



# Water and Environment Support

in the ENI Southern Neighbourhood region

# WES Project Consultation Workshop

**Cairo Water Week 2023**

1<sup>st</sup> of November 2023  
from 09:30 to 17:30

“Assist Egypt in the development of financing mechanisms, allowing the private sector to be involved and improve water network management and resources efficiency at the on-farm level”



Funded by the European Union





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# Case Studies: Review of Financing Mechanisms

Presented by:

Dr. Kerusha LUTCHMIAH, Non-Key Expert Water



LDK Consultants Global EEIG



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# Objective



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- Assist Egypt in developing a financing mechanism to **support farmers** in purchasing water-saving equipment and enable investments.
- To facilitate improved **water network management and resource efficiency** at the farm level.





# Criteria selected: Factors affecting feasibility of technology



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- Factors impacting **actual performance** -> the investor's final output are:
  - Climate, weather, country/geography/region, population, water scarcity, access to infrastructures, legislation, etc.
  - Crucial to the success of this type of technology.
- Financial models need to consider technically-related assumptions to assess:
  - **Savings**: Income being the most important variables for any commercial project.
  - **Capital expenditures [CAPEX]**;
  - **Operational expenditures [OPEX]**.



# Summary of analyses: country criteria



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Criteria	Morocco	Portugal	France	Turkey	Australia
1. Climate	-	-	-	-	+
2. GDP	+	+	--	-	--
3. Population	--	--	-	+	--
4. Geographical location	+	-	-	+	--
5. Area of agricultural lands (ha)	+	-	-	+	--
6. Water consumption for agriculture	+	++	-	+	+
7. Water scarcity condition	++	++	--	++	+

**In relation to Egypt**

++ very similar

+ similar

- different

-- very different



# Selected countries



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Four countries were selected:

- **Morocco, Portugal, France and Turkey**, were identified as the "most similar" to the Egyptian situation.
- **Region:** Turkey, Morocco and Egypt fall within the Middle East and North Africa region, which is considered the most water-scarce regions of the world. Portugal too, is at high risk of water scarcity. Currently, 45% of the country is experiencing "severe" or "extreme" drought conditions.
- **GDP:** In terms of economy, both Morocco and Egypt are considered middle-income countries, having a GDP of 3k and 3,6k USD/capita (2020), respectively.
  - Portugal's GDP of 231,3 Bn U.S. Dollars (USD) is lower than Egypt's and per capita higher. However, Portugal shows interesting examples of financial mechanisms, including schemes for **renewable energy on on-farm infrastructure**.
- **Financial mechanisms** and available PPP arrangements were researched to understand the best available examples of success/failure in PPP that may be relevant to the Egypt PPP arrangement or where Egypt could benefit from successful implementation.
- Additionally, Morocco shows several strong cases for **financing low-income farmers**, which are relevant for Egypt's rural economy.



# PPP arrangements



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- The success of **Dina Farms** (for more commercial uses) in Egypt may also build a strong case for the use of further PPP arrangements for agriculture investments in the country.
- The Moroccan PPP example, the Guerdane project, is therefore also very relevant, being the first PPP irrigation project in the world and creating Morocco's first-ever domestic private infrastructure operator.

## Dina Farms

The GoE provides a (partly) free groundwater supply at ca. 20.000m<sup>3</sup>/ha/year for the various crops at Dina Farms and drip irrigation is dedicated to the farming of orchards.

## Why use PPP arrangements?

- (1) There are long-term risks related to water and governments share this risk; various blends of public and private finance and guarantees may help reduce the burden on the GoE.
- (2) PPP could enhance professionalism by defining roles and responsibilities, improving management and introducing a business culture.



# Case Studies: Portugal & Morocco



Criteria	Morocco	Portugal	Reasons
<b>2. GDP</b>	+	+	<ul style="list-style-type: none"> <li>Similar <b>economies</b> to Egypt</li> </ul>
<b>5. Area of agricultural lands (ha)</b>	+	-	<ul style="list-style-type: none"> <li>Portugal and Morocco incl. predominantly rural economies; agriculture = <b>large spatial footprint</b></li> <li>Agriculture sector in both countries are heavily dominated by <b>small-sized, low-income family farms</b></li> </ul>
<b>6. Water consumption for agriculture</b>	+	++	<ul style="list-style-type: none"> <li>Very similar agricultural <b>water consumption</b> and <b>water scarcity</b> condition</li> </ul>
<b>7. Water scarcity condition</b>	++	++	
<b>Finance</b>	<p><b>Financial gaps</b> exist, however the agriculture sector shows a <b>positive attitude towards investments</b> with challenges and drivers</p> <ul style="list-style-type: none"> <li><i>Investments in irrigation systems have been fundamental to the growth of the permanent crop sub-sectors</i></li> <li><i>On-farm investments in irrigation are supported through the European Agricultural Fund for Rural Development (EAFRD).</i></li> <li><i>Land purchase triggers demand for finance by the Portuguese agriculture sector</i></li> <li><i>Similar risk profiles: high investment risk, lack of economic and financial viability, etc.</i></li> </ul> <p><b>Morocco:</b> Only <b>10% of Moroccan</b> irrigated land uses <b>drip irrigation</b> (2020); Moroccan government (via The Green Morocco Plan) encourages small farmers to adopt drip irrigation through 100% subsidies</p> <p><b>PPP example</b> relevant to Dina Farm Project in Egypt: <b>the Guerdane project</b> - the first PPP irrigation project in the world, which led to Morocco's first ever domestic private infrastructure operator;</p> <p>The <b>demand for financing</b> in the agriculture sector is expected to <b>increase in the near future</b> in both countries.</p>		





# Morocco & Portugal:

Similar climate smart agriculture projects to save water/ diesel/ electricity consumption



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## Egypt

- 10 PV powered irrigation/Diesel, 12-60 kW
- 3,000 small holder farmers (< 0.4 Ha)
- (World Food Programme)

**Collaboration:** International Finance Corporation (IFC), the World Bank subsidiary responsible for private sector financing, and ABE.

**Aim:** finance solar-powered irrigation systems in Egypt.



140 kWp – PV/Diesel - Drip  
Agro-industry  
Portugal



120 kWp – PV/Grid - Drip  
Agro-industry  
Morocco

## Portugal & Morocco

- **CAPEX~170k EUR, OPEX/year~3% CAPEX**
- a solar system alone can make up to 80% of a drip irrigation system's total capital cost for a farmer.
- **Proposed financial mechanisms:**
  - Bank loans, max. 6-7 years maturities
  - (operational) leasing, max 6-7 years maturities
  - Credit lines based on incentives
  - Crowdfunding (online platform)



# Q&A + Discussion



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“Solar energy is the cheapest energy in the history of the world – the international energy agency. Africa can be the renewable energy superpower” – Al Gore COP27, Nov 2022

96% of finance comes from the private market, in Africa only 14% comes from private; 86% from government – because of high interest rates. The World Bank system needs to change...OECD countries pay less interest rates; however, we still need to make access to private capital for developing countries more available.

- Stranded assets shouldn't be a thing.





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# Discussion: Criteria for eligibility of financial mechanisms

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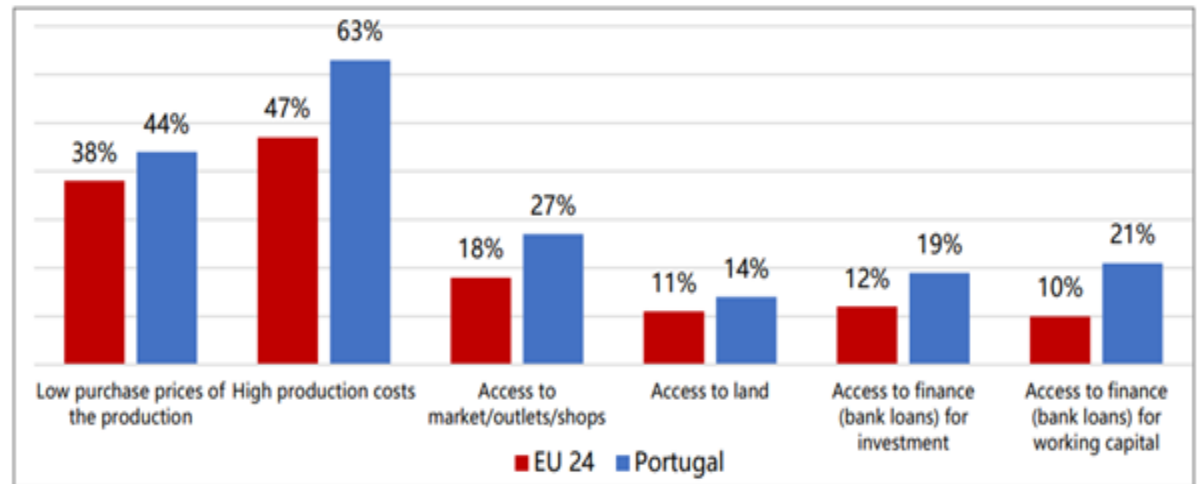


# Difficulties Experienced by farmers



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- The Portuguese agriculture sector mainly consists of small-sized family farms.
- Small-sized farms in particular, face challenges in improving their competitiveness and commercializing their products.












**DIFFICULTIES EXPERIENCED BY FARMERS IN 2017.**  
**SOURCE: FI-COMPASS SURVEY.**



# Overview of criteria for finance in Egypt



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Criteria	Issues
<b>Application procedure</b>	 <p>The governing rules require customers to bring several documents when applying for agricultural loans. SSFs usually do not have a tax card and do not make financial statements approved by a chartered accountant. &gt; Procedure initiated from banks' perception of high risks associated with economic, technical, marketing, distribution + pricing inefficiencies.</p>
<b>SME services</b>	 <p>The definition of SME does not always cover SSFs or WUAs</p>
<b>(Farm)land ownership</b>	 <p>Land titles, or lack thereof, prevent access to credit, loans and subsidies. Many active farmers currently do not own their land. They work on leases for several years. The land holdings in Egypt are significantly fragmented, (internal fragmentation and separation of ownership and use) also playing a significant role in this.</p>
<b>Land area</b>	 <p>The average farm size is &lt; 2.5 feddans (1 ha). Due to their size, small farms are often not eligible to benefit from public support or bank loans. E.g. CBE's initiative only allowed farms &gt; 7 feddan (ca. 3 ha) to qualify for the initiative, to avoid the transaction costs associated with providing loans to multiple smaller operations.</p>
<b>Land Consolidation</b>	 <p>SSFs have difficulty accessing the market. Agricultural co-operatives / WUAs, have higher market power.</p>
<b>Requirements for loan pay-back period</b>	 <p>Loan repayment issues: o high-interest rates; liquidity problems; lower revenues than expected. o procedures, lack of or short grace period, short repayment period and penalties. E.g. ABE offers agricultural loans to farmers at 5-10 % interest and "short repayment periods". Are these co-ordinated with ability to repay?</p>
<b>Collateral: social collateral / transfer of responsibility</b>	 <p>Minimal access to collateral is one of the main constraints of access to finance. The maturity times and higher lending risks, require banks to ask for higher levels of collateral. WUAs have little to offer loan collateral since they are granted the right to use infrastructure and do not own it.</p>
<b>Prioritisation</b>	 <p>Uncertain whether priority is given to: - farmers in specific geographical locations, or - pertaining to specific crops which need to be stimulated e.g. to consume less water OR - lands reclaimed from desert for farms or most fertile lands E.g. In old lands, where the farmers produce traditional and low margin crops, the net benefit of modern irrigation could be questioned</p>
<b>Capacity Building</b>	 <p>Fear of being rejected inhibits farmers from applying for bank finance. Farmers have weak presence or knowledge of relevant bureaucracies or programs; and scholastic education is limited for small farmers. Available SME services do not fully cater to SSFs.</p>



# Main points to consider



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1. How to make modern technology attractive to SSFs?
2. How to make lending attractive to commercial banks?

Farmers are risk-averse in their decision-making:  
They are not yet prepared to invest in technology they do not fully understand.



# Short survey: [www.menti.com](http://www.menti.com)



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# Suitability in Egypt & and suggestions to stimulate the financing mechanisms

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# Suggestions for capacity building

Capacity building will go a long way in supporting farmers to:

- **Renew beliefs in the banking systems:** E.g The Portuguese land reform, land distribution and subsequent spike in interest rates on agricultural loans left many older farmers with negative connotations towards loan requests and the banking system.
- **Improve financial literacy:** This will allow farmers to better understand basic financial concepts, manage their cash flow and understand requirements for debt servicing. This will empower them and encourage them to apply, increasing their chances of loans. Furthermore, more training should be given to make farmers aware of the type of financial products available and the conditions and the requirements associated with these.
- **Provide further technical support** to improve the sector's commercialisation and farmers' access to finance.
- Assist young farmers with **additional advisory support.**





# Suggestions for solar

## Why solar may work well:

- World Bank Group (2017) identified the off-grid application of Solar in agriculture as a significant opportunity, amounting to nearly 2.000 MW in photovoltaic (PV), approximately \$4 billion in investment.
- A follow-up Baseline Diagnostic explored the challenges faced by entrepreneurs in this sub-sector, i.e. customer finance and payments, access and

## Suggestions: What's needed / What's missing?

- Partners not linked to the Cairo-centric ecosystem, and developing innovative solutions
- A multi-disciplinary approach is required
- Entrepreneurs require more support from the government, intermediaries, the private sector, donors etc., to consider the market and value chain systems, barriers faced, and the role stakeholders can play to unlock value.





# Overall suggestions (1)



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- **Government support and incentives** for small and medium-sized farmers are important to reduce irrigation costs by sharing the cost of high-cost modern irrigation technology.
- **Private sector credit support** (commercial banks) of varying grace periods and maturities for the grant programs helps low-income farmers invest in modern irrigation systems.
- **Agricultural land consolidation/clustering** is directly related to the widespread and successful application of modern irrigation technologies (direct farmer participation in WUAs or farmer association can be increased).
- **Financial training:** The support system is seen only as a “financial supply” and technical support and training services are not provided to the farmers through projects. Therefore, it is important to couple consultancy services and training with finance as one package. This combined package will have two benefits:
  - helping to monitor and understand the impact of pressurised irrigation on sustainability in terms of water consumption, crop yield, etc. and
  - enhancing the knowledge, skills, behaviours, and attitudes of farmers in terms of using modern irrigation technologies effectively.

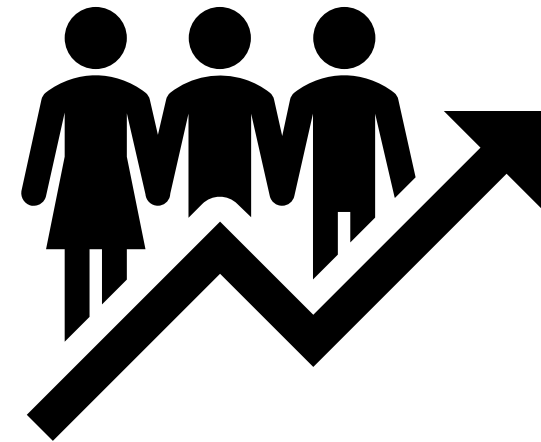


## Overall suggestions (2)



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- The inclusion of subsurface drip irrigation systems in **support and incentive programs** will accelerate the developments in the agricultural sector.
- The ministries can help **create awareness** and will need to advise farmers when / where e.g. the sprinkler irrigation method is more appropriate than drip irrigation or which crops are most appropriate to grow in their regions.



## Overall suggestions (3)



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- A **low-interest credit alternative** may be important to encourage irrigation investment, preferably with a solar energy system.
  - In addition to increasing the limits, it is important to note that the farmer can use this credit and make timely payments.
  - The farmer can benefit from these financial supports if s/he has a sustainable income and can continue production.





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# Feedback

All participants



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# The Way Forward

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# Wrap-up

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