

« Liberté – Egalité – Fraternité »

WELCOME IN FRANCE at COP21

WATER AND ADAPTATION TO
THE EFFECTS OF CLIMATE CHANGE

-Action Agenda-

2 December 2015

WE MUST
CAN
WILL



Lima-Paris Action Agenda



UNECE



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 and large wetlands.

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.



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SUR LES CHANGEMENTS CLIMATIQUES
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Paris Pact



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The UN Convention
for the international water courses management
in Europe – HELSINKY 1992

Network of Pilot Basin Organizations
to test measures for adapting to climate change

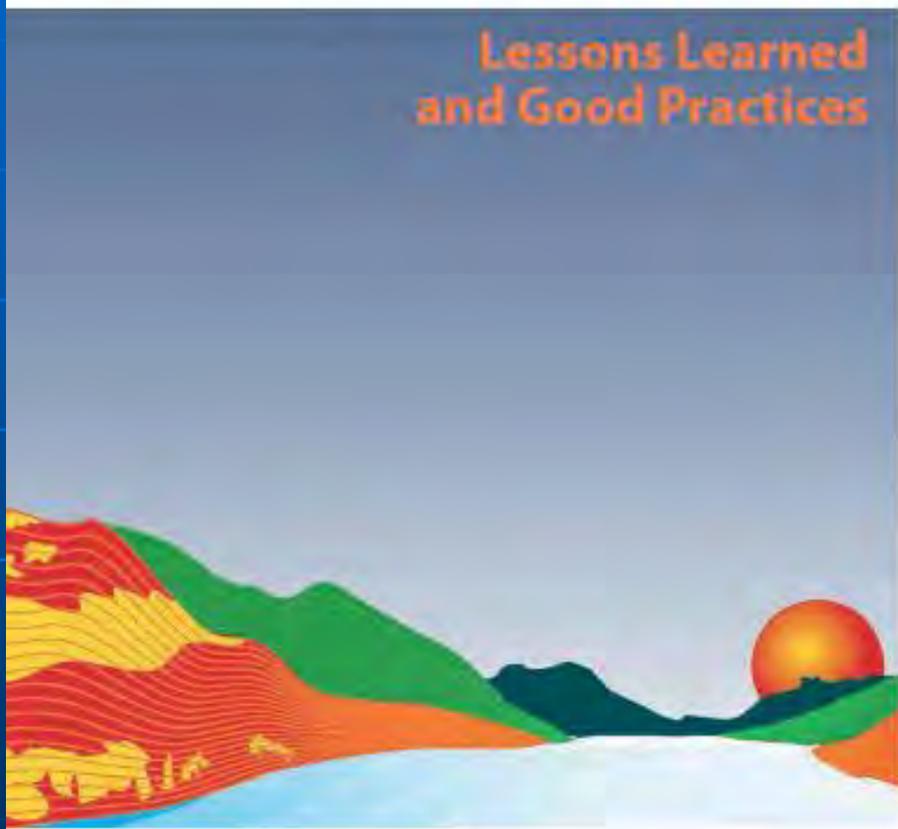




UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE
INTERNATIONAL NETWORK OF BASIN ORGANIZATIONS

Water and Climate Change Adaptation in Transboundary Basins:

Lessons Learned and Good Practices



UNITED NATIONS



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OF THE UNITED NATIONS
FRAMEWORK CONVENTION
ON CLIMATE CHANGE
COP21-CMP11

FRESH WATER IS A TIME BOMB!!!



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Water is one of the first victims of climate change!



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Climate change consequences



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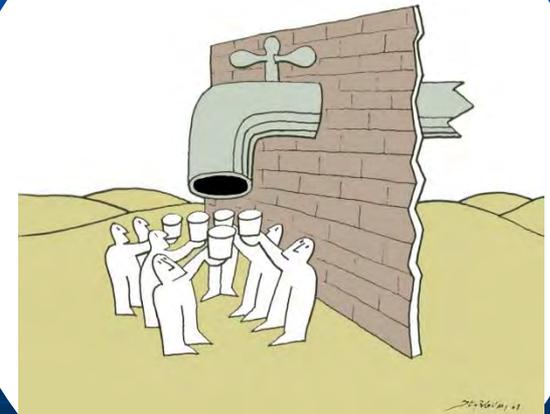


The climate change is likely to increase the frequency of extreme events, such as floods and droughts:

Conflicts!!



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We should act quickly before it is too late!



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**Indeed, basins are the natural territories,
in which water runs,
on the soil or in the sub-soil,
whatever are the national or administrative boundaries
or limits crossed.**



**An overall approach should be organized
on the relevant scale
of basin areas of rivers, lakes and aquifers.**



Paris Pact on water and adaptation to climate change in basins



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RECOMMENDED ACTIONS:

1) Reinforce capacity development and knowledge,

Establish risk warning and water information systems in a context of uncertainty.

2) Adapt basin management planning to climate change,

Better controlling water demand and developing a more efficient and sustainable use of water resources (including groundwater) - Enhance the services of water-related ecosystems

3) Reinforce governance,

Create new basin organizations and reinforce existing ones

Support mechanisms for the involvement of the stakeholders in basin management,

4) Ensure adequate financing.

Establish investment program and sustainable financing mechanisms

We do not have to reinvent the wheel to act quickly!

Did you sign it?



298 SIGNATORIES!!

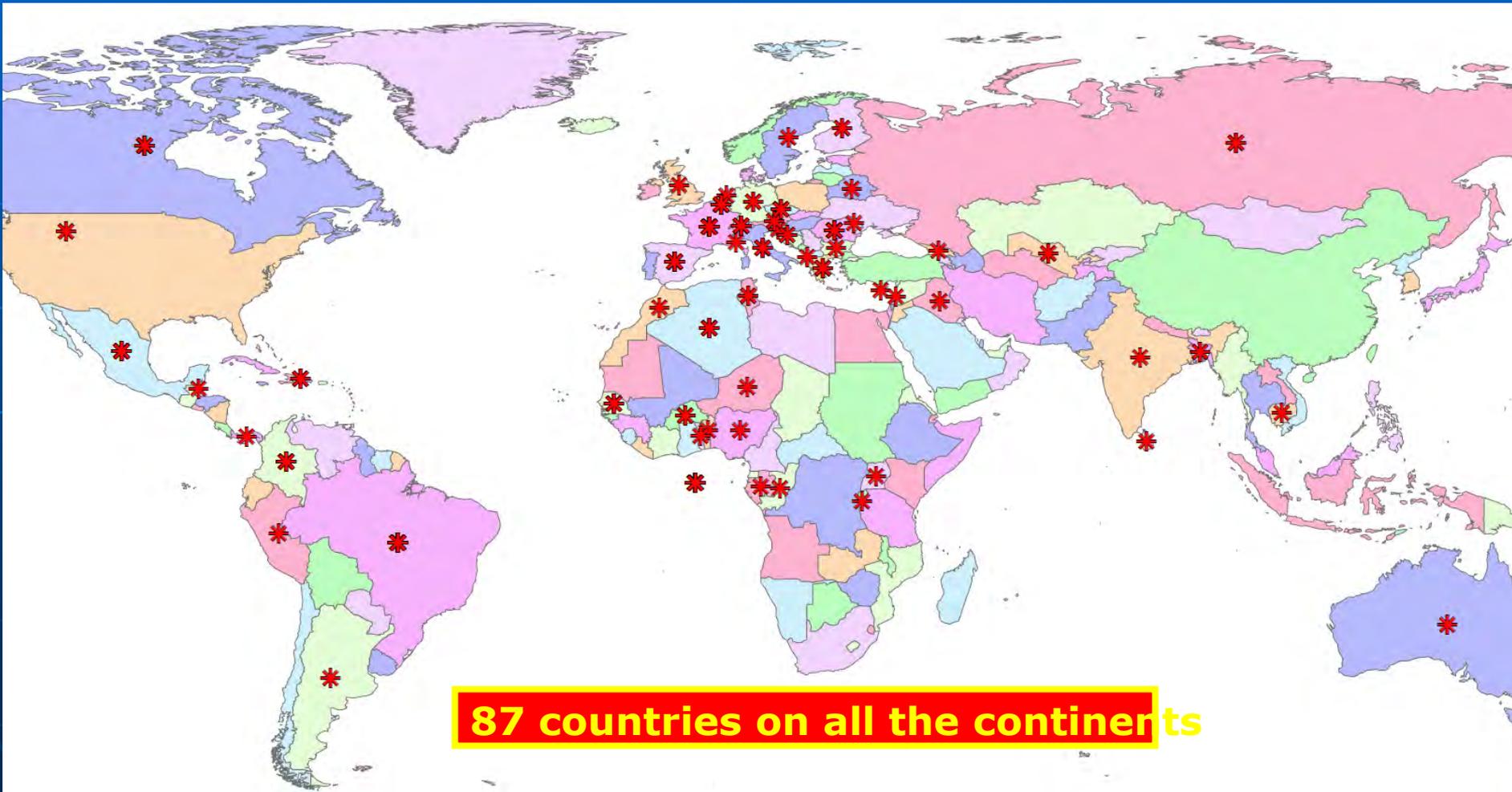




World Map of the «Paris Pact» signatories



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Today, More than **298** organizations have signed the Pact!

- **International Organisations = 34**
- **Transboundary basin Authorities = 13**
 - Parties- Countries = 52
- **INBO' Networks of Basin Organizations = 8**
- **243 others signatories in 54 countries**
(87 countries ic. others parties in transboundary BO)
 - **Ministries and national water agencies = 64**

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

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CHINA – HAI RIVER BASIN Integrated Water resources management And adaptation to climate change.



The 3 - 1000 km long water S/N transfers diverting flows of the Yangtze river to provide water to the water stressed cities of Beijing and Tianjin in the Hai river basin.



Context:

- **M**egacities (Beijing+Tianjin: 34 million people)
- **H**ighly affected by water stress, frequent floods and droughts, and high pollution



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SEINE
GRANDS
LACS



SIAAP
Service public de l'assainissement francilien



中华人民共和国水利部

河北省水利
Hebei Water Resources Department

天津市水务局
TIANJIN WATER AUTHORITY



中华人民共和国水利部
The Ministry of Water Resources of the People's Republic of China

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CHINA – HAI RIVER BASIN Integrated Water resources management And adaptation to climate change.

- **Objective:** Testing in pilot basins of Zhou and Luan rivers, tributaries of the Hai
 - Developing River Basin Management Plans (RBMP)
 - Implementing Program of Measures (PoM)
 - Revision of rules to operate reservoir-dams
 - Implementation of a minimum environmental flow policy,
 - Fight against eutrophication of the reservoirs,
 - Surface water and groundwater monitoring
- **Beneficiaries:** The population of the Luan and Zhou river basins, including Tianjin (China's 4th biggest city, with 14 million inhabitants),
- **Timeframe:** 1st phase: 2011-2012 ; 2nd phase: 2012-2015 ; 3rd phase: 2016-2018.
- **Funding/commitments:** 3rd phase: 805 000€.

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MEXICO – MEXICO DF AND VALLEY
Integrated water resources management
and adaptation to climate change.

District Federal and 60 neighbor Municipalities



Context:

- **M**egacity (Mexico: 23 million people – 2nd W largest city),
- **A**ltitude 2250m,
- **S**carcity: 160 m³/habitant/an,
- Low level of aquifers, driving of soils,
- Eutrophisation of the réservoirs,
- Urban flooding
- Low level of waste water treatment



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MEXICO – MEXICO VALLEY Integrated water resources management and adaptation to climate change.

■ Objective:

- Creation of a “Greater Mexico” Metropolitan Organization

for drinking water, sanitation and urban drainage,
Integration of the water utilities in this new area.

- Strengthening the Mexico Valley’s Basin Council:

- o Development of water information system,
- o study of River Basin Management Plans (RBMP),
- o Testing of economic tools (polluter-pays, cost/benefits & cost/efficiency),
- o Citizens participation and information,
- o control water demand,
- o Training sessions,

■ Beneficiaries: The water users of Mexico Valley

■ Timeframe: 2016-2020.

■ Funding/commitments: 1 080 000 €.





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COOPERATION AND ADAPTATION IN THE SENEGAL RIVER BASIN (Guinea, Mali, Mauritania, Senegal)

OMVS, A ROLE MODEL FOR ADAPTATION?
The secret recipe of joint investments and
shared benefits



State	Share of invest.	Share from benefits
Mali	35,3%	52% hydropower. Navigation.
Mauritania	22,6%	15% hydropower. 33% irrigable land.
Senegal	42,1%	33% hydropower. 64% irrigable land.





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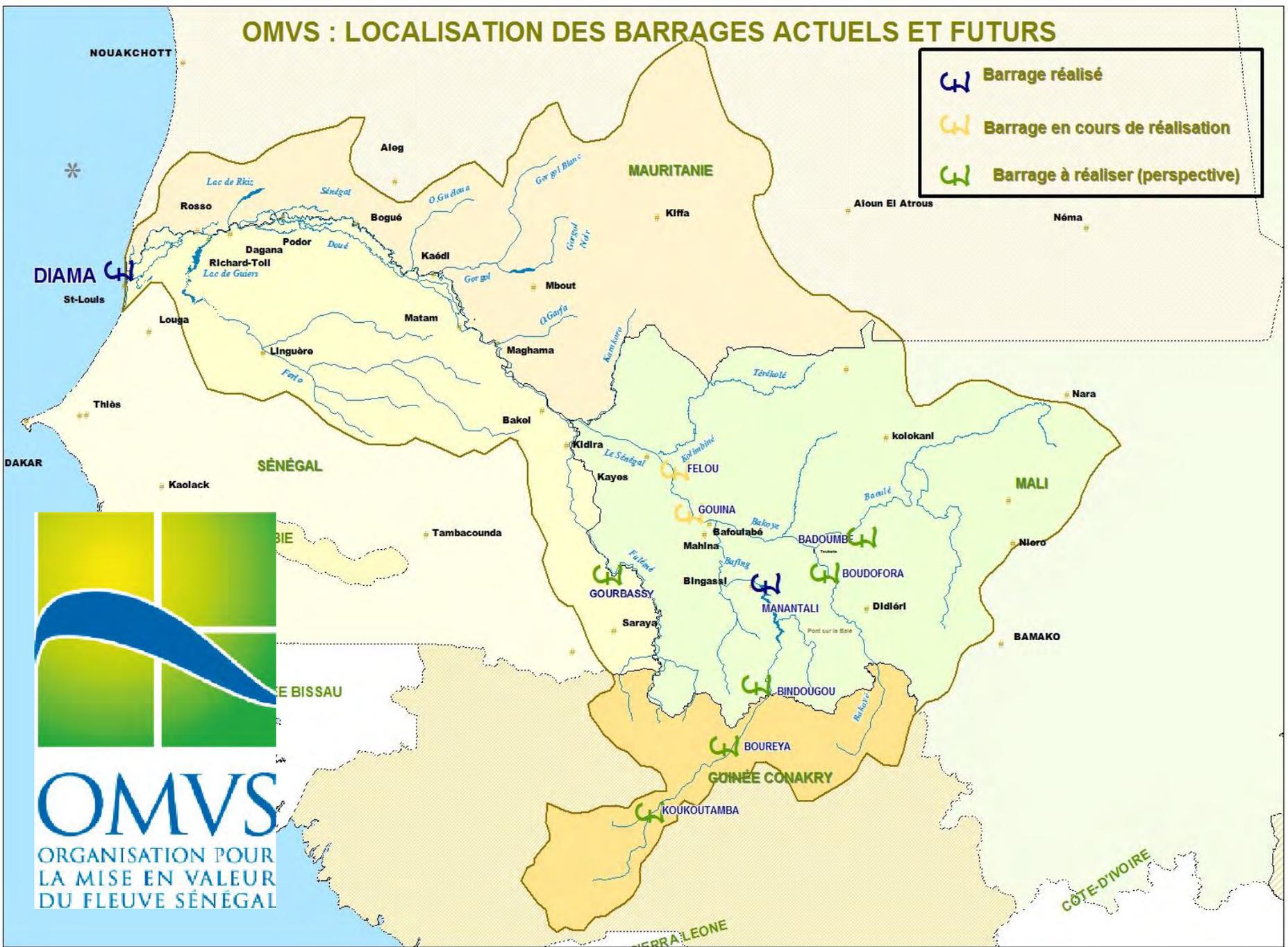
OMVS: COOPERATION AND ADAPTATION IN THE SENEGAL RIVER BASIN AND BEYOND (Guinea, Mali, Mauritania, Senegal)

- **Context:** - Mostly arid region highly vulnerable to climate change,
 - Limited investment capacity but significant hydropower and navigation potential.
- **Objective:** **Developing adaptation opportunities through joint investments and benefits sharing**
 - Investments in jointly owned infrastructures,
 - Benefits sharing depending on each States needs (e.g Mali= navigation; Senegal: water for agriculture),
 - Production of a *Climate change action plan for African river* by OMVS as secretary of the ANBO (diagnosis of the African basin organizations organizations needs in terms of adaptation, recommendations of priority actions, 5 year detailed program and budget).
- **Beneficiaries:** Riparian countries (OMVS), African river basin organizations (ANBO).
- **Timeframe:** 2015-2019
- **Funding/commitments:** 11 866 600 €



OMVS : LOCALISATION DES BARRAGES ACTUELS ET FUTURS

	Barrage réalisé
	Barrage en cours de réalisation
	Barrage à réaliser (perspective)



OMVS
 ORGANISATION POUR
 LA MISE EN VALEUR
 DU FLEUVE SÉNÉGAL



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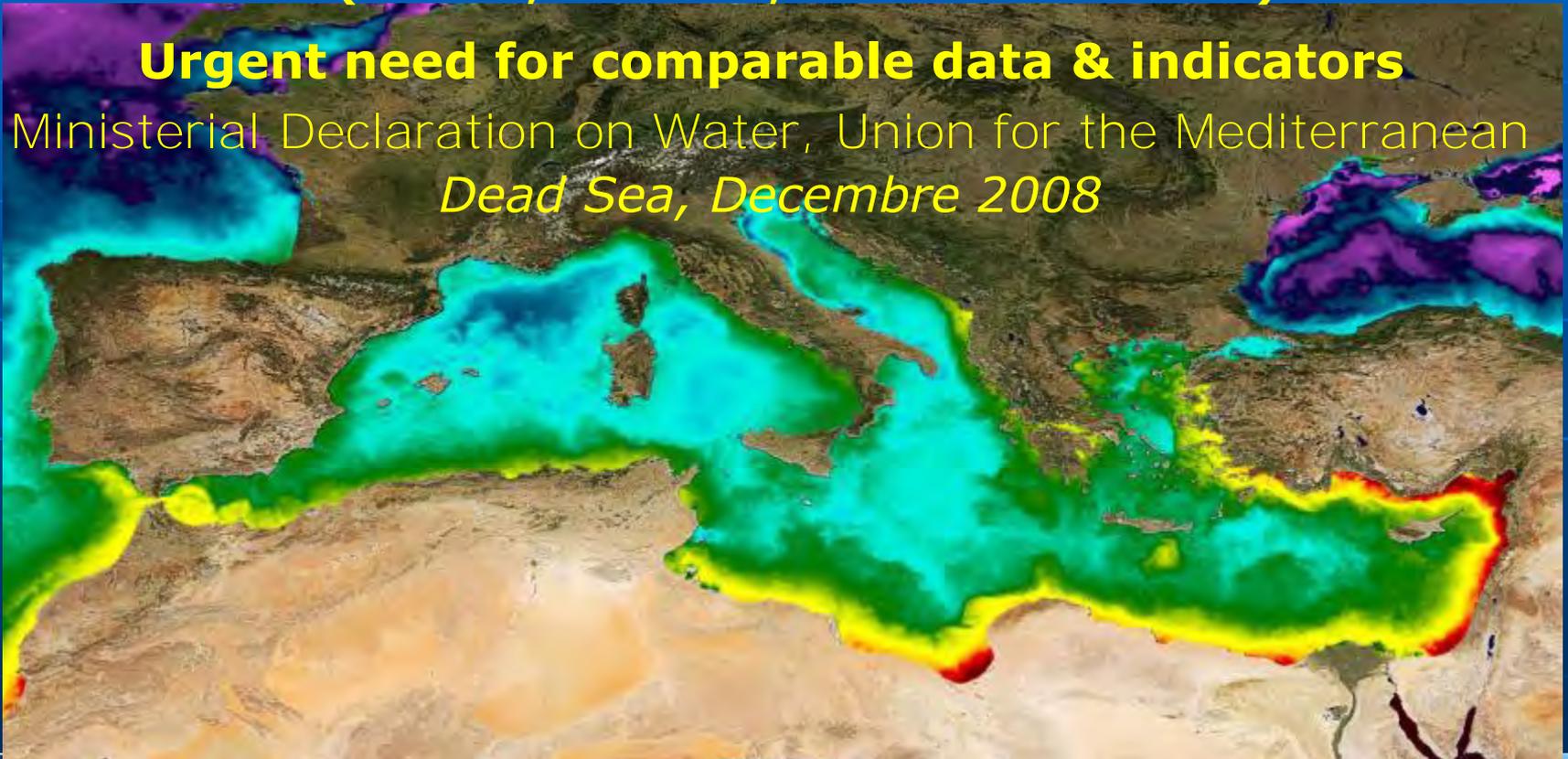
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THE MEDITERRANEAN WATER KNOWLEDGE PLATFORM for adaptation to climate change (Jordan, Lebanon, Morocco & Tunisia)

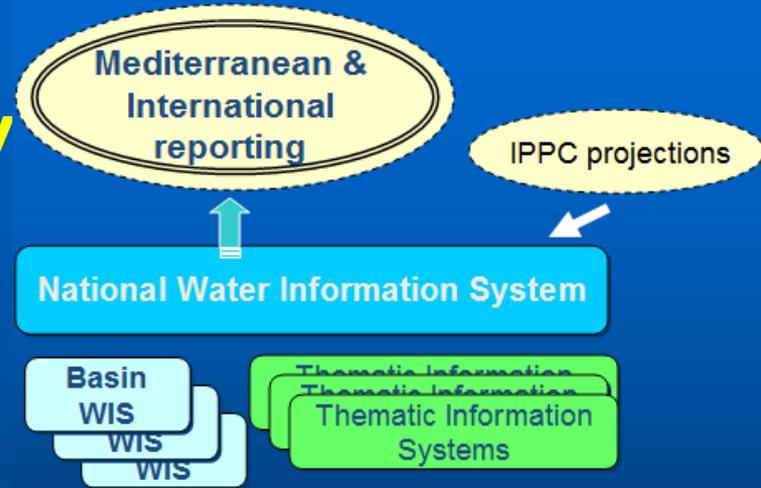
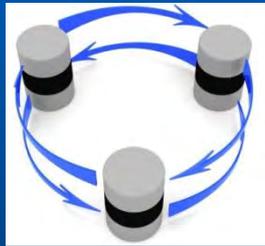
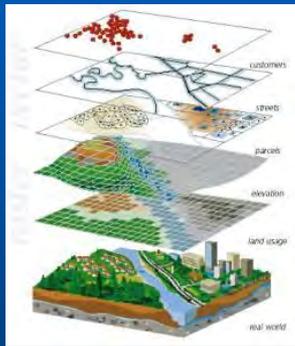
Urgent need for comparable data & indicators

Ministerial Declaration on Water, Union for the Mediterranean
Dead Sea, Decembre 2008

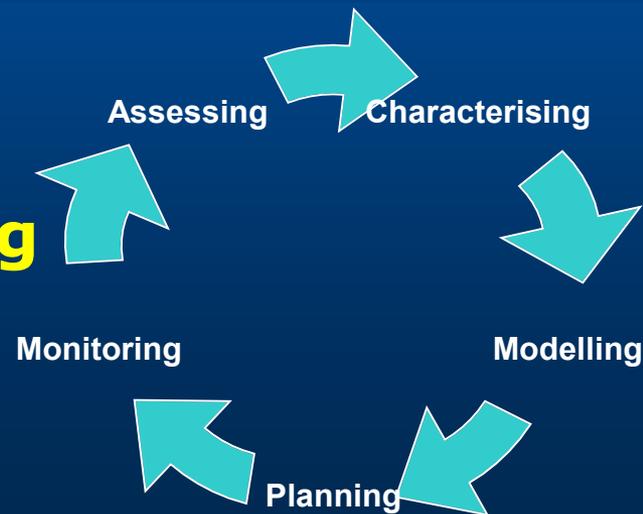


Responding to Climate and Development Challenges

- **Organising data sharing and management in each country**



- **Building capacities for monitoring, evaluation, planning**



- **Exchange of experiences**



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THE MEDITERRANEAN WATER KNOWLEDGE PLATFORM Knowledge for adaptation

(Jordan, Lebanon, Monaco, Morocco, Spain & Tunisia)

- **Context:** - A region of chronic water scarcity (less than 1000 m³/inhabitant/year),
- Highly vulnerable to climate change (rainfall patterns, floods and droughts).
- **Objective:** **Developing knowledge to increase basin capacities for adaptation**
 - Strengthening **National Water Information Systems** (4 pilot countries; 2nd phase open-ended),
 - Producing a “white paper” (6 pilot countries ; 2nd phase open-ended):
 - o Diagnosis of the water resources,
 - o Diagnosis of the uses,
 - o Recommendations on policies and actions needed for adaptation.
- **Beneficiaries:** 100 million people living in the beneficiary countries.
- **Timeframe:** phase 1: 2014- 2017; phase 2: 2018-2020
- **Funding/commitments:** 9 525 000€



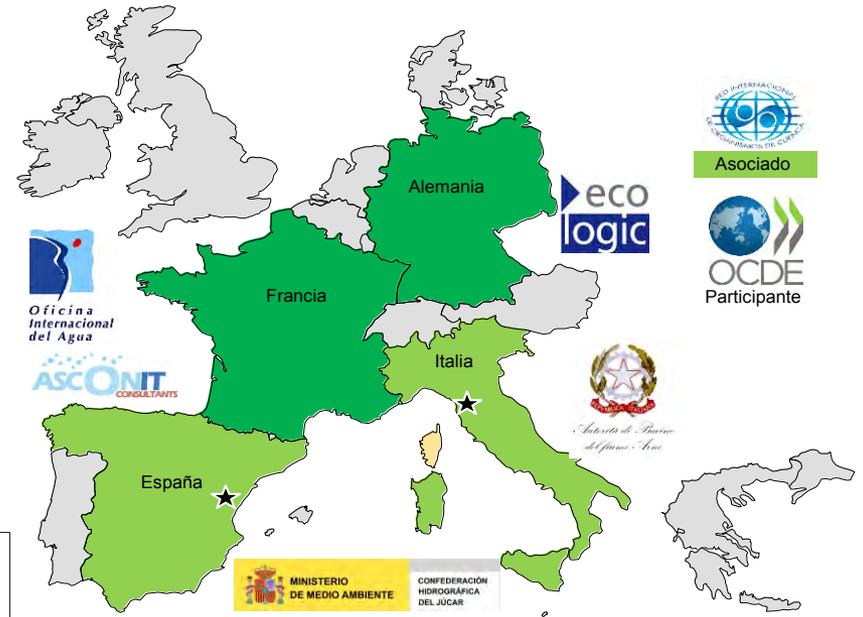


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ECOCUENCAS PROJECT



Demonstrate in a practical way
the relevance of redistributive mechanisms
for integrated water resources management and better resilience;



Participants of the project

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“ECOCUENCAS –LATIN AMERICA Financial mechanisms for basin management in the context of climate change (Peru, Ecuador, Brazil and Colombia)

- **Context:** - 3 basins (including 1 transboundary) in critical situations
- **Objective:** **Improving basin management and financial redistribution**
 - Diagnosis of the water resources and uses,
 - Recommendations of best practices for adaptation,
 - Design and implementation of financial mechanisms,
 - Networking, dissemination, training and capacity building.
- **Beneficiaries:** Population of the 3 basins (10,2 million people).
- **Timeframe:** 2014-2018.
- **Funding/commitments:** 2,5 million €.

Supported by European Union “Water Climate-LAC programme”





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NIGER RIVER BASIN The Climate Resilience Investment Plan

Climate change impacts are affecting the livelihood of the population living in the Niger river basin.



WORLD BANK GROUP



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NIGER RIVER BASIN The Climate Resilience Investment Plan

- **Context:** - **A** lifeline providing drinking water, irrigation, energy, and transport,
- **E**xtremely vulnerable to climate variability.
- **Objective:** **Building resilience of the basin populations and ecosystems**
 - Developing the knowledge base (monitoring networks and water information systems),
 - Strengthening institutional capacities:
 - o Diagnosis of the resources and uses,
 - o Developing basin management planning adapted to climate change,
 - o Testing economic tools (polluter-pays, cost/benefits & cost/efficiency)
- **Beneficiaries:** 100 million people living in the Niger river basin.
- **Timeframe:** 2015-2025
- **Funding/commitments:** 3,11 billion dollars





Background to the network

- Climate change impacts are mostly transmitted through water, many basins are already affected
- RBOs in **INBO's** network are starting to address cc
- UNECE Water Convention worked on climate change adaptation in transboundary basins since 2006
 - Guidance on Water and Adaptation to Climate Change adopted in 2009
 - Programme of pilot projects since 2010
 - As an outcome of the last World Water Forum INBO and UNECE created a global network of basins





Promoting cooperation on the ground and exchange of experience



- Global network of basins working on water and climate in cooperation with INBO and others:
 - Basins with different priorities (water scarcity, floods)
 - Currently 14 basins
- Platform for exchanging experiences:
 - Regular workshops and meetings of the Task Force and basin meetings
 - Internet platform
- Cooperation with UNFCCC, EU and others





Objectives of the global network of basins

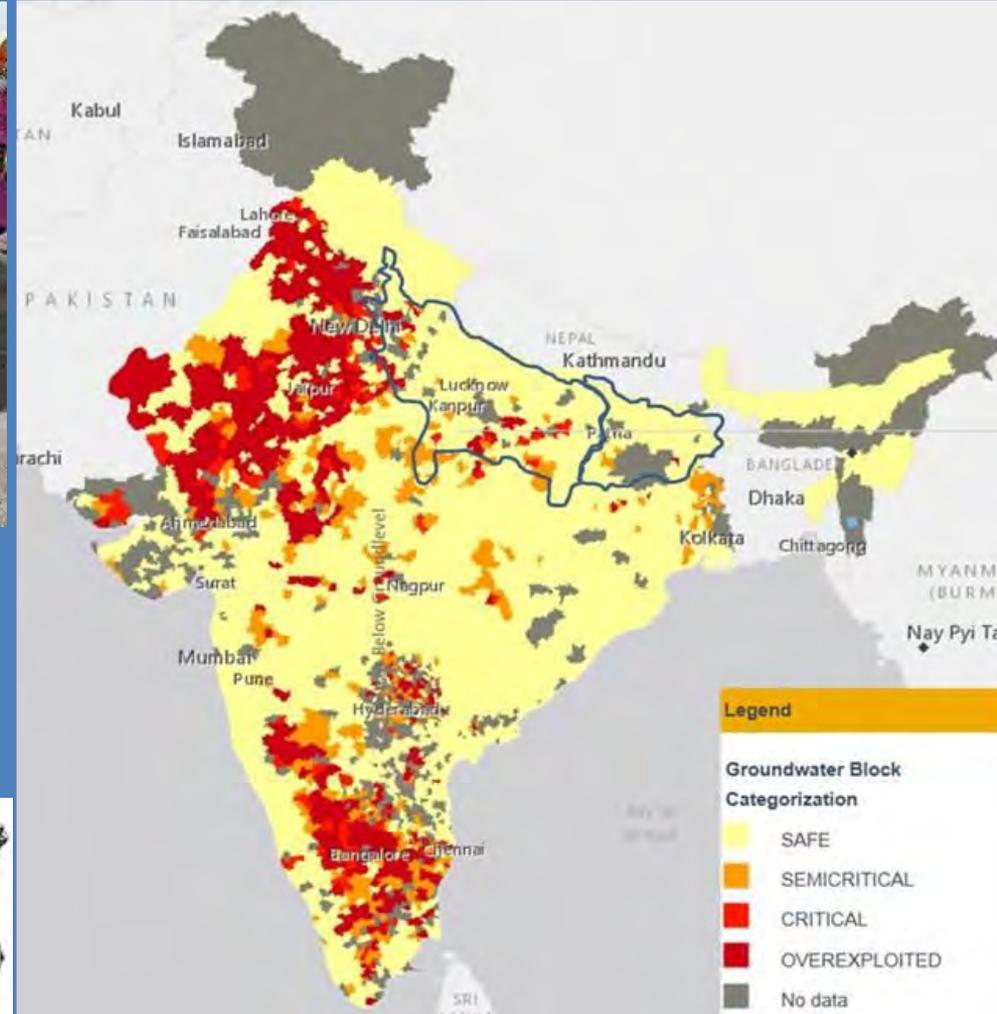
- Promote cooperation on adaptation in (transboundary) basins
- Compare different methodologies and approaches
- Promote a shared vision between the participating basins
- Assist countries in implementing the Water Convention and EU WFD in a changing climate
- Support countries (especially those in transition) in developing adaptation strategies and measures
- Create positive examples showing benefits of and mechanisms for transboundary cooperation in adaptation
- Support dialogue and cooperation on the design of an adaptation strategy in the transboundary context



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INDIA

Groundwater Management improvement Program for Climate Change Resilience



Over exploitation is one of the main pressure on groundwater. As an expected impact of climate change, a decrease in groundwater recharge will get worse.





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INDIA

Groundwater Management improvement Program for Climate Change Resilience

- **Context:** - In India, 65% of irrigated area depends on groundwater,
 - Overexploitation is the rule (not the exception),
 - Impacts of climate change: decrease in groundwater recharge.
- **Objective:** **Sustainable and resilient groundwater management**
 - Diagnosis of the resources and uses,
 - Capacity development (recharge, demand management),
 - Technical assistance,
 - Institutional reforms.
- **Beneficiaries:** 300 million people in four States
- **Timeframe:** 2017-2023.
- **Funding/commitments:** US\$ 1 billion.





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CONGO RIVER BASIN Strengthening monitoring to improve basin adaptation

- **Context:** - Congo river basin= world's second biggest (in both surface area and flow),
- Limited existing monitoring capacities, limited knowledge for adaptation.
- **Objective:** **Developing monitoring to increase basin capacities for adaptation**
 - Strengthening classic monitoring networks,
 - Developing the use spatial technologies for hydrometeorological monitoring,
 - Improving IWRM planning.
- **Beneficiaries:** 100 million people living in central Africa.
- **Timeframe:** 2016-2017
- **Funding/commitments:** 500 000€



Commission Internationale
du Bassin Congo-Oubangui-Sangha



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cnès

Défis de l'information sur la dynamique climatique



- Diminution sensible des stations d'observation et collecte des données hydrométéorologiques au sol,
- Difficulté de validation des scénarios des projections globales de changement climatique.



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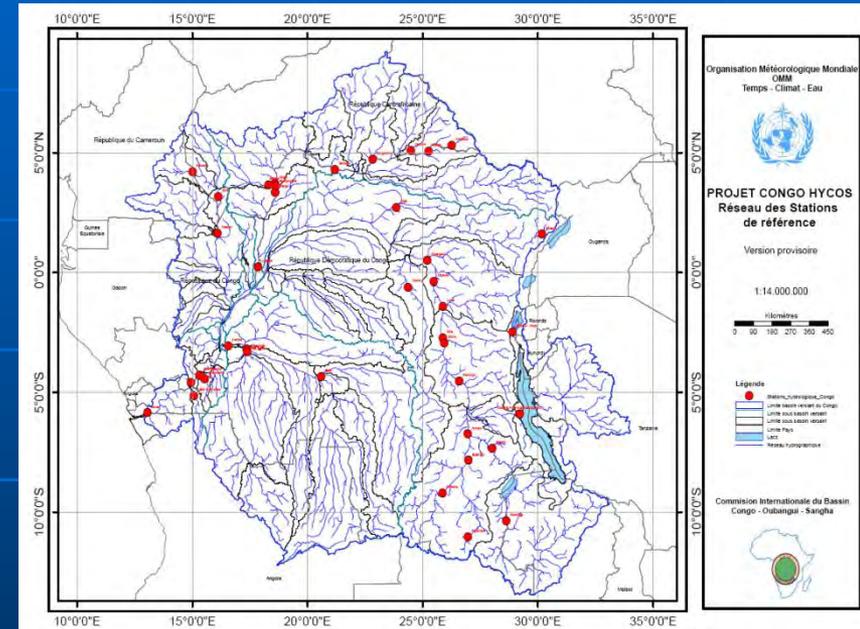


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CONGO RIVER BASIN Strengthening monitoring to improve basin adaptation

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Network of hydrological monitoring stations before (left) and after (right) the project



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Extension Irrigation Program

Objectives and Scope

Objective

- Valuing about 1.5 billion m3 of water and generate over US \$700 million / year of added value;
- Improve the efficiency of irrigation water distribution.
- Mitigate the rural exodus to the cities.

Scope

Area to be irrigated: **160 000 ha** (2008-2022)

- Large scale irrigation Projects : 90 000 ha
- Small and medium scale irrigation Projects : 70 000 ha

Cost: US \$ 2,5 billions

Expected impacts

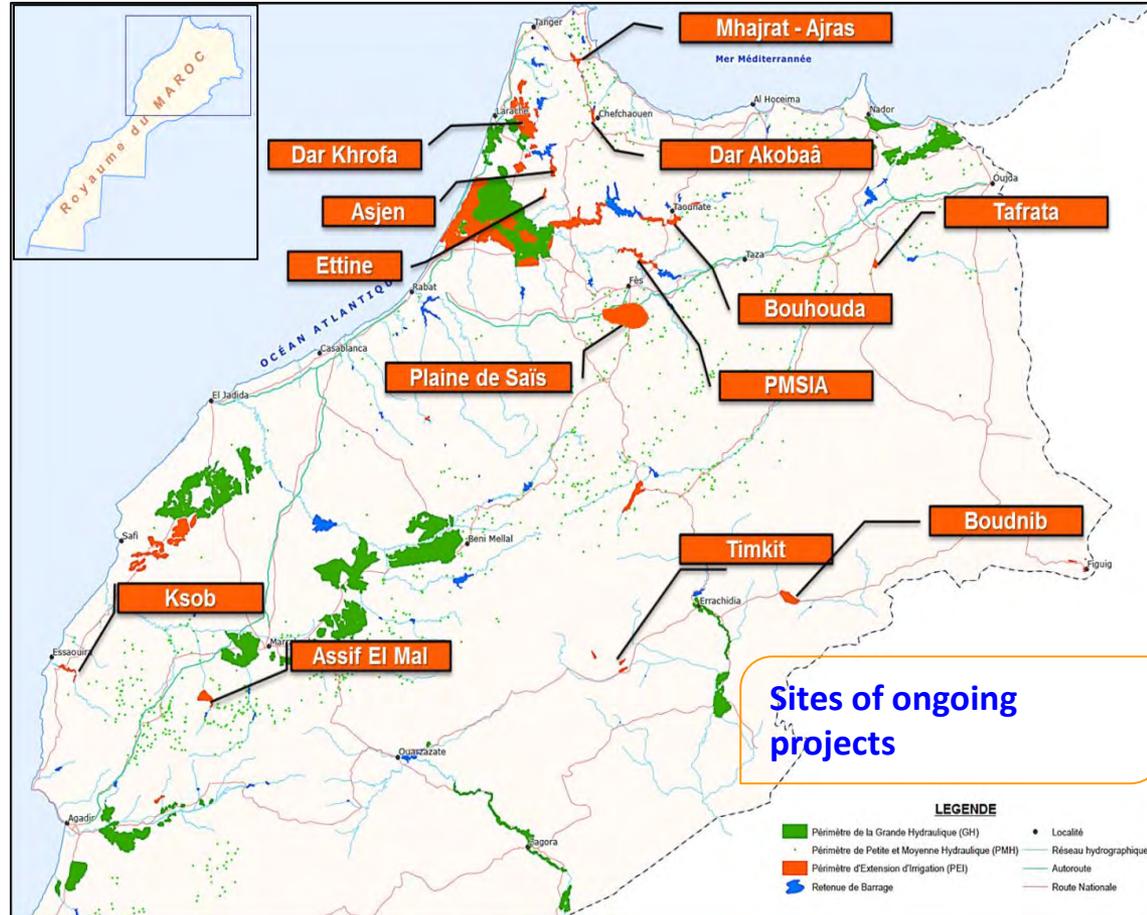
- Contribution to adaptation to climate change through mitigation of water shortages.
- Improving farmers' income (2 000-3 000 \$ US / ha / year).
- Job creation: more than 60.000 permanent jobs.
- Contribute to the sustainable management of groundwater.

Evolution of irrigated areas in ha (2014-2022)



Phase 1: 2010-2015 : Area under construction 45 000 ha (28%)

Phase 2: 2016-2022 : New commitments : US \$ 1,75 billions 115 000 ha (72%)



Sites of ongoing projects

LEGENDE

- Périmètre de la Grande Hydraulique (GH)
- Périmètre de Petite et Moyenne Hydraulique (PMH)
- Périmètre d'Extension d'Irrigation (PEI)
- Retenue de Barrage
- Localité
- Réseau hydrographique
- Autoroute
- Route Nationale



National Program of Irrigation Water Saving

Objectives and Scope

Objective

Mitigating the water resources scarcity and improve the irrigation water efficiency.

Scope

Conversion to drip irrigation over **550.000 hectares** (2008– 2020) :
▪ 220 000 Ha through projects of collective conversion (Public irrigation)
▪ 330 000 Ha through projects of individual conversion (Private irrigation)

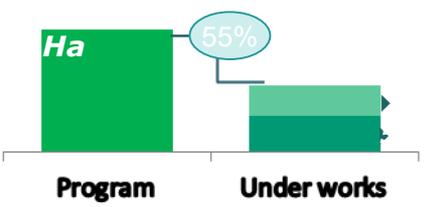
Cost: US \$ 4 billions

Expected Impacts

- Contribute to adaptation to climate change through mitigation of water shortages
- Saving up to 20 to 50 % of water consumption
- Increasing crop yields by up to 100%
- Doubling the added value per m3 of water.
- Contribute to the sustainable management of groundwater through better control of water supply to the crops

Achievements and new commitments

Collective modernisation :



- ▶ **120.000 Ha** Under works (55 % of the program)
- ▶ **100.000 Ha** New commitments (45 % of the program)

Integrated approach: Control of water from source to crop

Modernization of conveyance system



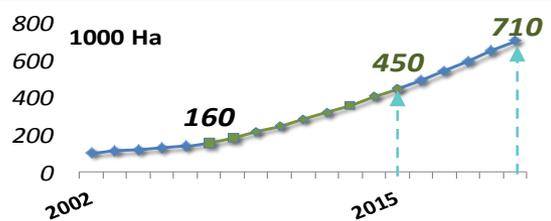
Modernization of water distribution system in pressurized networks



Equipment of plots with drip irrigation system and support for farmers to improve water use efficiency



Drip Irrigation Equipment



- ▶ Strong boost to Drip irrigation conversion: **30 %** of the irrigated area is being equipped
- ▶ **450.000 Ha** achieved (63% of the objective)

Support to help mature project benefits

- ▶ **Support to the entire value chain:**
 - ▶ **Support to Farmers** to adopt improved irrigation techniques and improved water productivity;
 - ▶ **Support to service providers** to improve management of the irrigation network
 - ▶ **Improved access to market & promote agribusiness**
 - ▶ **Institutional reform** towards utility-like management of public irrigation water service providers

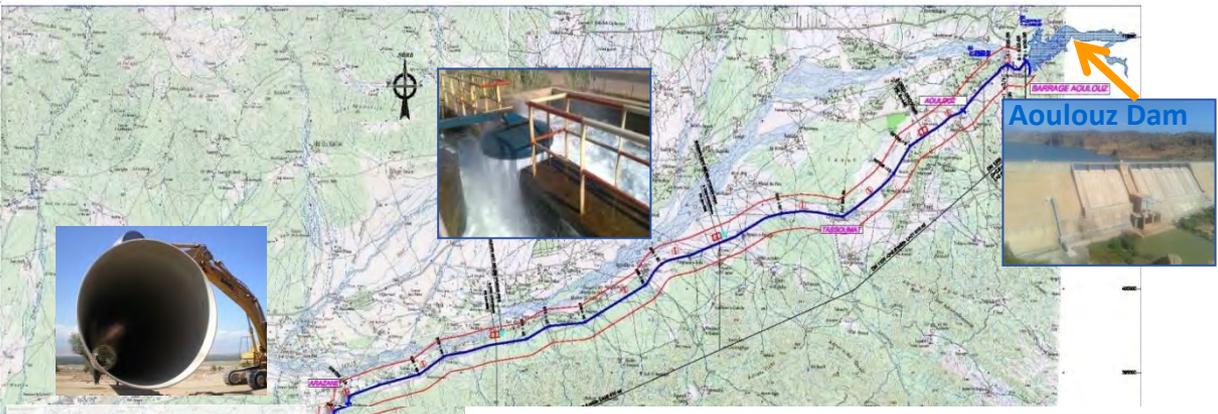
PPP in irrigation : From El Guerdane, worldwide pioneer, to large PPP

program Objective

- Substitute water resource for irrigation from groundwater to surface water (Aoulouz Dam)
- Pilot concession-type PPP in irrigation
- Preserve and refocus the Guerdane perimeter

El Guerdane irrigation Perimeter today

- **10.000** hectares of citrus
- **700** farmers
- The decrease of available resources in the Souss aquifer constrained farmers to give up citrus orchards and the uprooting of nearly 3.000 ha



Conveyance 90 km



Project scope

- dams complex of Aoulouz - Mohamed Mokhtar Soussi.
- **90 km** of conveyance pipelines;
- **300 km** of distribution pipelines;
- **600** irrigation hydrants.
- Irrigation system at farm level: drip irrigation.
- Infrastructure Cost: **US \$ 100 Million**
- Governance: Concession PPP for co-financing, design, construction and operating infrastructure

Project impacts to date

- Saving of **76** million m3 from Souss groundwater.
- Reduced pumping costs by 50%.
- Increased production of citrus by 22%.
- Maintenance of existing 11.000 jobs.

Large PPP program: Azzemour (3 200 ha) under implementation; Under preparation: Chtouka (15 000 ha), Saiss (30 000 ha), Gharb (42 800 ha), etc.

