« Liberté – Egalité – Fraternité »

WELCOME IN FRANCE
at COP21

WATER AND ADAPTATION TO THE EFFECTS OF CLIMATE CHANGE

-Action Agenda-

2 December 2015

PARIS2015
COP21·CMP11

WE MUST CAN WILL

Lima-Paris Action Agenda

“Paris Pact” flagship projects

International Network Of Basin Organizations

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

"Paris Pact" flagship projects

International Network Of Basin Organizations

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€.

“Paris Pact” flagship projects

International Network Of Basin Organizations

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 m^3/habitant/an,
- Low level of aquifers, driving of soils,
- Eutrophisation of the réservoirs,
- Urban flooding
- Low level of waste water treatment

"Paris Pact" flagship projects

International Network Of Basin Organizations

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 €.

CONAGUA
comisión nacional del agua

CONSEJO DE CUENCA
DEL VALLE DE MÉXICO
CCVM

“Paris Pact” flagship projects

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

International Network Of Basin Organizations

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.

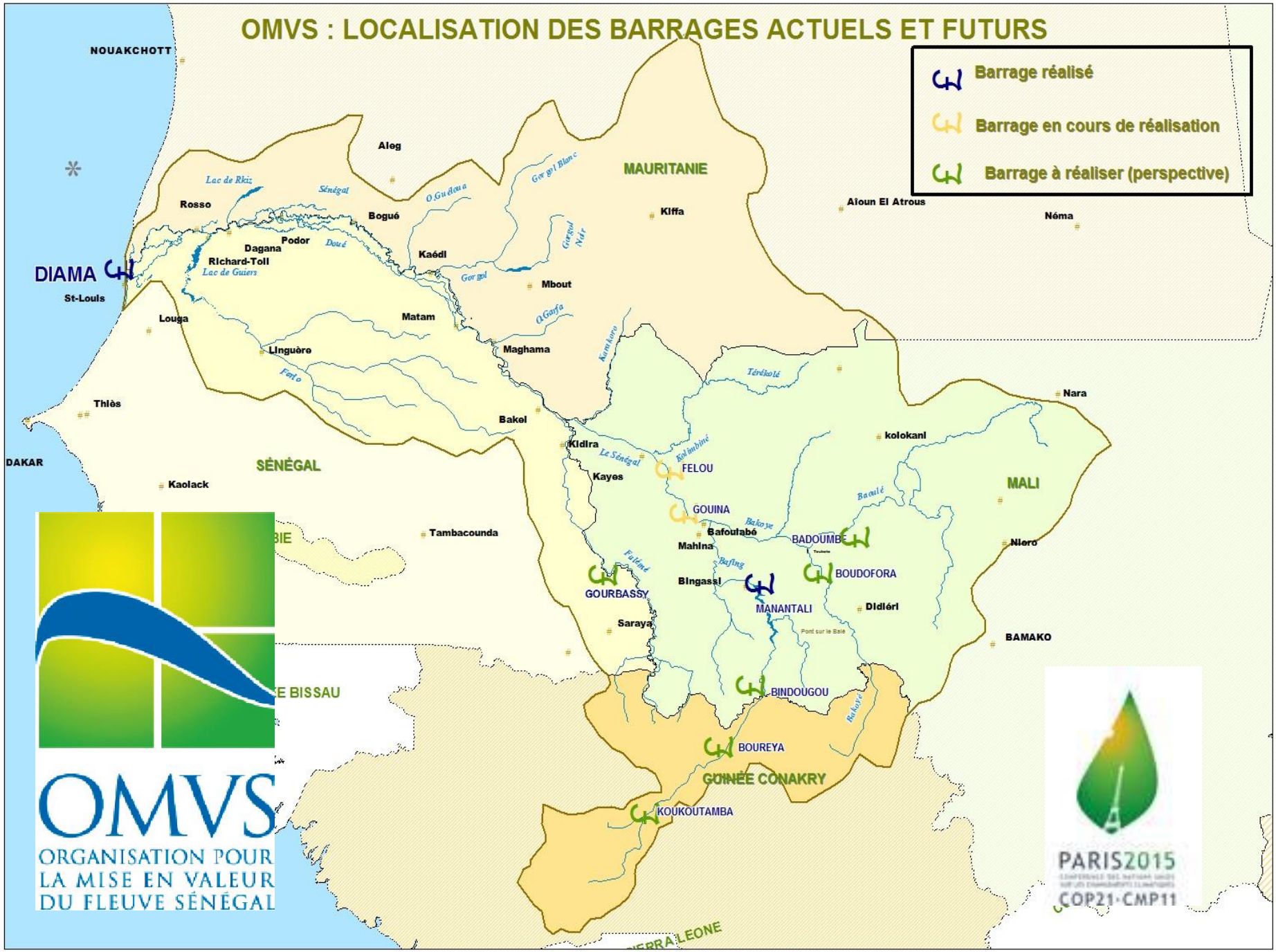
"Paris Pact" flagship projects

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

International Network Of Basin Organizations

- **Context:** - **M**ostly arid region highly vulnerable to climate change,
  - **L**imited 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 €



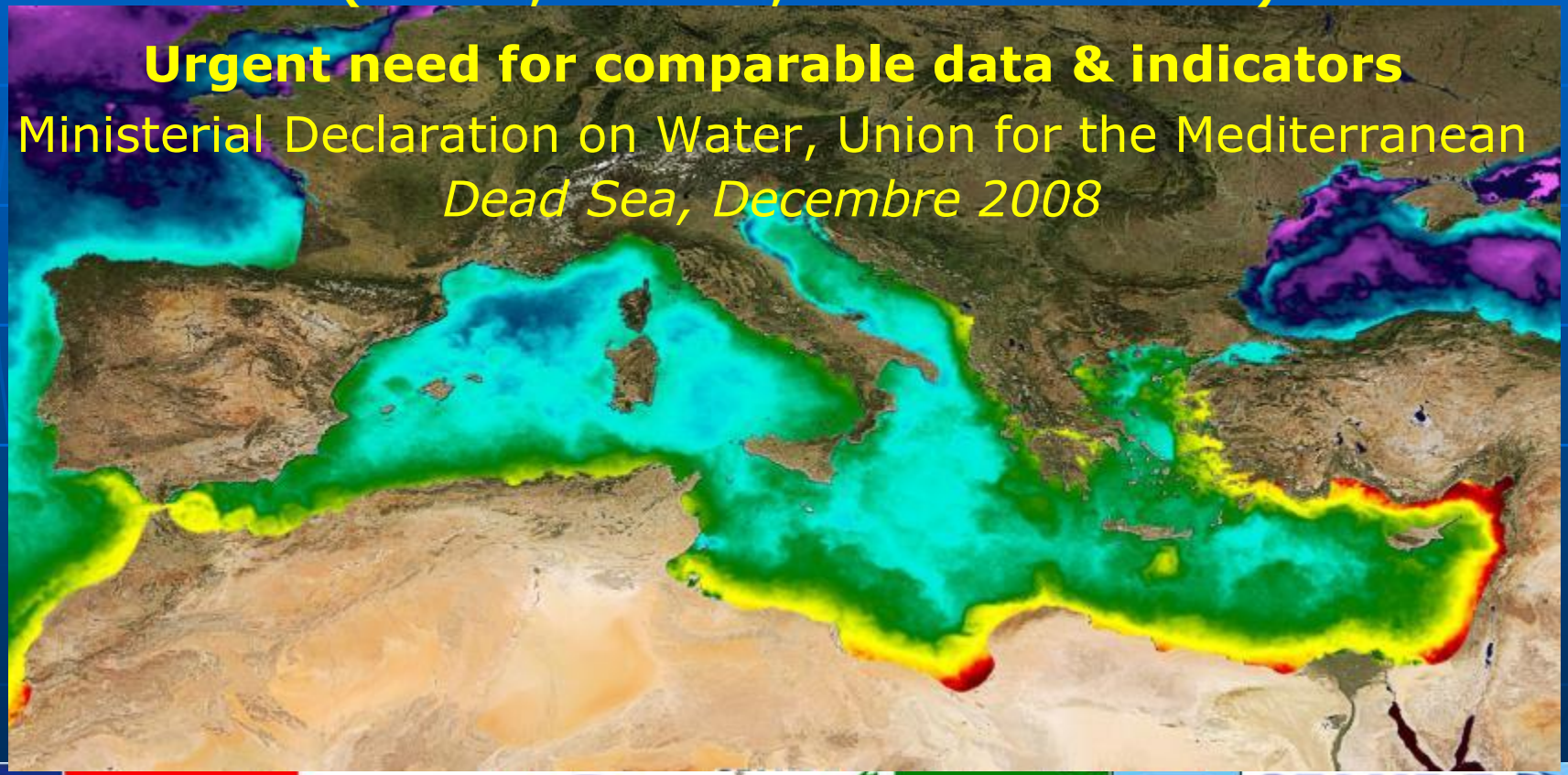


OMVS : LOCALISATION DES BARRAGES ACTUELS ET FUTURS
Barrage réalisé
Barrage en cours de réalisation
Barrage à réaliser (perspective)
NOUAKCHOTT
MAURITANIE
Aleg
Rosso
Bogué
Kaédi
Kiffa
Aioun El Atrous
Néma
DIAMA
St-Louis
Dagana
Podor
Richard-Toll
Lac de Guiers
Lac de Rkiz
Sénégal
Doué
Gorgol
Mbout
Matam
Louga
Linguère
Maghama
Thiès
Bakel
DAKAR
SÉNÉGAL
Kaolack
Kidira
Kayes
FELOU
GOUINA
Bafoulabé
Mahina
Tambacounda
Nara
kolokani
MALI
BADOUMBE
Nioro
BOUDOFORA
GOURBASSY
Bingassi
MANANTALI
Didiéri
Saraya
BAMAKO
BINDOUGOU
BOUREYA
GUINÉE CONAKRY
KOUKOUTAMBA
OMVS
ORGANISATION POUR LA MISE EN VALEUR DU FLEUVE SÉNÉGAL
PARIS2015
COP21·CMP11

“Paris Pact” flagship projects

International Network Of Basin Organizations

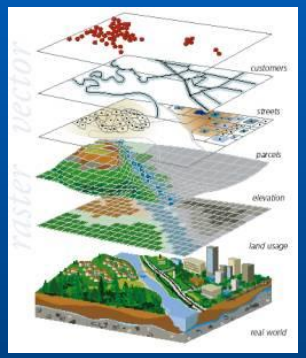
THE MEDITERRANEAN WATER KNOWLEDGE PLATFORM for adaptation to climate change

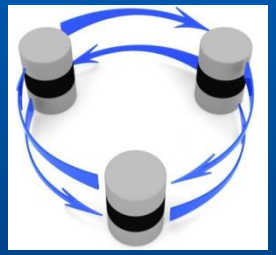
(Jordan, Lebanon, Morocco & Tunisia)

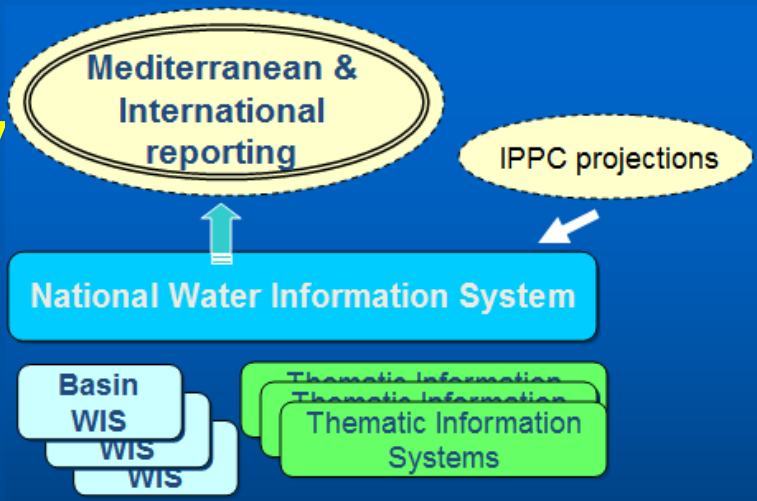


Responding to Climate and Development Challenges

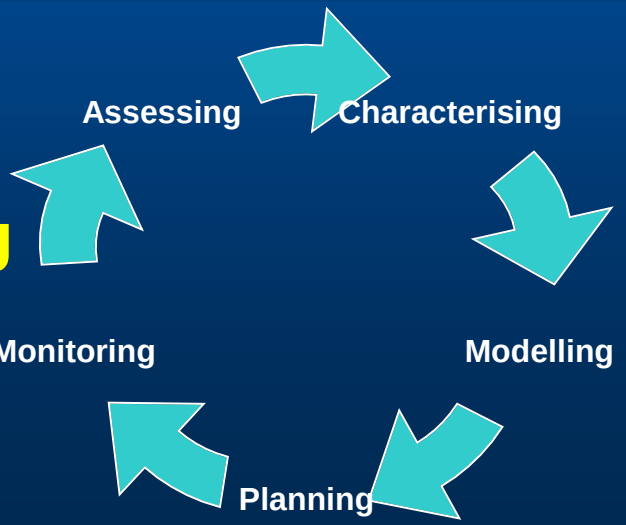
- **Organising data sharing and management in each country**







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



- **Exchange of experiences**

"Paris Pact" flagship projects

International Network Of Basin Organizations

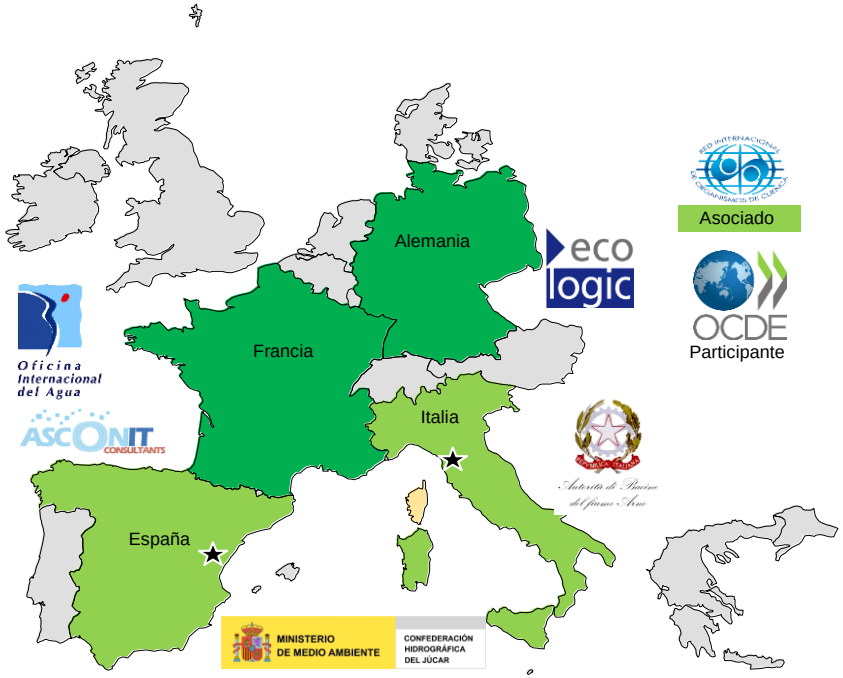
THE MEDITERRANEAN WATER KNOWLEDGE PLATFORM
Knowledge for adaptation
(Jordan, Lebanon, Monaco, Morocco, Spain & Tunisia)

- **Context:** - **A** region of chronic water scarcity (less than 1000 m^3/ 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€

ECOCUENCAS PROJECT

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



Participants of the project

"Paris Pact" flagship projects

International Network Of Basin Organizations

"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"

Manejo de Cuencas y Zonas Costeras en el Contexto del Cambio Climático en América Latina y el Caribe

WATERCLIMA LAC

“Paris Pact” flagship projects

NIGER RIVER BASIN
The Climate Resilience Investment Plan

International Network Of Basin Organizations

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

WORLD BANK GROUP

“Paris Pact” flagship projects

NIGER RIVER BASIN
The Climate Resilience Investment Plan

International Network Of Basin Organizations

- **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

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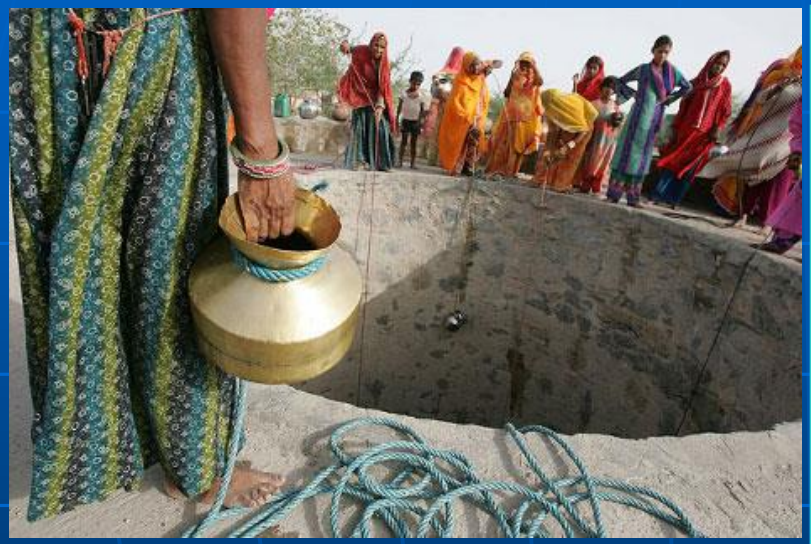
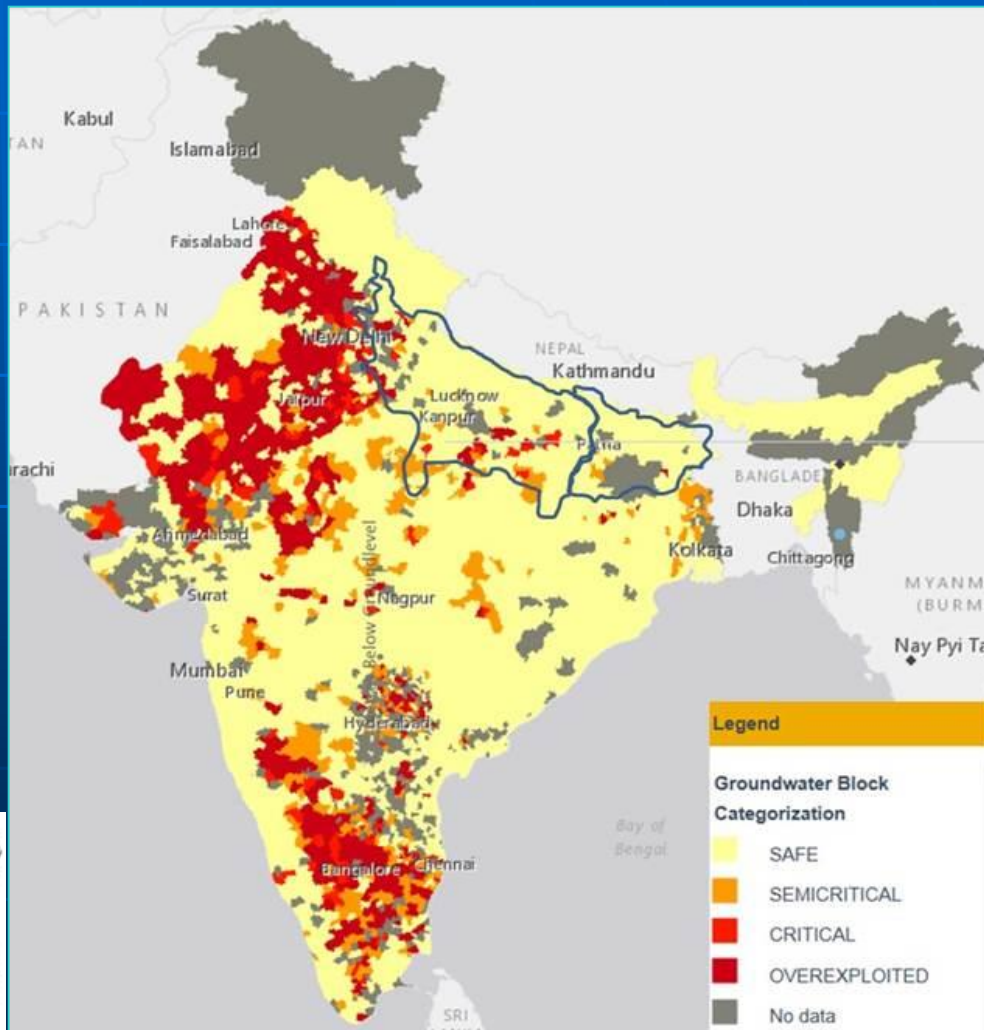
INDIA

Groundwater Management improvement Program for Climate Change Resilience

International Network Of Basin Organizations





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.

WORLD BANK GROUP

सत्यमेव जयते

“Paris Pact” flagship projects

International Network Of Basin Organizations

INDIA

Groundwater Management improvement Program for Climate Change Resilience

- **Context:** - **I**n 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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International Network Of Basin Organizations

CONGO RIVER BASIN
Strengthening monitoring to improve basin adaptation

- **Context:** - **C**ongo river basin= world’s second biggest (in both surface area and flow),
  - **L**imited 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

AGENCE FRANÇAISE DE DÉVELOPPEMENT

International Office for Water

cnes

Défis de l'information sur la dynamique climatique

International Network Of Basin Organizations

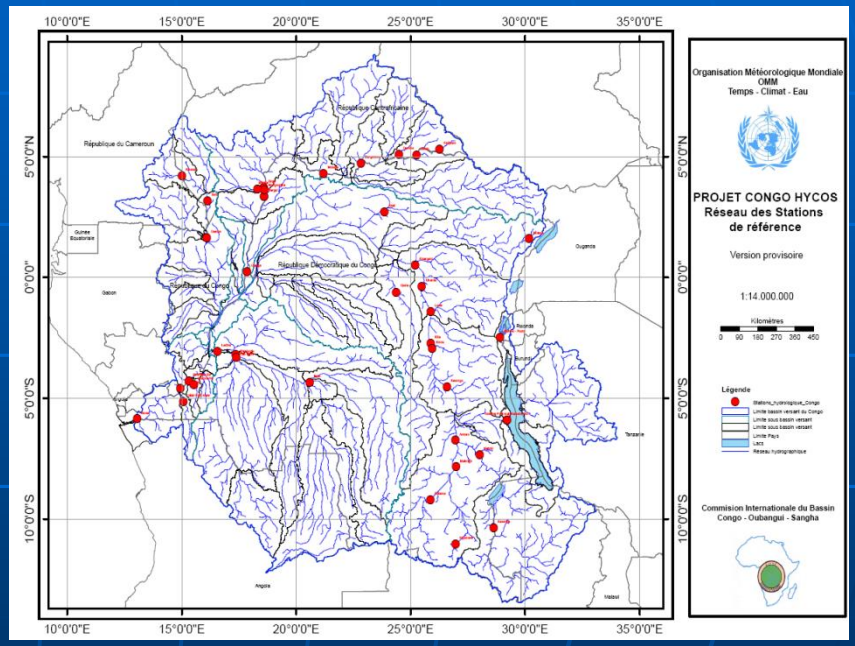
- Diminution sensible des stations d'observation et collecte des données hydrométéorologiques au sol,
- Difficulté de validation des scenarios des projections globales de changement climatique.

“Paris Pact” flagship projects

CONGO RIVER BASIN
Strengthening monitoring to improve basin adaptation

International Network Of Basin Organizations

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



Commission Internationale du Bassin Congo-Oubangui-Sangha

AFD AGENCE FRANÇAISE DE DÉVELOPPEMENT

International Office for Water

cnes

Morocco – WB - Irrigation Program - "Paris Pact" flagship projects - COP21 Paris 2015

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)

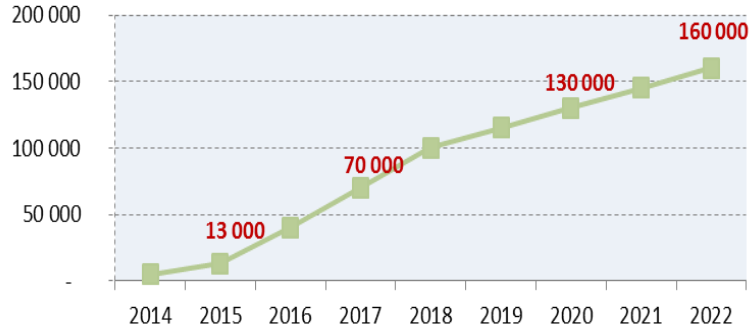
- Large scale irrigation Projects : 90 000 ha
- Small and medium scale irrigation Projects : 70 000 ha

Cost: US $ 2,5 billions

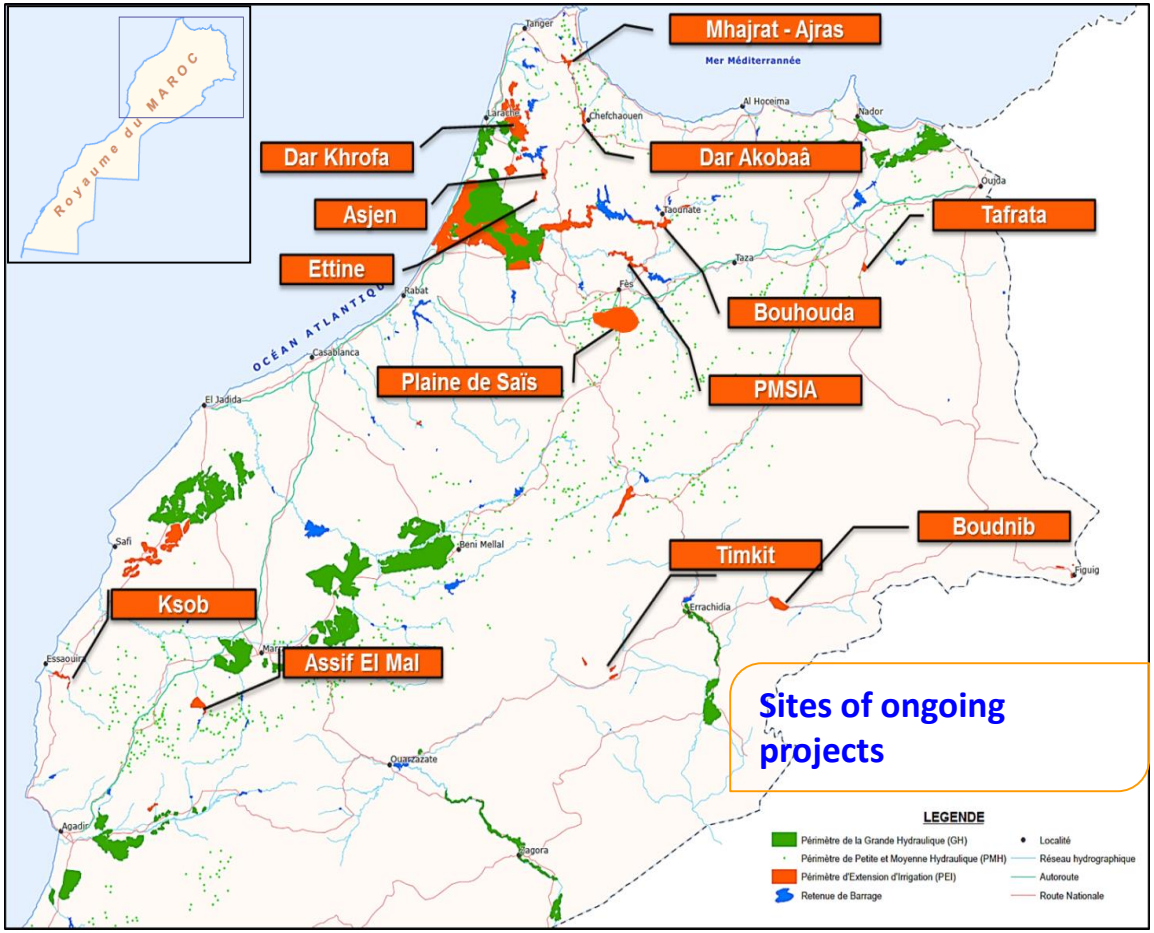
Expected impacts

- 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





Morocco – WB - Irrigation Program - "Paris Pact" flagship projects -

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

Integrated approach: Control of water from source to crop

Modernization of conveyance system



Modernization of water distribution system in pressurized networks

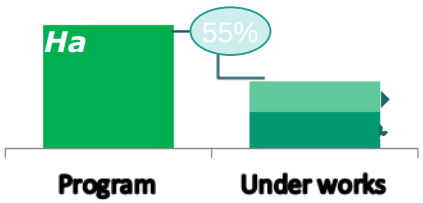


Equipment of plots with drip irrigation system and support for farmers to improve water use efficiency



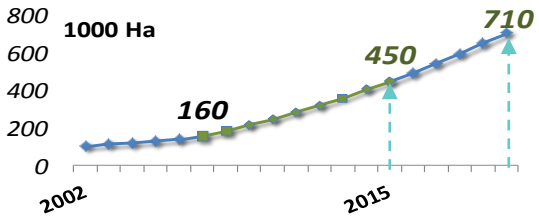
Achievements and new commitments

Collective modernisation :



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

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

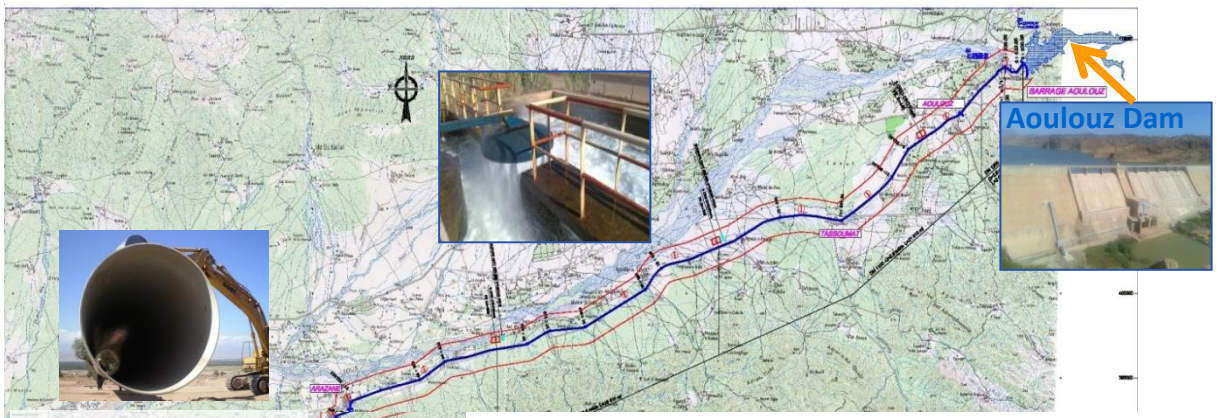
Morocco – WB - Irrigation Program - "Paris Pact" flagship projects -

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



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 goundwater.
- 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.

Before the project

After the Project

the pilot basins network

"Paris Pact" flagship projects

- 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

The UN Convention

for the international water courses management

in Europe – HELSINKY 1992

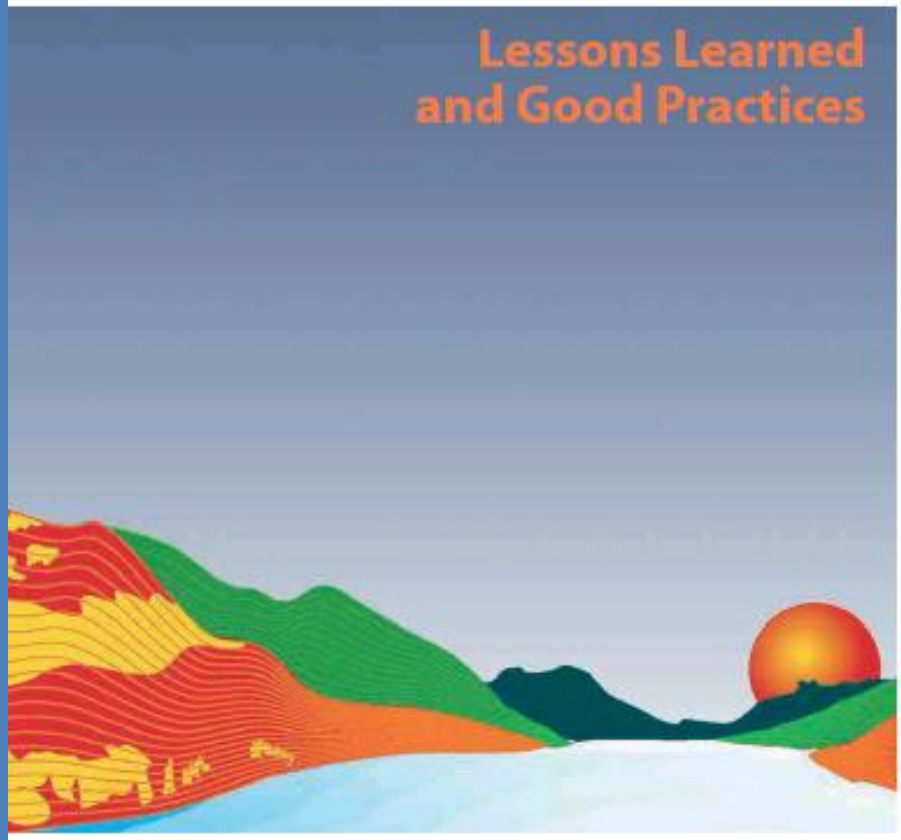
Network of Pilot Basin Organizations to test measures for adapting to climate change

PARIS2015
COP21·CMP11

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