



Ministry of Equipment Water and Forests
Morocco

WEFE NEXUS and Water Security in Morocco

Policies, Synergies and Private Sector Engagement

MED-RISE High-Level Conference: Mobilizing Private Investment across the WEFE Nexus, from Source to Sea - Advancing the Pact for the Mediterranean on the Road to the UN Water Conference

Session 1 : Advancing policy and action for blended finance through WEFE Nexus approach for climate resilience in the Mediterranean



National Water policy



2009

2020

2030

2050

National Water Strategy

National Water Plan 20-50



Under Law 36-15 on water, the National Water Plan 2020-2050 is the reference document of national water policy and the roadmap of the water sector over a 30-year horizon. It is reviewable every 10 years, or before that term if exceptional circumstances require its modification.

National water policy : Sector governance and stakeholders



Advisory and coordination bodies

- Higher Council for Water and Climate
- Interministerial Water Commission
- National Water Commission
- Basin Agency Board of Directors

Sector planning and decision-making bodies

Ministry of
Equipment Water and Forests

Ministry of Economy and Finance
and Public Performance

Ministry of
Interior

Ministry of
Health

Ministry of Agriculture, Maritime Fisheries and Food
Sovereignty

Ministry of Energy Mines and Sustainable
Development

This framework promotes better **coordination of public policies** and takes into account the **interdependencies between water, energy and food**, in line with the **Water-Energy-Food Nexus principle**

Public Institutions and water users

Agricultural uses

- 9 ORMVAs
- Water User Associations
- Private users

Integrated Management

- 10 Hydraulic Basin Agencies

Energy

Production

- ONEE-
Electricity
Branch

Drinking water and industrial uses

- ONEE-Drinking Water Branch
- Regional Multi-Service Utilities (SRM)



National water policy : Main Challenges

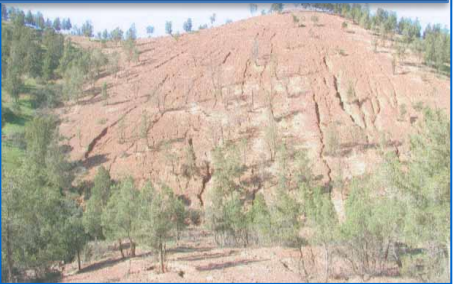


Direct discharge into watercourses



Pollution of surface water and groundwater from domestic, agricultural and mining sources

Effect of erosion upstream of the Lakhdar basin



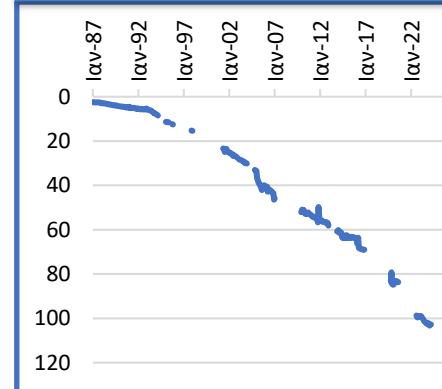
Soil erosion and loss of dam capacity due to siltation (a cumulative loss of storage capacity of around 2.5 billion m³)

Gharb Plain floods 2009



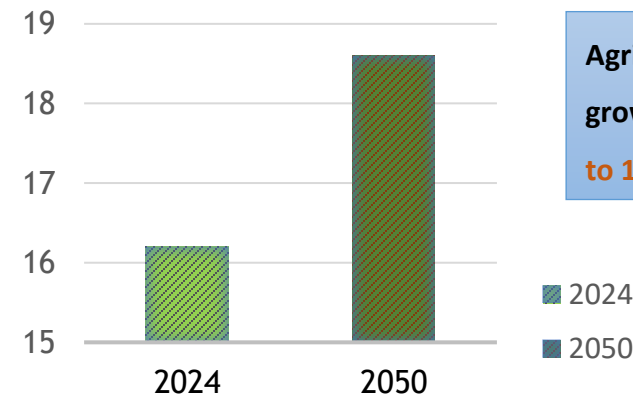
Impact of climate change and intensification of extreme weather events. (The total volume of water inflows recorded across all of the Kingdom's large dams during the 2022-2023 hydrological year is estimated at 3.9 billion m³, a deficit of 66% compared to the average annual inflow)

Overexploitation of the Jbel Hamra aquifer



Overexploitation of groundwater resources (overexploitation of more than 1.1 billion m³)

Change in agricultural water demand



Demand for drinking water, industrial and tourism use continually growing (1.72 billion m³ in 2020 to 2.6 billion m³ by 2050)

Agricultural water demand continually growing (from 14.4 billion m³ in 2020 to 16.4 billion m³ by 2050)

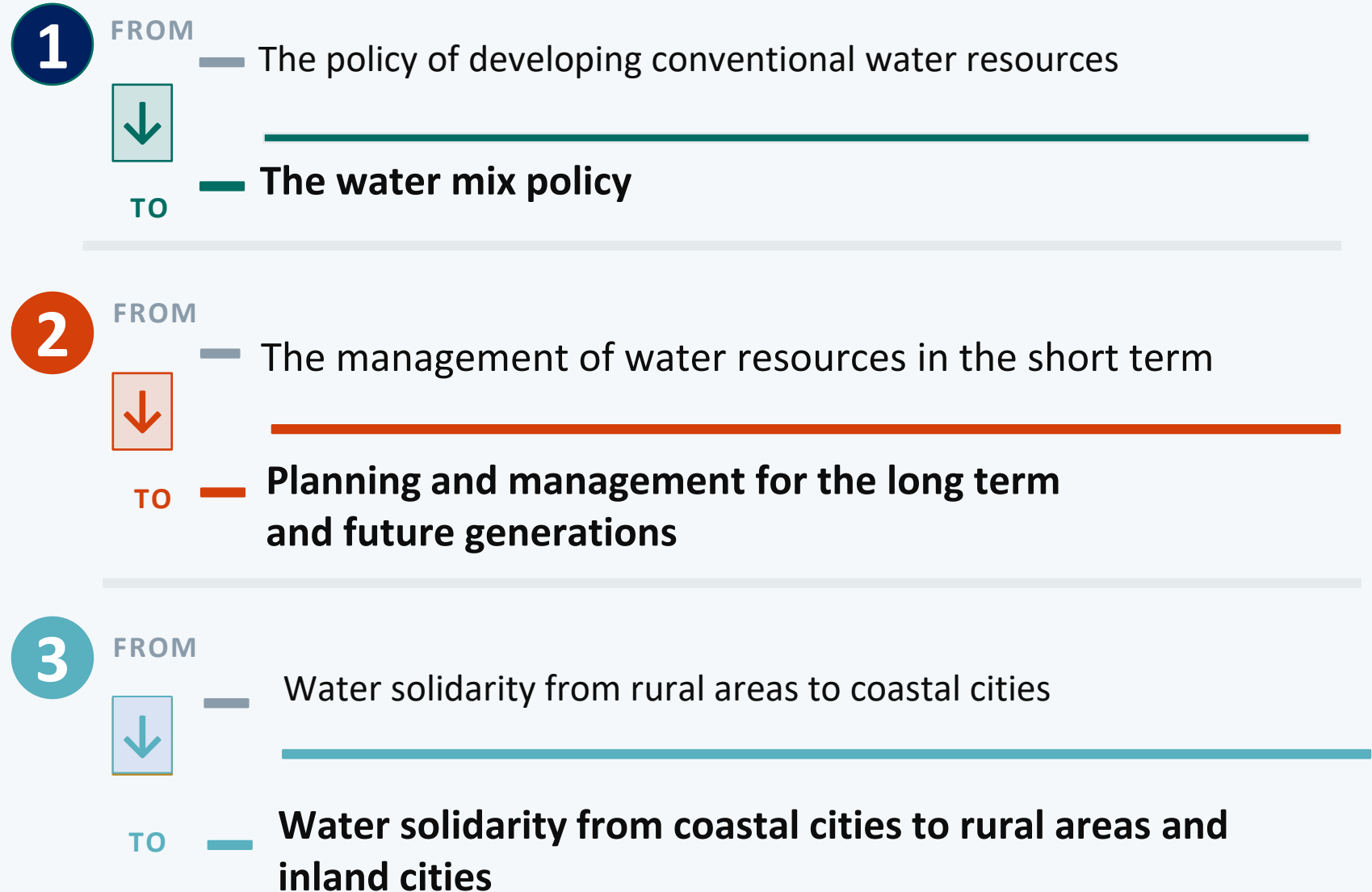
National water policy : The three major strategic shifts



3 Major Shifts

for Water Governance

Equitable · Forward-looking · Resilient





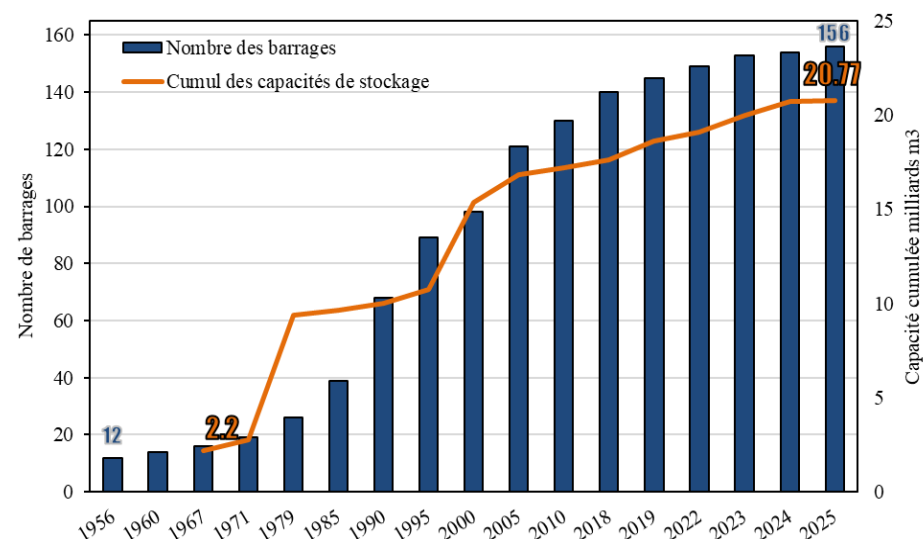
Major achievements of the water sector



HYDRAULIC INFRASTRUCTURE

- ✓ **156 Large and medium dams** with a total storage capacity of **20.8 billion m³**
- ✓ **150 small dams and hillside lakes** for local development, livestock watering and flood protection, with a total capacity of **140.82 Mm³** and **3 small dams under construction**
- ✓ **18 inter- and intra-basin interconnection projects** enabling territorial solidarity between surplus and deficit areas
- ✓ **17 seawater desalination plants** in operation with a total capacity of **410 Mm³/yr**, of which 60% is intended for drinking water supply, 14% for irrigation and 25% for industrial use
- ✓ A diversified and dense monitoring network
- ✓ **108 drinking water treatment plants**

Evolution of Dams Construction



17 seawater desalination plants



INDICATORS

- ✓ **Drinking water supply**
 - Rural areas: **98%**
 - Urban areas: **100%**
- ✓ **Irrigation** : more than **1.6 million ha**, of which 850,000 ha are irrigated by localized irrigation
- ✓ **Hydroelectric power generation**: installed capacity of **2120 MW**
- ✓ **Protection of people and property against floods**





WEFE NEXUS: Concrete Project Cases



POLITICAL DIALOGUE ON THE WEFE LINK

The political dialogue held in Tangier aims to transform climate challenges into sustainable development opportunities through integrated governance and coordinated action, marking a turning point toward concrete action for the WEFE Nexus in Morocco and beyond.



FRAMEWORK AGREEMENT SIGNED



Objective of the agreement

- Explore and leverage the cross-sector synergies, with an emphasis on promoting renewable energy, the judicious and efficient use of water, and strengthening agricultural resilience to climate change, while preserving natural ecosystems.
- Accelerating the identification of needs and investments for the implementation of WEFE NEXUS projects.



Contracting parties

- Ministry of Equipment Water and Forests
- Ministry of the Interior
- Ministry of Energy Mines and Sustainable Development
- Ministry of Agriculture, Maritime Fisheries and Food Sovereignty
- Abdelmalek Essaadi University



WEFE NEXUS: Concrete Project Cases



FLOATING PHOTOVOLTAIC PARK INSTALLATION PROJECT AT THE TANGER MED DAM

- ❖ Project located at the Tanger Med dam reservoir, which supplies the port with drinking water;
- ❖ Project aims to exploit solar resources while minimizing land occupation of the study area and protecting the dam's reserve from evaporation ;
- ❖ The area allows the installation of a capacity of approximately 25 MW of floating solar PV.
- ❖ Electricity supply to the Tanger Med port from the energy produced by the photovoltaic park.



FLOATING PHOTOVOLTAIC PARK INSTALLATION PROJECT AT THE OUED EL MAKHAZINE DAM





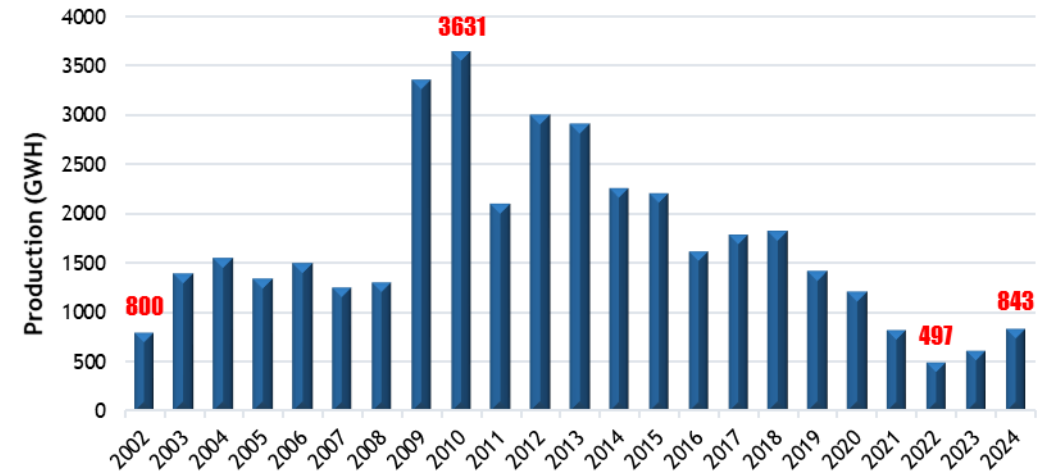
WEFE NEXUS: Concrete Project Cases



HYDROELECTRIC POWER PRODUCTION BY DAMS

Barrage	Capacité Installée [GWh]	Production Hydraulique Annuelle [GWh]
STEP AFOURER TURBINAGE	464.000	229.680
STEP ABDELMOUMEN TURBINAGE	350.000	135.156
AHMED EL HANSALI	92.000	-
AÏT MESSAOUD	6.400	6.625
BINE EL OUIDANE	135.000	14.450
AFOURER	93.600	31.850
HASSAN 1er	67.000	24.498
MOULAY YOUSSEF	24.000	8.097
AL MASSIRA	128.000	-
IMFOUT	31.200	2.652
DAOURAT	17.000	0.561
SIDI SAID MAACHOU	20.800	-
KASBA ZIDANIA	7.100	-
LALLA TAKERKOUST	12.000	0.987
MANSOUR ED DAHBI	10.000	2.725
TANAFNIT	18.000	25.019
EL BORJ	22.000	32.270
Micro-central source oum Er-bia	0.239	-
EL KANSERA	14.400	-
AL WAHDA	240.000	89.196
IDRISS 1er	40.600	3.935
ALLAL EL FASSI	240.000	41.636
OUED EL MAKHAZINE	36.000	15.291
MOHAMMED EL KHAMIS	23.200	9.816
BOU AREG	6.400	0.115
LAU	14.100	11.295
TAURART	2.000	-
FES AMONT	1.200	-
FES AVAL	1.900	-
MEKNES	0.600	-
TAZA	0.600	0.150
SEFROU	0.600	0.046

32 dams built for multiple purposes, simultaneously providing hydroelectric production / drinking water supply / irrigation / livestock watering.



ANNUAL HYDROELECTRIC PRODUCTION (GWh).



WEFE NEXUS: Concrete Project Cases



Currently

- 17 seawater desalination plants
- Capacity of 410 Mm³ of desalinated water/year

Under way

- 4 projects under construction
- Capacity of 447 Mm³ of desalinated water/year

Planned

- 11 planned projects, including 4 extensions
- Capacity of more than 1.7 billion m³/year (2030 horizon)

All planned seawater desalination plants are to be coupled with renewable energy production projects

DAKHLA SEAWATER DESALINATION PLANT



Project description

- ❖ Desalination plant with a capacity of 37 Mm³/yr, of which 7 Mm³/yr for drinking water supply and 30 Mm³/yr for irrigation ;
- ❖ Supplied 100% by renewable energy, provided by a wind farm in Dakhla with an installed capacity of 40 MW, expandable to 60 MW



Project characteristics

- ❖ Competitive cost of water;
- ❖ Reduction of direct CO₂ emissions related to energy;
- ❖ Integration into the national energy transition strategy

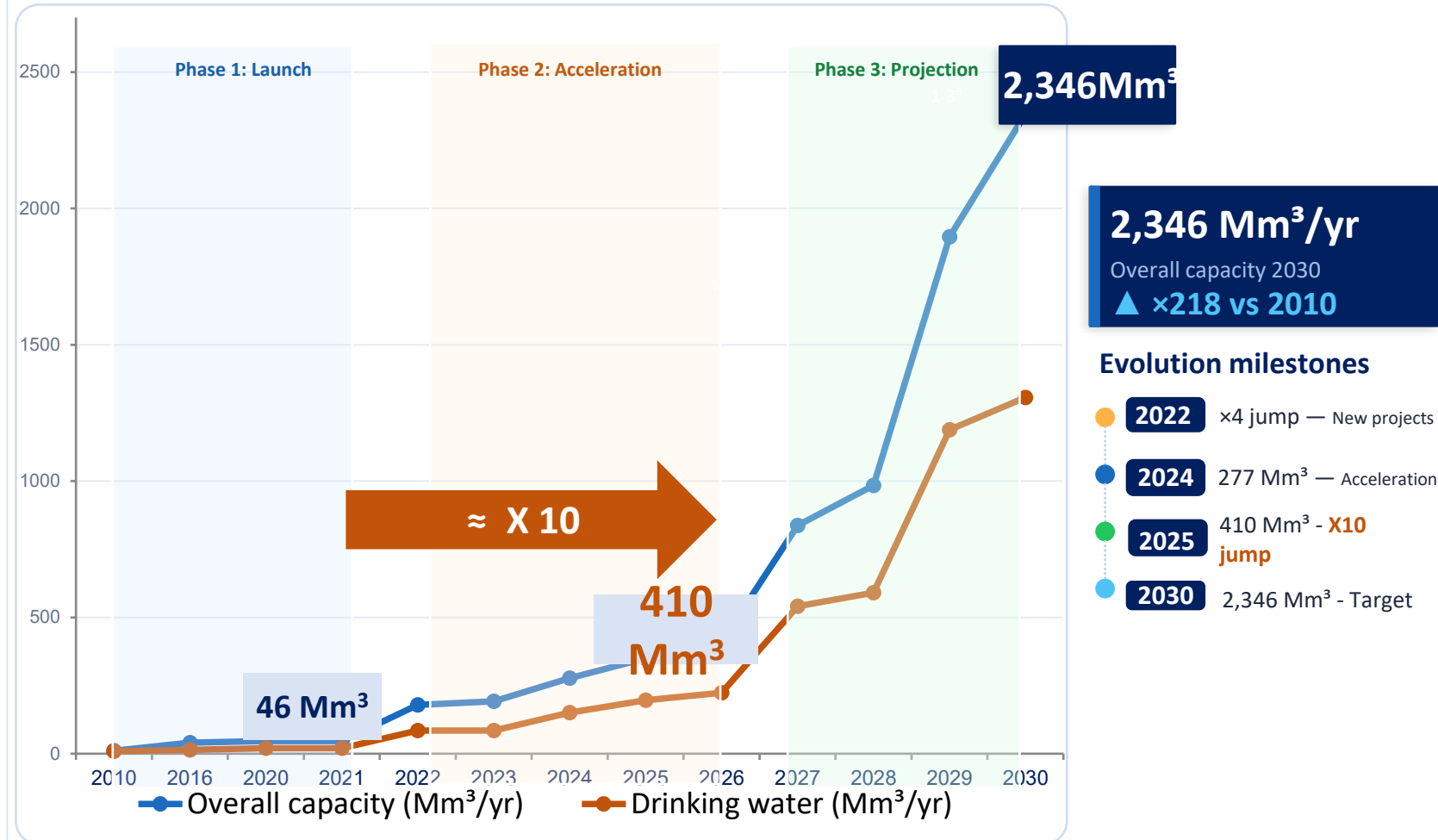


Private Sector Contribution



Private capital mobilization

- Public-private partnerships (PPP)
- Massive investments in inland and coastal mega-plants coupled with renewable energy (wind/solar).
- Acceleration of the delivery of flagship projects, notably desalination.





Studies & Technical Design

- Feasibility studies and technical design
- Economic, environmental and social studies
- Technical assistance to the project owner

Expertise & Technical Resources

- Specialized Design Offices: Highly qualified engineers
- Advanced Laboratories: geotechnical tests, water and material quality control, scale models.
- Technical resources: simulation and modeling software.

Technology transfer and acceleration of the maturation of State technical files

Construction of major structures

- Construction of dams and interconnection canals by the major civil engineering contractors.

Quality control & commissioning

- Checking compliance of the works with technical requirements.
- Carrying out operating tests and verification of equipment.
- Commissioning of the facilities

8 Large Dams built between 2021-2026



M'dez Dam



Koudiat Borna Dam



Toudgha Dam



Agdz Dam



Fask Dam



Kaddoussa Dam



Tiddas Dam



Rhiss Dam

Urgent water highway section built in 9 months





WEFE NEXUS: Challenges



- Absence of a dedicated entity responsible for the governance and implementation of the WEFE Nexus
- Lack of an explicit institutional and regulatory framework clearly defining the roles, responsibilities and coordination mechanisms between sectors
- Insufficient integrated planning tools specific to the WEFE Nexus



- ✓ Strengthen cross-sector coordination between water, energy and agriculture stakeholders through consultation mechanisms, data exchange and co-planning, in order to optimize synergies and reduce negative trade-offs between uses;
- ✓ Ensure the continuity and capitalization of successful Nexus projects;
- ✓ Strengthen the institutional and technical capacities of stakeholders through training, technical assistance and the development of decision-support tools adapted to the Nexus approach



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Morocco

**THANK YOU FOR YOUR
ATTENTION**