

# ***Sharing Knowledge Across the Mediterranean*** ***Tunis, 17 May 2012***

## **Energy cooperation for the sustainable development of the Northern African Region: analysis of MEDREC experience**

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MINISTERO DELL'AMBIENTE  
E DELLA TUTELA DEL TERRITORIO E DEL MARE

Energy cooperation for the sustainable development of the Northern African Region

## The Mediterranean Centre for Renewable Energies

The **Mediterranean Renewable Energy Centre (MEDREC)** is a regional centre for training, information, dissemination, networking and development of pilot projects in the Mediterranean Region in the fields of renewable energies and energy efficiency, established in Tunis in 2004 and founded by **Italian Ministry for Environment Land and Sea (IMELS)**



The **MEDREC** is the **focal point** for **Mediterranean Renewable Energy Program (MEDREP)** activities in North Africa



# The Mediterranean Centre for Renewable Energies

- **Promotion of training activities in the REEE**
- The dissemination of information in the ER and energy efficiency
- **Development of pilot projects in the REEE**
- The identification of financial resources and the development of support schemes
- **The support to renewable energy projects**
- The development of networks between different countries of the region through exchange of experiences, the capitalization of know-how and technology transfer
- **The strengthening of cooperation in the field of climate change and development of CDM projects under the Kyoto Protocol.**
- The development of partnerships between MENA and Italian investors
- **Networking activities with international networks (GNESD, REEEP) in the field of REEE**

## The Financial Instrument: MEDREP finance



The **Mediterranean Renewable Energy Program (MEDREP)**, is an initiative promoted by **IMELS** in partnership with the United Nations Environment Programme (**UNEP**) aiming at developing a sustainable renewable energy market system in Mediterranean and Balkan regions, removing project, policy and trade barriers and strengthening the market system, thus contributing to climate change mitigation.

The **IMELS** has already provided a financial contribution amounting to **10 million USD** to test different options to increase available financing for renewable energy and energy efficiency systems in Morocco, Egypt, Tunisia, Macedonia and Montenegro

## MEDREP Partners



- **Tunisian Ministry for Industry and Trade (TMIT)**
- **Tunisian National Agency for Energy Conservation (ANEM)**
- **The New & Renewable Energy Authority of Egypt (NREA)**
- **The National Agency for Renewable Energy and Energy Efficiency Development of Morocco (ADEREE)**
- **The Agency for the Renewable Energy of Lybia (REAOL)**
- **The Agence de l'Environnement et de la Maîtrise de l'Energie (ADEME)**
- **The International Energy Agency (IEA)**
- **The Mediterranean Association of the National Agencies for Energy Conservation (MEDENER)**
- **Observatoire Méditerranéen de l'Energie (OME)**
- **The International Solar Energy Society Italy (ISES Italy)**
- **The Regional Centre for Central and Eastern Europe (REC)**
- **The World Bank (WB)**

## MEDREP finance: Main objectives

- Support the demonstration, deployment and diffusion of renewable energy technologies
- Support renewable energy markets, defining appropriate policies and financial instruments for supporting investments
- Strengthen the institutional framework towards a common Mediterranean Energy Policy

## MEDREP finance: The actions

The actions performed under **MEDREP** are aimed to:

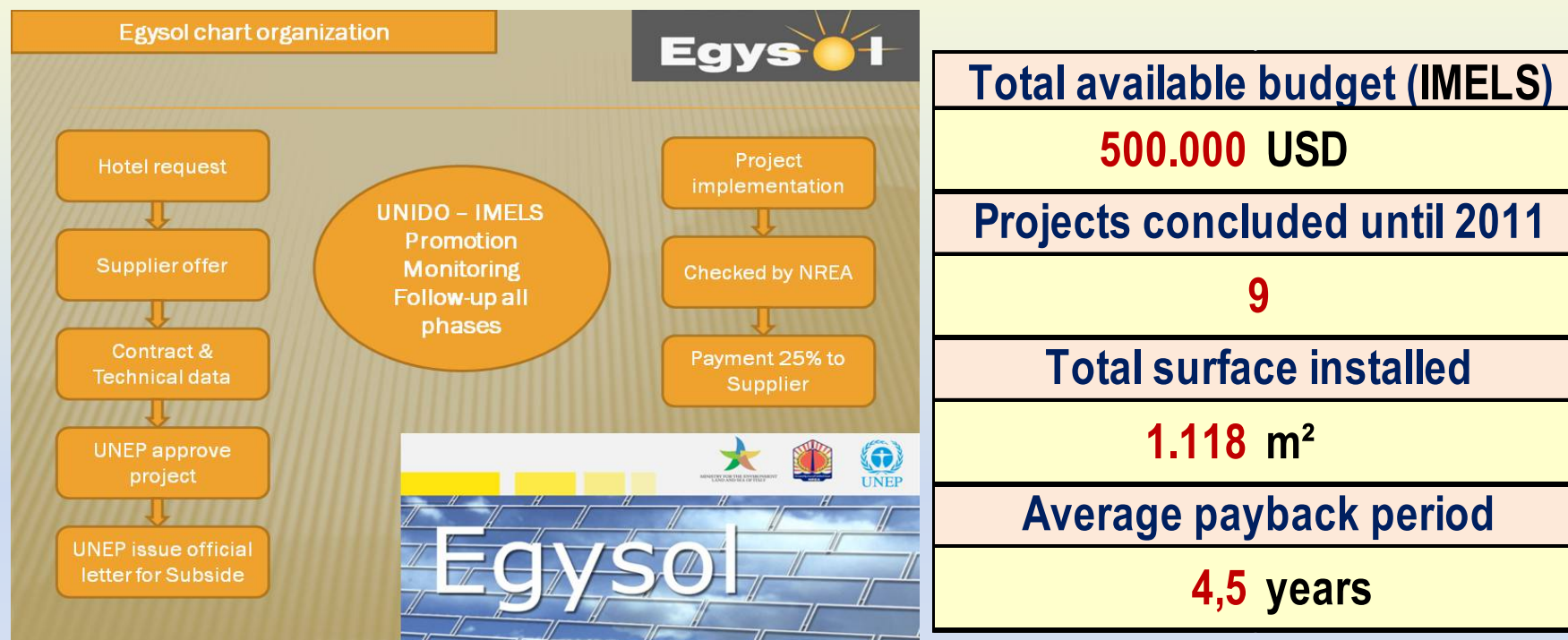
- lower the up-front cost for Energy Efficiency and distributed RE appliances
- lower the charged interest rates to end users to overcome up-front cost barriers
- ensure financial institutions participation by reducing the risk in entering a new market segment
- support the development of partnerships between commercial banks and suppliers of technology

## MEDREP finance: Ongoing Projects

- In **Egypt**, **EGYSOL** targets the hotel sector to install SWH systems through a combination of subsidies, awareness raising and training workshops, and by establishing quality standards for SWH suppliers
- In **Montenegro**, **MONTESOL** is allowing local banks to finance SWH end-users through preferential terms such as low-interest loans.
- In **Morocco**, MEDREP is helping to transform the market for energy efficient lighting, paving the way for phasing out incandescent lighting
- In **Tunisia**: The “**PROSOL family**”
  - **PROSOL** (SWH in residential sector - 2004->2008)
  - **PROSOL Tertiary** (SWH in hotel sector - 2009-> ...)
  - **PROSOL Industry** (SPH – 2009 -> ... )
  - **PROSOL Elec** (PV in residential sector – 2010 -> 2012)



## EGYSOL: SWH in hotel sector

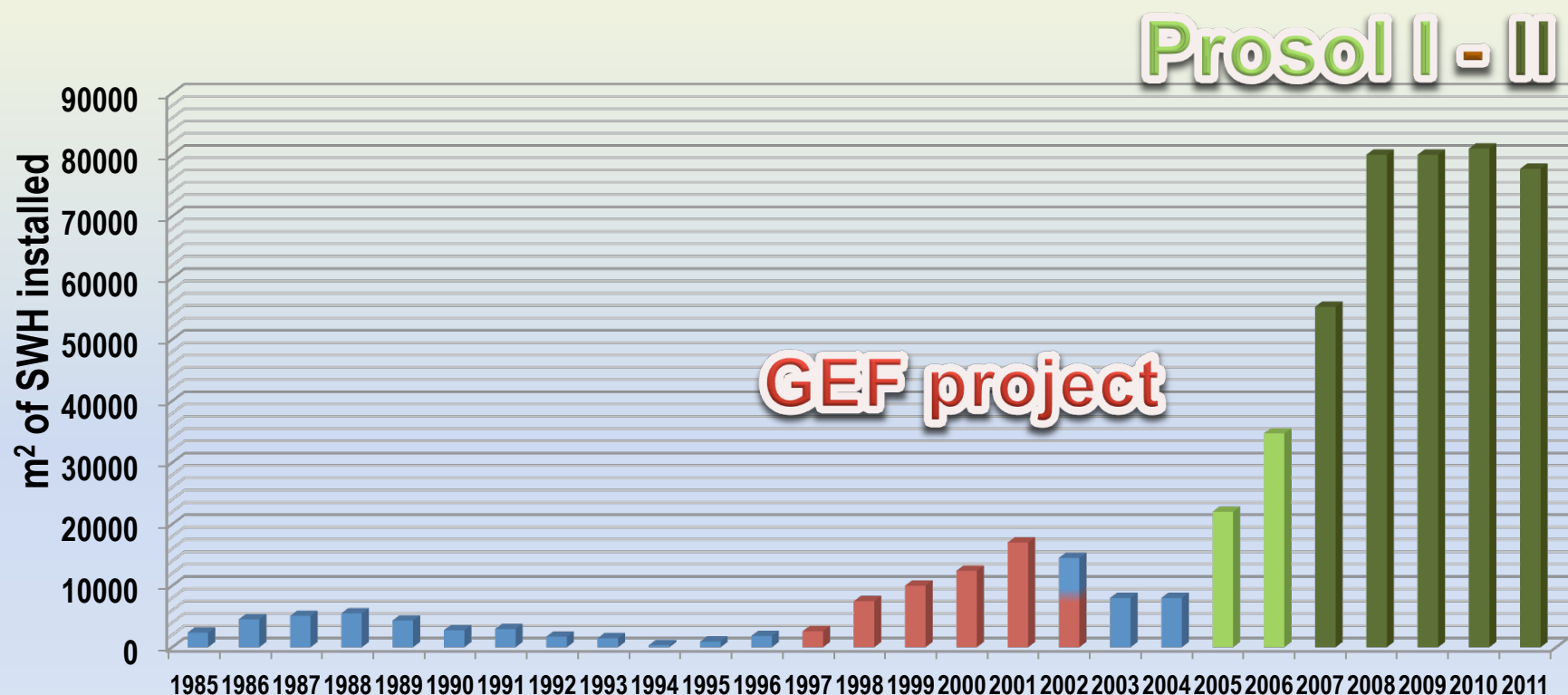


The project is targeting hotels and resorts both existing and under construction, in the Red Sea and South Sinai governorates.

The initial target is to cover **40** Hotels.

Egysol is based on a public/private partnership which includes **capacity building** of local institutions, **technical qualification of suppliers**, a **capital cost subsidy of 25%** and a decreasing **maintenance cost subsidy** over a four-year term.

## A success case: PROSOL

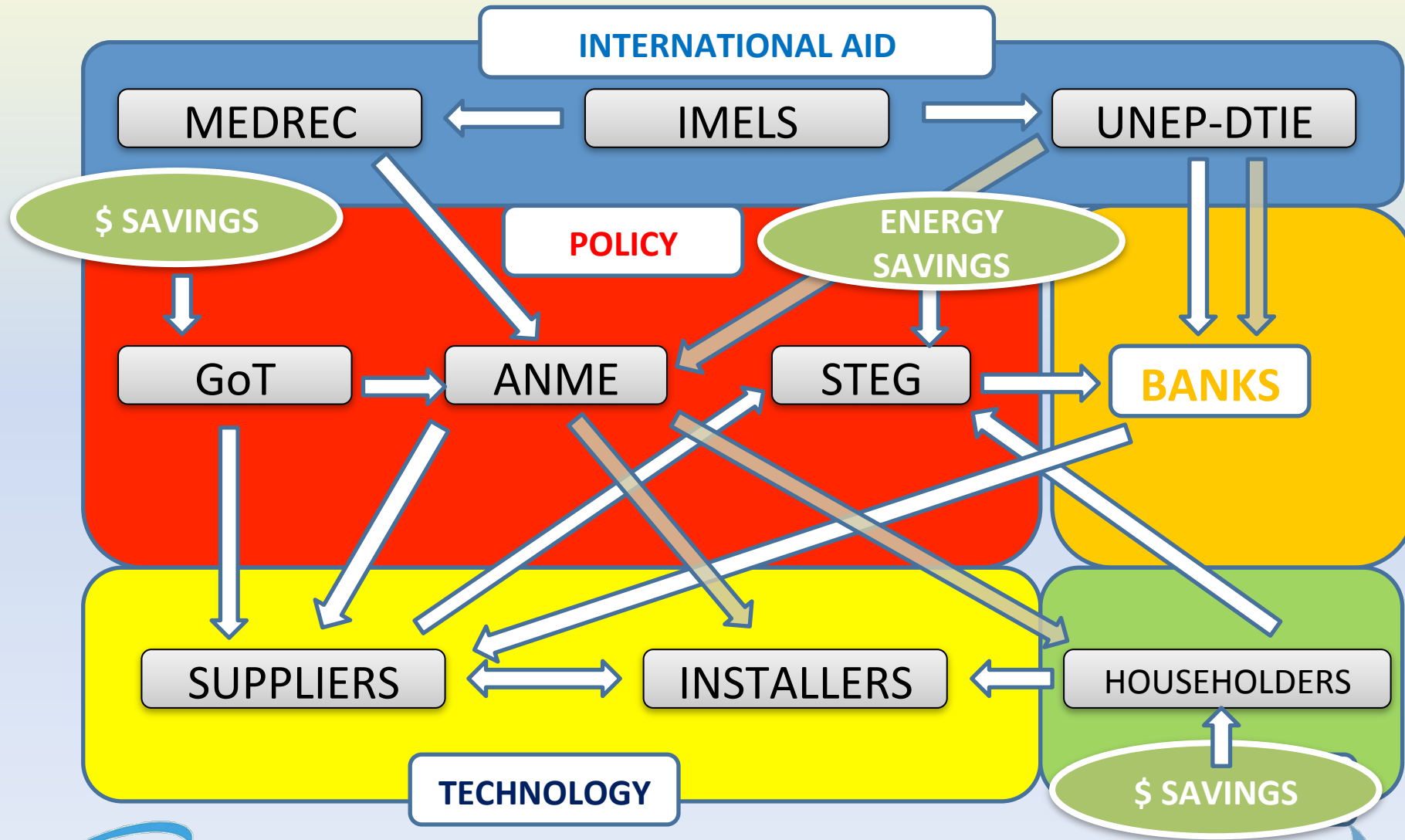


The introduction of a support mechanism tailored taking into account specific local conditions with regard to the institutional, legal and market framework was crucial to the growth of a self-sustainable SWH market

## Prosol - the mechanism: a mix of institutional and financial support

- 20% subsidy of the capital cost
- 5-year term loan to residential customers, made via systems suppliers
- discounted interest rates on the solar loans
- repayments made via the customer's electricity bill
- in addition capacity building and awareness raising
- **Initially as a temporary measure (Italian funded)**
- **Later made permanent in Tunisian legislation (2005)**

# Prosol: Integration of Stakeholders Involvement



## Prosol Tertiary: the mechanism for Hotels

Moving the steps from Prosol Residential achievements, a mechanism for the promotion of SWH in tourism sector was tailored in coordination with

**UNEP** and **ANME** and put in place since mid-2009

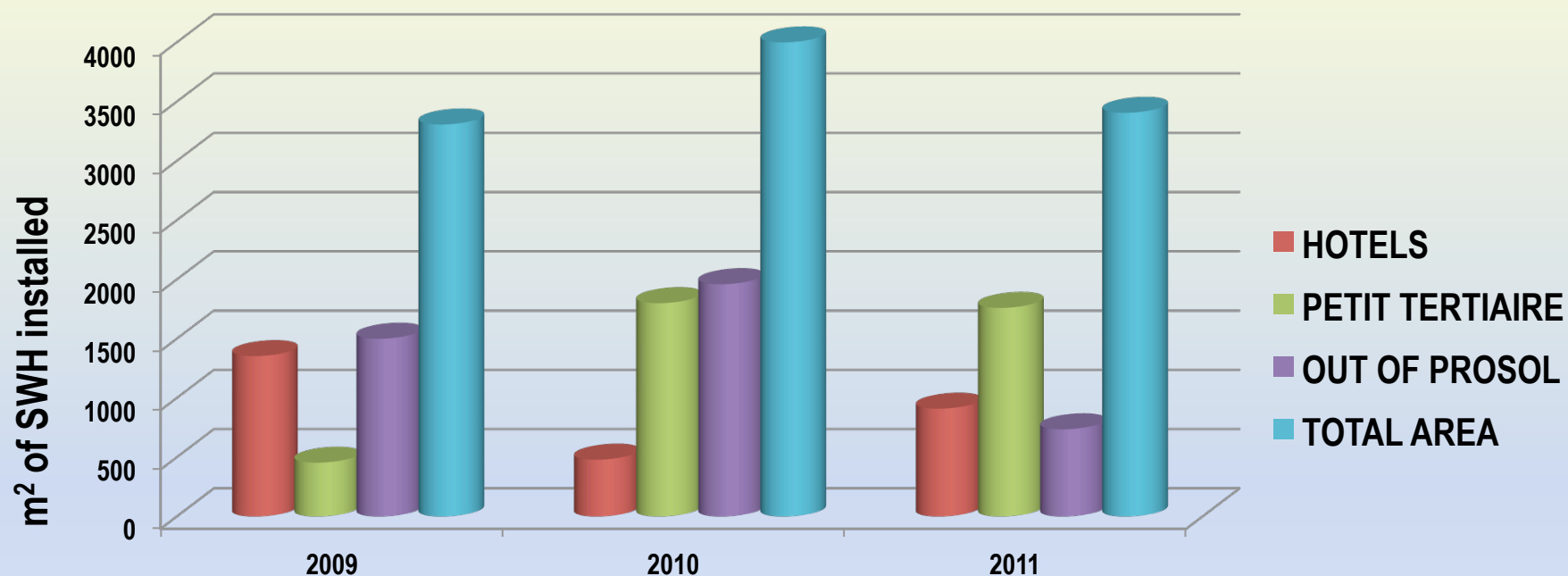
### **HOTELS and other large installations (more than 30 m<sup>2</sup>)**

- **40% subsidy of the capital cost**
- **Discounted interest rates on the solar loans with local banks**
- **50% of maintenance costs for two years after the supplier guarantee**
- **70% of design and commissioning costs**

« **PETIT TERTIAIRE** » (hospitals, dormitories, public facilities... funded only by ANME)

- **30% subsidy of the capital cost**
- **70% of design and commissioning costs (if required)**
- **Capacity building and awareness raising activities**

## Prosol Tertiary : very significant results



but...

- A significant share of installations achieved without recourse to the advantages provided by Prosol program
- None of hotels took advantage of discounted interest rate loans

## Prosol Tertiary – identified barriers

### Conjuncture:

14<sup>th</sup> January 2011 events led to touristic crisis and general investment attitude lowering

### Technology:

Large forced circulation SWH local market is not mature, this resulting in insufficient scale economies and higher investments costs.

### Upfront costs:

- According to Decree 362/09 of GoT, incentives are calculated with a cost cap of **500 DT/m<sup>2</sup>**, while actual cost of forced circulation systems is around **800 DT/m<sup>2</sup>**, this resulting in a real CC subsidy of around **27%** instead of **40%**
- **Difficult access to tailored credit:** the lack of Energy State Utility (STEG) involvement results in no security for banks against risk of nonpayment, in a sector already over-indebted and in crisis for monetary liquidity.

### Policy:

Natural gas is over-subsidized by GoT (>50%), this resulting in very long payback time for SWH investments (10 years and more)

## Prosol Industry – feasibility analysis

Different actions have been carried out in 2010 by local Tunisian consultants, including pre-feasibility studies on heated water needs of Tunisian factories belonging to different manufacturing branches and studies on the potential of solar thermal energy application to industrial processes

In 2011, in collaboration with UNEP and “Politecnico di Milano” University, detailed technical-economical feasibility studies have been carried out for industrial end users of textile and agro-food branches.

Results showed that solar thermal systems are not economically interesting for end users with current subsidy schemes, but they could lead to significant economic and social benefits for the government.

**An incentive mechanism for solar thermal based on the substitution of the subsidies currently given to fossil fuels can therefore be considered.**



## Prosol Industry - One case study

Corporate	XYZ		
Branch:	Dairy		
Process:	Re-heating of yoghurt mix		
Surface:		800	m <sup>2</sup>
Cost		500.000	TND
30% Subsidy		150.000	TND
Year 0 energy production:		939.000	kWh
Simple payback		7	years
Net Present Value		689.090	TND
Profitably Index		2,26	
IRR		20%	

Corporate actualized cumulative savings	723.545 TND
GoT actualized cumulative savings	898.988 TND

(20 years plant life - average growth of energy prices 6% per year

no change in subsidy policy during the lifetime)

## Prosol Industry: next step I

Two studies will be launched in May 2012 to define the operating framework of Prosol Industry:

### 1 - Assessment of potential of SPH market in Tunisia

- Define the overall methodology to be employed to determine the potential of low and medium temperature solar thermal application in the industrial sector in Tunisia
- Define the potential of low/medium temperature solar thermal application in the industrial sector (up to 90°C / 250°C)
- Analyze the status of technologies and the related time to market for medium temperature solar thermal applications

### 2 - Study on regulatory framework

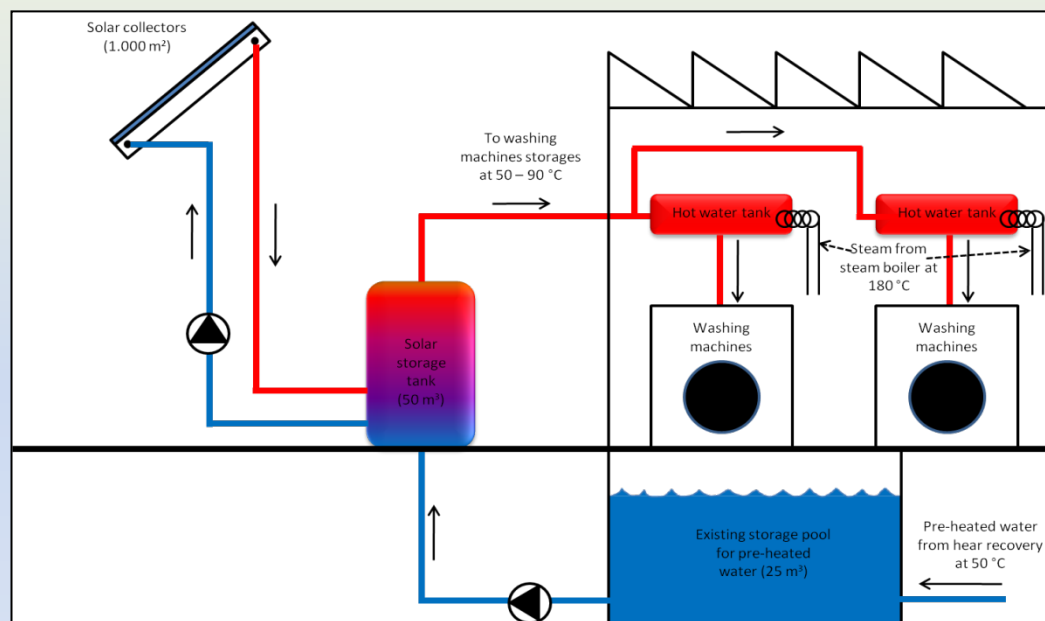
- Review the existing incentive and regulatory framework and develop a new incentive tool to promote solar thermal systems in the Tunisian industrial sector.
- Determine the level of Governmental funds necessary to provide the incentive and their coverage under the Government Budget
- Draft, in consultation with Tunisian authorities, a proposal to the Tunisian Government to integrate the identified incentive tool into the existing regulatory framework on solar thermal
- Address the role of financial institutions in providing credit.

Periodical Round Tables will be held to involve local stakeholders at all levels

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# Prosol Industrial: next step II

## Demonstrative plant at Benetton Tunisia in Sousse



Plant construction will start in August 2012

Design by Politecnico di Milano is ongoing

The plant will be funded by MEDREC and co-funded by Benetton

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# ELMED PROJECT (Electricité MEDiterrranéenne)



In March 2009, **Terna** and **STEG** signed a partnership agreement in order to build an electricity connection between Italy and Tunisia through a mixed company, **ELMED Etudes**

## ELMED PROJECT

The project includes two elements:

### Power production pole of 1200 MW in Tunisia

400 MW for Tunisian market, 800 MW to be exported to Italy

An integrated production system, renewable/conventional sources, with at least **100 MW** from RES

### Interconnection through a sub-marine cable

Transport capacity : **1 000 MW**

**800 MW** reserved for the export of ELMED cluster to Italy

The remaining **200 MW** available for public access

## Role of MEDREC in interconnection project

1. The realization of three international seminars involving all stakeholders
2. The implementation of the 2 following studies
  - The analysis of the institutional, regulatory and legal frameworks, needed to the effective application of the art.9 of the Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources  
(by GSE)
  - the evaluation, in the framework of the ELMED project, of the maximum electricity production capacity from non-programmable renewable energy sources connectable to the Tunisian grid in accordance with security, and quality requirements  
(by CESI)

## The application of article 9

The study prepared by the GSE concerning regulatory framework identifies all legislative and regulatory steps to be followed by Governments, Tunisian and Italian, to ensure that electricity produced in Tunisia and exported to Italy may be accounted in achieving the objectives set out in Directive 2009/28/CE and may make use of Italian incentive mechanisms.

This is one of the first concrete example in Europe of the application of Article 9 of the Directive, and, as such, may constitute a reference point for all European countries (and non-EU countries) that want to use the instrument of joint projects with non-EU countries

## The application of article 9 /2

The next step will be the definition of a **Roadmap** to create in Tunisia the regulatory and legal framework for applying the **art 9** of the **Directive 2009/28/EC**, on the basis of the outcomes of the two studies

With this regard another study coordinated by MEDREC is now ongoing



## Lessons Learned: Keys to success

- **Financing Mechanisms** tailored taking into account specific **local conditions with regard to the institutional, legal and market framework** (Investment costs and interest rates subsidies, financial support for design and maintenance...)
- **Capacity building to both private and public operators**
- **Awareness rising through communication campaigns**
- **Involvement of the banking sector**
- **Involvement of the Energy Utility**
- **Technical support for feasibility studies and design**
- **Development of Emission Reduction related activities**
- **Quality standards and certification procedures**

## Conclusions: the role of Political Commitment

A key factor for the successful deployment of SWH technologies at competitive cost-benefit ratios is the declared political commitment to systematically turn this technology into a major element of energy system.

Governments need to adopt, in agreements with relevant stakeholders, strategies, policy targets, and support schemes that are visible, feasible, and effective, that create both sufficiently expansive markets to drive down costs by scaling up deployment, and sufficiently attractive business perspectives for industrialists.

**MEDREC is working to assist Tunisian Government to address perverse subsidy on fossil fuels to SWH promotion (and REEE in general), to improve energy security and reduce CO<sub>2</sub> through simplified and effective support schemes tailored on local conditions.**

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**Thanks for your attention!**

