be required to create the necessary conditions for successful implementation of BP&T. Adequate timing of the implementation of a BP&T will often be an important prerequisite for success.

3. Inter-sectoral and inter-ministerial planning and coordination instances and processes are very important for success in IWRM. Adherence to, and incorporation of the river basin principle in decision-making is important in the context of giving due consideration to upstream-downstream connectivity. Both aspects are of key importance to making water management truly "integrated" (*both in space as well as among sectors or interest groups*).

4. In almost all cases, stakeholder participation and (local) ownership will be of crucial importance for (sustainability of) success.

5. In several of the documented experiences, "bottom-up" initiatives, or specific needs and initiative-taking at the local level have been the key to obtaining successful results. Chances for success of such bottom-up approaches and uptake and sustainability of its results will however be biggest if they are articulated within the confines of the framework set up at "the top". The adequate and timely development of the overarching (national or bi/multi-national) policy will be key to embed and make such processes compatible or well aligned with(in) the legal and institutional frameworks. However, in several cases the speed of progress at higher levels may be perceived as inadequate (in the short term), as compared to speed required or desired at the local level, by the different local user groups.

6. Promotion of local or regional pilot initiatives, articulated within the context of broader overall/national developments seems to be important (equilibrium between "top-down" and "bottom-up"), so that gradual progress can build upon existing lessons and experiences (adaptive management and learning, not only for a given site but also among sites).

7. “Internal drivers” such as existing problems or conflicts will often foster local action, even in the absence of higher-level interests. Without the bottom-up initiatives in many case the top-down framework never “touches ground”, or is (currently, in the region, very often) only felt in a limited number of high-priority “pilot-zones”. An increasingly important “internal driver” may be the (perceived) local sensitivity and vulnerability to climate variability and change.

8. “External drivers” such as market demands and multilateral or bilateral development aid and research projects such as those executed under the EC’s framework programmes (such as the “twinning” projects) will often constitute very important triggers /catalysts for success. Although many success stories impulsed through short-term interventions (such as the “twinning” projects) do exist, longer or phased interventions may considerably increase the probabilities of success and potential range and magnitudes of impacts. (*Initiatives such as the Twin2Go project, in which results from previous efforts are re-visited and shared, can indeed also hold great potential in this context*).

9. In case of transboundary river basins, the Ministries of Foreign Affairs in Latin-American countries will typically play a very important role; progress without their participation and consent will often not be possible at all.

10. Information and knowledge needs to support decision-making, data compatibility, adequate data management (incl. metadata) and data sharing across levels and political borders were all seen as very important to support successful improvements in effective water management and governance (*Geographic Information Systems, Decision-Support & Modelling Tools, shared data collection, management, documentation and exchange protocols*)

11. Finally, although no projects on transboundary water systems (co-)financed through the Global Environment Facility (GEF) were included as particular case studies (and consequently analysed) during the workshop, we do refer here to key principles of the GEF approach to improving (capacity for) transboundary water management and governance, due to their high relevance for our purposes and considering the many existing cases of success, both in the region and beyond: (1) the establishment of a Transboundary Diagnostic Analysis (TDA), consisting of a technical study of priority problems and their direct and indirect causes in the basins – including an analysis of the legal and institutional framework and

recommendations for reforms; (2) the establishment and operationalisation of Inter-Ministerial Committees; (3) the development of jointly agreed upon transboundary Strategic Action Plans (SAPs), broadly endorsed including at the highest levels in both/all countries, and establishing a political agreement for priority actions based on the outcome of the technical results from the TDA; (4) the translation of the transboundary SAP in compatible national action plans. The phased approach used under the GEF Focal Area “International Waters” (in which a first project intervention consists of the preparation of the TDA and SAP, while a second project intervention consists of the broader-scale implementation of the recommendations from the SAP) creates the possibility of a longer-term “external driver”/ support, which – in light of the observations formulated under the points 3, 4, 6, 8, 9 and 10 – effectively increases the chances for success and sustainability of results. Extrapolating conclusions from the former process, projects conducted under the EC’s framework programme for R&TD definitely hold great potential to provide important contributions to such Basin Diagnostic Analyses through applied research.

6 Findings from the regions

There are a number of general findings from the expert discussions on the application of best practices in water governance in river basins from the four targeted regions – for Africa, Russia/NIS, South-East Asia and Latin America. Some of them are as follows:

A variety of existing domestic legislation and institutional framework in water management in the countries or in the water basins, which are under study by Twin2Go, is the key, but not sufficient condition for good water governance. Institutional performance and effective implementation of norms and rules in everyday practice by multiple stakeholders remain to be the major challenge in all four targeted regions under study. The policy-practice gap remains to be among the major problems. Selection and application of best practices in water governance, with a particular focus on adaptive water governance, is the challenge for all regions. That is why many experts put their emphasis on the need to enhance the implementation process, to strengthen the verification and enforcement, as well as to apply additional tools stimulating best practices performance. It was underlined that in some regions national legislations and policies regarding water management and water governance are present, but sufficient transboundary regulations are lacking.

Experts recommend not to expect immediate results from the reforms in the water sector and from the introduction of BP&T related to new institutional settings in adaptive water governance. Institutions have a long living cycle, and their maturity period might require up to 50 years; after introduction or transfer new institutions need time to be rooted into existing local/regional frameworks. The same relates to the transfer of BP&T: the enabling environment is essential for imported institutions to be viable. And for this purpose a certain transit period for their 'embedment' is required. For example, time is needed for the consolidation of institutional innovations relating to the BP&T of the relaxation of administrative procedures for issuing water-use permits. This conclusion applies to all levels of analysis, including locales, basins, countries and the targeted regions in general. Recent history reveals, for example, that in the emerging economies during the transition period hundreds of institutions had been reformed or modified, and then rejected as ineffective. However, the reason for their failure was different: the transition period is needed for them to root. This conclusion is particularly valid in relation to reforms and transitions to new adaptive water governance systems.

A cautious approach is proposed for reforms in river basins and the introduction of basin management principles and IWRM. They should take into account the specifics, traditions and informal institutions of the territories and locales, especially within the large river basins. Existing local peculiarities should not be neglected by the newly introduced basin management principles, and adjustments and adaptations of the latter are essential. The enacting of the basin management principles, especially in large river basins, is not an easy task. Boundaries of administrative units in basins usually do not correspond to the natural boundaries. Technical and scientific questions within the river basin management process and the selection of adaptation strategies are often mingled with administrative management and governance issues. As a result adaptive water management in basins might be a complex, multilayered institutional problem with a variety of uncertainties, with overlap of competences and loopholes.

Integration and coordination – both vertical and horizontal – usually provide for better results in the application of best practices in water governance; especially horizontal coordination is important for the implementation of adaptive water governance. Clear allocation of tasks and responsibilities between ministries working in the water sector, avoiding overlaps, their regular cooperation and communication are essential. Integrative IWRM approaches enhance good governance and adaptive capacity. Without integration and coordination of interests, capacities (authorities, stakeholders and sectors, transboundary basins, investment and funding allocation, incentive tools) and possible trade-offs, the adaptation to risks associated with global change, and particularly climate change, might be tricky.

Stakeholder participation is a powerful tool in the implementation of good water governance practices. It contributes to their better performance and higher effectiveness in all river basins under survey. However, it is still inadequately applied, and stakeholders are insufficiently interacting. Broader involvement of civil society actors is critical for overcoming the coordination problems and ensuring control over transparency and accountability of bureaucracies and business in water sector. Diverse instruments – platforms, dialogues, consultations, joint assessments, committees, management councils, joint actions, etc. can provide deliberative engagement opportunities. They significantly enhance adaptive capacity in water management.

Context-specific factors, especially societal, are evaluated by experts as one of the important drivers in the implementation of BP&T in transition economies and in developing countries, while the impact of context-specific factors might be not that significant in ‘stable’ societies in the EU. Their role in the former might be high, their detailed assessment is required. The role of context-specific factors in the

application of BP&T and performance results seems to be higher in less developing countries and poor transition economies with unstable institutional systems and undeveloped democracies (for example, Uzbekistan).

Financial shortages in the application of BP&T are almost the 'standard' concern of all experts discussing the effectiveness of BP&T implementation. Reforms and introduction of adaptive water governance systems might require additional funding. However, experts agree that in many cases the major problem is not the lack of financial resources as such, but it is the problem of their mobilisation and allocation. Competition for access to funding and for control over resources is high in most cases. Misuse of funds can be among barriers for BP&T success. Thus, strict control over resource flows, transparency and accountability before the public is essential and is regarded as a proper practice in itself. The mobilisation of diversified sources and capacities is an important condition for success in BP&T implementation. The problem of finance and resource allocation is common to many countries worldwide, and quite often it is not just the technical problem, but a political one. Monitoring and verification is needed to control project implementation, achieve objectives and particularly ensure strict accountability for money flows. This is very important, as corruption might be quite high in some countries with low civil culture.

Enhancing synergy between incentives and regulatory instruments is essential for promoting the effectiveness of adaptive water governance. Yet, this is not thoroughly perceived and accepted by administrations in river basins. It also relates to most stakeholder groups. Particularly useful results such an approach might have are shifts towards environmentally benign behaviour of the private sector. Experts representing business confirm that it is slightly possible to expect that private companies would introduce water management and technological innovations without taking into consideration economic drivers and considerations of competitiveness. So, (1) proper stimulus from authorities towards changes in behaviour of business companies, and (2) the development of regular state-private partnerships to identify possible nuances in interests and perceptions, and to enact them in practice, is essential.

The adaptation of transplanted BP&T and institutions to the local/domestic contexts is essential. However, there is a risk that transplanted institutions might become severely modified in a course of this process and might lose their effectiveness. The careful selection of 'transplants' in adaptive water management is crucial, as the consequent decision about the introduction of new adaptive practices at the national level might interfere with the local priorities and might face opposition; this is particularly important, as there is a need for consent and support for transplants from real

'implementers' at the bottom. To ensure higher effectiveness of new adaptive water governance options their prior testing in practice in the regions is recommended. The conflict analysis of new practices (especially versus the local specifics) that are planned to be imported is suggested. Compatibility of transplants with existing local institutions and context is necessary, as well as the assessment of those at the local level that might interfere and impede rooting of the new ones. There can be the risk of ineffective performance when selected BP&T transplants are being incorporated into the old and outmoded institutional environment, which differs from institutional frameworks of donors. Especially high might be such risks in case of reforms and transfers to new adaptive water governance systems.

Best practices that enable learning and addressing uncertainties result in increased adaptive capacity. Open access to information, dissemination of monitoring results and integration of different kinds of knowledge support adaptation of the water sector to climate change. Still, the quality of data about water risks varies across basins, and related uncertainties are high. A range of BP&T address this issue, usually show good results and become essential elements in adaptive water planning, such as the mapping of flood and drought variability, early warning systems and operational protocols, monitoring of risks related to changes in permafrost, assessment of interests and capacities of particular stakeholders in the application of adaptive management options, education of the local population in the flood and drought prone areas, regular dissemination of 'user-friendly' information and advise about new adaptive water management plans, promotion of water monitoring networks and local water adaptation strategies.

7 List of references

ADB. 2009. Stimulating Participatory Process for Water Allocation in the Bang Pakong River Basin http://www.adb.org/Water/PDA/THA/pda-tha-200901-Proposal.pdf

Assessment Report on Climate Change and its Impacts in the Russian Federation. 2008. Vol. 1-2. Roshydromet, Moscow, 515

Christensen et al. 2007. Regional climate projections. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

Climate Doctrine of the Russian Federation. 2009. Ordinance of the RF President, N 864-рп, 17 December

de Wit, M., Stankiewicz, J. 2006. Changes in Surface Water Supply Across Africa with Predicted Climate Change. In: Science 311, 1917

FAO. 2011. Thailand's Water Vision: a case study. http://www.fao.org/docrep/004/ab776e/ab776e04.htm

Fifth RF National Communication to the UNFCCC. 2010. On measures to prevent threats to national security of the Russian Federation related to global climate change (2010), RF Security Council Meeting on Climate Change, 17 March

Fredkin K. ed. 2005. Irrigation in Africa in figures – Aquastat Survey, FAO, 13-21

GeoNova Thematic Maps. 2007

Goulden et al. 2008. Adaptation to Climate Change in International River Basins in Africa: A Review, Tyndall Centre

Hewitson B.C. and Crane R.G. 2006. Consensus between GCM climate change projections with empirical downscaling: precipitation downscaling over South Africa. International Journal of Climatology, 26 (10), 1315-1337

IPCC. 2007. Fourth IPCC Assessment Report. Chapter 10 Asia. http://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4-wg2-chapter10.pdf

Kalahari Conservation Society. 2011. Every River has its people, http://www.kcs.org.bw/Page.aspx?PID=58

Kundzewicz et al. 2007. Freshwater Resources and their Management. In: Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (ed. by M. L. Parry, O. F. Canziani, J. P. Palutikof, P. J. van der Linden and C. E. Hanson), 173-210. Cambridge University Press, Cambridge, UK, 173-210

Limpopo Basin Permanent Technical Committee. 2010. Roadmap for Stakeholder participation for the Limpopo Watercourse Commission - LIMCOM

Ministry of Development of North Eastern Region. 2007. http://mdoner.gov.in/writereaddata/eventimages/wATER3196630043.pdf

ORASECOM. 2011. http://www.orasecom.org/

Wetlands International (2009): Planting trees to eat fish: Field experiences in wetlands and poverty reduction. Wetlands International, Wageningen, The Netherlands.