INSPIRE

INTERNATIONAL NETWORK OF SERVICE PROVIDERS FOR IRRIGATION EXCELLENCE

WORLD BANK GROUP
Water

GWSP
GLOBAL WATER SECURITY & SANITATION PARTNERSHIP

Together we INSPIRE and grow!

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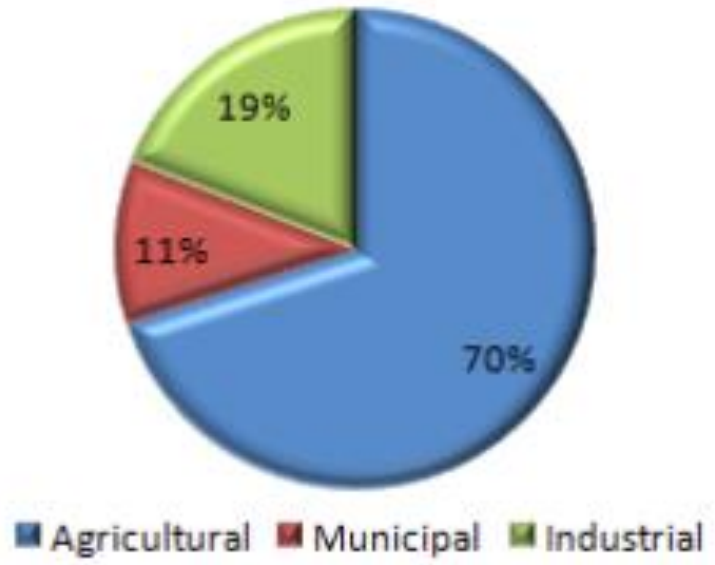
ICID•CIID

Felix Reinders

President, ICID

Increased Competition for Water

Agriculture
is responsible for an average of 70 % of water withdrawals from surface and groundwater sources worldwide



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Competition for our scarce resource

Great expectations exist to:

- ✓ Deliver sustainable irrigation and drainage services and achieve development impacts
- ✓ Account for water productivity
- ✓ Promote Water Use Efficiency
- ✓ Obtain financial sustainability

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WORKING TOGETHER

It is of critical importance for everyone in irrigation to actively engage in the INSPIRE platform:

- For cross-learning and generating of knowledge.
- To encourage global debate among I&D managers
- To create momentum for improvements in service delivery.
- To further professionalization and client orientation.

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MANAGERS OF IRRIGATION SYSTEMS

Need to present and discuss: Hands-on experiences, innovations, and best practices in improving the quality of I&D services.

This includes but is not limited to:

- Operational efficiencies
- Managerial efficiencies
- Financial efficiencies
- Institutional reform

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TOGETHER WE INSPIRE AND GROW!

INSPIRE and:

- Engage actively
- Cross-learn
- Generate knowledge
- Take part in global debate
- Create momentum for improvements in service delivery
- Further professionalization and client orientation

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INTERNATIONAL NETWORK OF SERVICE PROVIDERS FOR IRRIGATION EXCELLENCE

Why Service Delivery, why INSPIRE?

Launch of the International Network of Service Providers for Irrigation Excellence (INSPIRE)

November 25, 2020

The Irrigation service delivery Challenge

- **FARMING DEMANDS:** Farming systems are ever more rapidly evolving responding to growing and **changing demands** for crops translate in new demands on the service
- **EXTERNAL PRESSURES: Competing sectoral demands and limited resource availability**, along with climate change uncertainties require attention
- **DISRUPTIVE INNOVATION: Ongoing technical revolutions, institutional professionalization** allow for quantum leaps.
- **CHANGING SOCIETIES:** Rapidly changing **societal trends** will impact how agencies **become inclusive** and engage with clients and society at large.

→ **PROFESSIONAL RESPONSES:** Improved service delivery is possible, imperative, and driven by service providers in many parts of the world.

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Inclusive Irrigation Service Provision

- Farmers are clients requiring a water delivery service as an input.
- Despite an increasing feminization of agriculture, women are underrepresented in irrigation organizations at all scales.
- Solutions require inclusive approaches and decision-making roles as part of service providers' organizations.
- They include encouraging female leadership and empowering the next generation of leaders.
- Additionally, new technology has further enabled clients to have more responsive engagement with service providers.

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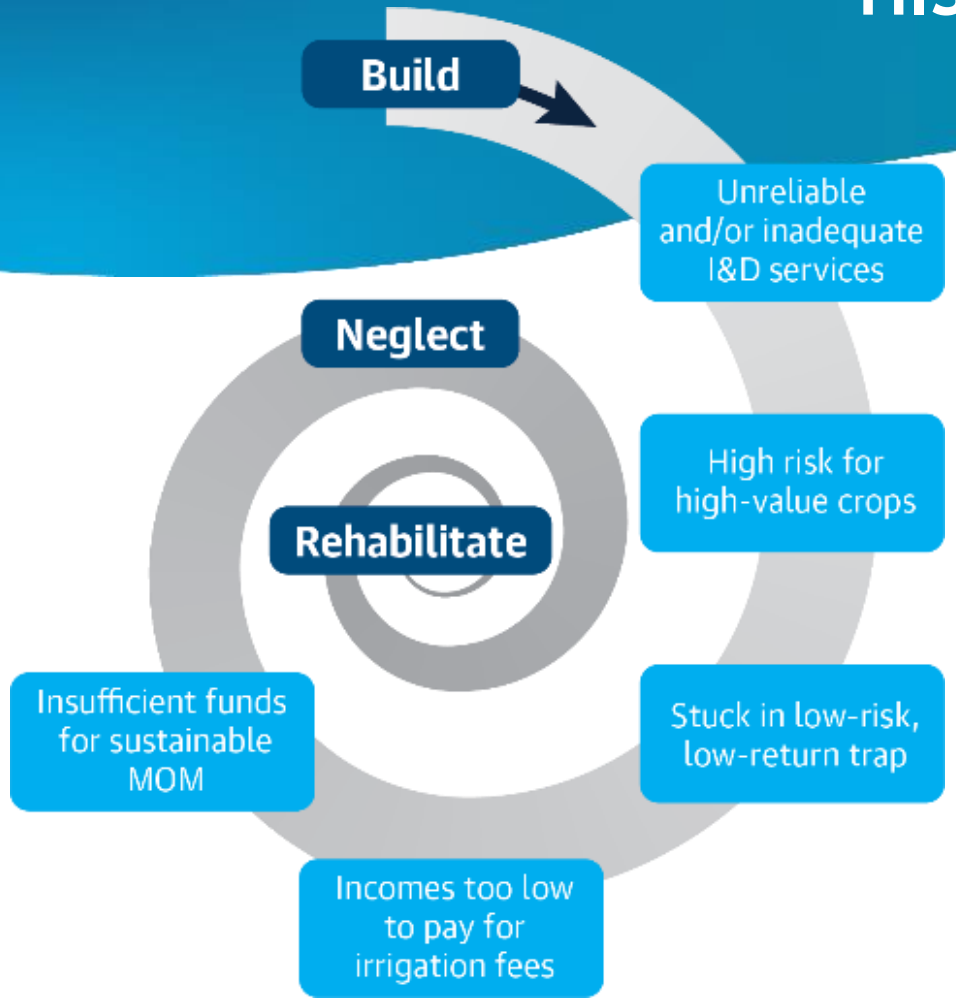
HISTORICAL TRENDS



The Build-Neglect-Rehabilitate Cycle

- Stems from an “infrastructure-only” approach to irrigation development of the past h.
- Breaking it requires a long-term focus on service delivery
- Investment costs in management represents a small fraction of typical infrastructural costs but present an opportunity for achieving major leaps in performance enhancement.

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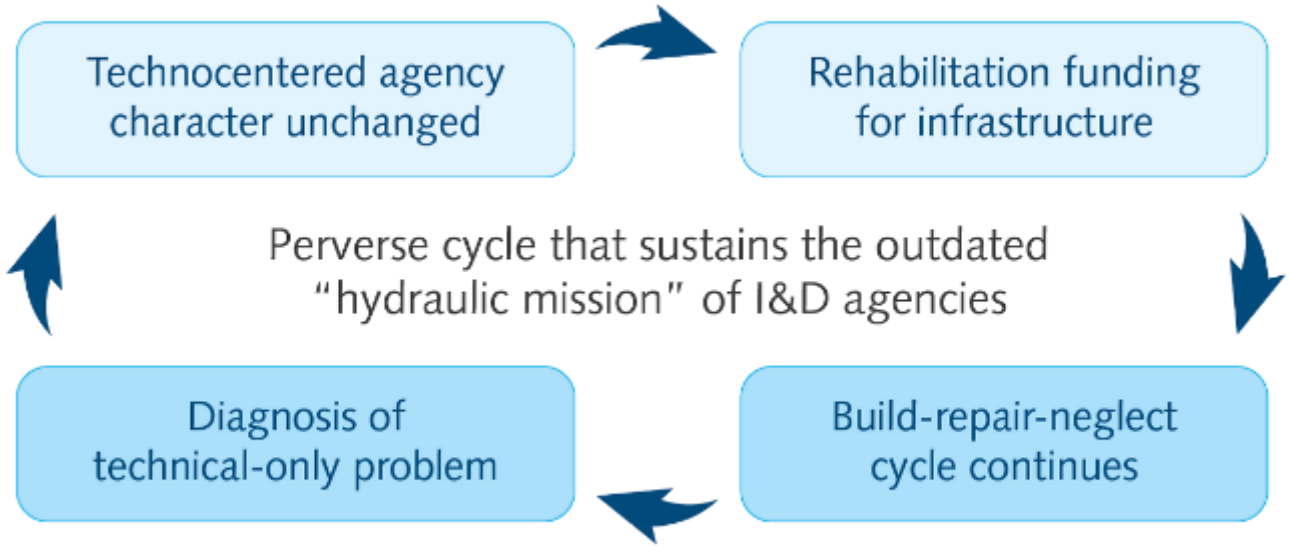
HISTORICAL TRENDS

Agencies are dominated by engineering competencies which leads to an emphasis on hydraulic infrastructure



Refusal to recognize the wider system, institutions and governance

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POLICY AND PERFORMANCE ENTRY POINTS

- Policy level dialogue on improving regulations, policy objectives, M&E, sector financing.
- Practical institutional support to irrigation agencies of all types based on their functional performance criteria and expectations.

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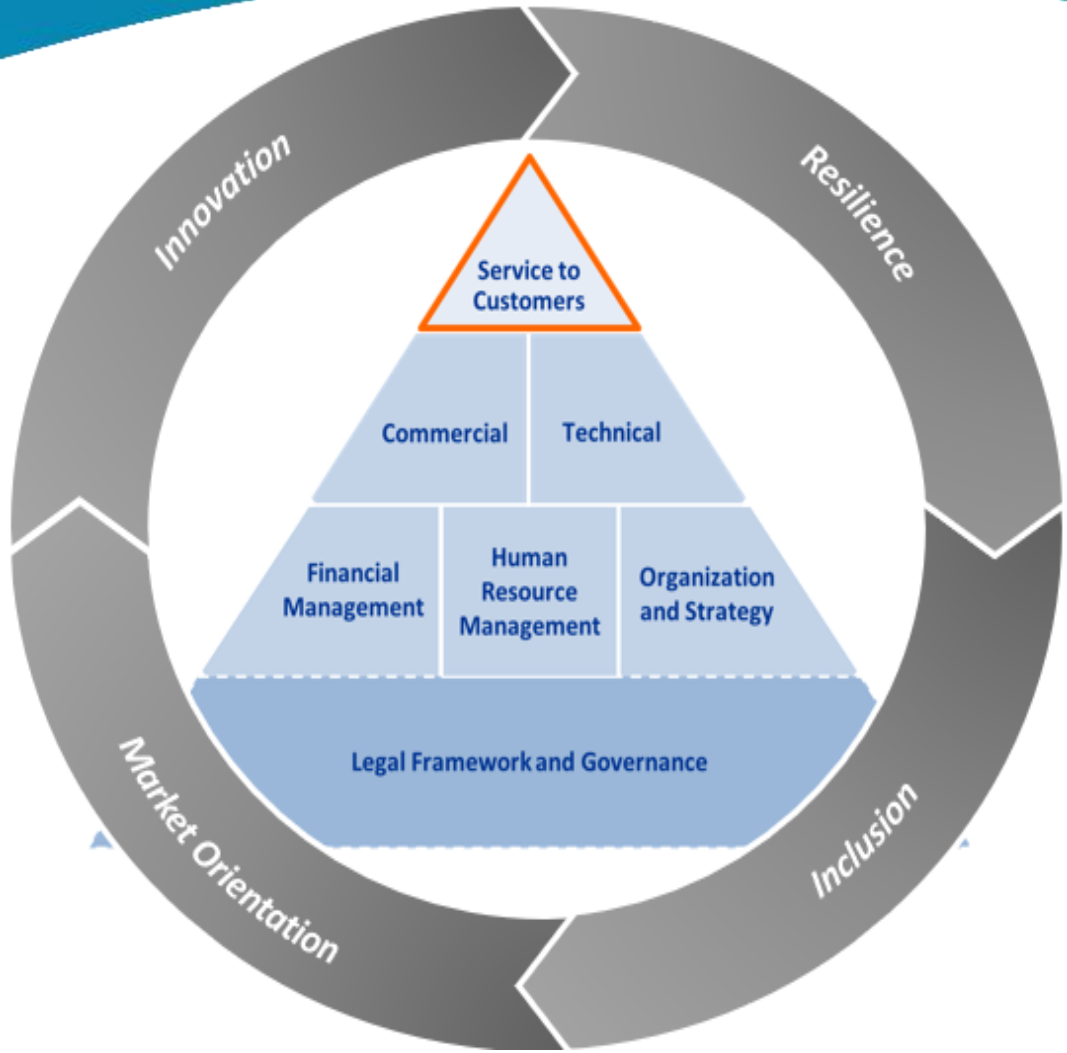
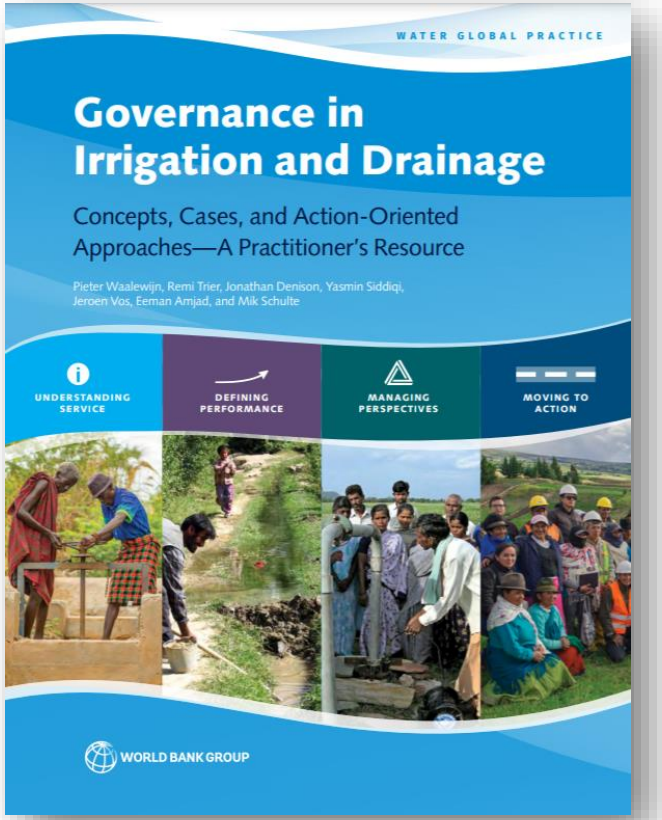
Service to customers as the first priority of the performance pyramid





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A FRESH TAKE ON SERVICE DELIVERY

Water service-delivery functions

- **Irrigation services:** Ensure scheduling and delivery of agreed-on quality, quantity, reliability, flexibility and equity to enable specific uses of water in the scheme
- **Drainage services:** Ensure the evacuation of excess water to avoid salinization and production losses after extreme events
- **Other water uses (if applicable):** Water supply for the rural population and animals

Organizational functions

- Financing (capex and MOM)
- Technical operations, organizational, and related process management
- Asset management and strategy

Governance functions

- Transparency and customer orientation
- Enabling policies and legal instruments
- Institutional and organizational coherence, accountability, and inclusion

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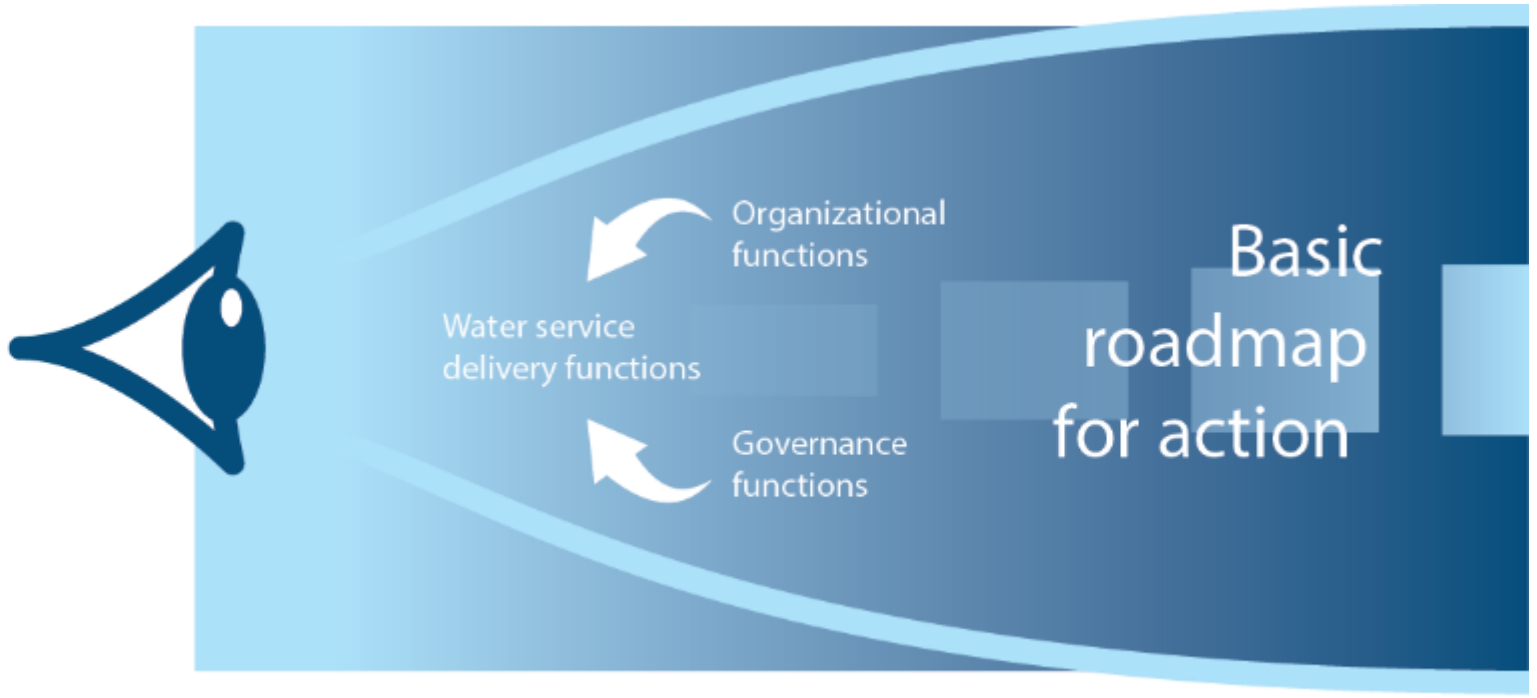
VIEWING PERFORMANCE PROBLEMS FROM MULTIPLE PERSPECTIVES TO DEVELOP ACTION-ORIENTED SOLUTIONS

- Farmers
- WUO
- I&D Agency
- Line Ministry
- Private Sector
- Other users



Multiple perspectives → Performance problem → Problem-based analysis and best-fit solutions

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PROBLEM-DRIVEN ACTION-LEARNING PLANNING APPROACH

Adopt a Problem-Centered Approach

- Taking time to identify problems is critical to solving them.
- Best-fit solutions rather than blueprint solutions.

Avoid the Isomorphic Mimicry Trap

- Working with service providers rather than developing prescribed solutions.
- Solve specific issues, rather than general ones.

Improvement as a Process

- Engaging a broad set of stakeholders to provide a more viable set of reforms.
- Stepwise interventions that enable an iterative process.

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What does the future irrigation manager look like?

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The I&D manager of the future

- Operations and maintenance performance standards and resilience
- Service delivery attitude and inclusive customer orientation
- Understanding of the context within which I&D systems operate. Broader outcome orientation (e.g. conjunctive systems, basin resilience)
- Mastering of the budgetary systems to prioritize long-term investment, asset management, and institutional planning
- Embracing of modernization and smart innovation in practical and coherent ways
- Influencing the broader governance environment
- A learning organization – use and apply tools to pursue long-term change

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Why a Platform for I&D Service Providers?

- Respond to demand for a space to discuss and learn among forward looking managers
- Help translate various pressures in day-to-day reality
- To get practical with small and large solutions that work
- Give voice to I&D service providers in global policy dialogue
- Its complement to farmer empowerment and strategy reform
- Recognize their ability to transform agency performance

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Objective

INSPIRE is a technical working platform for I&D service providers with a worldwide reach, supported by multiple development organizations. It serves:

- To encourage global debate on service delivery performance, change management and create momentum for change
- As a platform for cross-learning, twinning and bringing knowledge to and from practice.
- As a starting reference for global performance indicators and action planning
- As a vehicle to further professionalization and client orientation.

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VISION FOR INSPIRE

INSPIRE's vision is economically and financially viable, and environmentally and socially sustainable irrigation, attuned to the needs of clients, climate and its role in the wider basin and ag chains.

INSPIRE recognizes the important role that managers of irrigation systems play in achieving that vision and aims to support them and strengthen their capacities.

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A Joint Multi-Partner Initiative

ADB

AIIB | ASIAN INFRASTRUCTURE INVESTMENT BANK

Food and Agriculture Organization of the United Nations

ICID•CIID

IsDB البنك الإسلامي للتنمية Islamic Development Bank

IWMI International Water Management Institute

WORLD BANK GROUP Water

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Based on a common understanding that:

- Success of irrigation and drainage service providers relies, to a large degree, on the quality of the services they provide to farmers.
- These services, targets, and pathways differ widely because of structural, historic, financial reasons.
- However, I&D service providers are front and center in enabling change
- I&D sector needs new metrics of success for the service provider of the future as well as step-wise paths to innovation
- It is the willingness to reflect, innovate and change, rather than the starting point that characterizes the service provider of the future.

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INSPIRE IS FOR TODAY'S FUTURE SERVICE PROVIDERS

INSPIRE is for I&D service providers of all kinds:

- All shapes, sizes, and levels of maturity; public, parastatal, private, owner or third-party operated;
- With dedication to improving service delivery performance;
- Open to learn and share good practice;
- willing to engage in simple self-diagnosis, benchmarking and action-planning
- Targeted at management of I&D service providers, future managers
- With links to private sector, policy makers, academia on invitation

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HOW INSPIRE CAN HELP

- Learning on good practice of service provision of the future
- Tools for self-diagnosis, benchmarking and action planning
- Platform for innovative cross-learning
- Twinning partnerships
- Spotlight private-sector solutions and innovations
- Creating momentum in policy through programming/financing
- Vehicle to further professionalization and client orientation in long-term programming and investment design

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INSPIRE US!

This will be your platform – lets make it useful through:

- A learning program on service delivery topics
- Developing/piloting self-diagnosis and benchmarking reference
- Inclusive client orientation, citizen engagement and info management
- Dialogue with innovators, policy makers
- Learning about change management: levers of change
- Innovation and modernization programs in asset management
- Quick action programs for immediate gains
- **What else?**

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Participant Poll

Please join us in taking a brief poll. You will find the questions on the right-hand side of your WebEx window in the chat section. Please select your answers and click the ‘Submit’ button. The results of the poll will be presented later in the event.

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INSPIRE Partners: Introductions

ADB

AIIB | ASIAN INFRASTRUCTURE INVESTMENT BANK

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ADB and Irrigation Service Delivery

Irrigation in Asia and the pacific, food security and prosperity

Jelle Beekma
Senior Water Resources Specialist
Asian Development Bank

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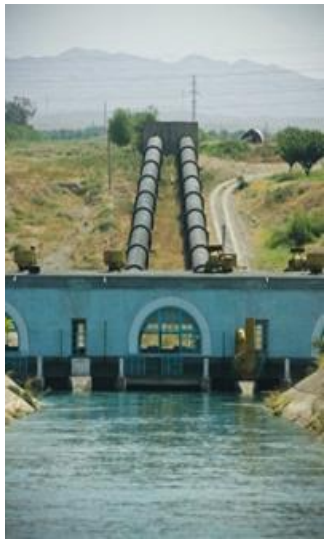
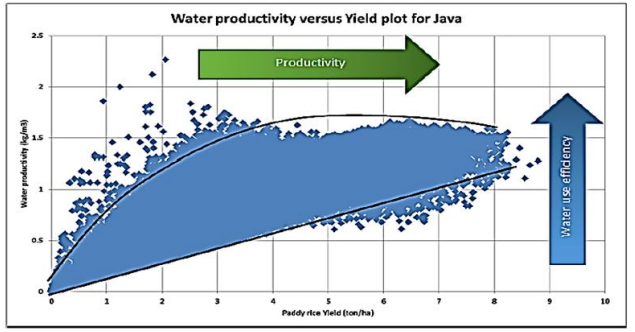
ADB and Irrigation Services



- 23 ongoing irrigation projects, 3.2 billion USD (18%);
- Asia contains 70% of irrigated land worldwide, irrigation accounts for 65% to 95% of water withdrawals;
- Wide variety of systems in size, technology and service providers;
- Improving services is well aligned with strategy 2030 and OPs;
- Focus on water productivity, innovations governance and inclusivity;
- Women are underrepresented in irrigation organizations;
- ADB proposes to start a committee on inclusive irrigation services, focus on women leaders and membership.



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ADB

ASIAN INFRASTRUCTURE INVESMENT BANK

ASIAN INFRASTRUCTURE INVESTMENT BANK

David Ginting
Investment Operations Specialist - Water, AIIB

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ASIAN INFRASTRUCTURE INVESMENT BANK

- AIIB opened for business in 2016; approved its first irrigation project in 2018 and has observed increasing need for throughout Asia and beyond;

- AIIB's Water Strategy (2020): places 'improvement of water services' (including for irrigation and drainage) as one of its investment focusses;

- **AIIB and INSPIRE:** the Bank is keen to (2) better understand the needs and challenges faced by irrigation service providers; (2) learn from global best practices and innovations; and (3) bring service providers (from its project financings) to participate and enrich the discussions in the INSPIRE.

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AIIB

Food and Agriculture Organization of the United Nations

Maher Salman
Senior Land & Water Officer,
Land and Water Division,
FAO

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The contribution of FAO towards the learning agenda for future Irrigation Managers

Food and Agriculture Organization of the United Nations

Knowledge Generation | **Cross-learning** | **Showcasing & Twinning** | **Bringing innovations**

Inspire metrics

1. Metrics – Investment:

- **Rehabilitation and modernization of irrigation systems**: already developed MASSCOTE (open canal) and developing MASSPRESS (pressurized systems) – Irrigation and Drainage Paper.
- **Irrigation asset management tool**: computer-based tool to maximize benefits with multi-level design of: (1) O&M-based inventory design, (2) condition scoring - Condition Index), (3) performance and risk assessment scoring - Criticality Index, 4) financial analysis through specific life-cycle cost model.
- **Technical assessment and audit for modernization programmes**: systematic design for performance assessment.
- **Multiple water use**: initiative of SMART Irrigation - SMART WASH to enhance multiple water use for food security and sanitation as response to the pandemic (Discussion Paper).

2. Metrics – Service delivery:

- **Rapid Appraisal Procedure**: Re-visited RAP for pressurized irrigation systems & RAP web-based computer friendly version.
- **Integrated data acquisition**: prototype monitoring system for integrated water management including modules of discharge monitoring, water quality monitoring, asset management.

2. Metrics – O&M standards:

- **Remote-based Rapid Appraisal Procedure (RE-RAP)**: semi-automated approach combining spatial and spectral indicators (drone-based analysis of rehabilitation assessment).
- **Three-pronged approach for conjunctive water use:** combined technology of solar irrigation, water harvesting and groundwater use.

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INTERNATIONAL COMMISSION ON IRRIGATION AND DRAINAGE

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Ashwin Pandya
Secretary General,
ICID

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www.icid-ciid.org

INTERNATIONAL COMMISSION ON IRRIGATION AND DRAINAGE

www.icid-ciid.org

VISION

Water secure World, free of poverty and hunger achieved through sustainable rural development".

MISSION

To work together towards sustainable agriculture water management through inter-disciplinary approaches to economically viable, socially acceptable and environmentally sound irrigation, drainage and flood management.

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INTERNATIONAL COMMISSION ON IRRIGATION AND DRAINAGE

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Islamic Development Bank

Nizar Zaied
Global Lead Water
Social Infrastructure Division
Economic and Social Infrastructure
Department

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Islamic Development Bank

What we can bring to INSPIRE Platform?

- Promote INSPIRE Platform within the IsDB Water sector portfolio.
- Make use of IsDB cooperation mechanisms to help achieve INSPIRE objectives: **IsDB REVERSE LINKAGE.**
- Bring to the platform regional countries with which IsDB enjoys a special partnership: e.g. Iran, Oman, etc.
- Leverage IsDB investment tools, which are asset based, to promote the objectives of INSPIRE.

About IsDB Water Sector Financing

- 57 member countries in Asia, Africa, MENA and Latin America Regions.
- 12 Regional HUBs implementing projects.
- Since inception (1975): USD 2.7 billion for 190 I&D operations, almost 20% of water sector investment USD 11.7 billion:
  - Completed USD 1.2 billion, 153 operations
  - Active USD 1.5 billion, 37 operations

International Water Management Institute

Alok Sikka
India Representative, IWMI

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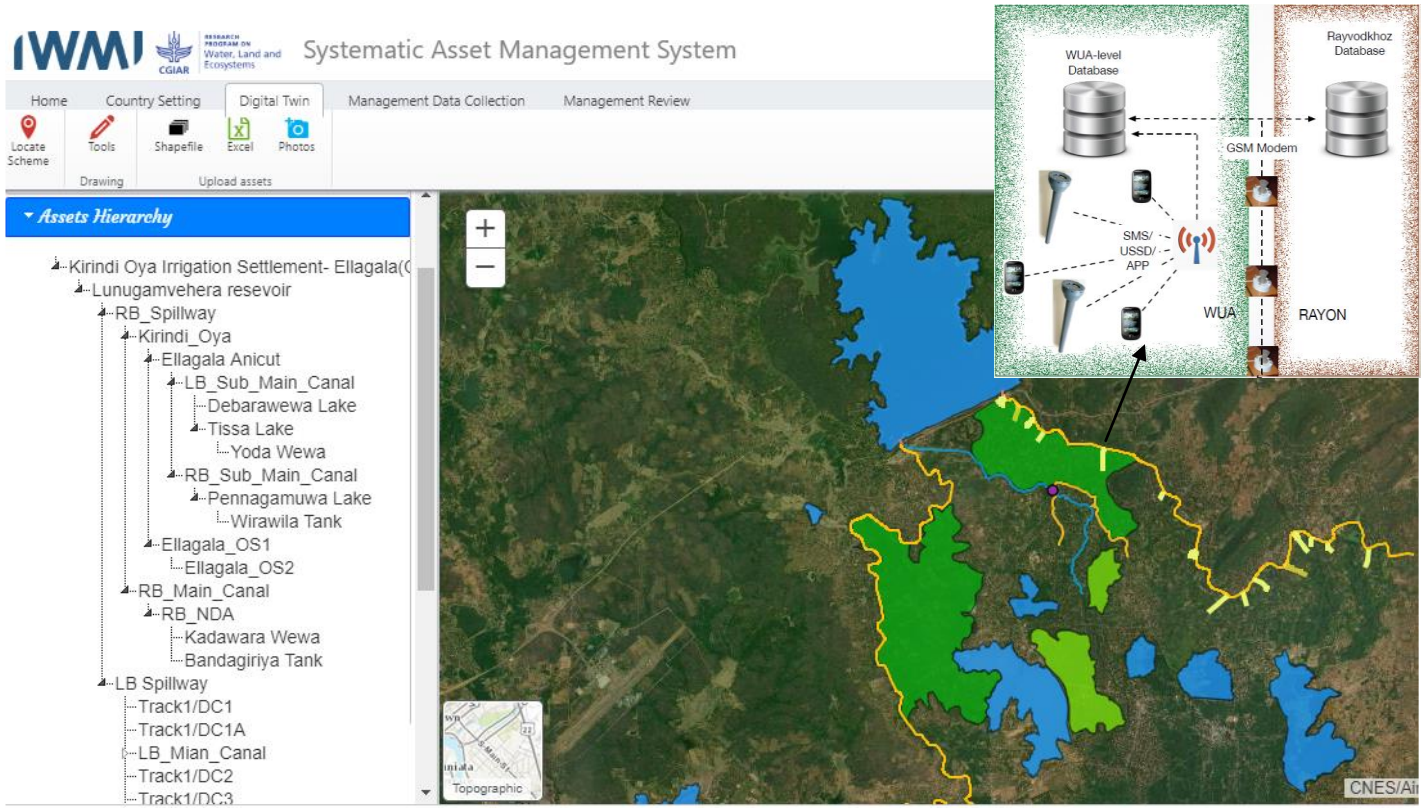
International Water Management Institute

SUPPORT TO IMPROVED IRRIGATION SERVICES

- 1984: International Irrigation Management Institute (IIMI) – Sri Lanka.
- SAMS4I & remote sensing for improved benchmarking and asset management.
- Disruptive technologies for improved monitoring of on-farm water application and water budgets.
- Incentives for improved service delivery through different financial modalities and inclusive water governance.



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World Bank, Water Global Practice

WORLD BANK GROUP
Water

Pieter Waalewijn
Global Lead, Water in Agriculture
Global Solutions Group, World Bank

With support from:

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GLOBAL WATER SECURITY & SANITATION PARTNERSHIP

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Some Experiences and Tips from Other Associations

Jose Luis Inglese, MsC Eng, NAE Member, IWA SC

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Why am I speaking here?

- Of course, because I was invited by the World Bank to share some experiences (successful and not) from other sectorial and professional associations that I dealt with and lessons I learned.
- **Which Associations?**
  - InterAmerican Association on Sanitary ad Environmental Engineering (Financial VP 1998-2002) – AIDIS.
  - Argentine Association on Sanitary and Env. Engineering (Chairman 1997-2003).
  - International Water Association-IWA(Strategic Council from 2019 to now).
  - World Operator Partnership-WOP LAC (supporting Executive Secretariat from 2016 to 2019).
  - Latin American Association of Water and Sanitation Operators (ALOAS).
  - Latin American Association of Water and Sanitation Regulators ADERASA (helped in its founding).

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Main things a Technical Association has to have

To last and become strong and influent, a technical or professional association has to have:

- Ambition to be the inspirational leader of the sector based on quality and equanimity;
- Long term objectives for professionals and executives of the sector, to become and stay as members;
- Clear and simple bylaws that assure rotation of the board but permanence of the executive staff;
- Flexible organization and conditions for membership to incorporate members from developed as well as LMI Countries;
- Regionalism and multilingualism;
- Strong willingness to associate with other associations, similar or not;
- A technical permanent staff that knows very well organizations and main leaders of the sector;
- A system of prizes, evaluated by peers, to reward the effort of outstanding professionals to improve the quality of services of the sector.

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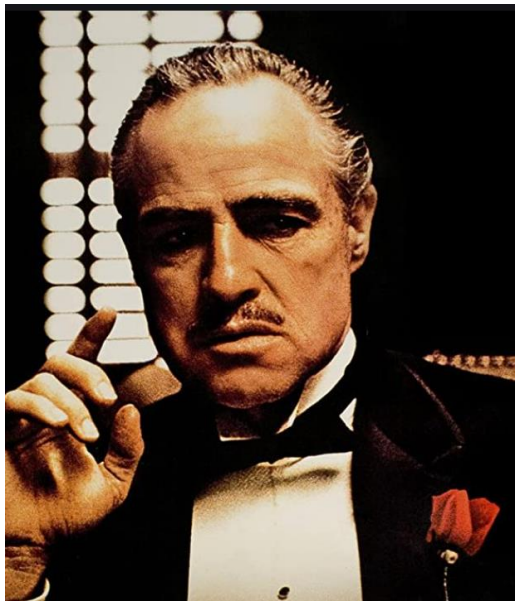
How to grow and last:

For the childhood's years, is convenient to have…

A Godfather:



or better, a Godmother:

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Examples of Godparents from other Associations

- ✓ **AIDIS**: Pan-American Health Organization
- ✓ **GWOPA**: UN Habitat
- ✓ **WOP-LAC**: Interamerican Development Bank (IADB)
- ✓ **WATERSHARE**: The Netherlands
- ✓ **ADERASA**: The World Bank

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The Golden Rule for Associations

Remember:

THE GOLDEN RULE IS:

THE ONE WHO OWNS THE GOLD RULES

- Nothing permanent is achieved without money. Voluntarism lasts the same way as a “movie stars’ love”.
- So, one of the main task of the executive staff is to look for money for survival and grow of the Association.
- Main sources of money for professional and technical Association has to be searched outside of it (multilateral financial organizations interested in the objectives of the Association, suppliers of the sector, Foundations and wealthy Universities, etc.) and not inside of it (members).
- Access to diversified sources of funding can make an Association independent so that its opinions are valued by its members.

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STRATEGIC ALLIES FOR SIMILAR ASSOCIATIONS

- **AIDIS**: HEALTH → WHO
- **IWA**: CIRCULAR ECONOMY AND CLIMATE CHANGE → IPCC
- **GWOPA/WOP-LAC**: INCLUSIVE GROWTH OF CITIES → UN HABITAT
- **INSPIRE**: CLIMATE CHANGE? FOOD SAFETY? → ???

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MAIN OUTCOMES FOR SIMILAR ASSOCIATIONS

- Setting benchmarking methodologies and sharing its results: ADERASA to set adequate water supply and sewerage tariffs.
- Capacity building through “training on the job”: WOP-LAC.
- Building bibliographic repository as reference for the sector: IWA Publishing.
- Creating the most prestigious reward in the water sector – Stockholm Water Prize: SIWI.
- Collaborating to set management standards: ISO 46001-Water Efficiency Standard: IWA.

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CRISES ARE OPPORTUNITIES

- Two big worldwide crises:
  - COVID-19
  - Climate change
- Many opportunities coming from them for INSPIRE:
  - Digitalization of capacity building and professional meetings make easier and cheaper to share experiences.
  - Circular economy opportunities growing between irrigation and NBS wastewater management, faced with food safety uncertainty.
  - Carbon and water footprint reduction through collaboration between water supply and sanitation sector and the irrigation sector, important to challenge climate change.

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LAST BUT NOT LEAST

A way to set a strong and hard basis for a professional and technical association is to help in creating soft linkages of friendship and team spirit among its members.

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Presentations
by I&D Service Providers

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The Australian Experience

Carl Walters

Manager, Sustainable Irrigation Program, GB CMA

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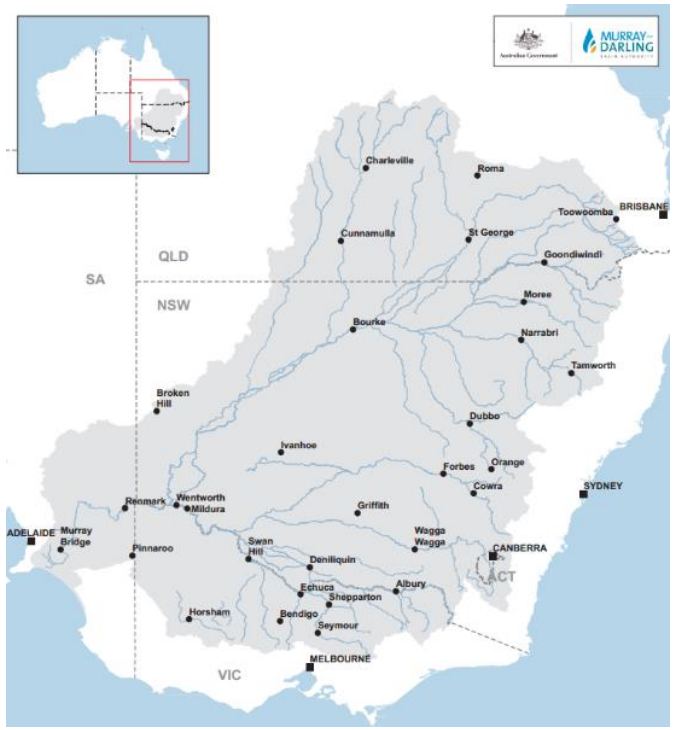
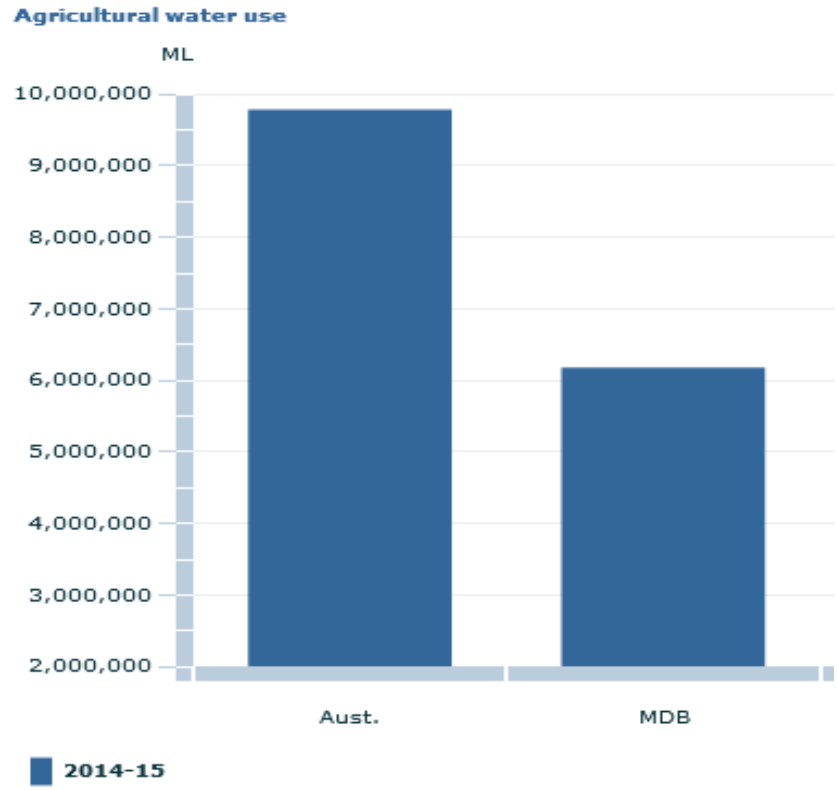
What has prompted a focus on service delivery?

Changing availability of Water Use for Irrigation in Australia





2014

2020

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Focus areas moving forward in Australia

- Flow Measurement and Sharing of Resource
  - (Rivers, Supply System and Farm)
- Efficient and Effective Use,
  - (Rivers, Supply System and Farm)
- Technology Improvements Physical and System Management
  - Rivers, Supply System and on Farm
- Growing More Product with less Water

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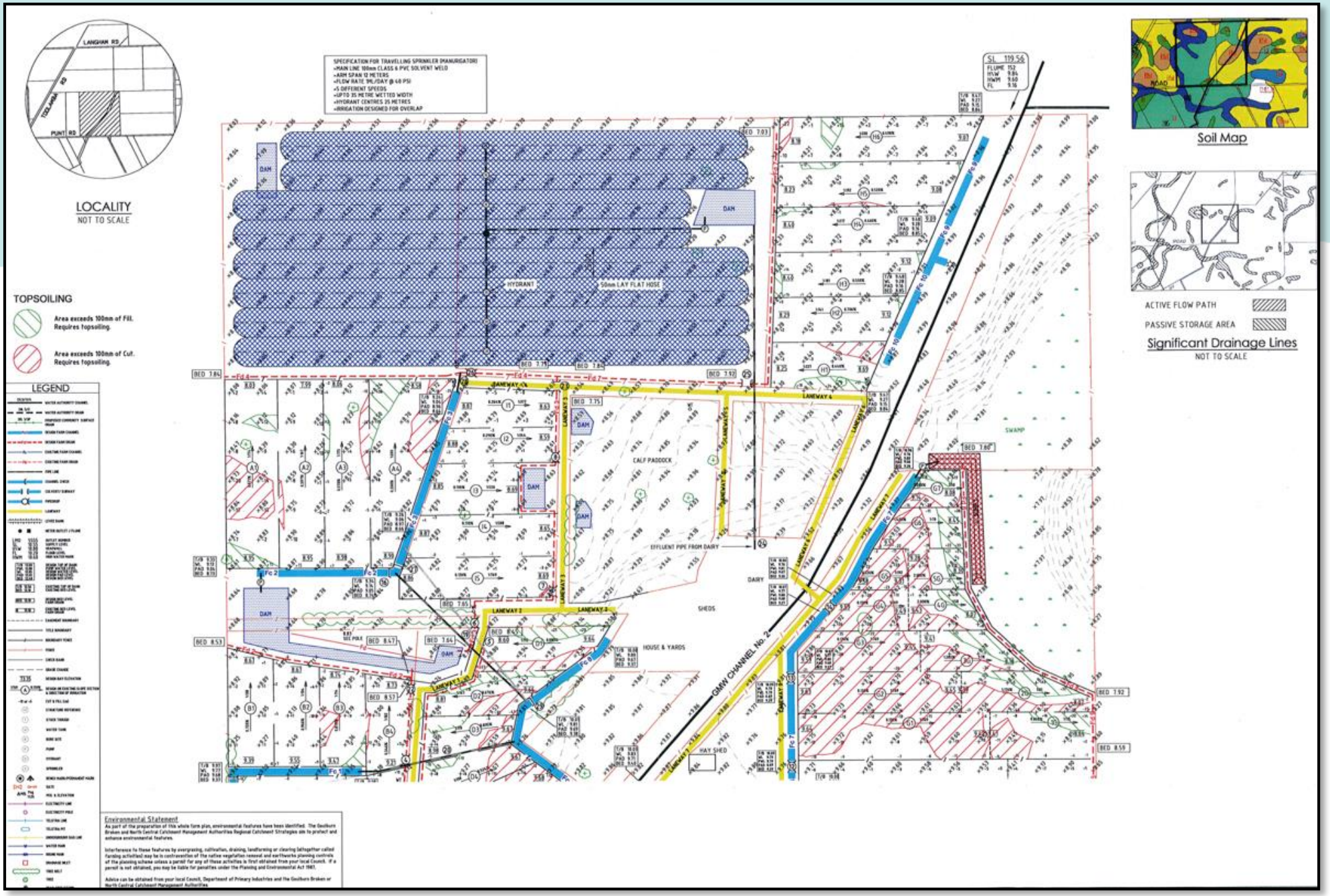

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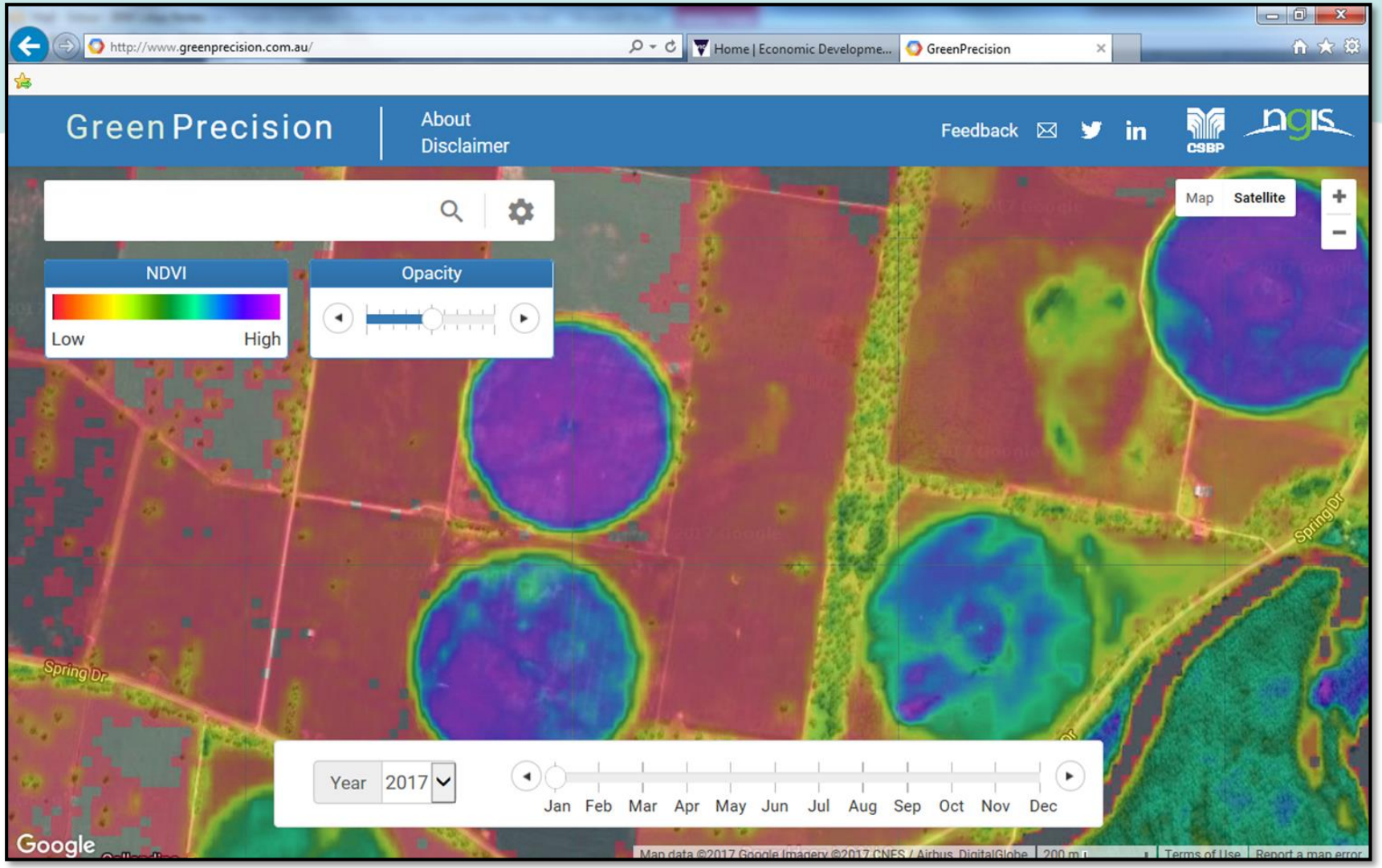
Incorporation of Scientific Research



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Thank You!

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BRL: A water service provider in the south of France

Etienne DRESSAYRE
Deputy Director with BRL Ingénierie

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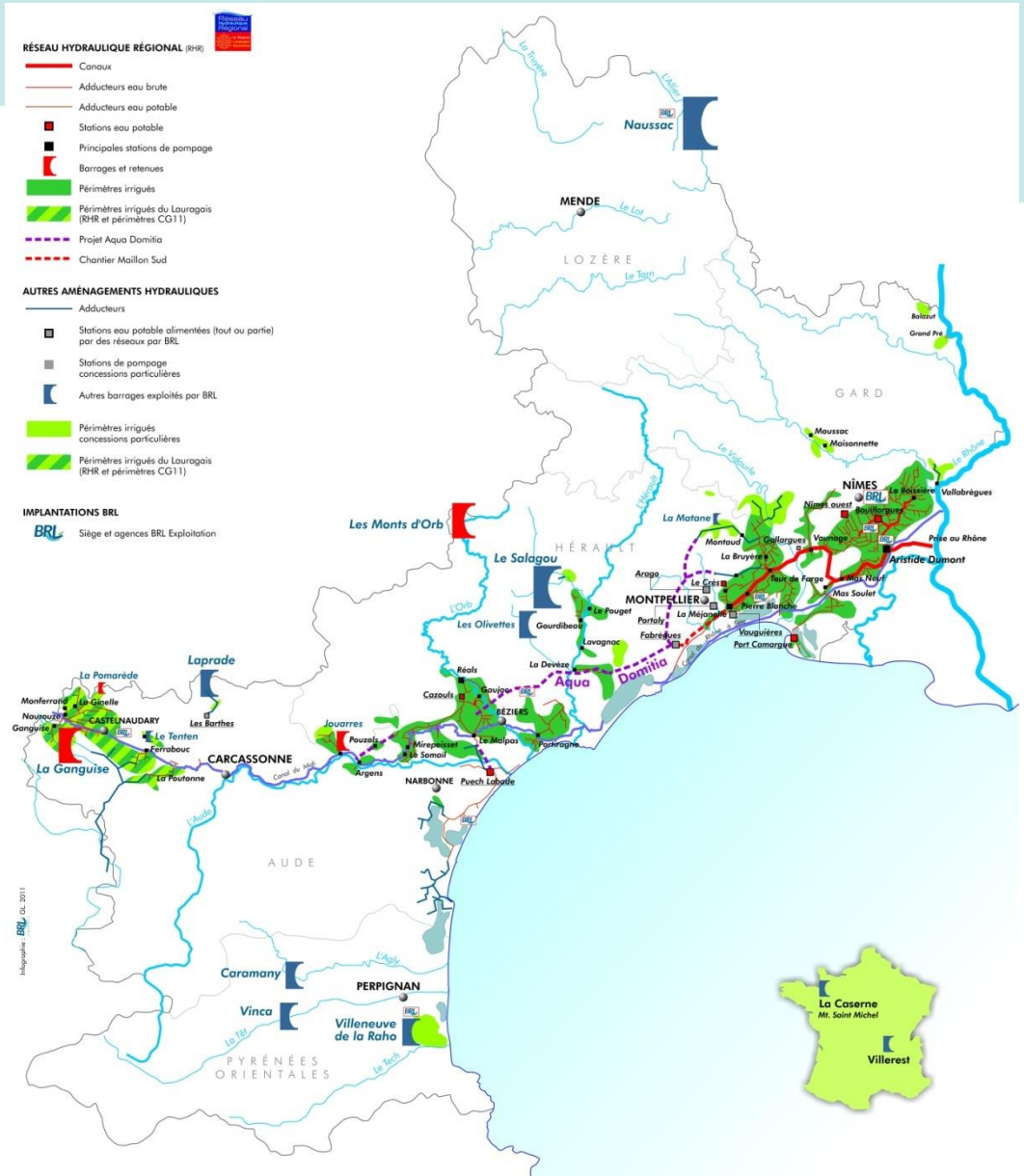
BRL: A Water service provider for agriculture in the south of France

- Established in 1955;
- 130 000 ha command area;
- 100% pressurized network;
- 13 dams and reservoirs;
- 105 km of main canals;
- 125 pumping stations;
- 5,000 km of pipes;
- 6 treatment stations.



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What made BRL decide to prioritize service delivery?

- Professionalization of agriculture:
  - Increasing the size of farms
  - Need for a secure and predictable water service
- Development of drip irrigation and intensive crop production:
  - Strong impact of a service disruption
- Decline of profit margins in agriculture:
  - Farmers have reduced their flexibility in terms of discharge per hectare.

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Priority activities to improve the quality of irrigation services

- Establishment of new contractual relationships, customized to the needs of each client;
- New modes of network management when networks are overloaded;
- Coupling traditional resources with non-conventional resources (e.g. wastewater).

A few examples:

- Tariff, organizational, and technical response to network saturation in order to adapt production to demand;
- Saving energy:
  - Integrating the time frames for electricity pricing into water contracts;
  - Allowing the networks to be used at times of low energy cost and when they are not saturated;
  - Creation of water reserves at farm level.
- Considering multi-resource reservoirs, particularly with treated wastewater.

Taking risks to meet farmers needs does not bring more revenue to our company but allows us to meet our public service mission by addressing economic needs.

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GOVERNMENT OF MADHYA PRADESH, INDIA:
Water Resources Department

"Har Khet Ko Pani"

Shubhankar Biswas, Project Manager (Executive Engineer)
for Mohanpura-Kundalia Project Management Unit

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ADB

What made your organization prioritize service delivery in irrigation?

- Government of Madhya Pradesh's commitment to:
  - ***"Har Khet Ko Pani"***, i.e. Access to Irrigation Service for Every Field.
  - National Water Mission's mantra of "***per drop more crop***", i.e. improving water use efficiency and water productivity.
  - Doubling farmers' incomes.
  - Leveraging technology to provide irrigation to areas where canal irrigation is not possible by gravity.

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Top 3 issues in improving quality of the irrigation services

1. Increased budget and department capacity for improved Management Operation and Maintenance (MOM) of canal irrigation systems – (Change exp: irrigation from tail to head).
2. Developing pressurised piped irrigation / micro-irrigation with Smart SCADA to increase water productivity and irrigation reliability.
3. Pilot test private sector involvement in MOM of Greenfield irrigation projects through DBO contracting modality.

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Kundalia Irrigation Project

- Included under an ADB-assisted Madhya Pradesh Irrigation Efficiency Improvement Project (MPIEIP); with a loan of USD 325 million.
- A greenfield site to provide pressurized piped irrigation to more than 125,000 hectares of CCA.
- 2 Design-Build-Operate contracts (FIDIC Gold Book):
  - Defined Performance Guarantees and KPI;
  - Penalties on failure to meet performance requirements;
  - Separate payment schedules for Design-Build and Operations Services;
  - Agriculture Support Component – Farmer Field Schools & Support Centres;
  - 5 years O&M period with possibility to extend.

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ADB

Performance Requirements

- Maximum Power Requirement (LBC-30 MW; RBC-40 MW);
- Maximum electricity consumption (LBC-0.25 kW-hr per m^3; RBC-0.35 kW-hr per m^3);
- Hydraulic pump efficiency (88% or better);
- Minimum Pressure and Continuous Discharge at 1-hectare outlet;
- Guaranteed availability of Plant (98%);
- Adoption of micro irrigation by farmers (95% by end of 8th year).

Project Implementation Progress

THE EMILIA ROMAGNA CANAL (CER)

WATER QUALITY
IRRIGATION RESEARCH
LOW WATER COSTS

Paolo Mannini

Direttore Generale e Direttore Scientifico

Consorzio di bonifica di secondo grado per il Canale Emiliano Romagnolo

Emilia Romagna Canal: Main Data

- Water delivery to 5 associated reclamation consortia
- From pumping station on the Po river to Adriatic coast
- Water lifting of 15 m height (4 pumping stations online)
- 151 km long (16 no-concrete + 135 concrete)
- 68 m^3/s flow-rate
- 300,000 hectares served area
- 200,000 hectares irrigated area
- 400 Million cubic meters/year delivered
- 80% agriculture, 10% domestic, 5% industrial, 5% wetlands
- Irrigated season 1: March-31 Octobe
- Irrigation systems: 0% surface, 40% sprinkler, 60% drip

Canale Emiliano Romagnolo

RESEARCH ON IRRIGATION AND WATER SAVING – THE SECOND MAIN 0BJECTIVE

For 61 years, the CER Consortium has carried out an extensive research activity on irrigation and water saving in order to supply the farmers with all the pertinent information for its proper and economically-sound use, thereby reducing waste of water resources.

ACQUA CAMPUS

ACQUA CAMPUS is CER's laboratory for research and demonstration on irrigation.

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We bring water to the countryside

We study how to save water

WATER QUALITY – THE PRIMARY OBJECTIVE

IMPROVE INLET WATER QUALITY

The first 16 km of canal do not have concrete lining and are very wide (about 240 hectares). The existing aquatic vegetation exerts a Phyto depuration action, thereby reducing pollutants by at least 50%, ensuring a high level of quality to the water.

NO BAD WATER INPUT

In the following 135 km, the Canal does not receive any inflow in terms of urban or agricultural wastewater. The Canal, also, underpasses various Apennine streams characterized by poor quality waters during summer.

MONITORING WATER QUALITY

During the irrigation season qualitative checks are carried out:

- 10-days frequency
- 5 sampling stations
- over 30 parameters tested
- over 4,000 tests per year

IRRIGATION RESEARCH & USE OF RESULTS

Studies on IRRIGATED CROP PARAMETERS

- Phenophases dates in day degrees
- Leaf Area Index
- Root depth, Crop coefficients Kc
- Capillary rise from the water table
- Varietal efficiency
- Rootstock efficiency
- Regulated deficit irrigation

Studies on IRRIGATION SYSTEMS

- Drippers technology tests
- Large irrigation machine tests
- Water filtration
- Low energy precision application
- Subsurface drip irrigation
- Soil and fruit sensors
- Precision irrigation

IRRIFRAME: EXPERT IRRIGATION DECISIONS SYSTEMS

IRRIFRAME is the irrigation expert system conceived and developed as a result of the CER research. It is based on a soil/plant/atmosphere water balance and provides the exact interval and amount of irrigation for each crop considered. It is currently used by more than 8,000 farms, with an estimated water saving of 1-2 Million m^3/year.

Use

REDUCING IRRIGATION COSTS - THIRD MAIN PRIORITY

Canale Emiliano Romagnolo

ACQUA CAMPUS

MULTIPLE USES OF WATER

Agricultural activity needs sustainable water costs. The Canal governance ensures the delivery of the resource even to richer non-agricultural uses. The cost recovery of the service is very important, thus allowing significant improvements in the economic balance sheet.

LOWER ENERGY COSTS

The Canal lifts water from the Po river with noteworthy energy and economic costs (about 4-5 Million€/year), moreover releasing significant amounts of Carbon Dioxide CO_2 in the atmosphere.

- water saving of farms
- reduction of water losses
- Self production of photovoltaic energy (in the next years)

Thanks for your attention!

Paolo Mannini

Consorzio di bonifica per il

Canale Emiliano Romagnolo

Bologna Italy

mannini@consorziocer.it

Hydro agricultural Infrastructure in Irrigation Districts

Grisell Medina Laguna

Deputy Manager of External Credit

International Cooperation Management of CONAGUA

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CONAGUA
COMISIÓN NACIONAL DEL AGUA

National Water Resources Program 2019-2024

Priority objective #2:

Public problem

Inefficient water usage that affects the population and productive sectors

Priority objective and indicator for the welfare goal

2. To make efficient use of water in order to contribute the sustainable development of productive sectors

→ Rate of increase in water stress in the central and northern areas of the country

Priority strategies

- 2.1 Efficient water use in the Agro sector in order to contribute with food safety and welfare
- 2.2 Strenghten water user associations to improve their performance
- 2.3 Support and promote productive projects in marginalized areas, particularly indigenous and afro-mexican populations, to boost their development
- 2.4 To guide the industrial and service sectors development in order to mitigate their impact on water resources

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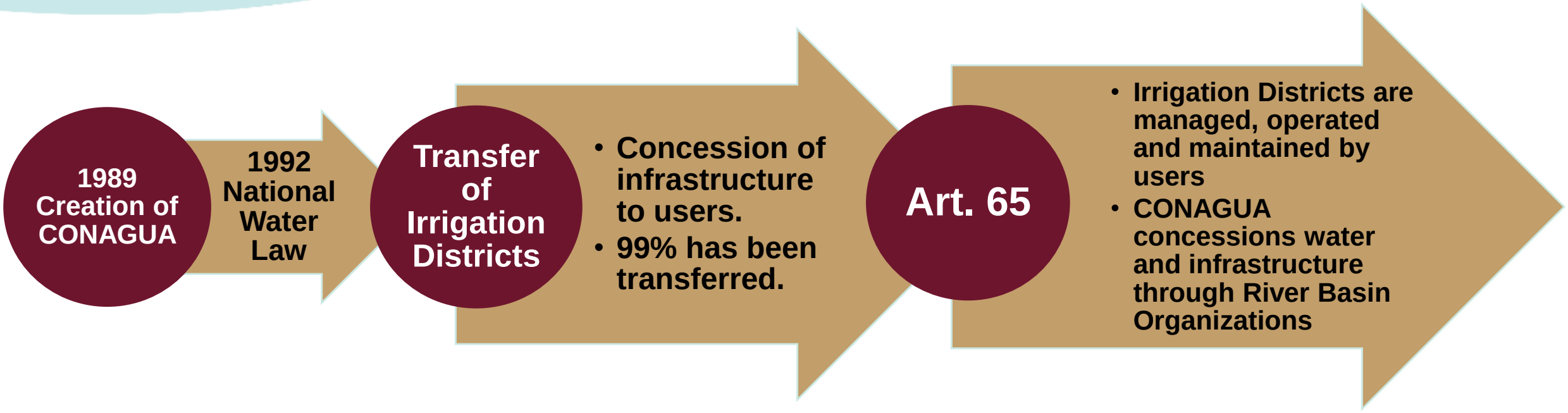
Irrigation Districts

86 Irrigation Districts

13 Hydrological-Administrative Regions

3.3 Million Hectares Irrigable Surface

CONAGUA and the transfer to Irrigation Districts



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Organization of Irrigation Districts

468 Civil Associations of Users and 18 Limited Liability Companies

- They manage, operate and conserve hydro-agricultural infrastructure of the major and minor network.

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- Preserves and manages head works, such as storage dams, diversions, booths and short stretches of canals

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Responsibilities and Subsidies

Concessionaires of hydraulic infrastructure have the obligation to maintain and rehabilitate:

- The water supply and distribution network
- The drainage network
- The roads
- The structures

For this task, the Federal Government implements a subsidy scheme to support the concessionaires who provide the irrigation service, in which they contribute 50% and the Government contributes the remaining 50%.

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Actions

Well rehabilitation

Actions

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Channel conservation

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Actions

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Tubing channels

Actions

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Channel lining

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Final Remarks

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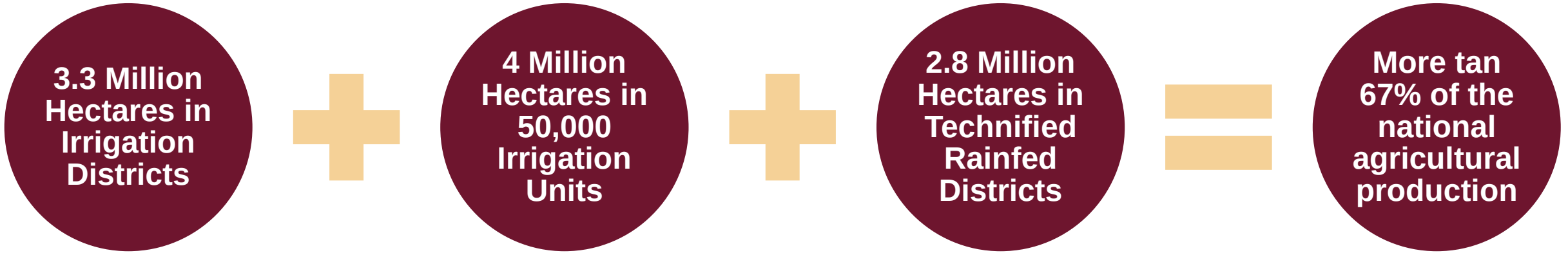
In addition to the Irrigation Districts, in Mexico we have:



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¡THANK YOU!

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AMENSOUSS, Morocco

El Bouari Ahmed

Irrigation and Agricultural Land Planning Director
Ministry of Agriculture – Morocco

Managing Director, AMENSOUSS

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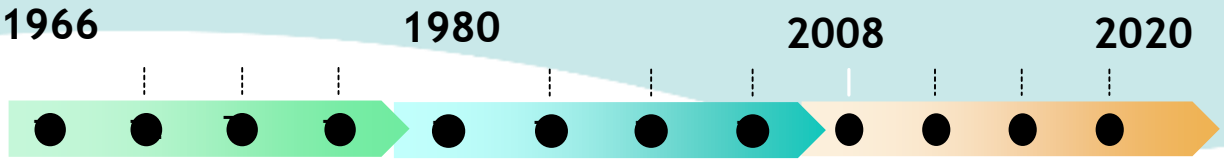
CONTEXT AND TRAJECTORY OF IRRIGATION IN MOROCCO

CLIMATE AND WATER RESOURCES

- Limited water resources : Less than 700 m3 /capita/year
- Hi spatial and temporal rainfall variability

EVOLUTION OF IRRIGATION POLICY



Proactive policy aim to irrigate 1 Million hectares to attend food security:

- Creation of regional irrigation agencies with larges prerogatives: 9 ORMVA
- Extend of Irrigated areas

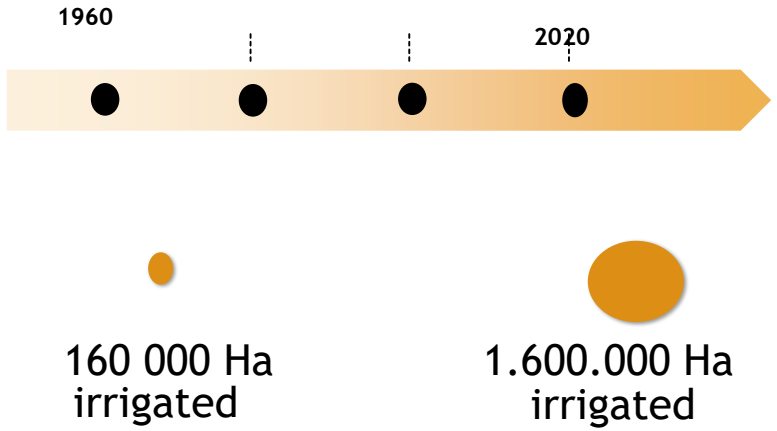
Major rehabilitations
Institutional reforms

Modernization collective irrigated systems

Massive conversion to drip irrigation

PPP to develop irrigation projects

- **Irrigated area x 10 since 1960**



THREE (3) MAIN IRRIGATION SYSTEMS

LARGE SCALE IRRIGATION (42 %) (*Modern irrigation infrastructure, water delivery to farmers through Collective irrigation networks, water use at farm level, High crop intensification rates*)

- 9 **Large scale irrigation schemes** developed by the Government
- 9 **Regional Agencies** (ORMVA) : public authority in charge of :
  - Construction of irrigation infrastructure.
  - Operation and maintenance of irrigation networks.
  - Agricultural development and farmers support

SMALL AND MEDIUM SCALE IRRIGATION (23 %)

- **Irrigated areas (from 200 to 2000 ha) developed by the Government**, with small and medium irrigation infrastructure for water supply and distribution to farms.
- **irrigation systems are managed and maintained by farmers' organizations**

PRIVATE IRRIGATION (35 %)

- Farms equipped with private investments mainly using groundwater.
- High crop intensification rates and crop yields.
- Major role in agricultural exports

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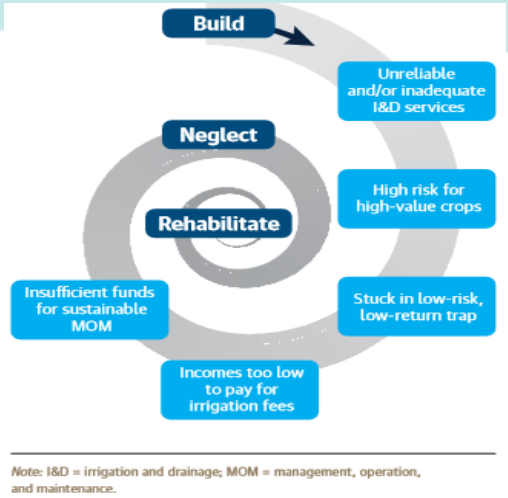
Main limitations of the conventional model (ORMVA)

- Limited flexibility in terms of water pricing, cost recovery and cost control
- Non-allocation of revenue from the water service to cover its costs
- Dependence on Government budget makes it difficult to develop a long-term global vision
- Difficulties in contracting Government/ORMVA relations
- ORMVA-User relations: farmer in a position of assisted rather than a customer of the water service

Impacts on the operational management of the water service



Note: I&D = irrigation and drainage; MOM = management, operation, and maintenance.

Long-term costly rehabilitation

A gradual and continuous degradation of equipment

Solution:

PRIVATE PUBLIC PARTNERSHIP

Share investment financing & risks

- Ensure the sustainability of irrigation infrastructure
- Improving water and energy efficiency
- Optimization of operation and maintenance
- Improving water service quality
- Reduction of Government budget transfers

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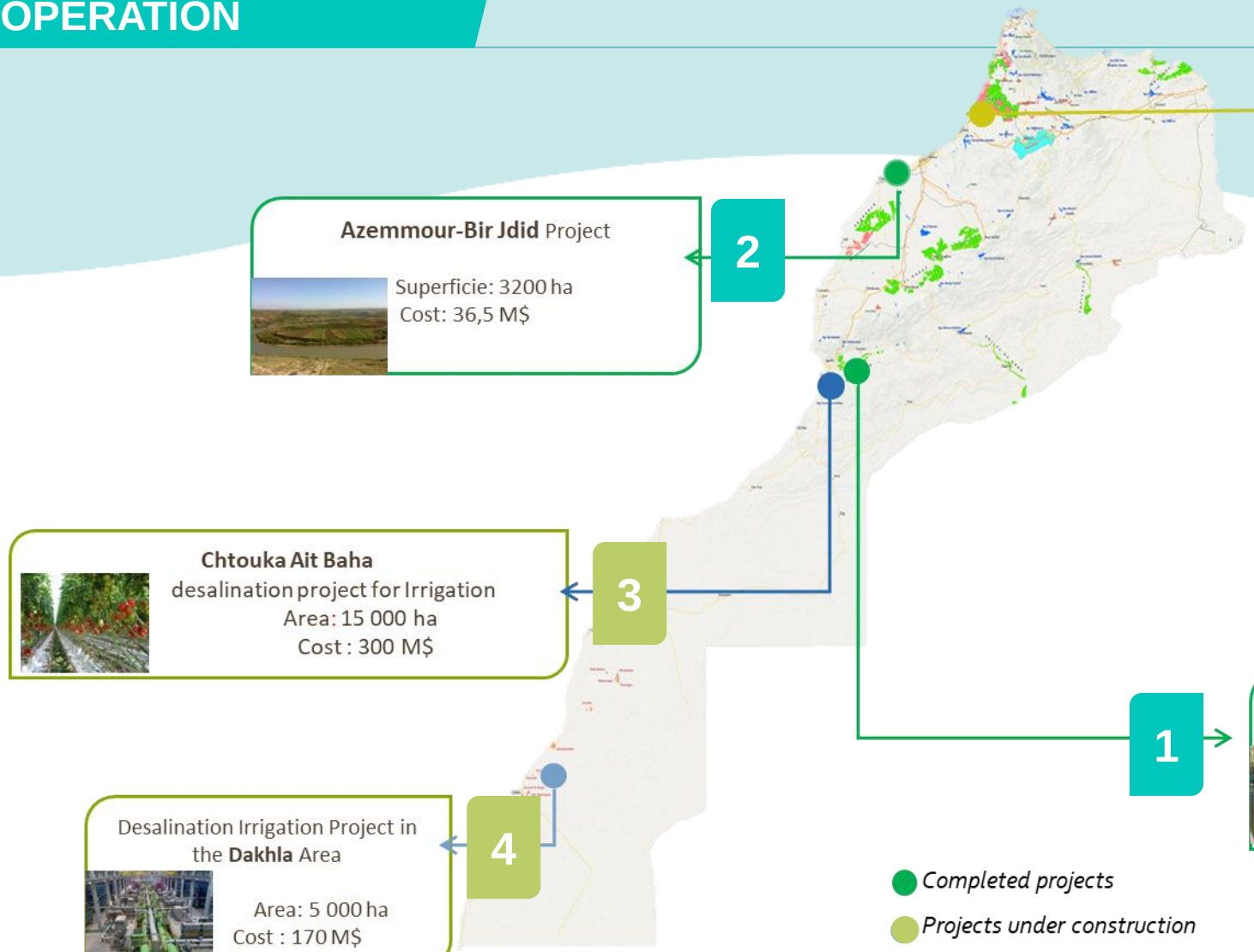
SEVERAL PPP PROJECTS IN OPERATION



Gharb project

Area : 30 000 ha
Cost : 600 M$

5

Azemmour-Bir Jdid Project

Superficie: 3200 ha
Cost: 36,5 M$

2

Chtouka Ait Baha
desalination project for Irrigation
Area: 15 000 ha
Cost : 300 M$

3

El GuerdaneP roject

Area: 10 000 ha
Cost : 98,7 M$

1

Desalination Irrigation Project in the **Dakhla** Area

Area: 5 000 ha
Cost : 170 M$

4

Completed projects

Projects under construction

Projects planed in short *term*

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The Moroccan PPP in Irrigation

El Guerdane Irrigation Project

The first experience in Morocco

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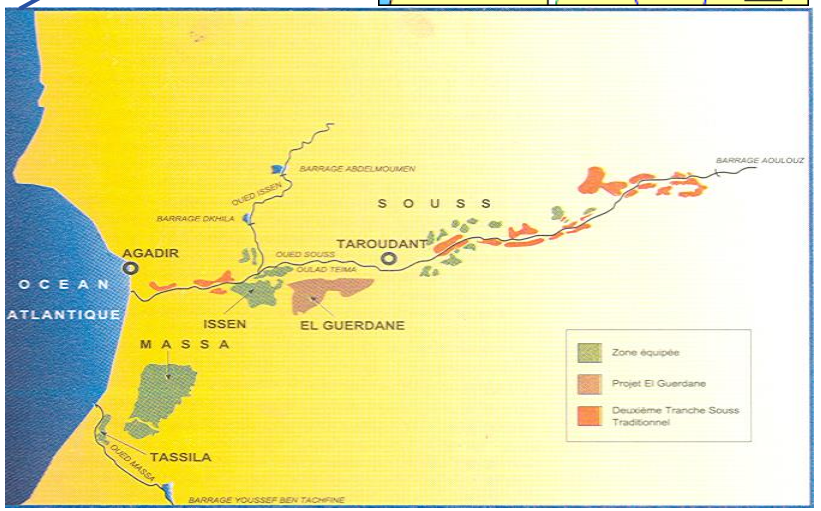
THE CONTEXT OF THE PROJECT

- **10,000 hectares of citrus**
- **670** farmers,
- Water resource **groundwater** (private wells)
- Water table overexploitation (- 2.5 m per year, Tree uprooting and loss of production)

How to sustain the project the Guerdane irrigated area?

- Transfer of **45 million surface water** to reduce water withdrawals from the groundwater (~ 50 % water needs)
- The main infrastructure of the project :
  - construction of a 90 km pipe to transfer water from dam to irrigated area
  - a collective irrigation network (300 km) to supply farms hydrants



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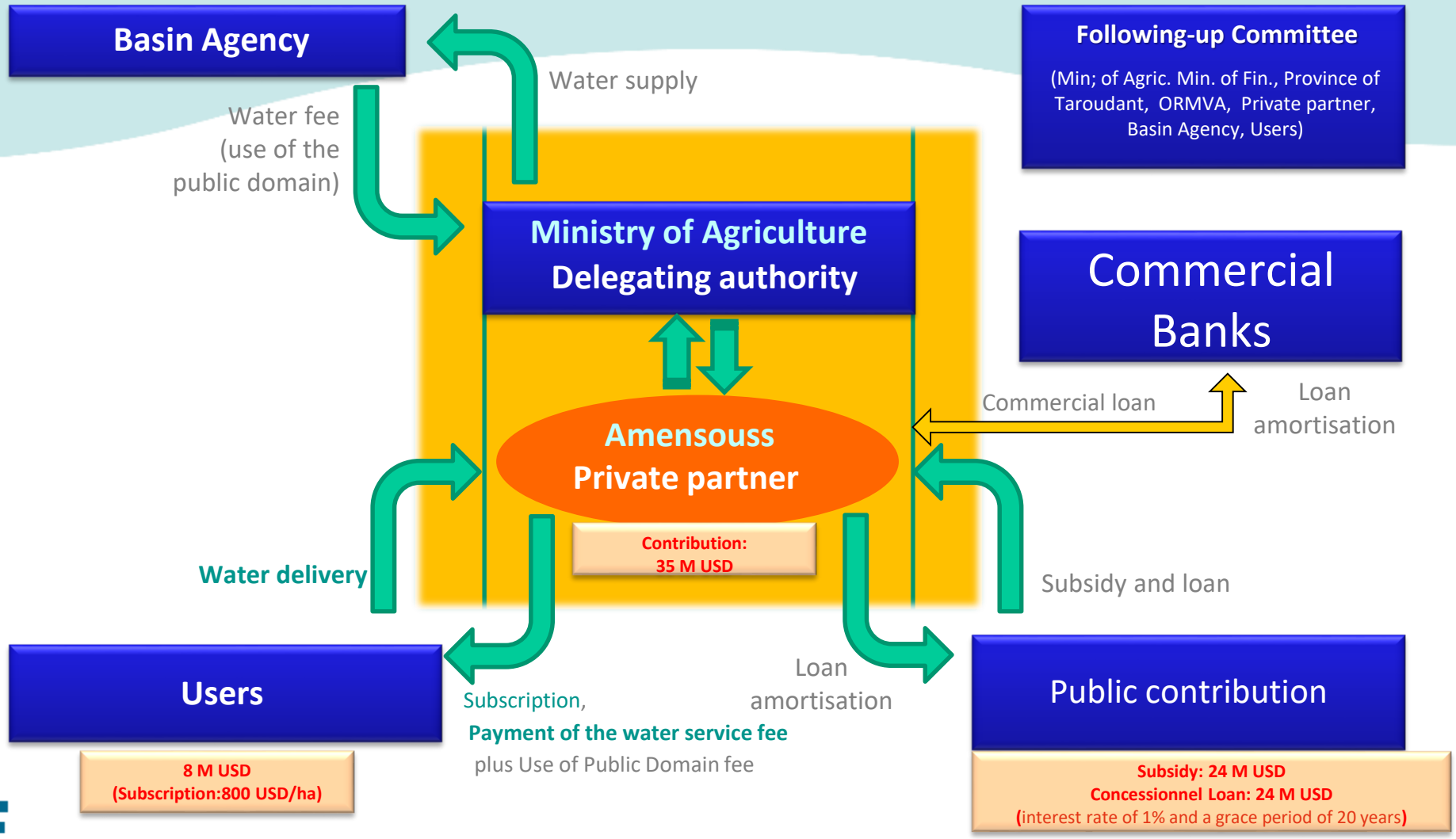
PROJECT PARTNERS



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Main lessons : a balanced service contract

A transparent, efficient and equitable irrigation service :

Obligations of the Private Partner

- User **subscription**;
- Installation of **individual irrigation hydrants**
- **Water allocation** according to contractual conditions
- **Pricing**;
- **Meter readings**
- **Quality of service** (Pressure, Flow, Suspension of service: duration of stoppages, etc.)
- **Network operation and maintenance**

Obligations of farmers

- **Equipment of farms with drip-irrigation**;
- **Payment of fees** and invoices relating to the service (Subscription; Connection; Annual subscription; Quarterly consumption, ABH fees)
- **Observe the prescriptions**:
  - Operation on irrigation hydrants
  - Access to counters
  - Exclusive rights to the service (ban on transfer, sale, etc.)

Main lessons : BALANCED RISK SHARING

Model designed to **minimize the service provider's risks**:

- **Water supply risk :**
  - The service provider's income deficit due to water scarcity for a specific year will be limited to 15% of a normal year
  - Users will contribute (over and above a 15% deficit in water volume) by a specific fee
  - The Government will compensate the service provider for any deficit above 22.75%
- **Demand risk :**
  - The **Government contribute in the investment** with 48 MUSD;
  - This amount will allow a **water fee comparable to the present groundwater withdrawal costs**, while maintaining the project financial return,
- **Optimized subscription procedure :**
  - To allow the service provider to identify the system users, a subscription procedure is set up
  - The subscription is effective with the payment of a cotisation per hectare
- **Limited risk of users' non payment :**
  - The water fee is made of a **fixed part** (20% of the subscribed volume) plus a **second part which is proportional to the consumption**
  - Such a binomial fee reduce the risk of users' non payment by authorizing the service provider not to deliver water to the faulty farmers

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Project risk allocation

- A **low ‘surface water demand risk** :
  - The public subsidy allows the water fee to be comparable to the present groundwater withdrawal costs, thus being affordable to farmers
  - In order to limit the service provider’s risk coming from an insufficient water demand, the service provider start constructing the irrigation network until subscriptions reached 80% of the project water allocation

- The **service provider is responsible for project design** :
  - The transaction documents indicate a limited number of technical criteria for guaranteeing good service quality and minimal environmental impact
  - The choice of materials, the distribution network design, and a number of service characteristics are the service provider’s decision

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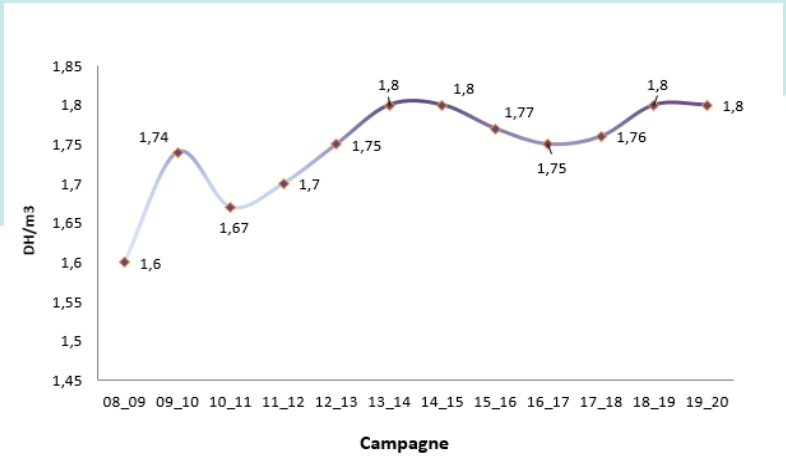
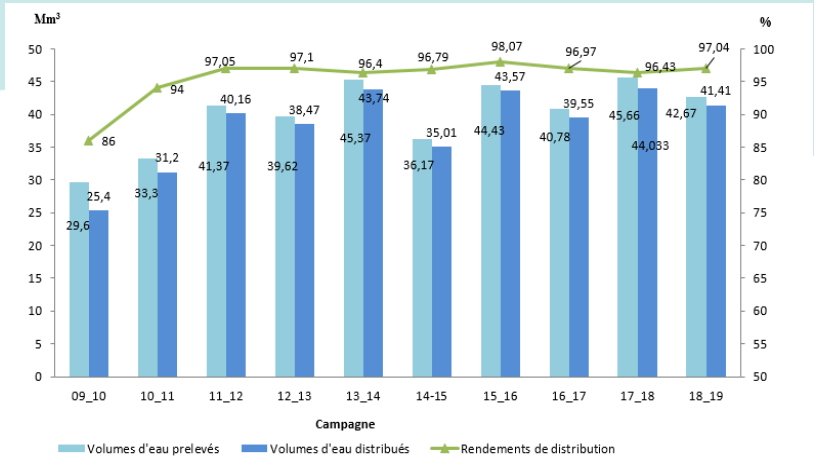
10 Years of Performances

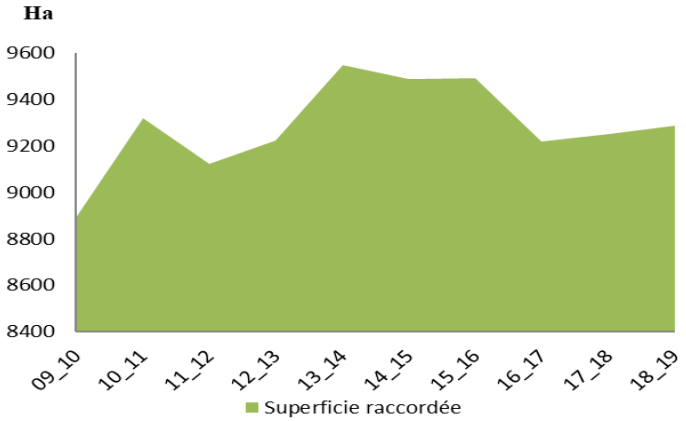
Evolution of the price of water service



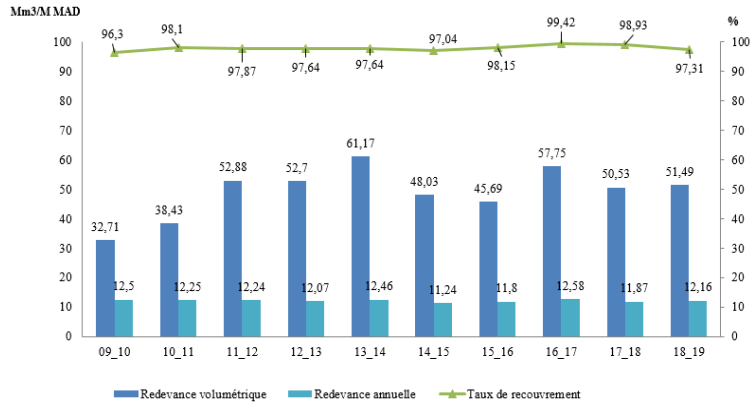
Network efficiency



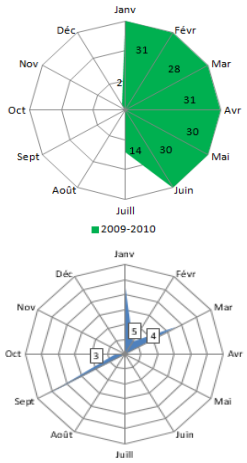
Users and Connecting



Billing and **recovery**



Service cessation



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Irrigation in South Africa: Government Initiatives and Interventions

agriculture, land reform & rural development

Department:
Agriculture, Land Reform and Rural Development
REPUBLIC OF SOUTH AFRICA

Mary Jean Gabriel

Director, Department of Agriculture, Rural Development and Land Reform, South Africa

Introduction

- South Africa is a young democracy.
- It replaced old policies with new policies to address inequalities of the past.
- It increased the contribution of irrigated agriculture to poverty alleviation, employment creation and skills development.

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Initiatives

- Developed the National Water Act (Act 36 of 1996)
- Conducted the Water Allocation Reform
- Increase the equity of access by historically disadvantaged individuals to water resources especially irrigated agriculture without compromising irrigation water efficiency
- Initiated government programmes and funding mechanisms.

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Interventions

- Revitalization, expansion and development of irrigation schemes
- Establish effective liaison and cooperation between all role players in irrigation to promote the development of successful, sustainable irrigation agriculture
- Introduced financial support to expand the pool of expertise in irrigation in the country
- Increased support for research on irrigation and irrigation related research done in South Africa and for South Africa’s unique conditions.

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Thank you!

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agriculture, land reform & rural development

Department:
Agriculture, Land Reform and Rural Development
REPUBLIC OF SOUTH AFRICA

Poll Results

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Open Discussion

This discussion will include panelists from the previous presentation and is open to the audience. Questions received through the chat will be provided to the panelists to facilitate the discussion.

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Thank You!

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INTERNATIONAL NETWORK OF SERVICE PROVIDERS FOR IRRIGATION EXCELLENCE

WORLD BANK GROUP
Water

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GLOBAL WATER SECURITY & SANITATION PARTNERSHIP