Methodologies and best IWRM practices for joint management of groundwater and surface water at basin level

Eric TARDIEU

Deputy Secretary General

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The International Network of Basin Organizations

RÉSEAU INTERNATIONAL DES ORGANISMES DE BASSIN
INTERNATIONAL NETWORK OF BASIN ORGANIZATIONS
RED INTERNACIONAL DES ORGANISMOS DE CUENCA

- Created in 1994
- Headoffice in Paris
- 192 members
- 71 countries
- 8 regional networks

- Technical Permanent Secretariat

International Office for Water

- Main objective : Promote and better organize IWRM at (transboundary) basin scale

INBO's Regional Networks

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A strong experience of basin management : methodological handbooks

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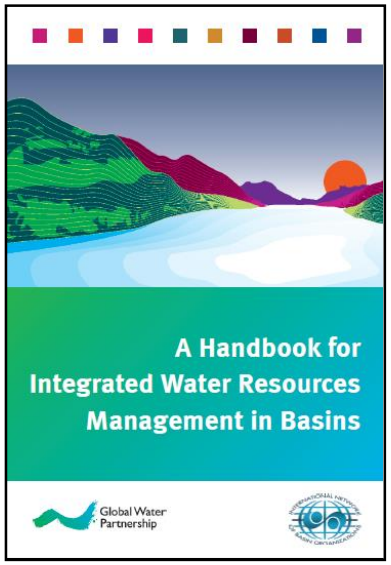

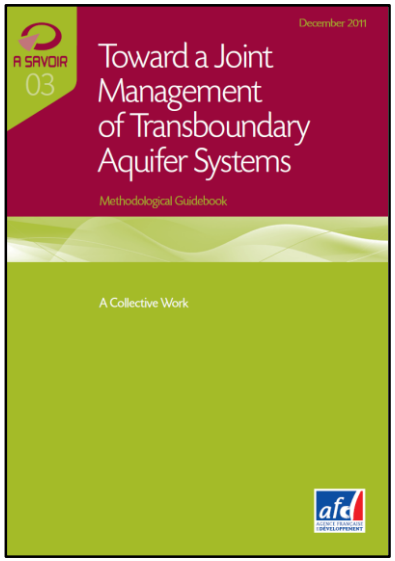

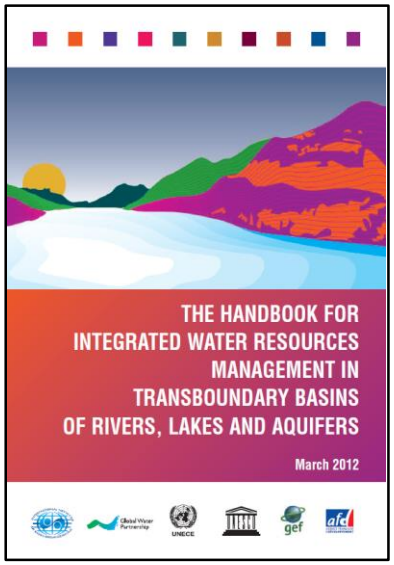

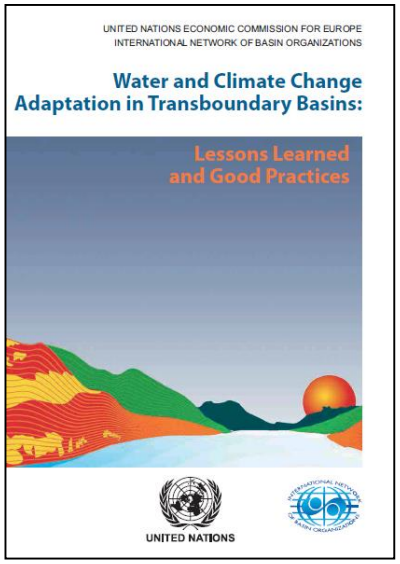

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Global Water Partnership

UNECE

UNESCO

gef

afd AGENCE FRANÇAISE DE DÉVELOPPEMENT

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263 rivers or lakes, and hundreds of aquifers, …are transboundary ones

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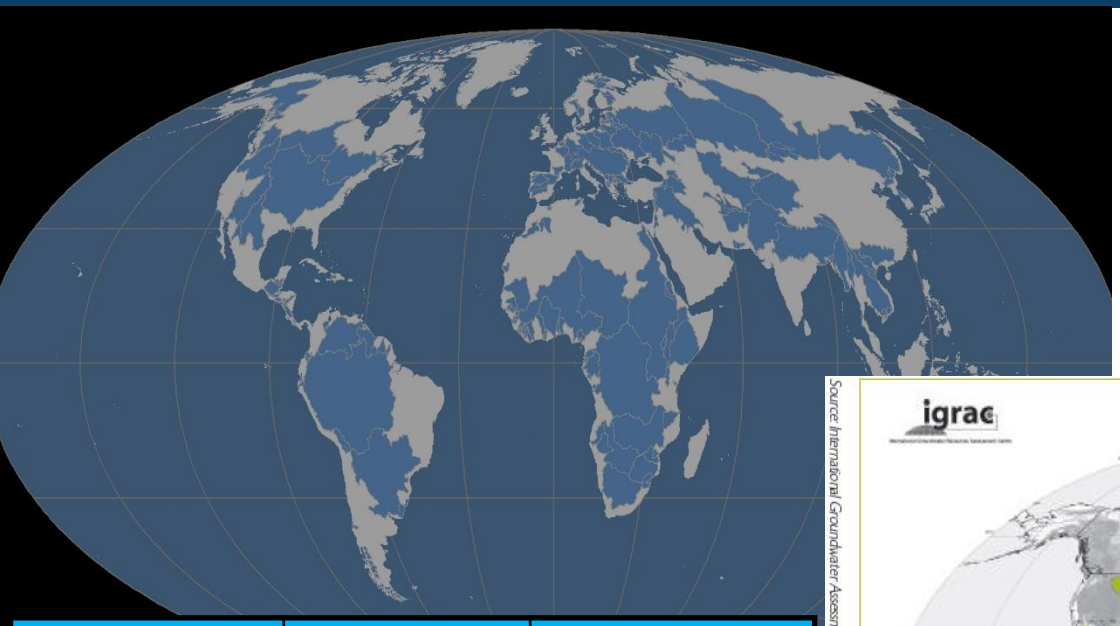
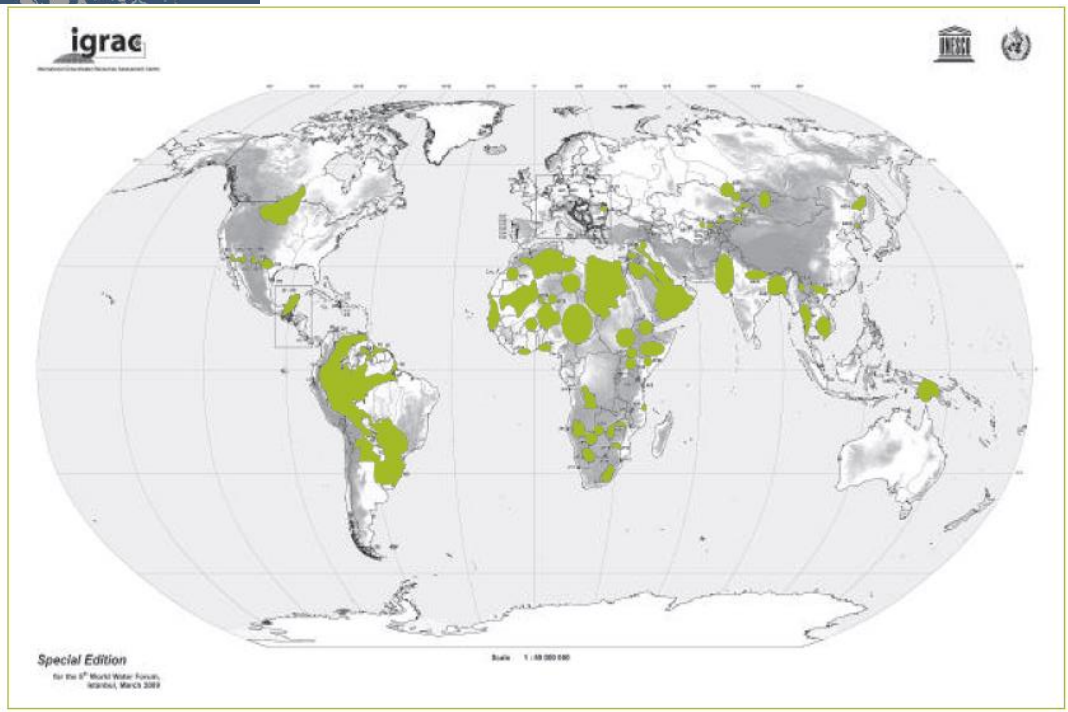


Surface Water

Ground Water

	Number	Land coverage
Africa	59	62 %
Asia	57	39 %
Europe	69	54 %
N. America	40	35 %
S. America	38	60 %
TOTAL	263	45 %



Source: International Groundwater Assessment Center, 2009.

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Increasing pressure on groundwater resources

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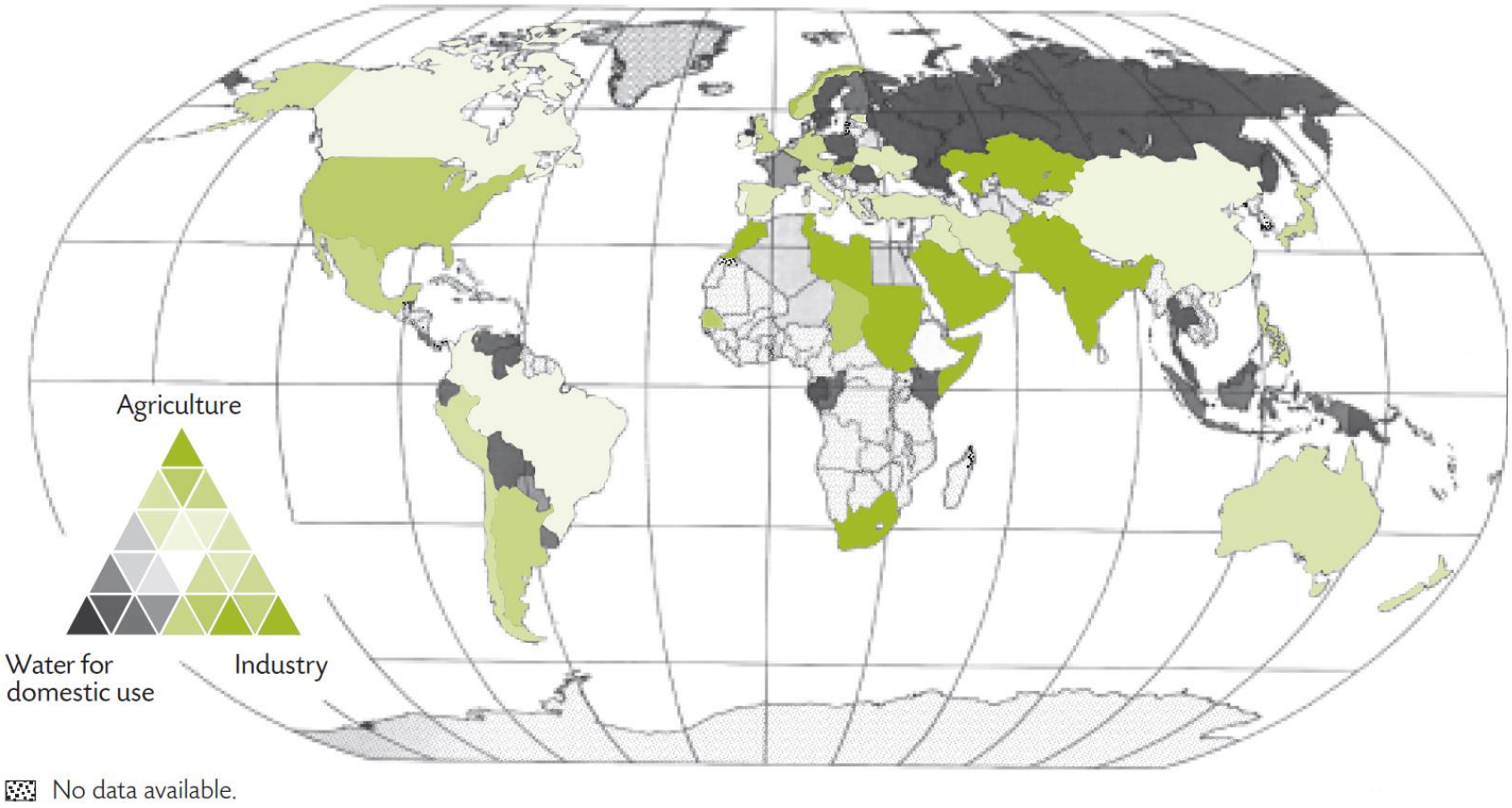

Source: Map modified from Margat, 2008.

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Threats on groundwater

- Population growth
- Urbanization
- Climate change effects
- Socio-economic development
- Increased pollution
- Non organized or uncontrolled exploitation

<u>Resulting in :</u>

- Overpumping, aquifer level lowering or even drying up
- Pollution(s)
- Salt-water intrusion
- Drinking water shortage
- Increased costs
- Health consequences

Joint approach for surface water and groundwater management

An integrated "3D-IWRM" approach should consider:

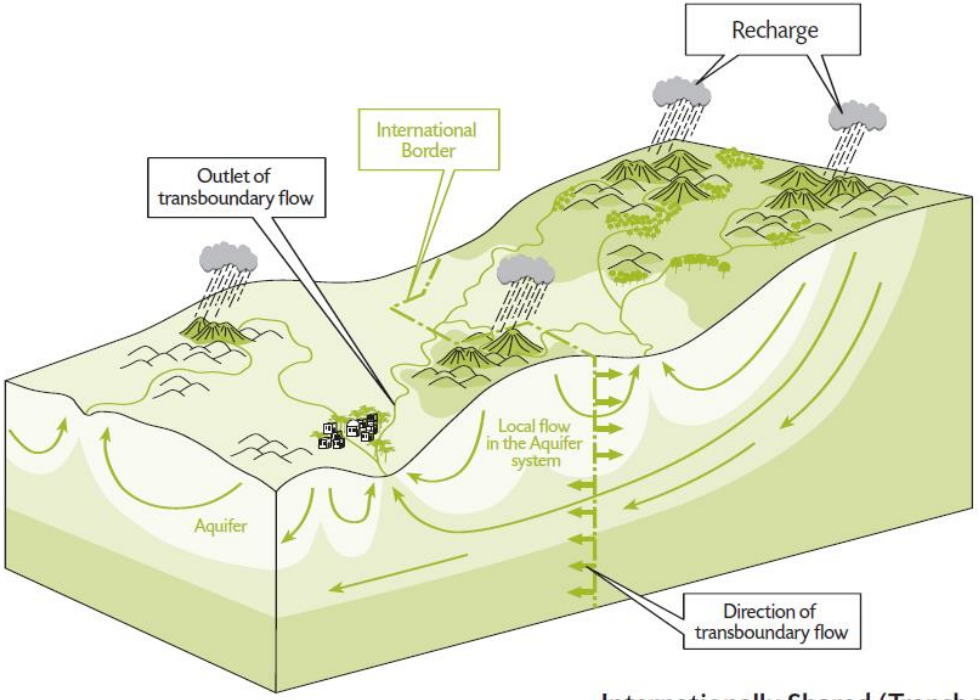
1) Both surface and ground water

2) The necessity to cross national or administrative borders in order to fit with the natural perimeters of aquifer systems

3) Common scientific approaches for data collection, data bases, information systems, models

4) Common strategies

5) Shared management plans



Source: *Puri* et al, *2001*

Internationally Shared (Transboundary) Aquifer Resources Management UNESCO, ISARM (2001).

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Integrated Water Resources Management at basin level

Water resources management should be organized:

1) on the scale of local, national or transboundary basins of rivers, lakes and aquifers;

2) based on integrated water information systems, allowing knowledge on resources and their uses, polluting pressures, ecosystems and their functioning, the follow-up of their evolutions and risk assessment.

3) based on management plans or master plans that define the medium and long-term objectives to be achieved;

4) through the development of Programs of Measures and priority investments;

5) with the mobilization of specific financial resources, based on the « polluter-pays » principle and « user-pays » systems;

6) with the participation in decision-making of the concerned Governmental Administrations and local Authorities, the representatives of different categories of users and associations for environmental protection or of public interest.

Specificities of transboundary water resources management

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- State **sovereignty**
- **National** legal and institutional policies
- Frameworks established **a priori** without coordination and coherence between the countries
- **Interests and objectives** for water linked to national development and security objectives and may differ across nations;
- **Proportion** of the country affected by the transboundary basin
- Conflicts on water **resources allocation and benefit sharing** are more complex and more difficult to manage across international borders, where international politics and historical or current conflicts (related or not to water) come into play;
- Exchange of **information and data** on water, which can already be a problem between different services within a same State, is often more difficult between States sharing a basin;
- **Relationship** between water, people and territory

International legal tools exist (1/2)

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2008 UN Resolution 63/124 « The law of transboundary aquifers »

- **Equitable and reasonable use**;
- Obligation not to cause significant **harm**;
- General obligation to **cooperate** with the riparian States of the aquifer;
- Regular exchange of **data and information**;
- Development of bilateral and regional **agreements** and arrangements to facilitate joint management;
- Implementation of appropriate measures to **protect and preserve** ecosystems related to shared aquifers;
- Identification by the States of the **recharge and discharge** areas of aquifers for the part located on their territory;
- Need for **pollution** prevention, reduction and control;
- Importance of **monitoring** transboundary aquifers or aquifer systems;
- Implementation of **joint management plans** by the riparian countries;
- **Assessment** of effects of planned activities on aquifer or aquifer system

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International legal tools exist (2/2)

1992 Helsinki « UNECE Water Convention » on the protection and use of transboundary watercourses and international lakes

- Specificity and particular vulnerability of groundwaters
- Protocol on Water and Health particularly relevant because of drinking water
- Riparian Parties required to cooperate on transboundary groundwater management
  - Aquifer specific agreements
  - Joint bodies
  - Agreements which covering all transboundary waters
- Espoo Convention
  - Abstraction activities and artificial groundwater recharge
  - Notification required

1997 UN Convention on the law of the non-navigational uses of international watercourses (not in force)

Methodological recommandations at transboundary level

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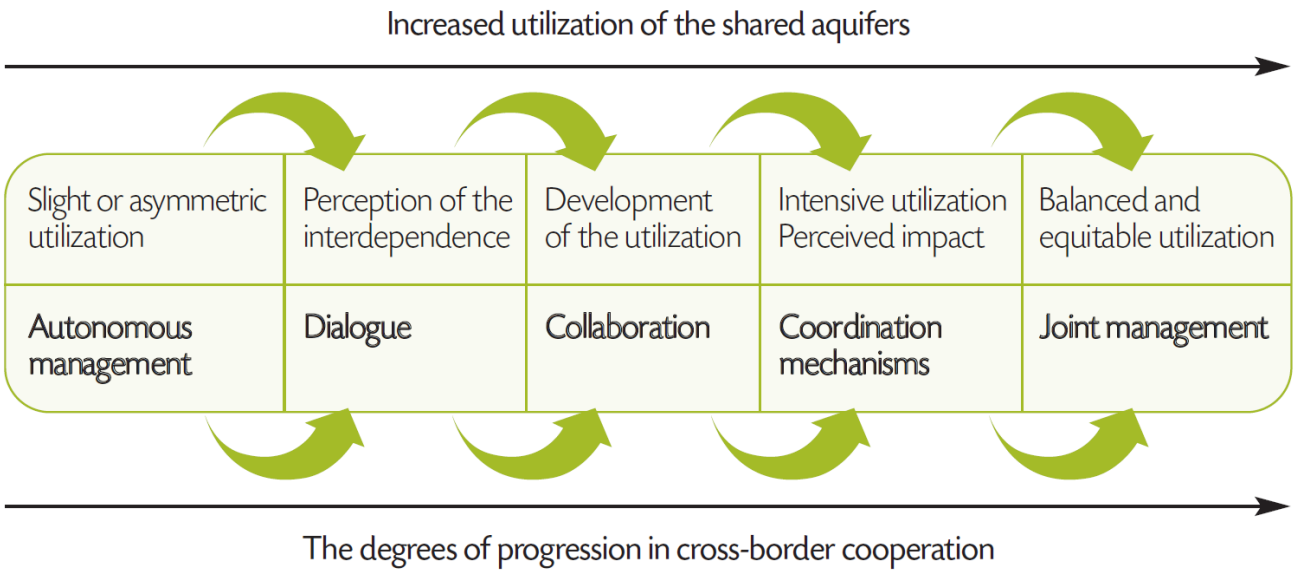
Preliminary technical contacts → Official meetings → Common data framework → Common management tools → Collaborative planning



Source: Adapted from Alker et al*., 2008 by the Académie de l'Eau.*

North-Western Sahara Aquifer System

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Project 1999-2009

1/ Regional hydrogeological model

2/ Database connected to a GIS and to models,

3/ Construction of a geographic server;

4/ Potentiometric network …integrated in the national networks of each country

Since 2006 : « permanent collaboration mechanism for the NWSAS

- production of indicators concerning the resource and water demand;
- water-resource management scenarios for development in the basin;
- common databases with exchange of data and information;
- common observation networks of the aquifer system.

Sahara and Sahel Observatory

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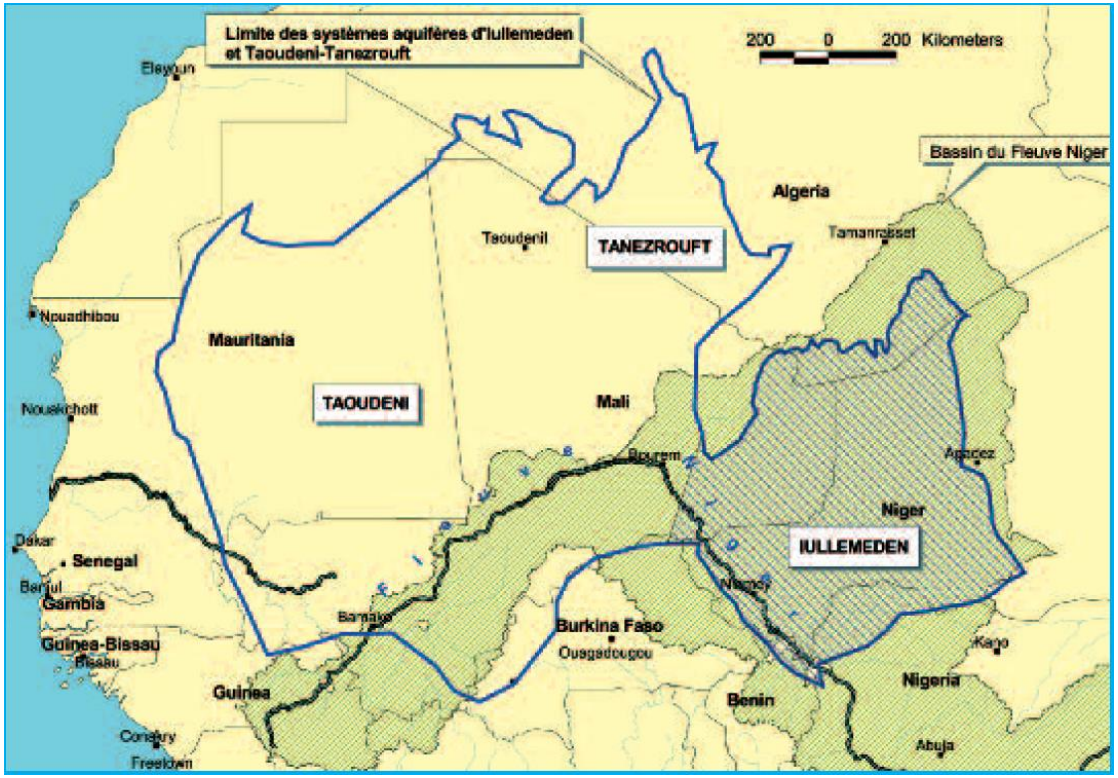
- International organization
- 22 African countries
- 5 northern countries
- Regional and international organizations
- Since 1992

Regional approach

Shared Water Resources Program



Project of **Integrated and Coordinated Water Resources Management of the Iullemeden, Taoudeni/Tanezrouft Aquifer Systems and Niger River**
7 countries: Algeria, Benin, Burkina Faso, Mali, Mauritania, Niger and Nigeria
Development of an Integrated Water Information System

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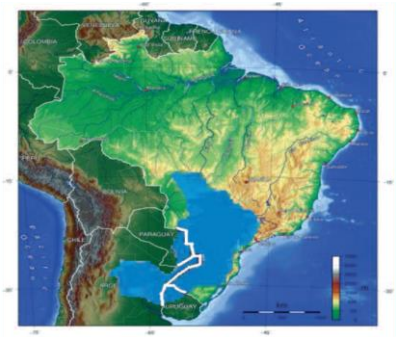
Other examples

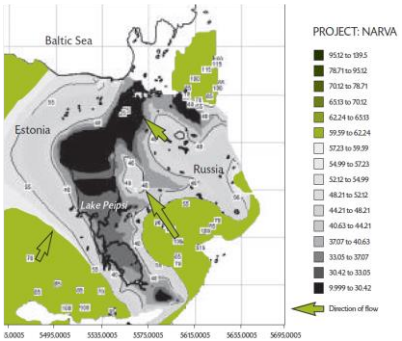
Genevese Aquifer

- France, Switzerland
- Since 1978
- Agreement for protection, utilization, recharge



Guarani Aquifer

- Argentina, Brazil, Paraguay, Uruguay
- Since 2003
- Regional Committee for the Guarani Aquifer System "inside" the Intergovernmental Coordinating Committee of La Plata river



Lake Peipsi aquifer system

- Estonia, Russia
- Since 2007
- Adoption of mathematical modeling to understand hydrological relations between groundwater and surface water

From COP21's Pact of Paris…

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Paris Pact on water and adaptation to climate change in the basins of rivers, lakes and aquifers

At the twenty-first Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21 / CMP11) organized from 30 November to 11 December 2015 in Paris, **We**, representatives of governments, international organizations, donors, national and transboundary basin organizations of rivers, lakes or aquifers, local authorities, of the civil society and companies, support the integration of Water into the Climate change Action Agenda, especially for initiating or strengthening necessary adaptation actions in the basins of rivers, lakes, aquifers, large wetlands as well as coastal areas.

General statement

Climate change is already affecting and will increasingly affect the quantity and quality of freshwater and aquatic ecosystems, especially through the intensity and greater frequency of extreme hydrological events, such as floods and droughts, as well as the increase in ocean level, which threaten security, economic and social development and the environment.

We recognize that adaptation actions should be undertaken without delay to minimize the impacts of climate change on the populations' health and safety, on economic development and the environment, considering the importance of the protection of water-related ecosystems.

The basins are natural areas where water flows on the surface and in the subsoil: they are the relevant territories for organizing water resources management.

In order to ensure more effectiveness, these actions to adapt to climate change should thus be implemented at the level of river, lake and aquifer basins, through a joint, participative, integrated and sustainable water resources management.

We should act quickly before it is too late!

To that end, mobilizing new and increasing funding dedicated to climate change adaptation in basins is essential. Therefore, new basin organizations and existing ones should be financed and strengthened to facilitate the cooperation, coordination and exchange of information, dialogue, consultation and prevention of conflicts between stakeholders and to enhance the implementation of adaptation measures and the sharing of benefits on the basin scale,

We encourage donors to support prior assessments and actions for adaptation to climate change in basins,

Local authorities and communities, economic sectors and the civil society should be better associated and involved in basin management, including in the definition and implementation of adaptation measures.

Cooperation and exchange should increase between the institutions involved, especially among the basin organizations at the global and regional levels in order to facilitate the transfer of experience and know-how on best practices in basin management and adaptation to climate change.

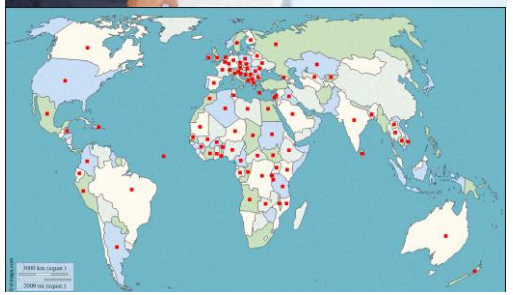
PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21·CMP11

v17

Paris Pact

www.inbo-news.org
www.cop21.gouv.fr/en

348 signatories
94 countries
50 projects collected



WATER and CLIMATE:

IT IS TIME FOR ACTION :
Join the *Paris Pact* initiative!
Send us your projects of adaptation to climate chan in the basins of rivers, lakes and aquifers!

As you know it the upcoming COP22 on climate will take place in Marrakech in Morocco from 7 to 18 November 2016 and, on the occasio Hakima El Haite, Minister Delegate to the Minister of Energy, Mines, Water and Environment, in charge of the Environment of Morocco, Paris last year, a priority in this conference.

These are the very good news that we all have expected, but we must now get mobilized and act as part of the "Global Climate Action Ag

What is the Paris Pact?

The Paris Pact **on water and adaptation to the effects of climate change in the basins of lakes, rivers and aquifers** a was laun Basin Organizations (INBO) in partnership with the United Nations Economic Commission for Europe (UNECE) during the COP21 un Action Agenda (LPAA), that now turned into then Global Climate Action Agenda «(GCAA), with the support of the French,, Moroccan and Pi and Water Resources in particular. It synthesizes principles and actions to be carried out for adaptation in basins.

Join the Paris Pact initiative…

… just like more than 348 basin organizations, ministries, local authorities, companies, donors, research and training centers, members organizations that already signed the Pact in 87 countries. ' Send us your signed Paris Pact, a photo of the signatory and a logo of yo and before September 30, 2016, , if you can, at the following address: a_bahsetti@inbo-news.org

If your organization has already signed the "Paris Pact", please excuse us for this general message.

Pilot projects promotion

You are invited to also send us your projects through , **the dedic** http://lenquetes.oieau.fr/index.php/survey/index/sid/538217/lang/en before Friday 30 Septembror by sending back to us the dedi

The Paris Pact, of course, targets **integrated Water Resources Management (IWRM) projects** for instance (national and transb strategies, water information systems, financial mechanisms, capacity building of basin organizations and for basin governance, cor involvement, training and education.

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4 priority commitments in the Pact of Paris

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Reinforce capacity development and knowledge

- Monitoring networks (meteorology, hydrology, quality, uses, environment…)
- Water Information Systems
- Exchange platforms between research and decision making
- Data interpretation capacities
- Translation into policy responses

Adapt basin management planning

- Impact and vulnerability assessment
- Production of adpatation strategies
- Floods and droughts prevention actions
- Performance indicators
- Water demand control for agricultural, industrial and municipal uses
- Development of water supply
- Water-related ecosystems services (NWRM)

Reinforce governance

- Individual capacities of BO staff (training)
- Institutional capacities (sharing experiences)
- Integration with related sectors (agriculture, energy, transport, tourism, fish farming…)
- Stakeholders participation

Ensure adequate financing

- Sustainable financial mechanisms
- Polluter/consumer pays principles
- Investment programs
- Cost-effectiveness analysis
- Financial support by donors

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…towards COP22

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November 9th : Water and climate day

2 segments in blue zone :

- Morning : Showcase projects
- Afternoon : Dialogue on priority topics

INBO « facilitator »

Preparation, organization, management and reporting of the events

With France, Maroc, Business Alliance, Megacities Alliance

- Showcase most effective initiatives
- Provide a space for dialogue
- Scale up the level of ambition
- Identify challenges and possibles solutions
- Provide opportunity to define suitable policy options
- Define a plan for the next year

PARIS2015 COP21·CMP11

MARRAKECH COP22|2016|CMP12

Mr. Eric Tardieu
Deputy Secretary General
International Network of Basin Organizations
Permanent Technical Secretariat
21, rue de Madrid
75008, Paris
France

Date: 15 September 2016

Dear Mr. Tardieu,

We have the pleasure of inviting you to organize with us an event on climate action to be convened at the Conference of the Parties to the UNFCCC in Marrakech, Morocco (COP 22) from 7 to 18 November 2016.

Since our appointment as high-level climate champions we have been committed to facilitating and accelerating global climate action by ensuring a robust and constructive connection between action on the ground and the UNFCCC negotiation process, and between non-Party stakeholders and Parties. We are also dedicating our time to enable the tracking of the implementation of existing initiatives to demonstrate credibility, promote best practices and enhance delivery; and to support new initiatives, focusing on initiatives from developing countries and non-Party stakeholders, in particular on adaptation.

It is our view that COP 22 must be the COP of action. Therefore, we are organizing a series of action events and dialogues to highlight the challenges of ensuring a sustained and effective global response to climate change, to celebrate the achievements, and to evidence the progress made by non-Party stakeholders on realizing the aims of the Paris Agreement since COP 20, in Lima, and through the work of the Lima Paris Action Agenda (LPAA).

The Paris Pact on Water and Adaptation, led by the International Network of Basins Organizations, is a crucial initiative with regard to water and climate change. We could not think of a better facilitator to organize the water related action events at COP 22. Therefore, we are pleased to invite you to organize with us the action event and the dialogue on water that will be held at COP 22 on 9 November 2016. The outcomes from these events will feed into a high-level event that will be held on 17 November 2016, to which we also kindly invite you to participate in.

If you were to accept our invitation, we would encourage you to work in close collaboration with the Government of France, the Government of Morocco through its Ministère délégué en charge de l'Eau, the Conseil Mondial de l'Eau, the Business Alliance, and the Megacities Alliance, as partners, in order to ensure that all the pertinent water issues are presented.

Conclusions

- Groundwater is a natural heritage of incredibly high value
- Huge need for knowledge and capacity development
  - From Science to decision making processes
  - Water Information Systems have to be funded
  - Training and capacity building always necessary
- Useful extension to groundwater management of existing surface water transboundary management organizations
  - Through institutionalized agreements
  - Many tools already exist
  - « 3D-IWRM » is a process…and takes time !
- A new pressure on the resources : climate change effects !
  - Increased necessity of integrated adaptation strategies
  - Rendez-vous at COP22 !

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