Food and Agriculture Organization of the United Nations

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AgWA Partnership for agricultural water for Africa

Emerging practices from Agricultural Water Management in Africa and the Near East

Thematic Workshop

Theme 3

Water Harvesting

The 3-pronged approach

29 August 2017

Theme 3:

Three-pronged approach

PRESENTATION OUTLINE

BACKGROUND AND DEFINITION

FIGURES AND FACTS

EMERGING PRACTICES

THE PROJECT

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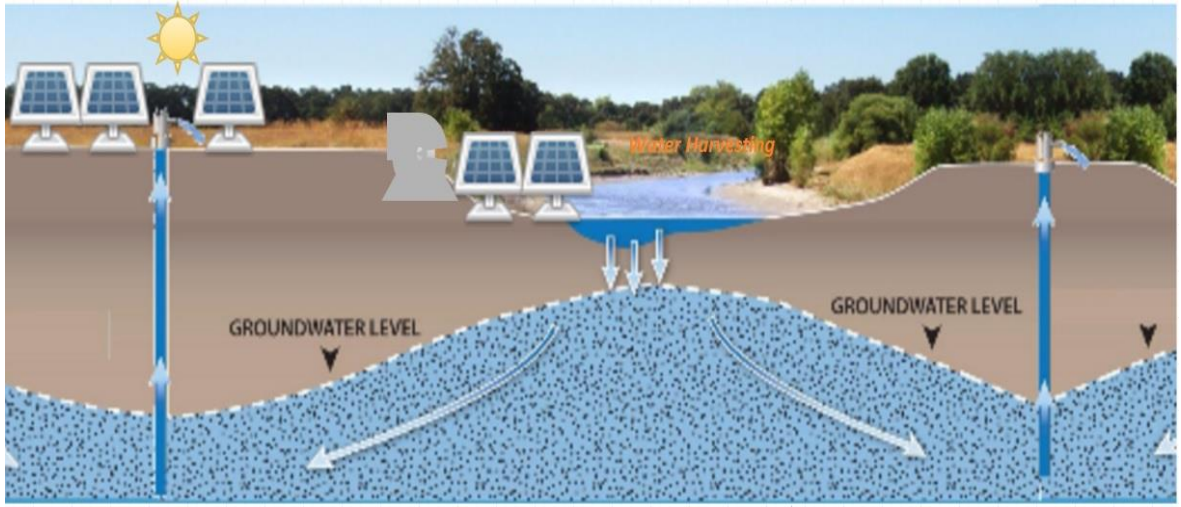
Three-pronged approach

BACKGROUND AND DEFINITION

Three-pronged approach: Combined application of techniques for sustainable and efficient use of agricultural water resources

Solar-powered irrigation

provides a sustainable source of energy for lifting water



Groundwater

ensures reliability of water supply

Water-Harvesting

allows the capture of resources that otherwise would have evaporated

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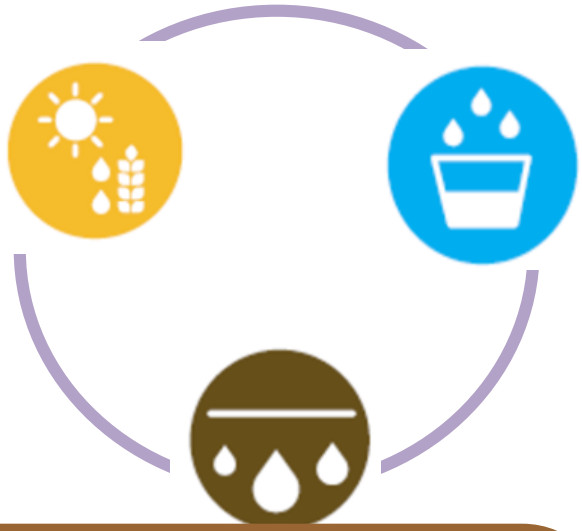
BACKGROUND AND DEFINITION

Solar water-pumping (SWP):

- technology using sunlight to convert into electricity to lift water
- twinned with efficient irrigation for resilience and sustainable agriculture.



Conjunctive use of surface and groundwater:

- an optimal combination of both sources of water
- minimizing the undesirable physical, environmental and economic effects of each solution
- balancing the water demand and supply

Water Harvesting (WH):

- collection of rainfall for direct application
- stored in the soil profile for immediate use or stored in a reservoir for future productive use

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BACKGROUND AND DEFINITION

FAO's Strategic Objective

3: Reduce rural poverty

Organizational Outcome

301: Support to improve **access** of poor rural producers and households to appropriate **technologies and knowledge**, inputs and market

Organizational Output

30102: Support to the promotion and implementation of **proper approaches to policies and programmes** which improve access to and sustainable management of natural resources

30104: Support **to innovations in rural services provision** and infrastructure development accessible to the rural poor

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FIGURES

The energy sector is the main source of GHG emissions because Jordan is **92% dependent** on fossil fuels (oil and natural gas).

Solar water pumps have a near **zero marginal cost** of operation, thus raising concerns of water over-withdrawal

FACTS

Jordan is heavily dependent on groundwater resources (over 50% of supply). 10 out of the 12 groundwater basins are **over-exploited**

Increase in irrigation is founded on increasingly **unsustainable groundwater abstraction**: the majority of irrigated land (around 56 %) uses water sourced from wells

In Jordan, in any given year, **half of potentially cultivable land is left** fallow because of fluctuating and unevenly distributed rainfall.

There are around **370** existing, under construction or planned for construction **water harvesting structures** in Jordan.

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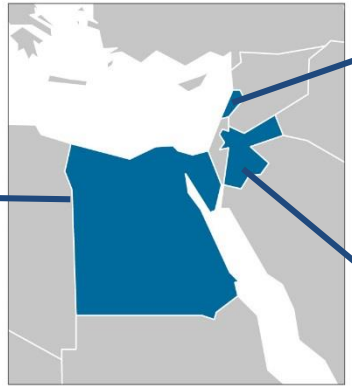
EMERGING PRACTICES

Flagship program of cooperation between Italy and FAO

Coping with Water Scarcity – The Role of Agriculture
Phase III: Strengthening National Capacities
(Jordan, Lebanon, Egypt)

Egypt - Use of solar powered energy for irrigation



Lebanon - Improve use of treated waste-water for irrigation

Jordan - Contribute to the development of water harvesting

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EMERGING PRACTICES

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Phase 1: Conceptual framework					
	Phase 2: Country-level water audits				
		Phase 3: Strengthening national capacities			

Significant results → Implementation in other projects

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Reduce vulnerability in Jordan in the context of water scarcity and increasing food/energy demand

Outcome

Sustainable agricultural water resources and efficient management in Jordan through the application of a **three-pronged approach:**

- Water-harvesting
- Conjunctive use of groundwater
- Solar-powered drip irrigation

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*Fully developed and operational **pilot area of water harvesting** with conjunctive employment of groundwater and solar power for lifting irrigation water*

***Strengthened national capacities** to adopt, operate and maintain the proposed three-pronged approach (water harvesting-solar powered-conjunctive employment of groundwater)*

*Established **community of practice**, empowered and fully responsible for operating the three-pronged approach*

*Prepared **long-term policy, regulatory and institutional frameworks** to facilitate the adoption and integration within national policies/strategies and programmes*

*Produced and widely disseminated **outreach materials**, including guides and technical reports*

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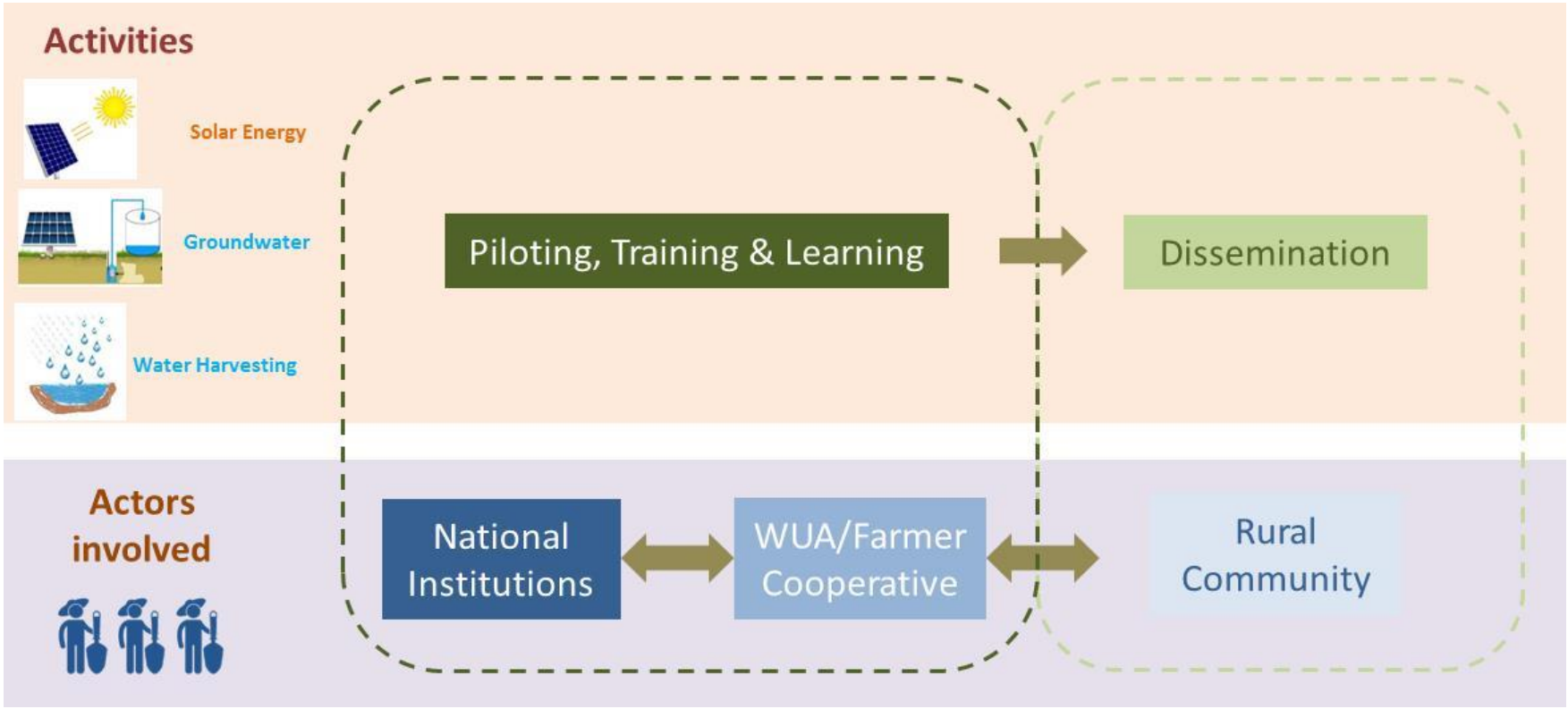

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OUTPUT 1 - PILOT AREA OF WATER HARVESTING

Activities

1. **Selection of potential site** to apply the three-pronged approach

2. **Selection of water harvesting technique** appropriate to pilot area –
   hydro-geologic environment and socio-economic context

3. **Implementation of pilot project -** full participation of relevant stakeholders in all phases

4. Full **impact assessment** of the new approach - evidence-based analysis including baseline and final study

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OUTPUT 2 – STRENGHTENED NATIONAL POLICIES

Activities

1. **Establish a network of experts** and **institutions** to develop, share, adapt and build capacity **on water technologies in agriculture**

2. **Train and mobilize** various categories of stakeholders on the implementation of the new approach

3. **Develop a water harvesting strategy** in the project region to serve as input in the national water resources strategy

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OUTPUT 3 – COMMUNITY OF PRACTICE

Activities

1. **Training programme** to strengthen the capacity of **communities** on implementation of the three-pronged approach

2. **Training programme** to strengthen the capacity of **research institutions** on implementation of the three-pronged approach

3. Implement a **dialogue platform to engage policy-makers, decision-makers and technical experts** on the three-pronged approach

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OUTPUT 4 – LONG-TERM POLICY

Activities

1. **Review and evaluate previous strategies** related to individual components of three-pronged approach in the region

2. Conduct **policy and institutional evidence-based analysis** - using diagnostic tools developed by FAO

3. **Validate** the developed long-term policy and frameworks

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OUTPUT 5 – DISSEMINATION

Activities

1. **Prepare guides for professionals and farmers** - technical reports, posters, brochures and information materials

2. **Disseminate the outreach materials** to a wide range of stakeholders

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Water Harvesting

NEXT

INTRODUCTION TO METHODOLOGY AND TOOLS

METHODOLOGY AND TOOLS IN ACTION

RESULTS ACHIEVED

COUNTRY EXPERIENCES

STRENGTHS AND WEAKNESSES OF IMPLEMENTATION

DISCUSSION