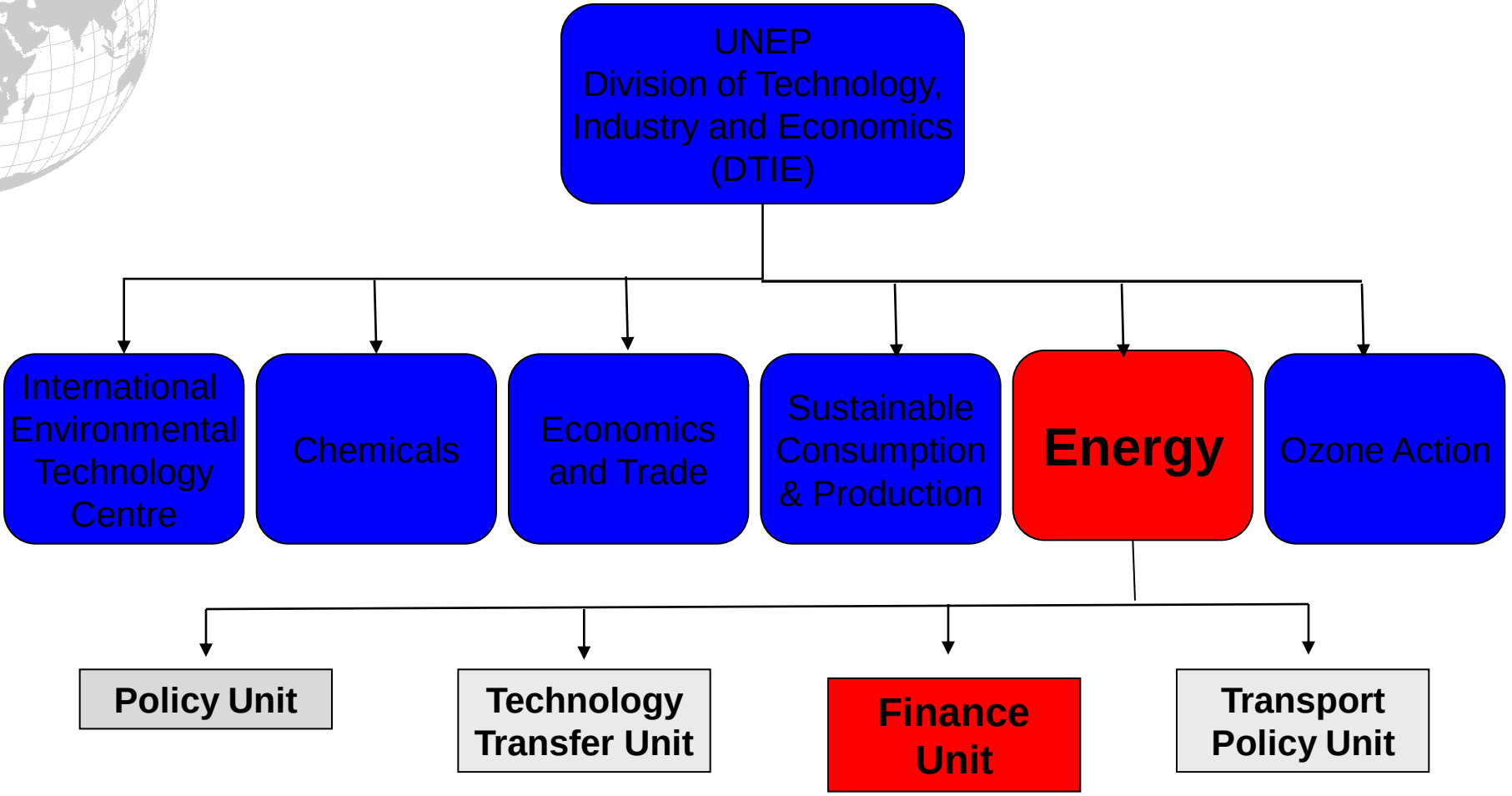
Engaging the Banks In Providing End-User Financing To the Solar Water Heating Sector

United Nations Environment Programme, DTIE

Program Manager, **Myriem TOUHAMI**

myriem.touhami@unep.org

UNEP-DTIE and the Energy Branch



Mission: To help **overcome market barriers** and **increase investment flows** to renewable energy and energy efficiency technologies

Within our Energy branch programme, UNEP helps to:

- Overcome market barriers
- Increase investment flows to renewable energy and energy efficiency technologies

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- UNEP is **not a bank** but we work to support the banking sector and other financial players in creating tailored clean energy finance mechanism.

- For sectors already commercialized on a “cash and carry” basis, UNEP has been implemented credit enhancement programmes that help local banks build dedicated loan portfolios.

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PROSOL (Prog. Solaire) : A success Story in Tunisisia

PROSOL goal is to upscale ***the Market for Residential Solar Water Heaters,*** with the aim reach a significant decrease of CO2 emissions at the household level.

PROSOL helps local banks build **loan portfolios** in RE area by implementing a framework that tackle all the market barriers

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Initial Situation

Why isn't solar energy used for water heating in sunny Tunisia?

Favourable conditions

- ✓ High solar resource
- ✓ Strong institutions
- ✓ National priority: Energy conservation

Challenges

- ✗ Capital intensive, no financing
- ✗ Current option (LPG)heavily subsidised

UNEP Strategy

1. Help banks to begin financing Solar Water Heaters
2. Address perverse subsidy

Goal

- ✓ Develop sustainable SWH market; displace LPG use.
- ✓ Improve energy security and reduce CO_2

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Market Analysis- Barriers to investment for stakeholders

Tunisian Government	- Budget constraint for public resource - No previous pilot project that removed market barriers - Fossil fuel (LPG) subsidies distorted the economics of SWH
Households	-Lack of confidence in the technology (previous bad experience) -High Upfront cost barrier - Not aware of the economic benefits
Commercial banks	-Risk aversion -Lack of local bank expertise to tailor RE loans -Bad perception of the market profitability

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Main Features of the Programme

1. Mechanism to facilitate consumers access to credit

- repayments made through **electricity bills**
- interest rates **initially softened**
- interest subsidy phased out after 18 months

Discounted Interest Rates:

Initial average bank consumer loans: 12 – 13%

II/

With STEG's involvement, banks lowered the interest rates by 5-6 points because the **risk of nonpayment** is low (less than 1%, Prosol I)

UNEP further softened **interest rates down to 0%,** full benefit passed on to the customer.

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PROSOL- What it does

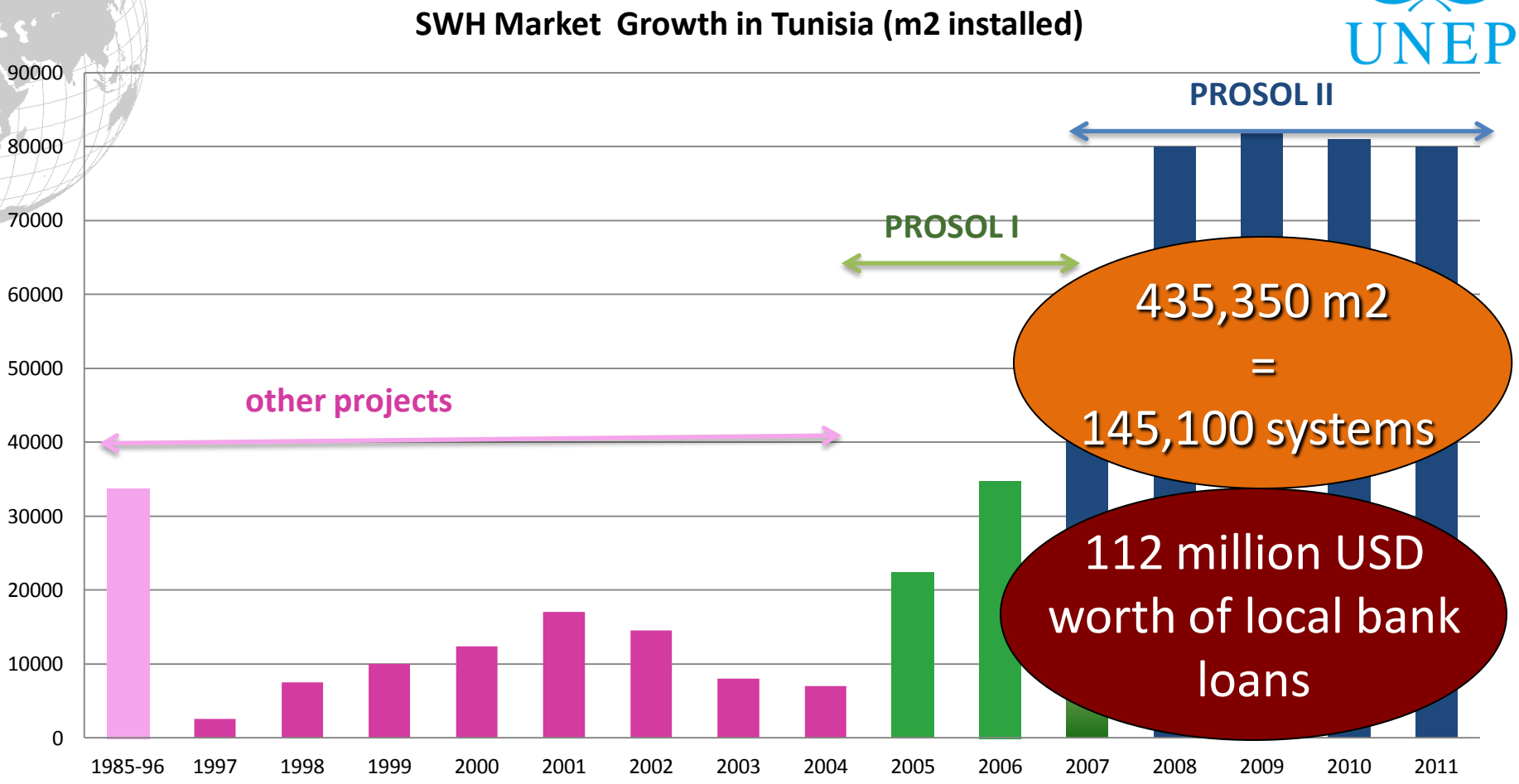
A Quick and Simplified Procedure

- Customer contacts the SWH supplier
  - A list of eligible suppliers is given by our main partner to the project, the National Agency for Energy Conservation (ANME)

- Customer fills out the application form at **the SWH supplier office**, presents his latest STEG bill and ID

- The installation is **immediate** once the application form and engagement form are signed

PROSOL Results



CO_2 emission reductions in 2005-2010 was 135,000 tCO_2,

Financial and Economic Analysis

PROSOL Residential in Tunisia has been selected by the ***Climate Policy Initiative (CPI) as a San Giorgio Group case study.*** *CPI carried out a detailed analysis considering PROSOL a successful example that provides an insight into how a developing country can align domestic and international support to level the playing field between low carbon technologies and heavily subsidized fossil alternatives*

Financial and Economic Analysis

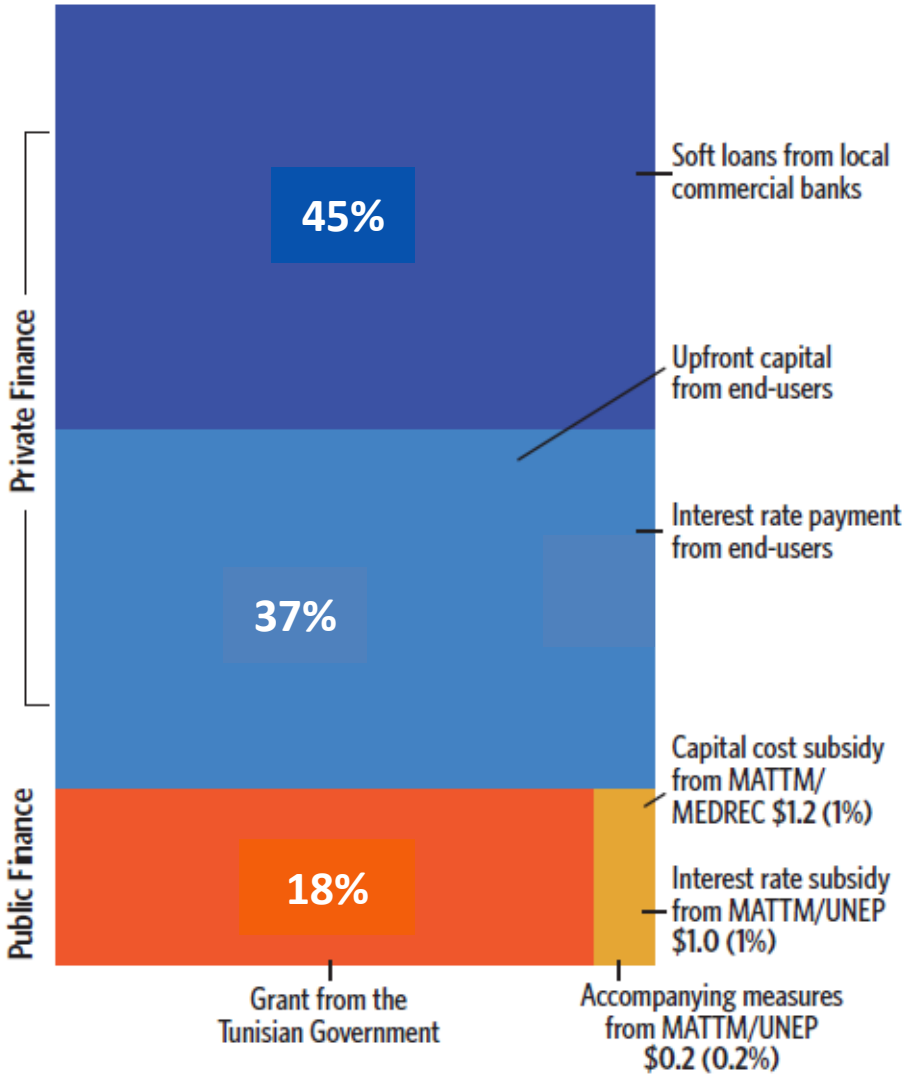
Investments – Who pays for what

- investment in the overall Program during 2005-2011 has been estimated at approximately **US$ 248 million**
- The **Public Sector** provided 18%;
- 82% was provided by **Private Capital (end-users and banks)**

1 US$ of public resources

Mobilized

5 US$ of private capital

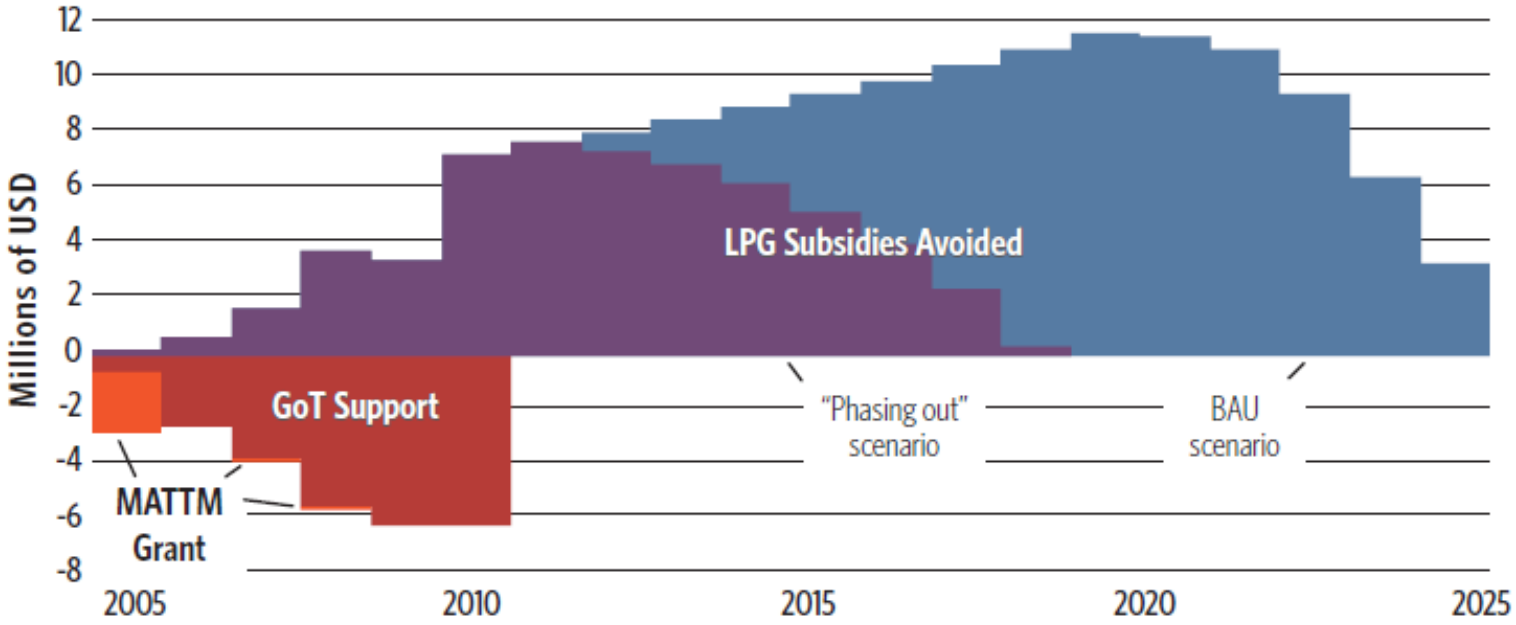


Financial and Economic Analysis

Benefits for the Tunisian Government

- **101 million US$** savings achievable in 20 years (2005-2025), of which 15.2 million US$ were achieved in the period 2005-2010.
- 21.8 million US$ of public resources are paid back in **less than 7 years**, thus full offsetting the Government's (GoT) initial investment

Public finance returns under the BAU scenario and fossil fuel "phasing out" scenario



Financial and Economic Analysis

Benefits for the Tunisian Government

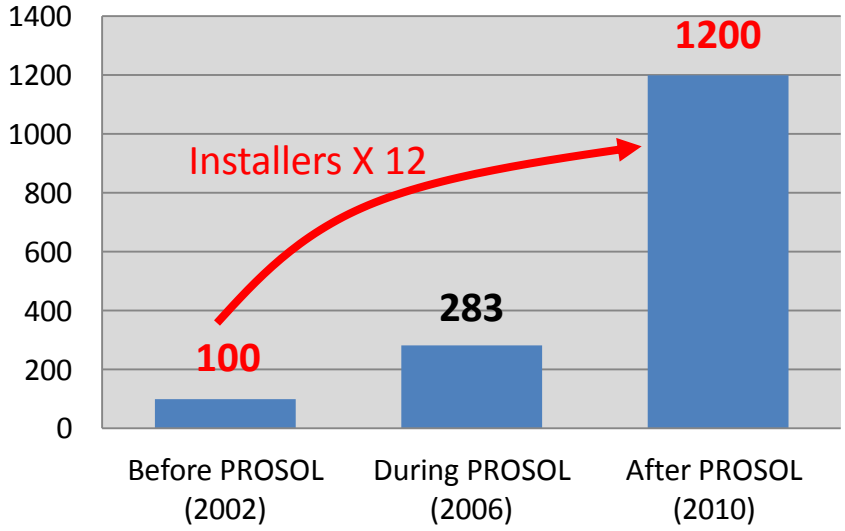
- SWH capacity in the period **2005-2010 generated fuel savings** of approximately **47,000** tons of oil equivalent (toe).
- **251,000 toe of fuel savings** are expected over the 20 years lifespan of SWHs
- CO2 emission reductions in **2005-2010** was **135,000 tCO2**, while **715,000 tCO2** are expected over the 20 years lifespan of SWHs
- The second phase of PROSOL Residential has been registered as a **Programmatic CDM** with a an estimated annual emission reductions of 7,200 tCO2. Associated revenues range between **350,000-700,000 US$** and will be reinvested to sustain the Programme itself.

Financial and Economic Analysis

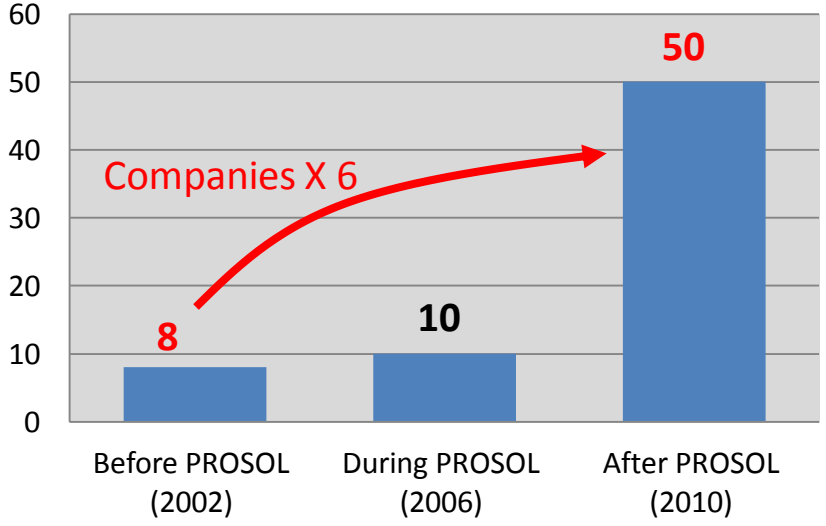
Local Economic and social Development

PROSOL Residential has stimulated the development of the domestic solar thermal industrial cluster, with local actors playing a primary role.

Number of qualified installers



Number of sale companies



- The **industry turnover 2005-2010** has been estimated of about **120.2 million US$**, of which 106.8 million US$ associated to manufacture and 13.4 million US$ associated with installers.
- Local stakeholder's analysis suggest that PROSOL contributed to create **3,000 new direct jobs** and up to **7,000 indirect**

Financial and Economic Analysis

The end-user perspective

PROSOL offers the possibility for households to use energy bill savings to cover investment costs in an acceptable period of time, with affordable upfront investment costs.

- overall **reductions in households' energy bills** to approximately US$ 605 -1,325 over the expected SWH's life-cycle.

- The different incentive measures introduced by PROSOL– the capital cost subsidy, the softened credit condition and longer repayment terms – significantly lowered SWH system costs for residential consumers: **SWHs' Levelized Cost of Energy (LCOE)** decreased indeed from USD 9.7 cents/kWh to USD 7.3 cents/ kWh (around 25% less).

- Local stakeholders today believe that PROSOL had a tangible cultural effect on households, inducing **changes in their investment behavior**

Risk Analysis and Response Strategies

- **SWH failure risks:** thanks to mitigation measures – accreditation scheme for suppliers, certification of equipments, training, on-site spots checks, guarantees – **default rates** observed in 2005-2010 corresponded to **only 1%**.

- **Debt default risk:** this risk was mitigated by a double-level loan guarantee scheme:
  a) **Third-party loan debt collector** – the state-owned utility (STEG) collects loan repayments through electricity bill and may suspend electricity supply in case of payment default
  b) **Third-party loan guarantor** – suppliers initially (PROSOL I) and then STEG (PROSOL II)

- **Risk Allocation:** There is an overall evidence of a balanced risk allocation under which risks are allocated to the stakeholder more suited to bear them

PROSOL Key Success Factors

- The **engagement** and strong **commitment** of national public **Authorities** evident in the credible and stable support that bolstered investors' confidence

- The involvement of the State utility **STEG as a debt enforcer**, which enhanced domestic financial institutions trust and resulted in lowered financing costs for residential end-user purchasers;

- an **appealing financial scheme** using soft interest rates and longer repayment terms;

- the implementation of pervasive and focused **awareness raising, communication and capacity building activities**; and

- a **stakeholder-tailored approach** that involved all relevant actors in the development of the SWH market from national authorities to financial institutions, suppliers, installers and end-users .

What we have learned…

Besides the need for enabling policy frameworks, the other barrier to uptake has been **the lack of tailored financing** to help these highly capital-intensive technologies compete with conventional options.

Renewable Energy companies in developing countries frustrated by lack of bank interest to finance their operations or lend to their customers.

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What we have learned engaging the banks…

- Banks need help to get started
  - *Assessing technologies,*
  - *Marketing new loans,*
  - *Kick-starting demand.*
- Typical goal: 10,000 loans.
  - *At this scale partner banks will usually continue on their own and others will follow.*
- Solar thermal markets scale up quickly once banks start to lend.
- Lending gives feedback signal that technology is mature.
  - *Policy makers take a technology more seriously once banks are lending for it.*

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Conclusions

- **No standard** bank engagement strategy

- End-user finance initiatives must employ **a variety of approaches and tools:**
  - Institutional support from local governments
  - Multi-stakeholder approach (government, banks, suppliers, installers, state utility)
  - Technical support for setting up dedicated loan instrument
  - Targeted capacity building, training, communication and dissemination to specific financial incentives

- **Integrating carbon reduction benefits**

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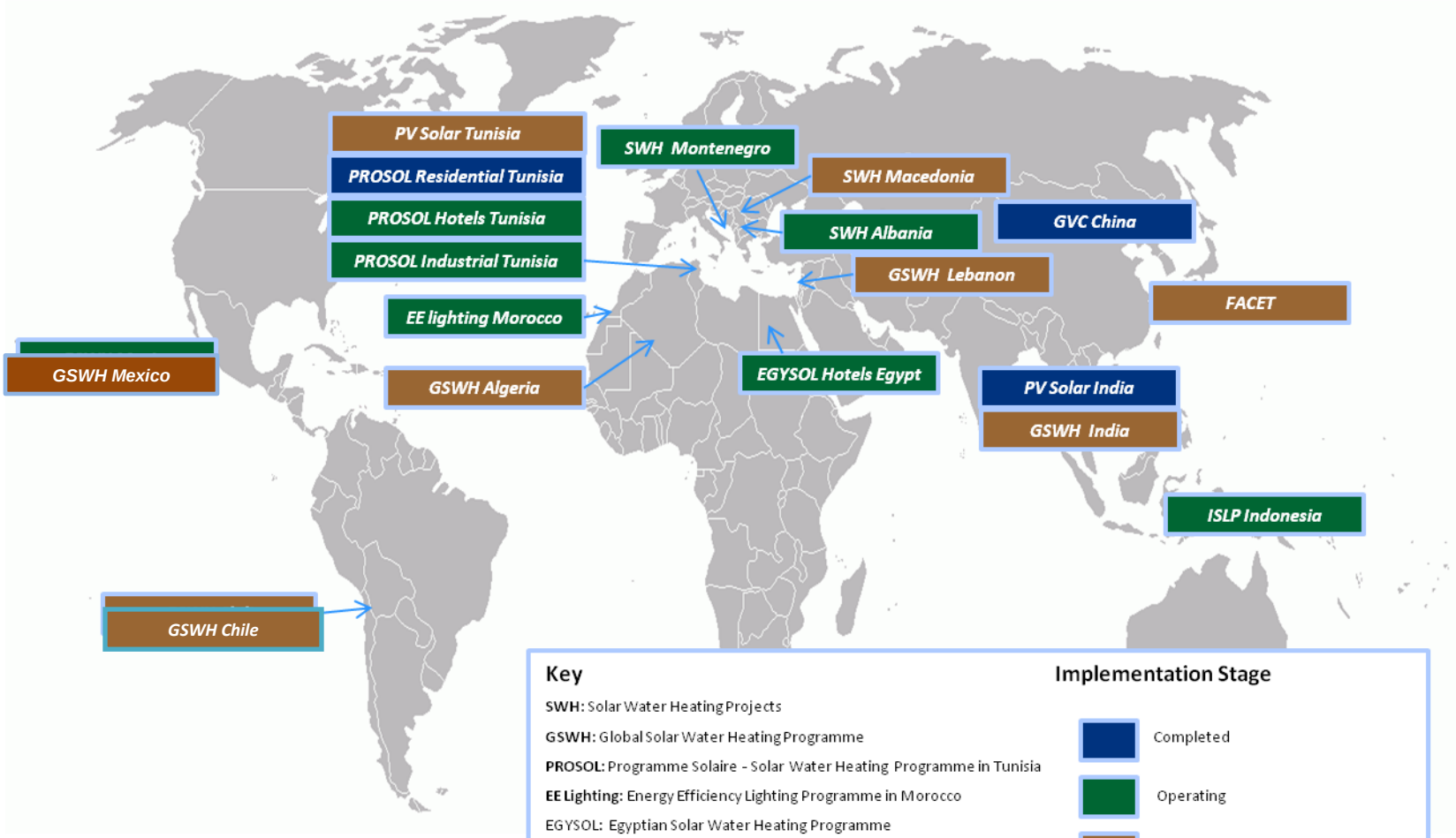
End-User Finance Programmes



Key

SWH: Solar Water Heating Projects

GSWH: Global Solar Water Heating Programme

PROSOL: Programme Solaire - Solar Water Heating Programme in Tunisia

EE Lighting: Energy Efficiency Lighting Programme in Morocco

EGYSOL: Egyptian Solar Water Heating Programme

PV Solar Loan Programme India

PV Solar project; Photovoltaic solar project in Tunisia

FACET: Financing Access to Clean Energy Technologies (3 countries Asia)

ISLP: Indonesian Solar Loan Programme

GVC: Green Village Credit China

Implementation Stage

Completed

Operating

In Development