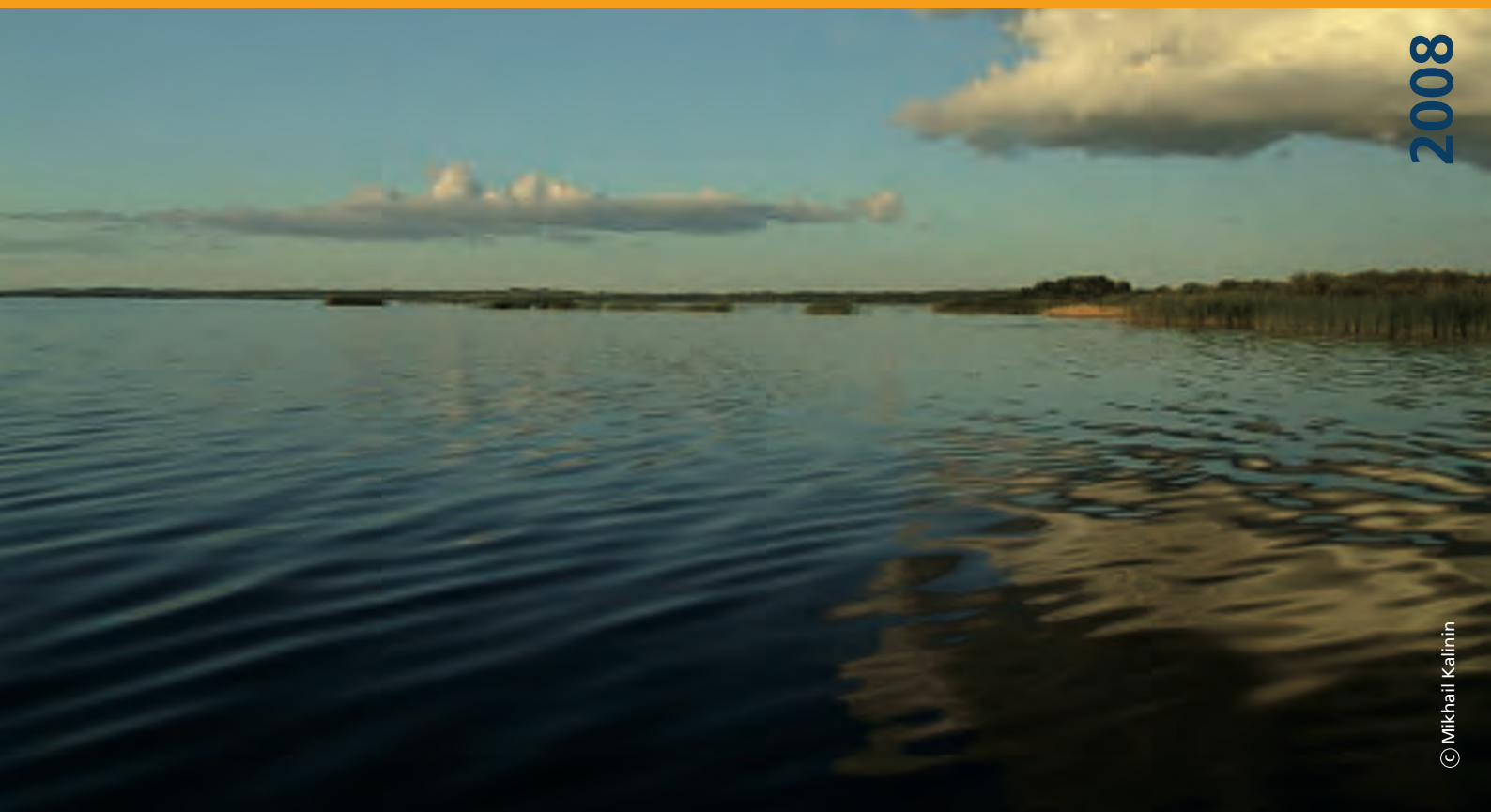
UN WATER

Thematic Paper

Transboundary Waters:

Sharing Benefits, Sharing Responsibilities



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The issues[1]

Approximately 40 per cent of the world's population lives in river and lake basins that comprise two or more countries, and perhaps even more significantly, over 90 per cent lives in countries that share basins. The existing 263 transboundary[2] lake and river basins cover nearly one half of the Earth's land surface and account for an estimated 60 per cent of global freshwater flow. A total of 145 States include territory within such basins, and 30 countries lie entirely within them. In addition, about 2 billion people worldwide depend on groundwater, which includes approximately 300 transboundary aquifer systems.

Aquifers not only contain quality water and represent a substantial hidden global capital, but also support land and water ecosystems. Their overexploitation can lead to serious problems such as groundwater depletion, saltwater intrusion in coastal areas and mobilization of toxic substances such as arsenic and fluoride. Pollution can also affect aquifers, and thus the populations relying on them.

The transboundary basins and aquifers link populations of different countries and support the incomes and livelihoods of hundreds of millions of people worldwide. Wetlands such as lakes and floodplains which are also often shared by neighbouring countries provide invaluable ecosystem services to humans such as food provision and reduction of flood impacts and pollution. All transboundary water bodies create hydrological, social and economic interdependencies between societies. They are vital for economic development, reducing poverty and contributing to the attainment of the Millennium Development Goals.

While embedding a potential for discourse and conflict, they provide opportunities for cooperation and promotion of regional peace and security as well as economic growth. Recognizing this potential, through various initiatives the members of UN-Water are focusing on tipping the balance from potential conflict to cooperation, by supporting countries in their efforts to improve the management of transboundary water resources.

Depleted and degraded freshwater supplies, caused by population growth, poorly managed development and weak governance, hamper sustainable development and underscore the need for cooperation between the major water-use sectors – agriculture, industry, energy, navigation and water supply and sanitation. Individual countries, within their areas of political responsibility, have good reasons to implement integrated water resources management to protect and sustainably use water and related ecosystems and to reconcile the demands of different sectors for socio-economic development. Potential transboundary impacts and conflicting interests can best be solved by cooperation, adequate legal and institutional frameworks, joint approaches to planning and sharing of benefits and related costs.

[1] The term "transboundary water" in this paper refers to transboundary rivers, lakes, inland water as a whole and aquifers; here, explicitly excluding open oceans, territorial seas and coastal waters.

[2] The terms "transnational", "trans-State" and "international" are also used.

Differences between riparian countries – in terms of socio-economic development, capacity to manage water resources, infrastructure, political orientation and institutional as well as legal contexts – represent challenges to effective and coordinated development as well as to the joint management and protection of transboundary water resources. At the same time, these differences open up opportunities for capacity development and technical, social, legal and economic cooperation.

Not surprisingly, cooperation over transboundary waters has a long history. The same cannot be said about transboundary aquifers, however: their joint management is still in its infancy. But steps are being taken. Inventories of transboundary aquifers have been performed for Europe, Latin America and the Caribbean, Africa and Eastern Asia by different United Nations institutions pursuing water-related activities. These inventories will help to further our understanding of the sustainable management of such aquifers and their relationship with surface water.

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Potential for cooperation and benefits for human security

A growing number of States are experiencing rising or even permanent water stress, and climate change consequences will increase the numbers of countries experiencing high variability in water resources availability including higher frequencies or intensities of floods and droughts. Competition over water can heighten tensions and even lead to open conflict.

Fierce national competition over water resources has prompted fears that water issues contain the seeds of violent conflict.
...If all the world's peoples work together, a secure and sustainable water future can be ours.

Kofi Annan,
World Water Day 2002

An assessment of past water-related conflicts shows that water scarcity, dam construction, water abstraction, and chronic and accidental water pollution by industry, as well as neglect or non-acceptance of existing treaty provisions, often lie at the root of water tensions. As growing populations, urbanization and economic development all require more water for agricultural, municipal and industrial uses, there are greater risks. This said, it is usually factors outside the water domain that are decisive in exacerbating tensions.

Climate change is expected to add to pressures on transboundary water resources in many areas with fluctuations in water availability and water quality. It will magnify regional differences in the world's natural resources and assets and lead to an increased risk of inland flash floods and more frequent coastal flooding, droughts, etc. The necessity to adapt to climate change, however, will also offer new opportunities for cooperation in developing adaptation strategies.

Indeed, history has often shown that the vital nature of freshwater is a powerful incentive for cooperation,

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compelling stakeholders to reconcile even the most divergent views. Water more often unites than divides peoples and societies. Since 1948, history shows only 37 incidents of acute conflict over water, while during the same period, approximately 295 international water agreements were negotiated and signed. Clearly, averting disputes is often a strong political driver for initiating cooperation on transboundary waters, as riparian States recognize that they must safeguard their greater common interests.

Sharing benefits

Political will and commitment are important preconditions for successful cooperation in all aspects of water-sharing.

Cooperation enables better ecological management, providing benefits to river, aquifer, lake, wetland and related ecosystems as well as adjacent estuaries, coastal areas and seas. It also underpins important further types of benefits, some of which are not readily apparent or properly taken advantage of. For example, efficient, cooperative management and development of shared waters and adjacent flood plains can yield increased food and energy production, improved irrigation can contribute to poverty reduction and help control migration from rural areas to urban centres. and transboundary early-warning systems can minimize loss of life in the event of floods. A third (political) benefit derives from the easing of tensions due to cooperation. Finally, as international waters can be catalytic agents, a fourth benefit is improved economic integration between States. Transboundary water management can thus directly or indirectly contribute to international trade, economic development, food security, political security, poverty alleviation and regional integration.

Pillars for transboundary water cooperation

Achieving transboundary cooperation is always a long and complex journey; there is no single path and there are few short cuts. Instead, there are many routes that can be followed and any arrangement must be tailored to a given basin's characteristics and reflect a range of environmental, hydrological, political, economic, social and cultural circumstances. Water resources policy must also be coordinated with other natural resources and sectoral policies, such as land-use management and spatial planning.

Political will and commitment from all Governments, at all levels, are prerequisites for successful transboundary water management. While there is no universal solution, the following seven pillars are usually considered as necessary for long-term, sustainable and reliable transboundary cooperation.

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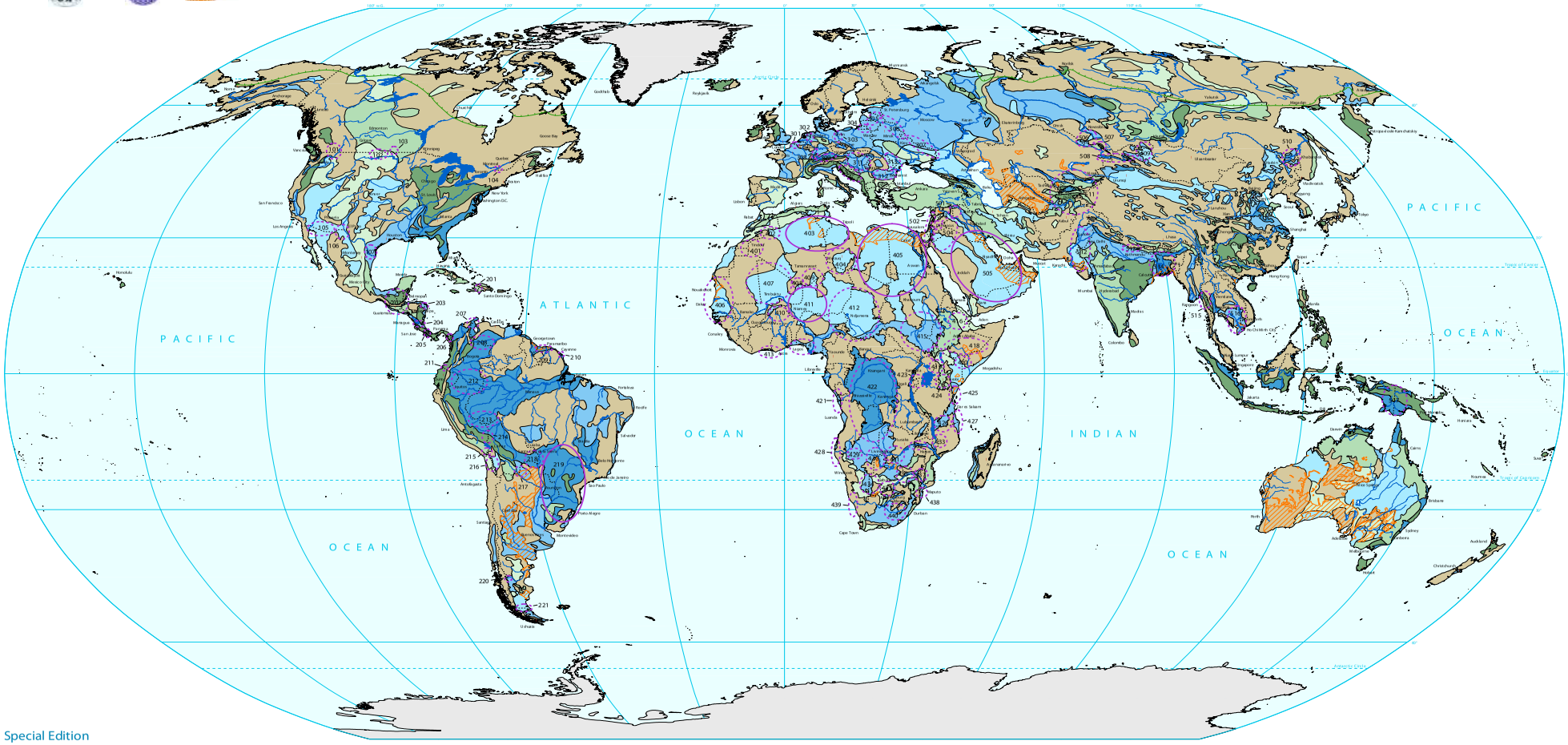
Groundwater Resources of the World

- Transboundary Aquifer Systems -



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Mexico City, March 2006

Transboundary Aquifer Systems
- coherent modelling in progress
- additional investigation required
- 401 number of aquifer system (see table 2)

Groundwater
- major groundwater basin
  - high groundwater recharge (> 150 mm/a)
  - medium groundwater recharge (15 - 150 mm/a)
  - low groundwater recharge (< 15 mm/a)
- area with complex hydrogeological structure
  - high groundwater recharge (> 150 mm/a)
  - medium groundwater recharge (15 - 150 mm/a)
  - low groundwater recharge (< 15 mm/a)
- area with local and shallow aquifers
- area of saline groundwater (> 5 g/l TDS)

Surface water
- major river
- large freshwater lake
- large saltwater lake
- continuous ice sheet

Geography
- selected city
- country boundary
- boundary of continuous permafrost

0 1000 2000 3000 4000 5000 km

Prepared by

Wilhelm Struckmeier and Andrea Richts (Chief Editors),
Ian Acworth, Giuseppe Arduino, Emilia Bocanegra,
William Cunningham, Abdallah Droubi, Nelson da Franca,
Wilfried Gilbrich, Jan Girman, Jac van der Gun,
Ralf Klingbeil, Jean Margat, Dominique Poitrinal,
Shaminder Puri, Alfonso Ri vera, Mohamed Safar-Zitoun,
Ofelia Tujchneider, Slavek Vasak, Jaroslav Vrba,
Peter Winter, Markus Zaepke, Han Zaisheng and Igor Zektser

Under the auspices of

UNESCO / IHP	Andras Szöllösi-Nagy and Alice Aureli
UNESCO / IGCP	Robert Missotten
BGR	Bernhard Stribrny and Wilhelm Struckmeier
CGMW	Jean-Paul Cadet and Philippe Rossi
IAEA	Pradeep Aggarwal and Bill Wallin
IAH	Stephen Foster and Andrew Skinner

Cartographical editing / GIS

BGR	Uta Philipp, Andrea Richts and Patrick Clos

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Legal instruments

A sound legal framework is essential for stable and reliable cooperation. At the global level, the 1997 Convention on the Non-Navigational Uses of International Watercourses represents an important step forward. The Convention was adopted by the United Nations General Assembly and provides a legal framework for inter-State cooperation on international watercourses. Although it is not yet in force, this Convention's core principles, – e.g. equitable and reasonable utilization and the no-harm rule – are already part of international customary law. In Europe, the 1992 UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention) has been the basis for adoption of many bilateral and multilateral agreements, most notably the 1994 Convention on the Cooperation for the Protection and Sustainable Use of the Danube River. The regional success of the Water Convention has convinced its Parties to adopt an amendment to the Convention opening it up for accession by all United Nations Member States. When this amendment comes into force, the Water Convention will increase its importance beyond the UNECE region.

Recognition by the international community of the importance of bilateral, regional and multilateral legal frameworks has made possible the conclusion of a number of treaties, protocols and conventions on the use, development and protection of transboundary watercourses and related ecosystems, e.g. the 1960 Indus Water Treaty, the 1978 Great Lakes Water Quality Agreement, the 1991 Pakistan Water Apportionment Accord, the 1995 Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin, the 1995 Protocol on Shared Watercourse Systems in the Southern African Development Community Region (revised and extended in 2000), the 1996 Mahakali and Ganges treaties and the 2003 African Convention on the Conservation of Nature and Natural Resources. In addition, other multilateral environmental agreements such as the United Nations Convention to Combat Desertification and its Subregional Action Programmes, the Ramsar Convention on Wetlands and the United Nations Convention on Biological Diversity may not solely address water issues, but help provide an important support framework for cooperation.

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New impetus to adopt transboundary aquifer agreements could also come from the work of the United Nations International Law Commission, which has adopted in May 2008 draft articles on the law of transboundary aquifers, and will forward them to the UN General Assembly. A number of initiatives are also already under way (e.g. Nubian Sandstone Aquifer System, North-Western Sahara Aquifer System) to develop legal frameworks for individual shared aquifers. Similarly, the body of law pertaining to flood management and drought-proofing is steadily growing. Various legal instruments have been devised on a bilateral and multilateral basis for all aspects of flood preparedness, response and recovery, most recently in the European Union Member States through the EU Directive on the assessment and management of flood risks. Model provisions on transboundary flood management have been developed and agreed under the UNECE Water Convention, and WMO has released a "Rapid Legal Assessment Tool" to assess the needs for legal reform to provide an institutional backbone for flood management in river basins.

Despite the proliferation of agreements on transboundary water management, there are still numerous watercourses, not to mention aquifers, without adequate legal frameworks for cooperation. Notably, 158 of the world's 263 international river basins, plus transboundary aquifer systems, lack any type of cooperative management framework.

Moreover, existing agreements are sometimes not sufficiently effective to promote integrated water resources management due to problems at the national and local levels such as inadequate water management structures and weak capacity in countries to implement the agreements as well as shortcomings in the agreements themselves (for example, inadequate integration of aspects such as the environment, the lack of enforcement mechanisms, limited - sectoral - scope and non-inclusion of important riparian States).

There is a consensus among the majority of riparian countries that transboundary agreements need to be concrete and to set out institutional arrangements for cooperation, measures for management and protection of water resources and related ecosystems as well as enforcement. Agreements must take into account water quantity and quality, hydrological events, changing basin dynamics and societal values as well as all potential impacts of climate change. They should also incorporate dispute resolution mechanisms and identify clear yet flexible means to share the benefits of water, water allocations and water-quality standards. Provisions for joint monitoring, information exchange and public participation as well as mutual assistance in case of extreme events are also crucial. Agreements should include ways to factor in risk and uncertainty, for example related to climate change. Finally, they should have provisions for encouraging water-related joint economic development activities, e.g. cost-sharing arrangements.

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Institutional structures and capacity development

The right institutional structures at the national, transboundary and regional levels are a precondition for sustainable development and management of transboundary waters and for lasting cooperation among the riparian States. A clear mandate for the different national and transboundary organizations is an important prerequisite for the formation of strong governing bodies.

Effective transboundary water management starts at the national level, where coordination and cooperation between different ministries and water-related institutions is needed, as are sufficient financing and political commitment. Some common obstacles are conflicting mandates, fragmented authority and limited capacity of national institutions. The lack of strong political will to develop and implement the laws and agreements needed to effectively coordinate water uses within the various sectors and to manage resources in an integrated manner adds to the problem.

At the transboundary level, the formation of joint bodies with strong enforcement capacity, such as river, lake and aquifer commissions, is fundamental to ensuring cooperation between the various governmental entities and good management of shared resources. Enforcement can only be achieved if these bodies possess strong mandates and political support from the various Governments. Apart from States, a variety of actors – local stakeholders, non-governmental organizations (NGOs), research institutions, private sector participants and donors – must all be involved. Success can be found in the interaction and cooperation between the different levels and stakeholders. Vertical and horizontal integration is a necessity, and the joint bodies are the framework where such integration takes place.

To be effective, joint bodies should pursue the following:

- Coordination and advisory functions (e.g. collecting and exchanging hydrological data and forecasts, identifying pollution sources and hot spots, serving as a forum for the exchange of information on emerging issues, existing and planned uses of water and related installations, conducting studies on climate change impacts);

- Policy development and implementation, including formulating joint policies, strategies and visions to implement the agreement (e.g. developing joint monitoring programmes, establishing warning and alarm procedures, setting up regimes for reservoirs and other facilities);

- Implementation and dispute settlement, including monitoring and reporting on implementation and settling differences and disputes.

Joint bodies in the same basin with a different scope (e.g. navigation and water management, as well as bodies overseeing a first-order basin, main tributaries or aquifers) should develop institutional and administrative structures that facilitate cooperation. Similarly, cooperation between joint bodies with the same scope but in different areas, e.g. protection of inland waters and of the marine environment, makes the work of both bodies more effective.

Appropriate rules of procedure and terms of reference for river basin organizations that take into account specific local conditions are also crucial. These rules should not only recommend the structure, responsibilities, rights and financial status of such organizations, but also ways and means to ensure public participation.

For joint bodies to be effective, their institutional and human capacities are crucial. Staffs of joint bodies should have a broad competence and skills that bridge disciplines. The capacities of managers, especially at the national and local levels, should be strengthened not only to raise understanding of the complexities of managing shared water resources but also to derive the benefits made possible through cooperation. Negotiation, diplomacy and conflict resolution skills need to be developed and improved. The capacity to develop and implement policies and laws as well as the relevant enforcement mechanisms is vital, and should be developed accordingly, as is setting up funding arrangements, both internal and external.

An integrated approach

Transboundary as well as national water development and management are strongly linked to sustainable and responsible growth. Thus, an integrated approach favouring long-term and contingency planning is needed, building resilience into vulnerable systems, with an emphasis on increased diversity and flexibility. New management approaches should be based on regional cooperation principles, focusing on river basins and aquifer systems. Integrated Water Resources Management (IWRM) is a process that promotes coordinated and efficient development and

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management of water, land and related resources to maximize the economic and social welfare without compromising the sustainability of vital ecosystems. This requires a coordinated approach by industry, agriculture, the water-supply infrastructure, etc. It calls for a holistic management of surface and groundwater, implemented with the entire river basin in mind. Numerous challenges are involved, such as continuous changes in people's demands and values and structural transformations in society and environment, not to mention climatic anomalies and other exogenous shifts. These various challenges call for multifaceted, flexible decision-making processes.

Many existing transboundary cooperation arrangements are highly sectoral; the majority address specific waterworks, water uses and measures to control and regulate water flows, others pollution or the environment. There is a need to revise these approaches in order to follow IWRM principles. Sectoral entities should be actively used as the building blocks of an integrated approach, with the right mechanisms as well as changes in legislation. Globally agreed targets and indicators for IWRM plans are very important, since such plans provide an opportunity to assess the current water situation in all its thematic and subsectoral dimensions, as well as quality and quantity aspects[3]. A first step has been taken by UN-Water with the proposal of a road-mapping activity for IWRM.

Exchange of information and joint monitoring and assessment

Information based on well-organized measurement networks and monitoring programmes is a prerequisite for accurate assessments of water resources and problems. Assessment is essential for making informed decisions and formulating policy at the local, national and transboundary levels. Moreover, basin management by two or more countries calls for comparable information. A common basis for decision-making requires harmonized (if not standardized), compatible assessment methods and data management systems as well as uniform reporting procedures.

Exchange of information – including on pollution caused by accidents, on infrastructure projects that could affect downstream countries, on extreme events (floods and droughts) as well as on operations such as for hydropower, navigation and irrigation – is vital to building trust and a shared vision among riparian countries. In this context, a number of key policies on the "free and unrestricted" exchange of hydrological data and products are being promoted by WMO and UNESCO.[4]

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[3] UN-Water (2008). Status Report on IWRM and Water Efficiency Plans for CSD-16.

[4] See in particular Resolution 25, agreed by WMO Congress XIII, and Resolution XII-4 of the UNESCO-IHP Intergovernmental Council.

Joint monitoring requires an agreed terminology, for example the ones provided by the UNESCO/WMO International Glossary of Hydrology or the System of Environmental-Economic Accounting for Water developed by the United Nations Statistics Division and the Division for Sustainable Development of UN-DESA. Such a terminology translates an international standard vocabulary into regionally used languages (see also the ESCWA Arabic glossary on transboundary water).

A participatory approach

Public participation is fundamental to maximize agreement, enhance transparency and decision-making, create ownership and facilitate the acceptance and enforcement of decisions and policies. It is also a mechanism for gaining a better or common understanding between the various stakeholders on the nature of a given problem and the desirability of specific outcomes. Stakeholder participation strengthens integration, thereby contributing to conflict prevention, and risk reduction – all highly important in large infrastructure development projects.

Numerous methods exist for public involvement ranging from compilation of a stakeholders' database for network interaction to public hearings. Participation should be organized in an open and transparent way and should involve all relevant groups. Local residents, government representatives, the research community, farmers, industries, the private sector, women and minority groups all need to be fully involved in the development of river basin, lake and aquifer strategies, agreements and institutions. Of course, numerous challenges to public participation exist as well, for instance differing legislation and management and public participation systems – as well as priorities – in neighbouring countries. Frontiers frequently represent a "delimiter" not only of a linguistic but also a cultural and socio-economic nature, and the public can be insufficiently aware of how to take part in decision-making. In addition, mechanisms of public participation are not well developed in many countries and even less at the transboundary level. Critically, public participation requires adequate financial resources to be effective. Yet despite the difficulties, transboundary public participation efforts can be successful: witness the Danube Convention, the Sardar Sarovar Project and the Regional Partnership for Prevention of Transboundary Degradation of the Kura-Aras River.

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Benefits and costs-sharing

Riparian countries should focus first on optimizing the generation of basin-wide benefits, and secondly on sharing those benefits in a manner that is agreed as fair. The use of water, rather than the allocation of water itself, provides by far the best scope for identifying mutually beneficial cooperative actions. The perception by all countries that a cooperative basin development and management plan which maximizes overall benefits is "fair" is essential to motivating and sustaining cooperation. It is therefore important that consensus over basic entitlements is reached and that attention is paid to the differential distribution of costs resulting from the use of the water resources of the entire water body in question. It should be recognized, however, that due to the limited amount of overall available water in some cases, such decisions sometimes involve very difficult trade-offs and choices.

Payments for benefits (or compensation for costs) can be made in the context of cooperative arrangements. Downstream countries can be compensated, for example, for the creation and operation of additional storage capacity by upstream countries. This basin solidarity also might entitle upstream countries to share some portion of the downstream benefits that are generated, and thus share the costs of these practices. It is important, however, to apply a special approach to those benefits and costs that are not easily quantifiable or commensurable. Payment for ecosystem services (PES) – such as for flood mitigation, regulating run-off and water supply – is a new and still contested approach. Nonetheless, if implemented well, PES has the potential to be an environmentally effective, economically efficient and socially equitable tool for IWRM that can internalize environmental costs, broaden sources of finance and create incentives for environmentally friendly investments and behaviour.

Financing

Effective development and management of transboundary water resources, more and more widely understood as an international and common public good, requires appropriate financing. The costs of developing a legal framework, establishing institutions, developing capacity, creating monitoring,

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data-sharing and assessment systems and – most costly of all – long term investment programmes that optimize equitable use and protection of the shared water body need to be sustainable. The level of necessary financing varies broadly from one transboundary water resource to another, depending not only on available national budgetary resources, but chiefly on the existence and strength of the specific joint body.

A mixture of financing mechanisms and various sources of financial resources is typically used for transboundary water management cooperation: from national budgets and external bilateral or multi-lateral donors funded projects to more strategic programmes and funds or private public partnerships (e.g. the Mekong River Basin Development and Management). Investment needs in most cases exceed the resources available to riparian countries; therefore various financing mechanisms are being developed and employed. International development banks or specialized development funds are successfully testing a number of innovative approaches such as strategic partnerships comprising regional funds, leveraging significant additional investment through these funds. Other innovative financing schemes, e.g. regional revolving funds, PES, inter-riparian financing and cost recovery of water services, could be considered as options for sustainable financing of transboundary water management institutions. However, these require strong political support, good governance and appropriate institutional structures.

The role of UN-Water and its activities

UN-Water is the United Nations inter-agency mechanism for all its agencies, departments and programmes involved in water-related issues. It is responsible for follow-up to the water-related decisions reached at the 2002 World Summit on Sustainable Development and the Millennium Development Goals. It supports Member States in their efforts to achieve water- and sanitation-related goals and targets.

UN-Water acts at the global, national and regional levels, creating added value to the work and expertise of separate United Nations agencies and programmes. By helping to bring coherence and integration, UN-Water serves as the common voice of the United Nations system on water and sanitation. It improves cooperation with external partners, and provides timely information on status and trends of the world's freshwater resources. UN-Water has grown out of many years of extensive collaboration and partnership among the United Nations agencies. These efforts have contributed to the achievement of significant progress to date and have helped to bring water and water-related issues to the top of the political agenda.

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Transboundary water issues have been identified by UN-Water as among the priority areas requiring joint action. Which solutions States will find in their competition over shared water resources and how transboundary surface and groundwaters are managed will impact upon the successful achievement of many of the Millennium Development Goals and the Johannesburg Plan of Implementation. A prime objective of UN-Water in this area is to provide coherent and comprehensive information, policy advice and technical support to countries and stakeholders so that they can better manage transboundary waters. Coordination under the aegis of UN-Water can ensure an overall unity of complementary actions and thus supply a coherent framework for all the many programmes of the Organization's water-related agencies and their partners. World Water Day in 2009, with a thematic focus on transboundary water cooperation, is one such example of this common UN-wide effort.

What United Nations agencies are doing for transboundary water cooperation

Through its Development Law Service, the Food and Agricultural Organization of the United Nations (FAO) has a fundamental "enabling" mandate: it helps member countries sharing a transboundary river, lake, or aquifer to establish a legal and institutional environment conducive to stable and mutually beneficial cooperation. This is done with a view to managing and developing transboundary water resources for the benefit of agriculture, fisheries and other uses, including ecosystem support. Recent examples include the permanent Consultation Arrangement established in 2007 by Algeria, Libya and Tunisia for the management

of the Northern Sahara Aquifer System, and the similar arrangement currently being negotiated by Mali, Niger and Nigeria for the management of the Iullemeden Aquifer System. FAO also works to strengthen the ability of the governments of the Nile Basin to take informed decisions with regard to the management of their water resources. This objective is being achieved through the development of information products that integrate technical water resources and water use data with agricultural, demographic, socioeconomic and environmental data. Moreover FAO is engaged in the environmental protection and sustainable management of the Okavango River Basin, including all wetlands, fluvial and lacustrine systems, and their biological diversity.

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The Global Environment Facility (GEF) is an international financing mechanism established in 1991 to address global environmental issues. GEF projects help those countries sharing transboundary surface and ground water to establish priorities, adopt policy legal and institutional reforms in sectors facing degradation or conflicts, and test the feasibility of various investments to address conflicts and reverse degradation. GEF provides assistance to developing countries and countries with economies in transition to improve cross-sectoral management of transboundary basins and aquifers. Over the past 15 years, GEF has provided some $1 billion in grants – for a total cost of $4 billion in projects – to more than 150 different countries.

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The International Atomic Energy Agency (IAEA) is involved in transboundary groundwater management through a series of projects in Africa and Latin America. These projects aim to enhance cooperation and shared management mechanisms through improved scientific assessment and understanding of aquifer systems and stronger institutional frameworks. The aquifer systems under investigation include the Nubian, North-Western Sahara and the Nile Basin aquifers in Africa, and the Guarani Aquifer system in Latin America. In addition to filling scientific knowledge gaps, these projects are preparing shared aquifer diagnostic analyses, a strategic action programme, and the basis for a convention to govern the shared management of the aquifer. In the Nile basin project, the primary objective is to ensure that the groundwater systems and their inter-relationships with lakes and rivers are fully integrated into the Nile Basin water resources planning and management frameworks.

The United Nations Department of Economic and Social Affairs (UN-DESA) promotes and supports international cooperation to achieve development for all. In addition to facilitating intergovernmental debate and recommendations on transboundary waters during meetings of the Commission on Sustainable Development and the Economic and Social Council, UN-DESA provides analytical and technical support to developing countries and countries with economies in transition, namely: (a) analytical work,

including publications in "Natural resources/Water series", for example on existing treaties or institutional and organizational aspects affecting international watercourses; (b) technical cooperation assistance – programme development in cooperation with countries, river basin organizations and other stakeholders, e.g. on the Senegal, Niger, Chad and Okavango basins and the Nubian aquifer; (c) organization of and support to international conferences on regional watercourses, e.g. the Colloquium on the Global and Sustainable

Management of the Resources of the Niger Basin (1999) and the International Conference on Regional Cooperation and Transboundary River Basins (2005); and (d) advisory services to the Eurasian Economic Community to promote regional cooperation on transboundary water management in Central Asia (2008).

The United Nations Development Programme (UNDP), through its GEF International Waters portfolio, Transboundary River Basin Initiative and other programmes, is supporting governance reform processes in over 35 shared water bodies (freshwater and marine), involving over 100 countries. UNDP applies a three-stage approach to catalysing and sustaining integrated, ecosystem-based approaches to the effective governance of shared water bodies, namely: (a) joint fact-finding to reach agreement on priority transboundary issues and their impacts and causes; (b) joint preparation of a Strategic Action Programme (SAP) of agreed commitments to regional and national governance reforms and investments; and (c) support for implementation of agreed SAPs through capacity-building, institutional strengthening and technical assistance. As of 2008, UNDP overall transboundary waters portfolio totals about $1 billion including co-financing. UNDP works with a wide range of partners including other United Nations agencies, international financial institutions, intergovernmental organizations, NGOs and the private sector in developing and implementing its transboundary waters programme.

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Transboundary waters management is one of the important functions of the United Nations Economic Commission for Africa (ECA). Knowledge is generated through research and studies requested by Governments of riparian countries; land and water resources assessments and institutional studies for integrated water resources management conducted on the Congo, Nile, Lake Chad and the Zambezi river/lake basins, amongst others. The generated knowledge is managed through Web-based portals such as the African Water Information Clearing House. Advocacy and consensus-building is achieved through regional and subregional consultative conferences, which discuss the findings of analytical studies as well as publications and build consensus and common positions around key issues of relevance to Africa.

Advisory services are provided to African constituencies to address water resources management issues at the national, subregional and basin levels. Other principal ECA activities are regional integration, linkage and fostering dialogue and cooperation among the various countries, the other United Nations agencies involved in water management in Africa, and development partners

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The United Nations Economic Commission for Europe (UNECE) is involved in transboundary water management mainly through its Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention). The Convention obliges Parties to prevent, control and reduce transboundary impacts, including impacts on human health and safety, flora, fauna, soil, air, water, climate, landscape and historical monuments and other physical structures as well as on cultural heritage and socio-economic conditions. The Water Convention also includes provisions for joint monitoring, research and development, consultations, warning and alarm systems, mutual assistance, institutional arrangements for transboundary cooperation, exchange of information and public access to information. The Meeting of the Parties adopts a triennial programme of work intended to support the Convention's implementation through capacity-building (e.g. on water and health issues), the development of assistance programmes (e.g. for the establishment of legal frameworks and joint bodies), the preparation of guidelines on different aspects of IWRM (e.g. on transboundary flood management, joint monitoring and assessment, and PES), and the establishment of transboundary pilot projects.

The United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) was the founder of the Mekong Committee, now the Mekong River Commission (MRC). Over the years, the institutional framework for Mekong basin cooperation has evolved from the coordination of initial development under the MRC into a foundation for cooperation on development and investment, now known as the Greater Mekong Subregion Programme. ESCAP continues to provide advisory services to the MRC, in various programmes such as on basin development planning and flood management and mitigation. ESCAP also promotes the exchange of information and data for better flood management of international river basins under the framework of the WMO/ESCAP Panel on Tropical Cyclones.

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Since 1995, the United Nations Economic and Social Commission for Western Asia (ESCWA) has been enhancing regional dialogue and building national capacities for the sustainable management of shared aquifers in the Western Asia region. Training in negotiation skills has been provided to national delegates from Jordan, Lebanon, Palestine and the Syrian Arab Republic. Over the past three years, ESCWA has extended its activities on shared water aquifers to the Euro-Mediterranean Partnership Region. A project

aiming at strengthening the capacities of water management institutions in this region to implement sustainable forms of use, management and protection of internationally shared groundwater resources has been implemented in collaboration with the United Nations Economic Commission for Africa, UNECE and UNESCO. This project is expected to consolidate support for regional declarations and agreements.

The United Nations Educational, Scientific and Cultural Organization (UNESCO) promotes international cooperation among its 193 Member States and six Associate Members in the fields of education, science, culture and communication. The Natural Sciences Sector implements major international programmes in the freshwater, marine, ecological, earth and basic sciences. The International Hydrological Programme (IHP) is the intergovernmental and international scientific cooperative programme of UNESCO for water research and water resources management, education and capacity-building. IHP has developed two specific programmes related to transboundary waters. PCCP, or "From Potential Conflict to Cooperation Potential"- which is considered a direct contribution of IHP to the World Water Assessment Programme (WWAP) - facilitates multilevel and interdisciplinary dialogue to foster peace, cooperation and development of shared water resources management. ISARM (International Shared Aquifer Resources Management) is working to set up a network of specialists and experts to compile a global inventory of transboundary aquifers and develop wise practices and guidance tools for shared groundwater resources management.

United Nations Environment Programme (UNEP) work in transboundary waters is undertaken in the context of its Water Policy and Strategy, which was approved by the Governing Council in February 2007. Broadly, UNEP promotes integrated water resources management with a focus on environmental aspects. It advocates ecosystems management, appropriate adaptation measures to climate change, and mitigation and management of water-related disasters. Current UNEP activities include, at the global level, the development of methodologies and arrangements for transboundary waters assessment and the strengthening of global capacity to sustain transboundary waters. UNEP supports basin initiatives in Africa (e.g. the Volta River basin and downstream coastal area and the Lullemeden aquifer system) and in Latin America and the Caribbean (e.g. in the La Plata, Bermejo and Amazon basins). UNEP also sponsors the exchange of experiences on transboundary waters; recent events include the Workshop for African River Basin Organizations on adaptation to climate change (August 2008) and the International Conference on Transboundary Water Governance (October 2008).

The United Nations University (UNU) was established by the General Assembly in 1973 to serve as an international community of scholars engaged in research, advanced training and knowledge dissemination related to pressing global problems. UNU operates as an active global network of experts and institutions. The International Network on Water Environment and Health (UNU-INWEH) is the water-focused academy within UNU, which aims to strengthen water management, particularly in developing countries. UNU-INWEH is leading two major transboundary water initiatives. The first brought together five lake commissions focused on the African and North American Great Lakes to share experiences and understand common challenges such as climate change. The second, a joint effort by UNU-INWEH with UNEP, UNESCO and other partners, aims to synthesize the scientific achievements from the projects executed through the GEF International Waters Focal Area.

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The World Health Organization (WHO) develops guidelines for drinking-water quality and recommends water safety plans that require a risk assessment-risk management approach to the quality of surface and ground waters used for drinking water. These activities are particularly important in the framework of transboundary water resources. WHO also implements the International Health Regulations (IHR), which guide countries in handling outbreaks of water-related disease, including in transboundary contexts. In the framework of the Barcelona Convention, WHO performed detailed monitoring of access to and use of sanitation in all human settlements with more than 2,000 inhabitants situated along the Mediterranean coast and assessed the functionality of wastewater treatment systems as well as these facilities' impact on the interface between freshwater and marine environments, particularly in those areas used for recreational purposes or aquaculture. WHO operates a disaster prevention and management programme and, under the Protocol on Water and Health, works to strengthen countries' capacities for managing water resources and maintaining fully functional water and sanitation services during extreme weather events.

The World Meteorological Organization (WMO) supports national hydrological services, river basin organizations and other institutions in the assessment of the quantity and quality of water resources, both surface and ground water, to meet the needs of society, mitigate water-related hazards, and maintain or enhance the condition of the global environment. Activities include standardizing various aspects of hydrological observation and organizing the transfer of technologies to provide the hydrological data and information required for sustainable development of national and internationally shared water resources. WMO provides advice on flood management policy in the national and transboundary contexts. Through the World Hydrological Cycle Observing System, WMO is improving basic observation activities, strengthening international cooperation and promoting free and unrestricted exchange of data in the field of hydrology.

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The United Nations Office to Support the International Decade for Action `Water for Life´ 2005–2015 (UNO-IDfA) contributes to meeting the Decade's goals. It is responsible for communication and advocacy, bringing United Nations agencies together to develop advocacy campaigns aimed at accelerating the implementation of policy actions and measures. The office is based in Zaragoza, Spain, and is hosted by UN-DESA.

The UN-Water Decade Programme on Capacity Development (UNW-DPC) is a coordination and capacity development programme hosted by UNU. Its mission is to enhance the coherence and effectiveness of UN-Water by strengthening its capacity development programmes. UNW-DPC pursues two main activities concerning transboundary waters. It will create a single-point-of-access database to transboundary water-related capacity development activities, accessible to all UN-Water members, partners and other important water management stakeholders. An expert workshop, with the emphasis on "successful cases" – the practical achievements of institutions with respect to developing feasible institutional structures, in tackling the challenges involved in managing transboundary waters, and in developing the capacity required to do so – will be organized. The main outcome will be a detailed compendium and analysis of successful institutional arrangements.

UN-Water is a mechanism to strengthen co-ordination and coherence within the UN system. It is made up of the UN agencies, programmes and funds that have a significant role in tackling global water concerns. It also includes major non-UN partners who cooperate with them in advancing progress towards the water-related goals of the Decade Water for Life and the Millennium Declaration. It is the official United Nations mechanism for follow-up of the water-related decisions reached at the 2002 World Summit on Sustainable Development and the Millennium Development Goals and supports Member States in their efforts to achieve water and sanitation goals and targets. Its work encompasses all aspects of freshwater, including surface and groundwater resources and the interface between fresh and sea water.

UN-Water members

Food and Agriculture Organization of the United Nations (FAO)

International Atomic Energy Agency (IAEA)

International Fund for Agricultural Development (IFAD)

United Nations Children's Fund (UNICEF)

United Nations Conference on Trade and Development (UNCTAD)

United Nations Convention on Biological Diversity (UNCBD)

United Nations Convention to Combat Desertification (UNCCD)

United Nations Department of Economic and Social Affairs (UN-DESA)

United Nations Development Programme (UNDP)

United Nations Economic and Social Commission for Western Asia (ESCWA)

United Nations Economic Commission for Africa (ECA)

United Nations Economic Commission for Asia and the Pacific (ESCAP)

United Nations Economic Commission for Europe (UNECE)

United Nations Economic Commission for Latin America and the Caribbean (ECLAC)

United Nations Educational, Scientific and Cultural Organization (UNESCO)

United Nations Environment Programme (UNEP)

United Nations Framework Convention on Climate Change (UNFCCC)

United Nations High Commissioner for Refugees (UNHCR)

United Nations Human Settlements Programme (UN-HABITAT)

United Nations Industrial Development Organization (UNIDO)

United Nations International Strategy for Disaster Reduction (UN-ISDR)

United Nations University (UNU)

The World Bank Group

World Health Organization (WHO)

World Meteorological Organization (WMO)

For further information on transboundary water issues, please contact:

Francesca Bernardini
Vice-Chairperson, UN-Water
United Nations Economic Commission for Europe
Palais des Nations
1211 Geneva, Switzerland
e-mail: francesca.bernardini@unece.org

András Szöllösi-Nagy
United Nations Educational, Scientific
and Cultural Organization
1, rue Miollis
75732 Paris Cedex 15, France
e-mail: a.szollosi-nagy@unesco.org

Pasquale Steduto
Chairperson, UN-Water
Food and Agriculture Organization
Viale delle Terme di Caracalla
00153, Rome, Italy
e-mail: Pasquale.Steduto@fao.org

Muhammad Aslam Chaudhry
Secretary, UN-Water
United Nations Department of Economic
and Social Affairs
New York, NY 10017, USA
e-mail: chaudhry@un.org