Mitigation & Adaptation in the Southern Mediterranean Region

SOLAR WATER PUMPING IN JORDAN VALLEY - INTRODUCTION

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ClimaSouth

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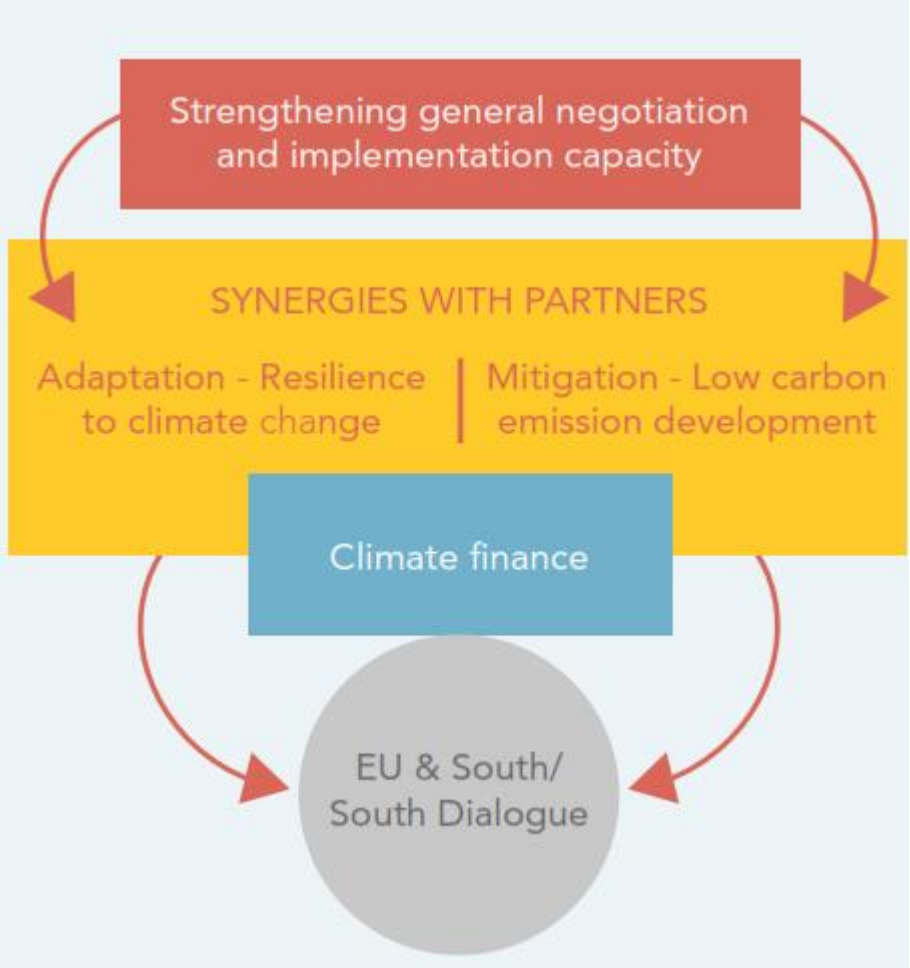
ClimaSouth Overview

Objective: To support the transition of 9 Mediterranean Countries towards low carbon development and climate resilience, by enhancing appropriate actions through capacity development, resource mobilization and proactive climate risk management.

Increased focus on support to capacity building and development of attractive projects/programs to crowd in financial resources.

HOW ?

- ***Thematic workshops*** to address issues of regional character;
- ***National activities*** linked to the work programme & potential replication in the region.
- ***EU-South/South country dialogue*** website/platform



ClimaSouth – Regional coverage

- EU FUNDED (5M EURO)
- 2013 – 2017
- ENPI SOUTH
- NO COUNTRY ALONE Documentary: http://www.climasouth.eu/en/node/113

Purpose of the meeting

- Introduce the proposed climate finance proposal: “Solar Water Pumping in Jordan Valley”.
- Answer questions regarding “Solar Water Pumping in Jordan Valley”.
- Obtain feedback on “Solar Water Pumping in Jordan Valley”:
  - Overall assessment
  - Key concerns
  - Suggestions for improvement

Contents presentation

1. Problems addressed and approach
2. Financial aspects within Jordan
3. International financial aspects and program funding

<u>Each part</u>

- Presentation (± 20 minutes)
- Q&A (± 20 minutes)
- Discussion and feedback (± 20 minutes)

Part 1: Problems addressed and approach

10.30-10.50

What is climate finance?

- Finance related to mitigation of greenhouse gas emissions and/or adaptation to climate change.
- Domestic sources and international sources.
- International sources:
  - Additional
  - Predictable
  - Sufficient
- Part of investment requirements of selected investment projects can be covered by international climate finance.
- International rules, processes, procedures.

History of the project proposal

- Original project proposal focused on solar water pumping only submitted by Jordanian focal point for the ClimaSouth project to ClimaSouth. The project is a Jordanian government initiative
- Missions in August 2014 and October 2015
- Changes over time:
  - Scaling up
  - Addition of water savings
  - More sources of funding considered

Problems addressed

Two key problems

- High energy costs related to water pumping in Jordan Valley irrigation
  - Electrical power: 1500 JOD/year cost to farmer, and ±1500 JOD/year cost to government in subsidies
  - Diesel fuel: 2580 JOD/year cost of diesel.
- High water usage for irrigation in Jordan Valley while water is very scarce in Jordan.
  - Water availability per capita: 147m^3/year (2010).
  - Jordan river irrigation accounts for 60% of total water in JV
  - High water subsidies from government

Investment measures

- Switch from electrical pumping and diesel pumping to solar water pumping
- Water saving investments, to be identified, case specific:
  - Crop choice
  - Low-water species
  - Further uptake drip irrigation
  - Plastic covers
  - Night-time irrigation
  - Etc.

Barriers

Switch to solar water pumping:

- Lack of profitability
- Lack of finance

Water saving

- Lack of profitability
- Partial lack of knowledge on suitable technologies and measures to save water (farmers and financial community)
- Lack of finance

Mechanisms (1)

Switch to solar water pumping

- Participation is voluntary.
- Long-term concessional loan facility of 15 years duration → finance and low cost of capital → profitable.
- Positive impact on cash flow in all years.
- Possibly grant rewards on installation and generation of power → Depends on terms of long-term loan.

Mechanisms (2)

Water saving

- Participation is voluntary
- Grant rewards on water saved, per m3
- TA (grant-based) to:
  - identify water saving opportunities;
  - develop methodologies to measure water savings;
  - conduct demonstration & dissemination campaign.

Questions to be resolved by team

- List of potential water saving measures in Jordan Valley including cost and impacts / water savings.
- Sizing solar water pumps
  - Electrical power → solar water pumping
  - Diesel pumping → solar water pumping
- Specific investment contents solar water pumps
  - Electrical power → solar water pumping
  - Diesel pumping → solar water pumping

Questions on this part of the presentation?

Feedback

- Please answer questions 1-5 of the questionnaire.
- Many thanks in advance!

Part 2: Financial aspects within Jordan

12.00-12.20

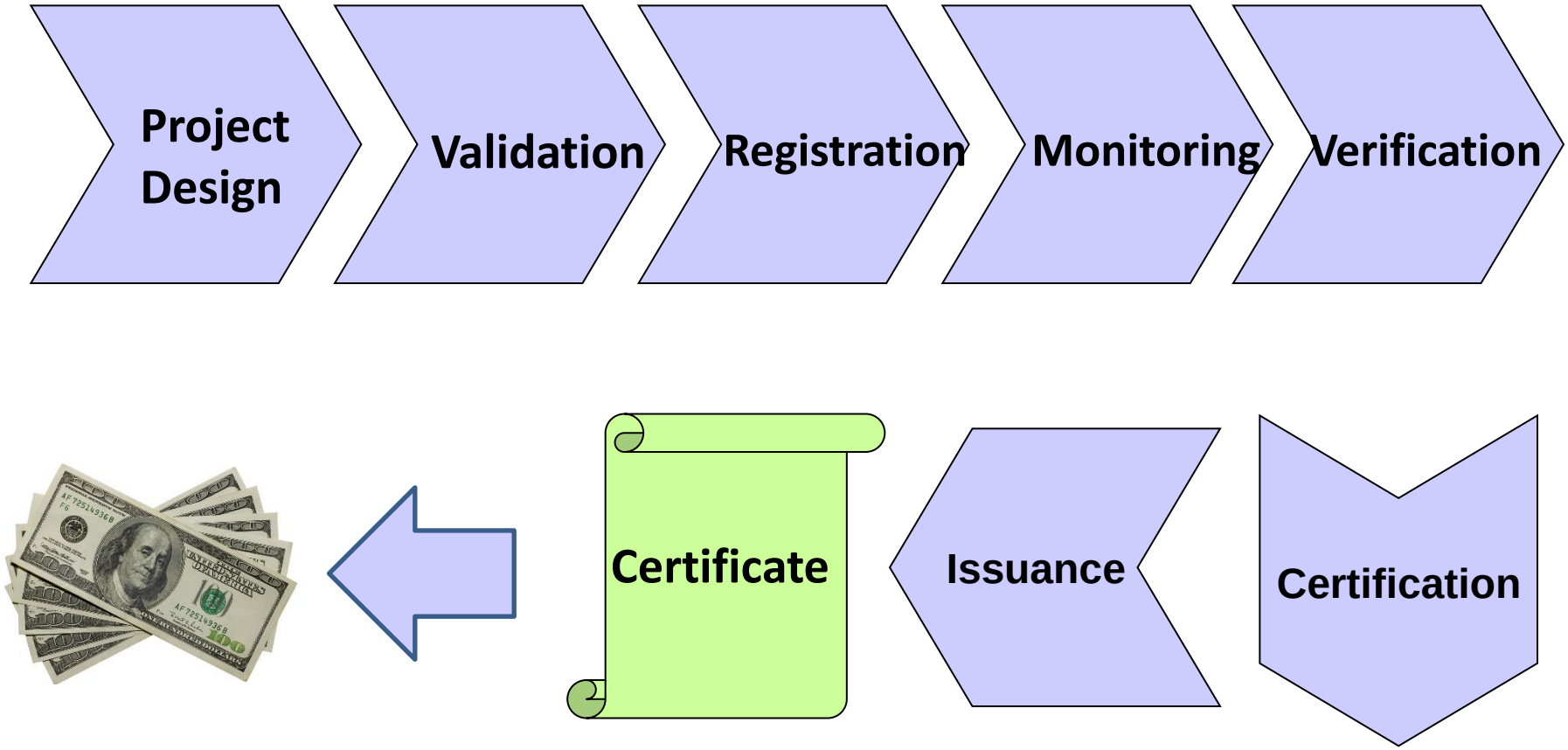
Principles for designing domestic programs

- Voluntary participation
- Gains in all years for participants
- Reduced risks
- Address barriers
- Some domestic funding and support – international sources will not cover all investment costs.

Switch to Solar Water Pumping

- Number of farm units: 10,000
- Number of participating farm units: 5,000 (50%)
- Expected size systems: 15.9/23.4 kW (to be confirmed)
- Expected power generation: 1575 kWh/kWp
- Expected investment costs: 17k/29k JOD/system
- Expected annual costs of loan: 1245/2140 JOD/year (max)
- Expected saved annual energy costs:
  - Diesel baseline: 2580 JOD
  - Electrical power baseline: 1500 JOD

Water saving cycle diagram



Promoting water saving

- Number of farm units: 10,000
- Number of participating farm units: 5,000 (50%)
- Investment per participating farm unit: 2420 JOD
- Expected water saving per participating farm unit: 5000 /m^3 water per year
- Reward for water saving: 0.121 JOD/m^3 based on avoided water subsidies.
- Expected annual return on water savings: 600 JOD/year

Proposed national manager

- Various possibilities, open for discussions.
- Initial thinking JEEREF because of renewable energy mandate; water-saving some linkage to energy efficiency.
- Alternative could be Jordan Environmental Fund, NGOs or commercial banks.

National contributions government

- National contribution is unofficial requirement for attracting international climate finance:
  - International climate finance leveraging other finance
  - Demonstration of ownership and commitment
- Not according to expectations of Jordanian government, also considering uncertain outcome of investments – difficult to upfront commit funding.
- Proposed compromise: Jordanian government contributes half of realized savings of subsidies.

Questions to be resolved by team

- Updated estimates investment cost solar water pumping
  - Electrical power → solar water pumping
  - Diesel pumping → solar water pumping
- Updated estimates investment cost water savings
- Financial conditions national manager – impact on cost concessional loans

Questions on this part of the presentation?

Feedback

- Please answer questions 6-10 of the questionnaire.
- Many thanks in advance!

Part 3. International financial aspects and program funding

13.00-13.20

Principals for attracting international climate finance

- International climate finance to be used to “bring in” other sources of finance
- Preferred not grant only if possible
- Change systems to allow replication
- Address barriers
- Cover risks
- Domestic contribution
- Domestic government contribution
- Linkage to results → MRV

International financial contribution switch to SWP

- 15 year zero interest rate concessional loan
- Total loan amount 142.1 million USD (100 million JOD): 5000 systems at 28,420 USD/system on average.
- Grant component for rewards for switch at this moment set to zero – could increase depending on costs of concessional loans.

International financial contribution to water saving

- International grant matching domestic water saving reward system: 250 million m3 @ 0.121 JOD/m^3 = 30 million JOD (42.5 million USD)
- TA grant for development of water saving measurement system, TA grant for identification water saving options, for demonstration and dissemination of water saving investments: 2 million USD (1.42 million JOD)

Proposed national recipient

- Preferred would be to have one manager & recipient combined.
- Various possibilities, open for discussions.
- Initial thinking JEEREF because of renewable energy mandate; water-saving some linkage to energy efficiency.
- Alternative could be Jordan Environmental Fund, NGOs or commercial banks.

Monitoring, reporting and verification

- MRV of financial flows
  - Number of interested farmers, amount of loans provided, grant rewards spent, unit cost switch to solar water pumping, TA spending.
- MRV of mitigation results
  - Capacity, power generated, CO_2e emission savings
- MRV of adaptation results
  - Water saving investments made, amount of water saved, amount of water saved per $ invested.
- TA to support MRV and M&E system – $ 1 million

Overview national and international contributions

Type	Amount (USD)	Source
Concessional Loan	142.1 million **Mitigation**	GCF, others
Grant	0 **Mitigation**	Jordan government **TBD**
Grant	42.5 million **Adaptation**	GCF
Grant	2 million **Adaptation**	DFI, bilateral **TBD**
Grant	1 million **Adaptation & mitigation**	DFI, bilateral **TBD**
Grants and concessional loans	143.25 million **Adaptation & mitigation** **Subject to discussion**	Jordan government

Summary of key benefits from the program

- Energy and energy related cost savings > 250 JOD/farm unit per year.
- Water savings estimated at 25 million m^3/year
- CO_2 emission reductions: 61,853 tCO_2/year; 1,237,060 tCO_2 investment lifetime.
- Knowledge & experience: Important novel system that can be applied to irrigation worldwide.

Questions to be resolved by team

- Any relevant restrictions on organizations to take (concessional) loans?

Questions on this part of the presentation?

Feedback

- Please answer questions 11-15 of the questionnaire.
- Revisit all answers on the questionnaire and modify any answers as needed
- Please complete the questionnaire
- Many thanks in advance!

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Thank you…

ClimaSouth

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