



NAVIGATING WATER SCARCITY & SUPPORTING FOOD SECURITY

Market-based Development of Sustainable Irrigation

Dr. Youssef Brouziyne

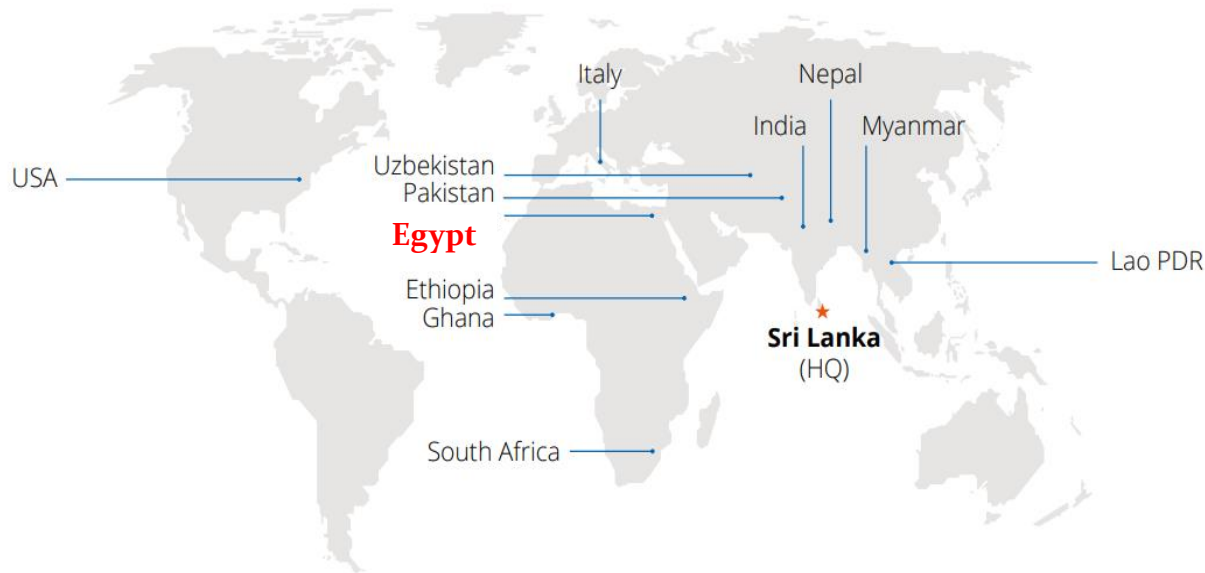
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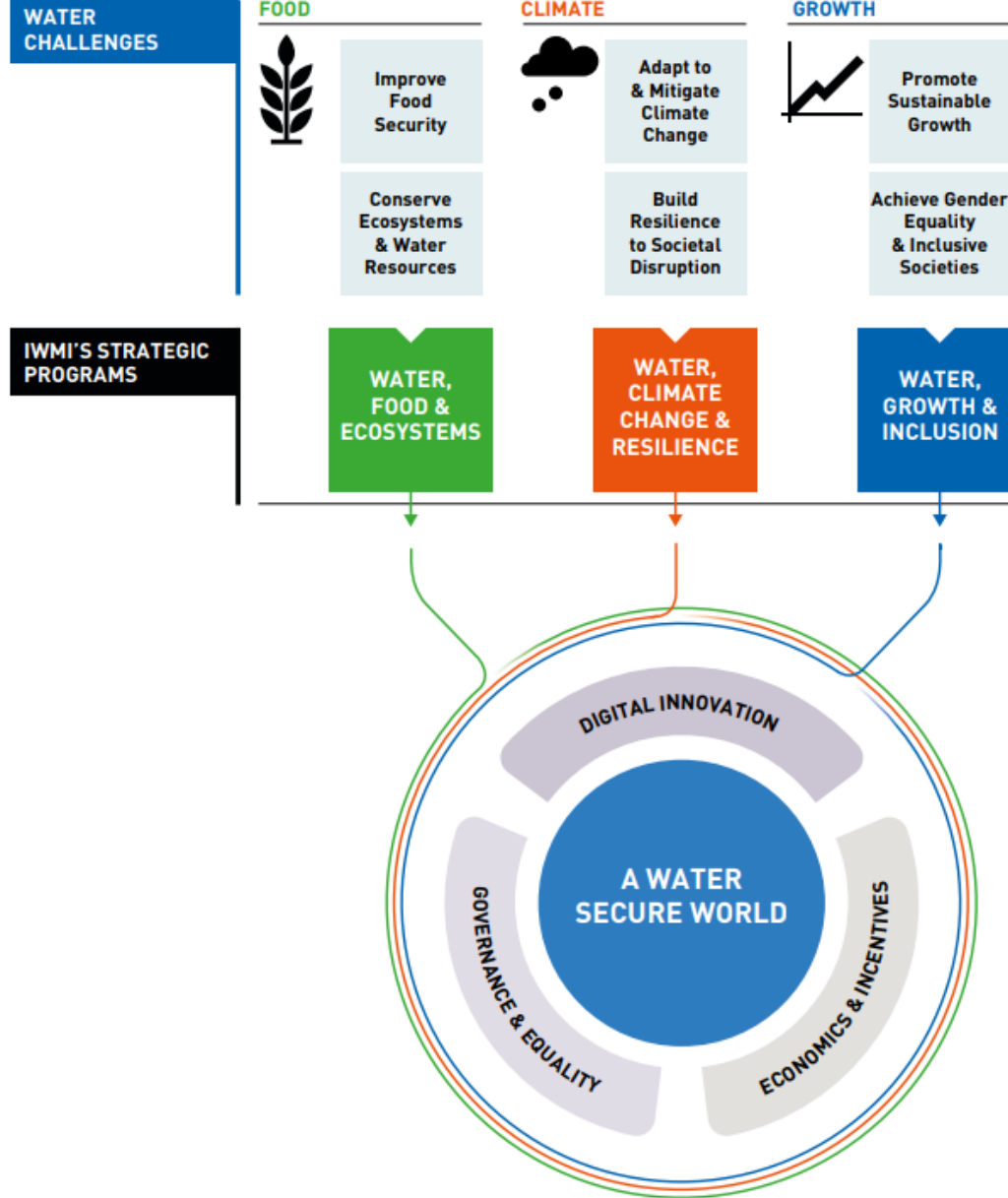


IWMI Offices



IWMI is an international, research-for-development organization, with offices in **15 countries** and a global network of scientists operating in more than **55 countries**. For over three decades, our research results have led to **changes in water management** that have contributed to social and economic development.

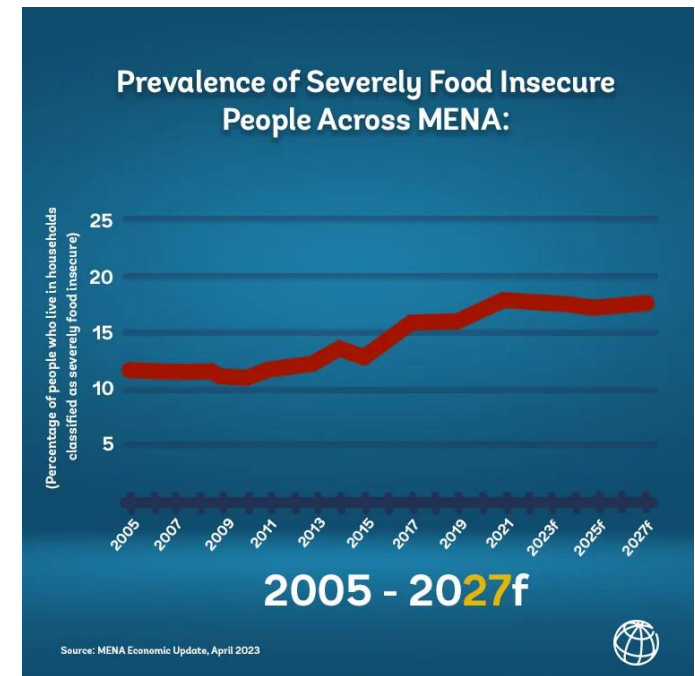
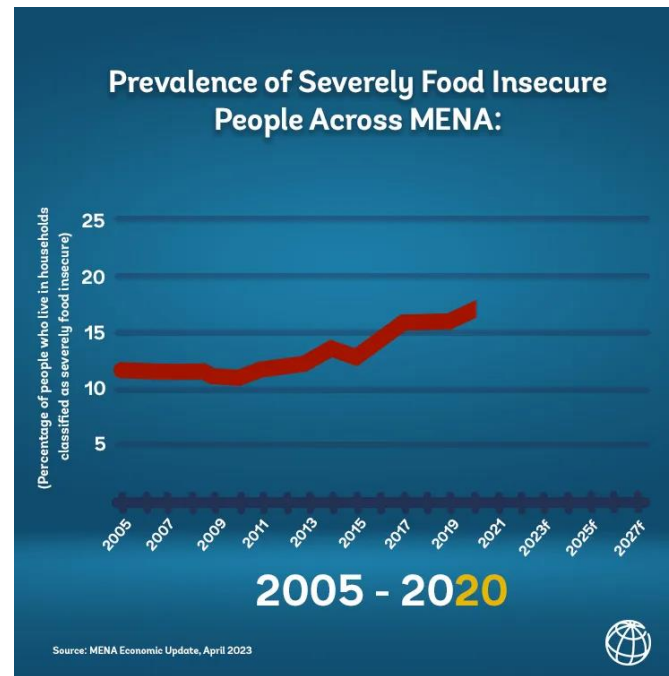
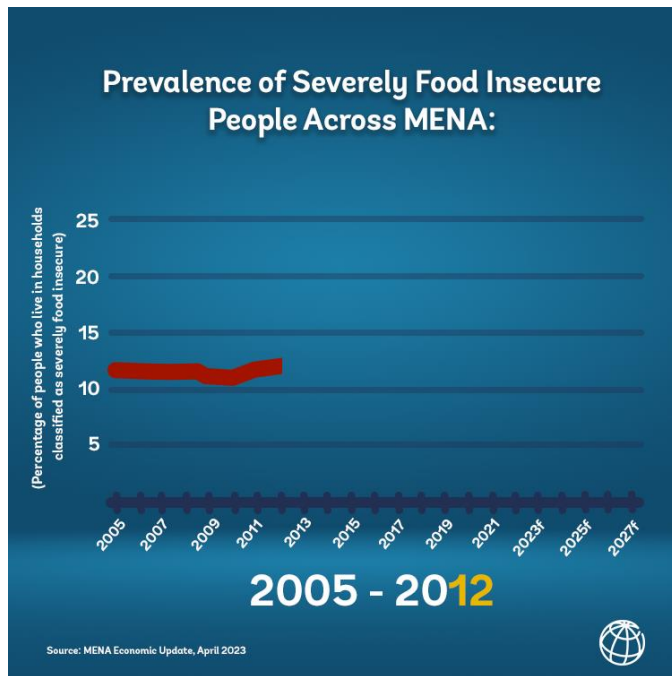
IWMI's Strategy



IWMI Response to Water Systems challenges



Food Security in MENA



Irrigation Development Efforts in MENA



مشروعات الري والموارد المائية خلال عشر سنوات
تعظيم الاستفادة وتنمية الموارد

عمان

"الثروة الزراعية" تنفذ مشروع نظام ري متكامل بفلجي صعراء والبريمي

Leaders

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Economy

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وكالة الأنباء الأردنية
Jordan News Agency



سلطة وادي الأردن: تطوير أداء انظمة الري بقيادة الملك عبدالله

هيئة أبوظبي للزراعة والسلامة الغذائية
ABU DHABI AGRICULTURE AND FOOD
SAFETY AUTHORITY



WATERSAVING USE FOR IRRIGATION FROM THE UAE

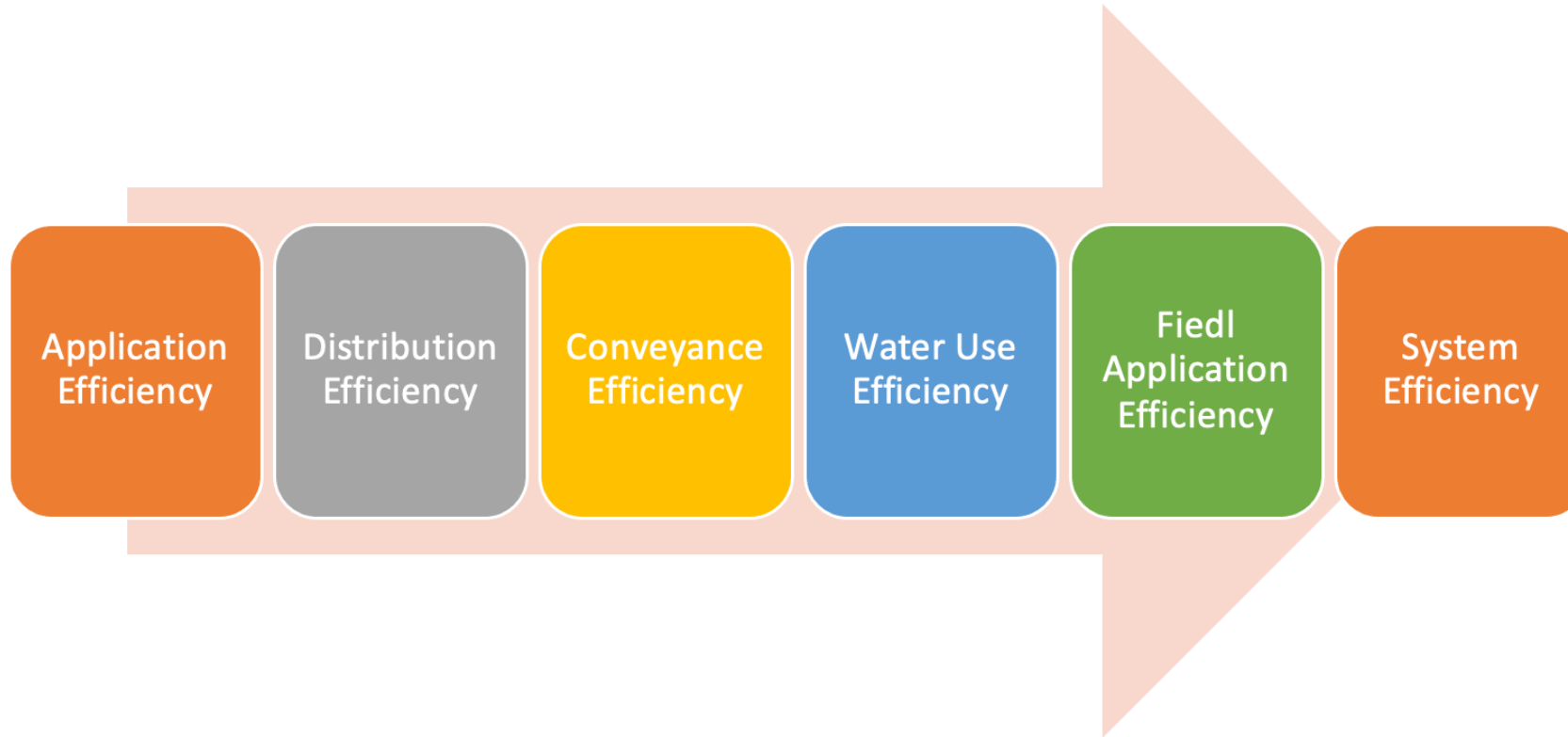
Irrigation Development Efforts in MENA



Irrigation Development Efforts in MENA



Types of Irrigation Efficiency



How to increase efficiency?



Valves



Water meters



Weather stations data



Fertilizer



Water quality



Wind speed



External device



Humidity sensors



Water pumps



Water pressure



Pivot center



External device



Failure factors of the introduction Efficient Irrigation Tech Projects

- ❖ Inappropriate problem or partnership
- ❖ Inappropriate tools and mechanisms
- ❖ Inclusivity: stakeholders, small-farmers, value chains...
- ❖ Viability: finance, parts, After-sale service...



Avoiding simplistic thinking



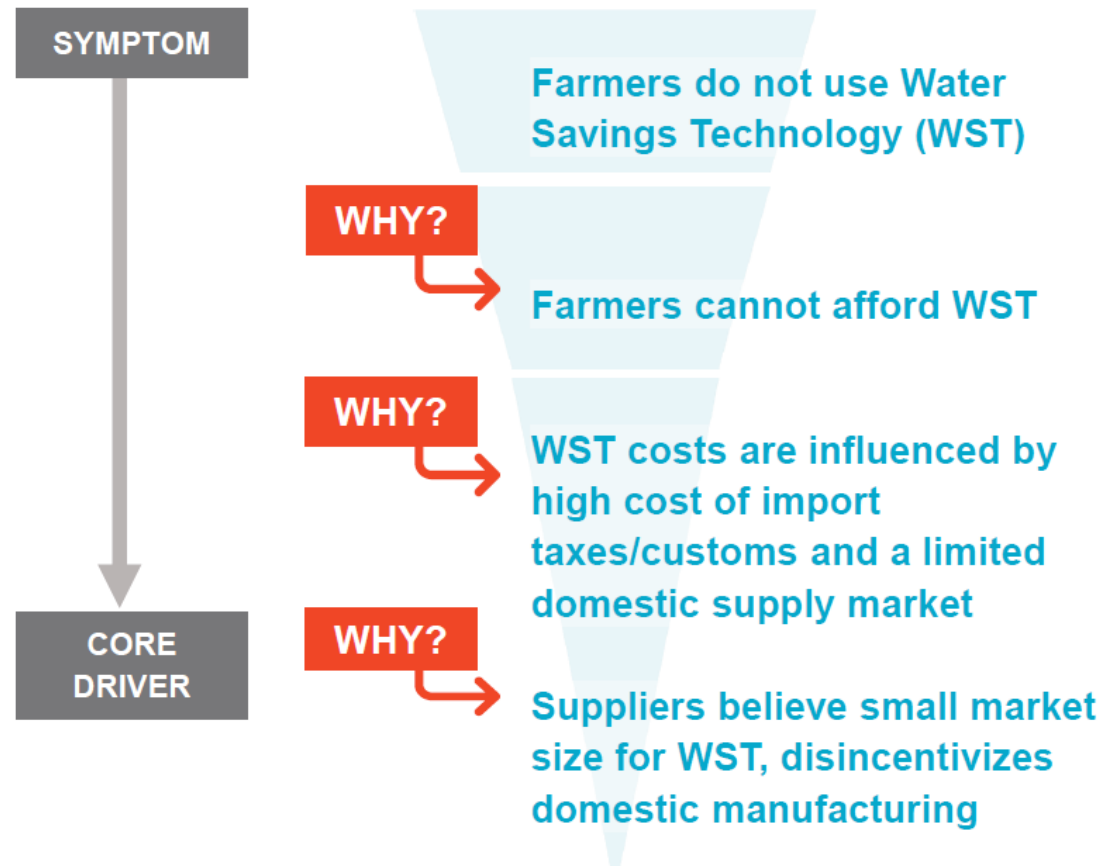
We often try to address challenges as though they are *simple*

For example, we might assume that a farmer isn't using water saving technologies **only because of** a lack of information

The reality is usually **much more complex**

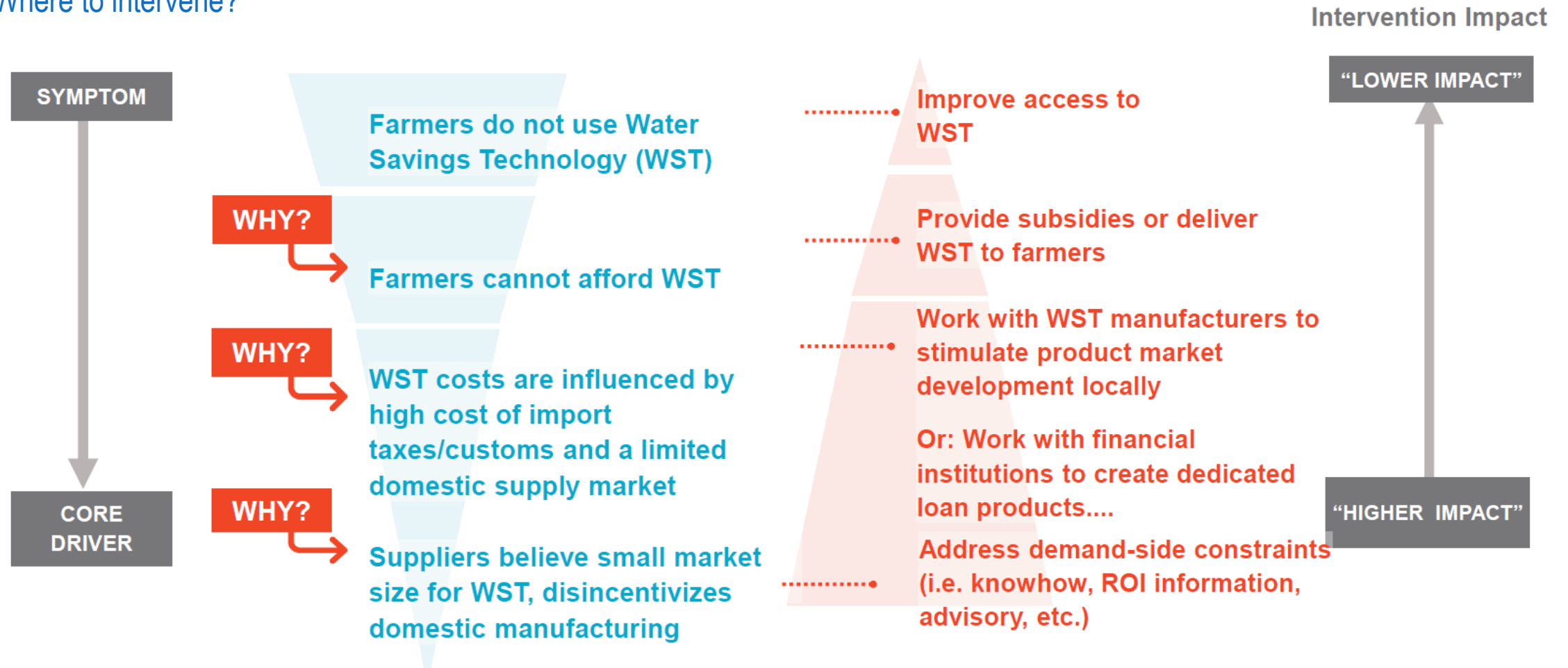
Avoiding simplistic thinking

Where to intervene?



Avoiding simplistic thinking

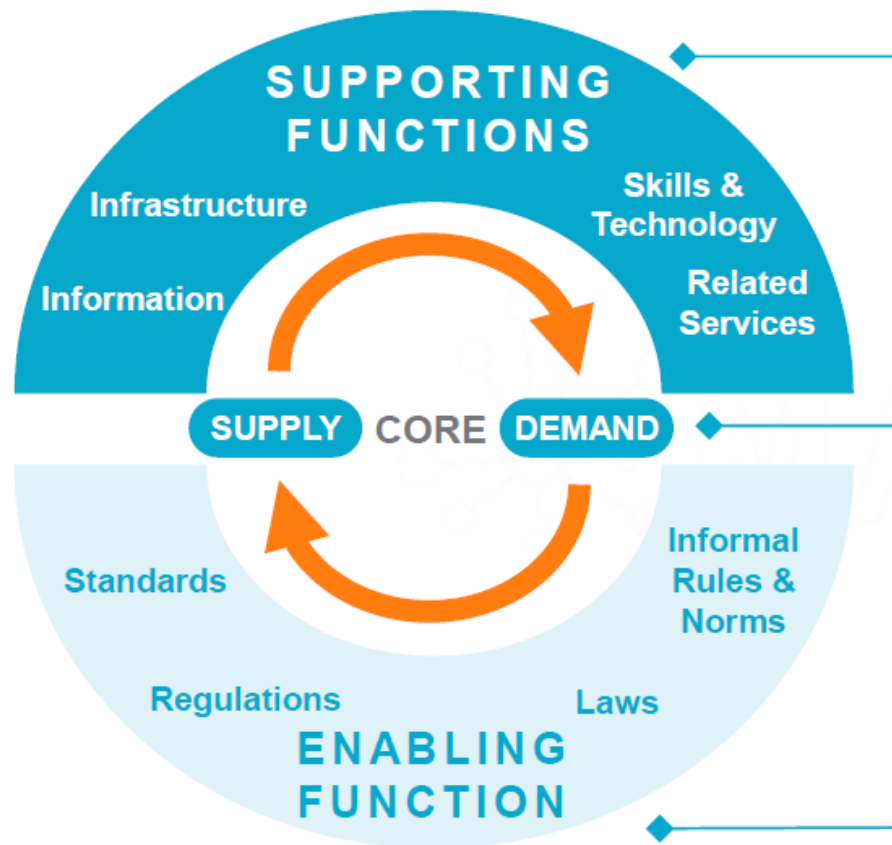
Where to intervene?



Market System Development (MSD)

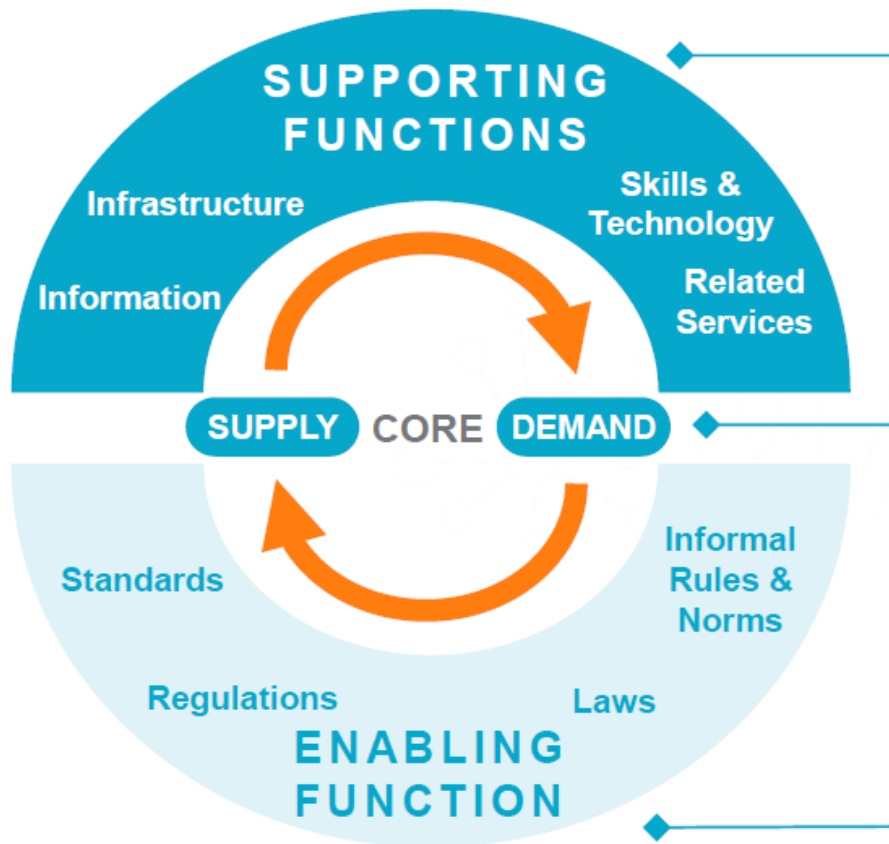
- MSD programs **don't react to observed problems** with direct interventions and quick fixes, such as grants and subsidies.
- Instead, they gain a **good understanding** of market opportunities and underlying causes of market dysfunction and collaborate with market actors (both public and private) to improve business models, policies and practices.
- These improvements **increase access of marginalised** groups to basic inputs and services, making the market system more inclusive, productive and efficient, which in turn contributes to pro-poor growth.

Market-based Development (MSD)



Source: Adapted from The Springfield Centre's M4P Operational Guide, funded by SDC and DFID

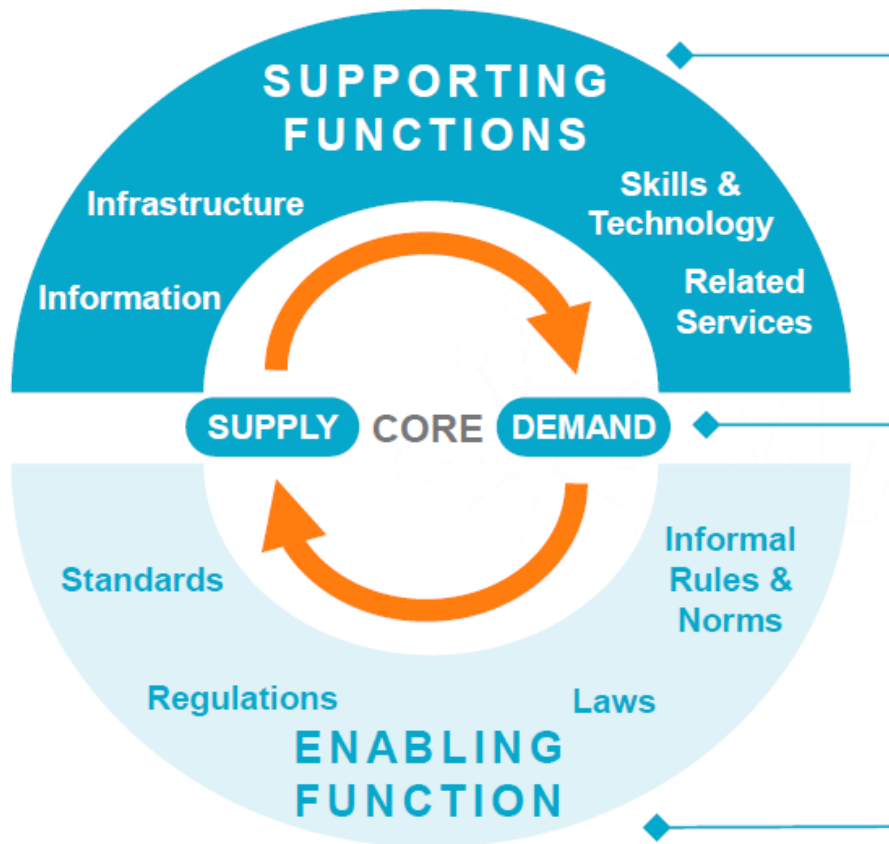
Overview



Core function: the central set of **exchanges between providers (supply-side) and consumers (demand-side)** of goods and services at the heart of a market system. The medium of exchange can be financial or non-financial (e.g., through accountability mechanisms or the 'setter' and 'receiver' of a regulation).

(i.e. manufacturer, retailer, farmer, water user)

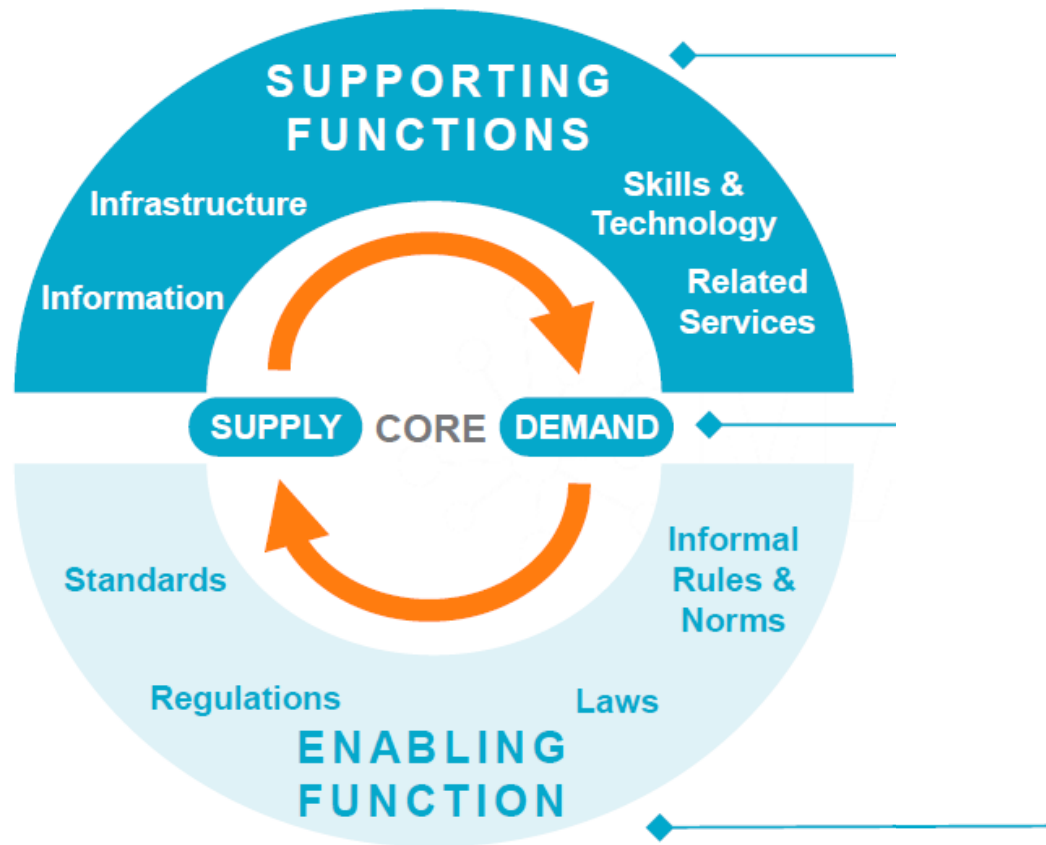
Overview



Supporting functions: a range of context- and sector-specific functions that **inform, support, and shape the quality of the core function** and its ability to develop, learn, and grow.

(i.e. ag extension, water infrastructure, marketing)

Overview



Enabling functions: formal rules (laws, regulations, and standards) **and informal rules** (values, relationships, and social norms) that strongly **define incentives and behavior** of market players in market systems.

Overview



**Systems
thinking**



Facilitation

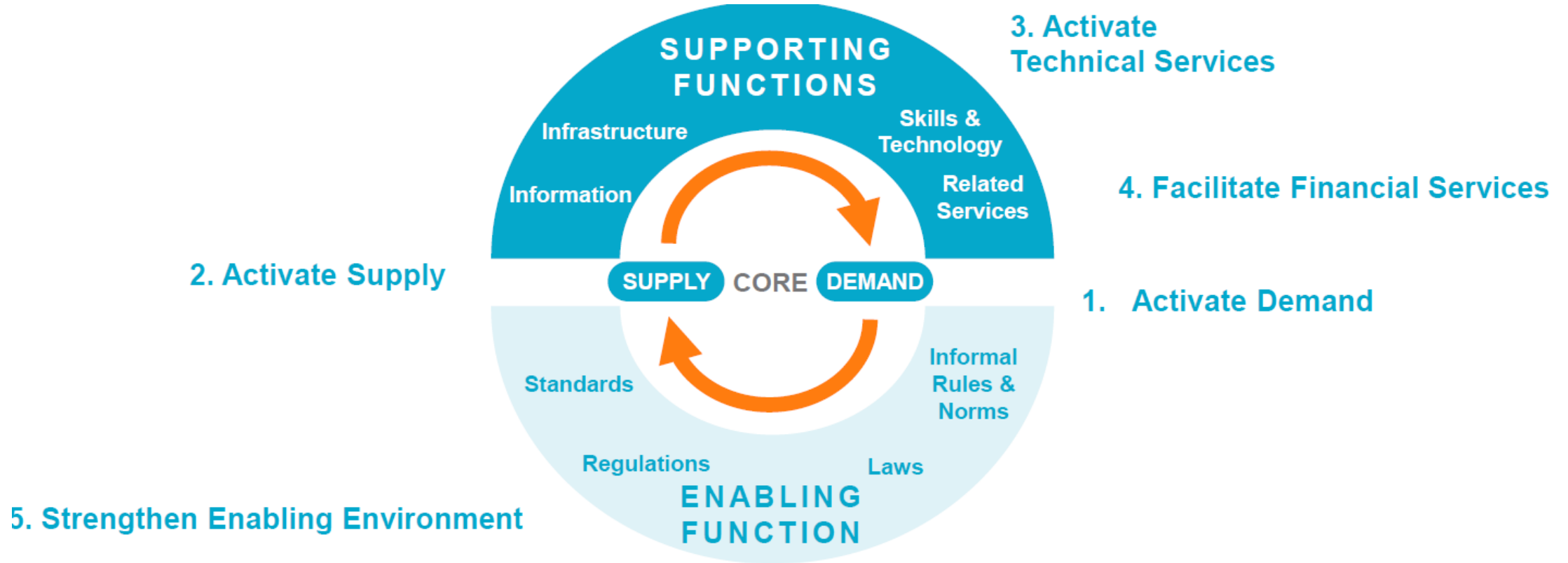


Inclusion



**Adaptive
management**

Overview



Source: Adapted from The Springfield Centre's M4P Operational Guide, funded by SDC and DFID



Water Innovation Technologies Project



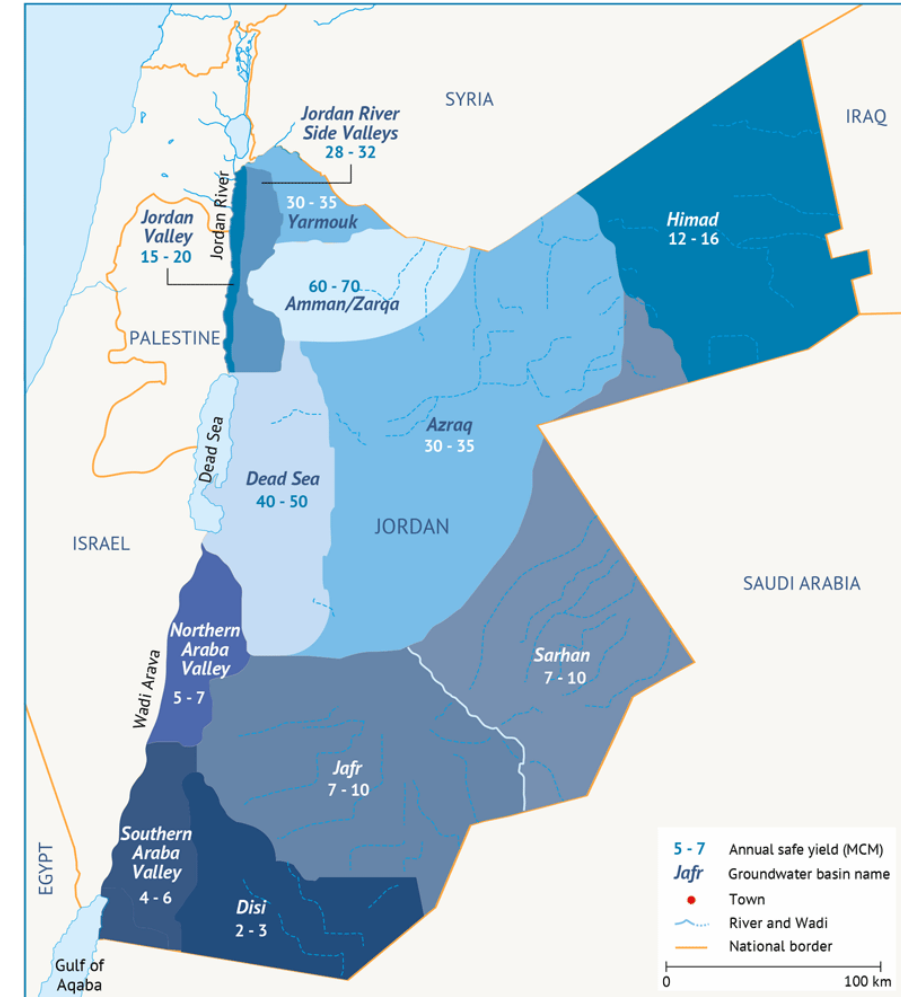
Efficient Irrigation Tech intro Projects in Jordan

- Many projects have provided direct grants of equipment to farmers and farmers groups, industrial factories.
- These included subsidies or direct acquisition of Water Saving Technologies (WST) given to farmers.
- In some situations, these types of support and grants **did not result in viable business models** that would support the future purchase and maintenance of this WST

Project Background

The Water Innovation Technologies (WIT) Project

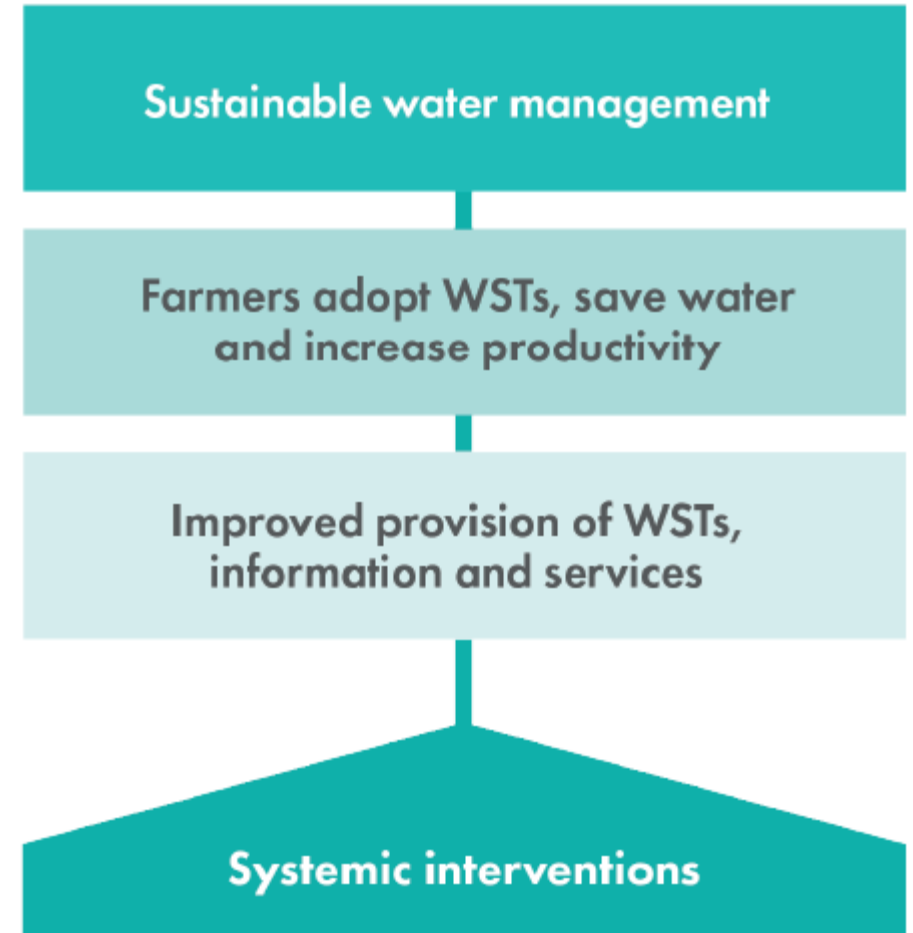
- ❖ A five year project funded by USAID and led by Mercy Corps with a target of saving water from groundwater resources by introducing water saving technologies and practices in the agriculture sector in Jordan following a market system approach (MSD)



Project Background

The Water Innovation Technologies (WIT) Project

Objective: to save 18 MCM of water in the agricultural sector and household level



WIT's overall theory of change

Main areas of intervention

- › Access to information on benefits and availability of WSTs
- › Building capacity for engagement between key market actors
- › Access to finance to enable investments in WSTs
- › Creation of spaces for interaction and learning



Market actors and their roles

Agriculture Extension Department

Extension Services

WST Supplier

Manufacturing or importing, and selling WST

WST Retailer

Selling WST directly to farmers

Agriculture Credit Corporation

Provide financial support and investments

Jordan Renewable Energy Efficiency Fund

Provide financial investments for renewable energy

Jordan Enterprise Development Corporation

Enterprise and startup development

Water Use Associations

Water distribution and monitoring
Convening Farmers

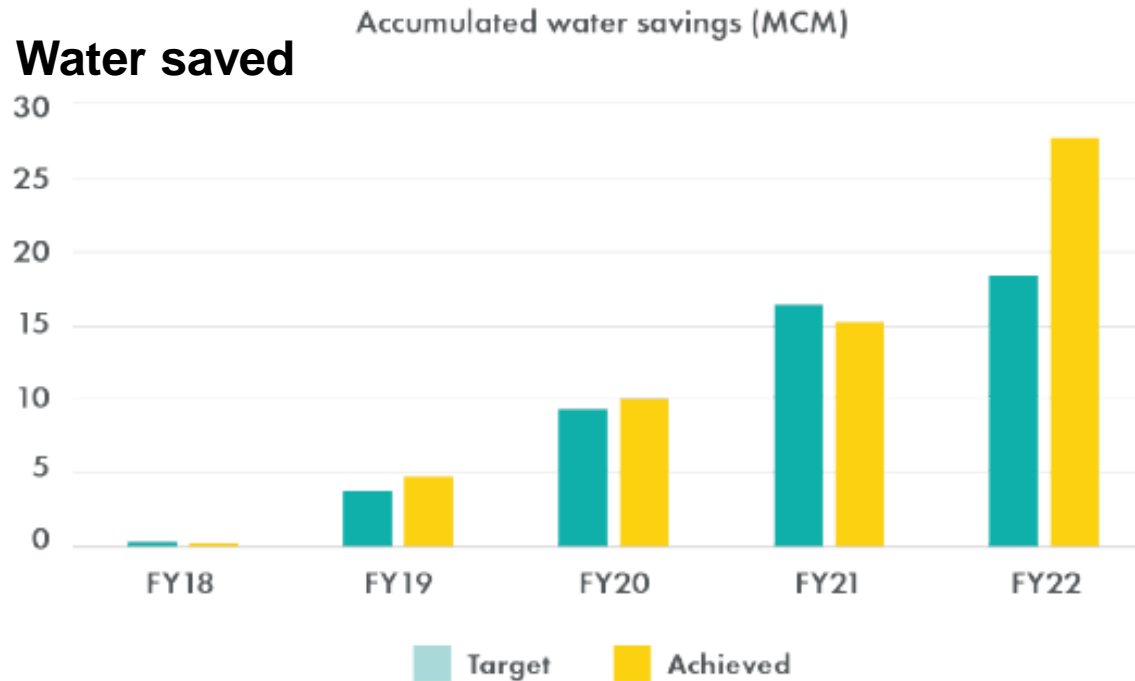
National Agriculture Research Center

Generating research, and technical best practices on farming and irrigation

Vocational Training Corporation

Training design and implementation
Business incubation

Main impacts



WIT's strategies and interventions led to total **savings of 28 MCM of water** in the agricultural sector and at household level.



These savings exceeded the original target of 18.5 MCM by 51% and are equivalent to 11,000 Olympic pools.

Adoption of WSTs by farmers

The most **common motivations** for farmers and farm managers to invest in WSTs and practices are: Saving water for future use, saving money on energy bills, saving money on water bills, improving crop quality and yield, and using water somewhere else in the farm

Expansion and response by WSTs providers

Retailers had **perceived a higher demand** for more advanced irrigation technologies and, as a result, responded by **increasing their investments** in improved information and marketing materials, technical staff and farmer advisory services.

WSTs return on investment

With an average installation cost of PC systems of \$1200 per hectare, and average lifespan of the installations of eight years the **ROI is 450%**. With a lifespan of three years, the ROI was approximately 135%.

Learnings

- ❖ **Water Saving & irrigation efficiency Technology Market still lack a dialogue** between key players, sensible policy and incentives to boost technology up scaling and to encourage farmers adoption.
- ❖ **The importance of research and development**, in facilitating effective market mechanisms.
- ❖ The importance of addressing **water and energy nexus** to facilitate the adoption of innovative water and energy saving technologies.
- ❖ The effect of **monitoring and evaluation** end-users' **behavior** towards water and energy saving.
- ❖ Water savings at the field scale **can translate to water for reallocation** to the basin scale when policies on irrigation expansion and intensifications are enforced, along with setting water withdrawals caps

Thank You

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