



Where Finance and Green Technologies Meet

GEFF Egypt Financing PV Solar Pumping

May 23, 2017, Jose Luis Bobes, Team Leader

▶ GEFF Egypt Stakeholders



Developed by:



Supported by:



In cooperation with



Participating Financial Institutions



GEFF was developed by the European Bank for Reconstruction and Development (EBRD). In Egypt, GEF is implemented in cooperation with Agence Française de Développement (AFD) and the European Investment Bank (EIB), and financially supported by the Neighbourhood Investment Facility of the European Union and the EBRD Shareholder Special Fund.

Agenda



- EBRD Facility Overview
- Financing PV Solar Pumping
- Project Eligibility
- Case Studies – Pilot Phase
- Case Studies - Morocco
- Conclusions



► Importance of water in the Arab World (medieval South Spain, Al-Andalus)

- Sophisticated irrigation systems using water wheels
- Vast network of irrigation channels



▶ Valencia Water Tribunal

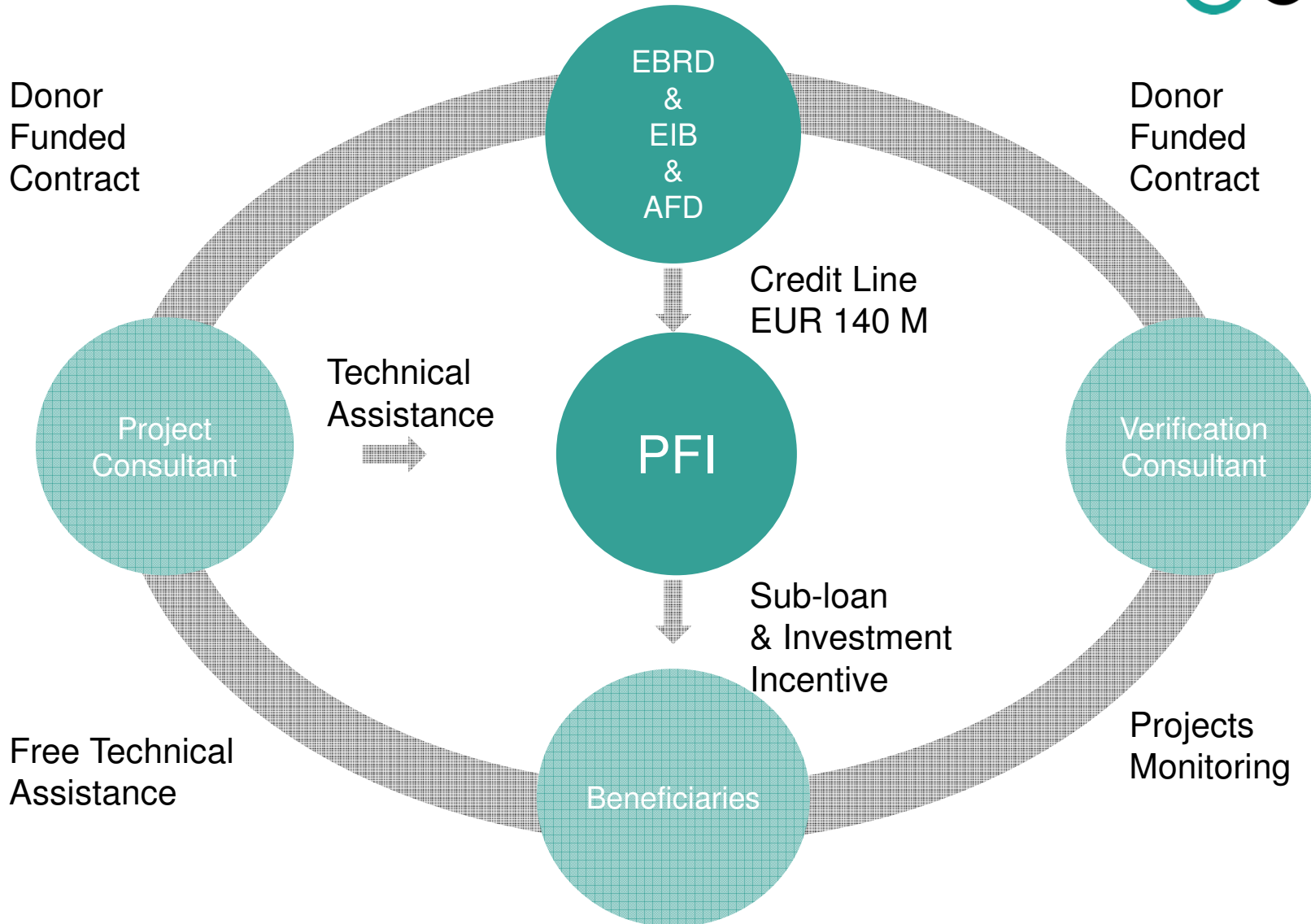


- Founded by Calipha **Abd-ar-Rahman III** of Cordoba, 960
- **Only institution in Spain that has been working for more than 1000 years without any interruption**



EBRD Facility Overview

▶ GEF Stakeholders



▶ GEFF in a Snap Shot



GEFF Benefits	Technology Selector Loans	Project Assessment Loans	Supplier and Vendor Loans	
			Energy Service Company Loans	Equipment Vendor & Producer & Service provider Loans
Maximum Loan Amount	USD300,000	USD5,000,000	USD5,000,000	USD1,000,000 to USD5,000,000
Investment Grant	10%	10% or 15% depending on efficiency	10% or 15% depending on efficiency	Not Applicable
Free Technical Assistance	Yes, to select equipment	Yes, to select best solution, assess profitability, prepare loan application, make your idea bankable!		

▶ High Level Terms & Conditions



- Loans are processed in EGP, except if your business is allowed by the Central Bank of Egypt to obtain loans in USD or EUR
- Participating Banks, QNB and NBK may add additional Terms & Conditions
- Maximum Loan Term is 5 years. Other Terms & Conditions Apply. For full eligibility criteria, terms and conditions visit. www.ebrdgeff.com/egypt

Financing PV Solar Pumping

Ready for commercial financing



SOLAR WATER PUMPING READY FOR MAINSTREAMING!

PRICE HISTORY OF PV SOLAR CELLS (IN US\$ PER WATT)*

*Source: Bloomberg New Energy Finance & pv.energytrend.com

FLOW UP TO **40** M³/H WITH **200** HEADS

LIFE-CYCLE-COST-COMPARISON

DIESEL PUMPING

VS

SOLAR PUMPING

BREAKEVEN: 1-3 YEARS

LIFESPAN OF A SOLAR PANEL

25 YEARS

CHALLENGES

THEFT

AWARENESS

MAINTENANCE/REPAIR

Source: <http://www.worldbank.org/en/topic/water/brief/solar-pumping>

Case Studies

Egypt

Morocco

► Solar Water Pumping

(confidential client, Egypt, 2015)



- Application: Farm irrigation
- Investment Cost: USD 100000
- Implementation period: 1 month
- Energy saving: 110 MWh/year
- Economic Saving: USD 30000
- Simple Payback period: 3.3 years
- CO2 Reduction: 70 Ton CO2 eq/Year
- NPV: 104,326 USD
- PBP: 4.5 years
- IRR: 29.4%
- Remarks: A 70 KVA diesel generator driving a pump in a farm is replaced by a solar water pumping system. Fuel price, including transport, used is 2 EGP/lit of Diesel oil, Discount rate 12%





Case Study: Egypt

(confidential client, Egypt, Luxor area)



Replacement of 30kW pump fed with diesel generator

MODEL OUTPUT (w/o incentive)

IRR (w/o repayment w/o incentive)		19.2%
Simple Pay Back Time (w/o incentive)	year	4.98
Discounted NPV (w/o repayment w/o incentive)	USD	8,825

Case Study: Morocco: Dairy Farm



The Company

- Industry- Agroindustry
- Location – Casablanca, Morocco

Project Goals

- Modernization of the farm
- Increase productivity

Investments

- 1 430 000 Euros
- Milking parlors
- High efficient boilers and AC
- Solar pumps
- Solar water heaters

Results

- Energy savings: 2033 MWh/year
- % Energy savings: 88 %
- Reduction in CO₂ emissions: 1186 TCO₂e/year
- **IRR: 32 %**
- **SPBP: 2.9 years**

Faced with rising costs, Albane Sahel, decided to modernize its dairy farm located just outside of Casablanca and sought guidance on investing in the best energy efficiency and energy management opportunities to reduce energy costs, enhance environmental quality and increase productivity and profitability.

- 2 milking parlor with efficient pumps and electronic speed drives
- High efficiency water boiler for with water softener
- 2 solar pumping systems for water pumping
- Efficient split air conditioners
- 2 solar water heaters (300 liters each)
- LED lighting



Case Study: Morocco greenhouse



The Company

- SME
- Greenhouse based fresh produce producer & exporter
- Location – Safi, Morocco

Project Goals

- Reduction of energy bill
- Reduction of greenhouse gas emissions

Investments

- 446,209 Euros
- Solar panels
- Trolleys

Results

- RE Production: 1.1 GWh/year
- Reduction in CO₂ emissions: 705 TCO₂e/year
- IRR: 17.25%
- SPBP: 5.1 years

Faced with rising electricity costs SAFILAND, a company specialized in greenhouse production of diverse produce such as melons, tomatoes, and peppers decided to explore solar pumping as a green solution to save on electric bills. With 190 Hectares of irrigated greenhouse based production located 70 kilometers south of Safi (270 km south of Casablanca), irrigated via four pumping stations. It is investing in three solar units using photovoltaic solar panels on trolleys at its farm which will reduce its CO₂ emissions by 65% and with a new production plan have a 50% savings on electricity.



Conclusion:

GEFF financing fits very well the needs of PV solar pumping

► Conclusions



- PV Solar Pumping in Egypt to replace diesel pumps is bankable
- **GEFF terms are suitable for financing PV solar pumping in Egypt**
- Payback periods are generally less than 5 years
- IRR around 18-20% make it an interesting investment
- No fuel supply risk and Low maintenance

► Barriers and Solutions



- **BARRIERS**

- Title of the land is not clear many times
- Bankability of borrowers

- **INNOVATIVE FINANCING SCHEMES**

- PPP and or Long Term Purchase of water agreements
- Loan guarantees, or other risk mitigation instruments:
SASME

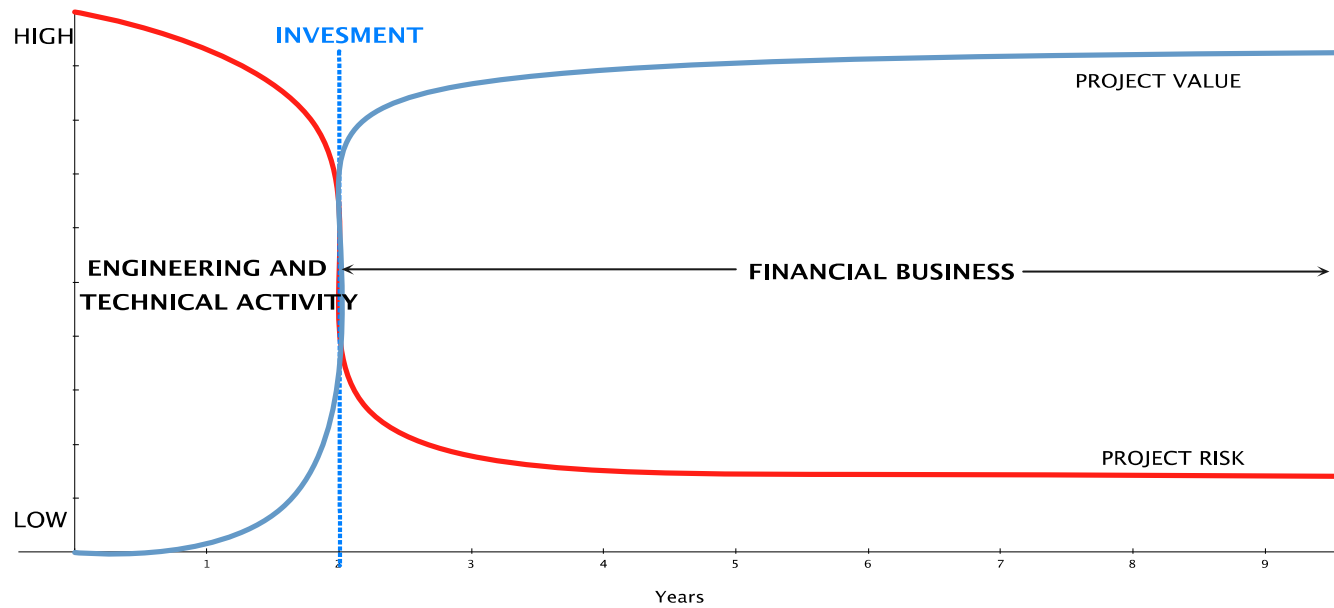
Establishment of a Risk Sharing Mechanism (RSM)

- **The RSM will take the form of a €9M trust fund funded by the EU grant delegated to AFD**
- **The objective of this Agricultural Guarantee Scheme is to facilitate access to finance for underserved borrowers in the Egyptian agriculture sectors by making available a pool of cash used as collateral to extend paper guarantees to the benefit of eligible lenders and finance**
- **A large range of beneficiaries targeted : Agricultural SMEs, small associations of farmers, business associations, cooperatives, NGOs, etc**
- **All types of agricultural sectors could benefit of this guarantee scheme**

GEFF Technical Assistance



▶ Less Risk.. Thanks to Technical Assistance



Thanks!

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