

MENA Energized: Regional Challenges to Green the Power Sector

Session 1: the emergence of a regulatory framework
in the MENA Region

Perspective from the Maghreb Countries

28th June 09

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- **Energy context and RE status in North Africa region**
- **Institutional and regulatory framework for Renewable Energy**
- **RE countries policy and their objectives**
- **Strengths of the RE policies in the region**
- **Success stories**

Energy context and RE status in the region

Varied energy contexts

■ Algeria

- Gas and petroleum net exporter
- Primary energy consumption : 35 Mtoe

■ Libya

- Gas and petroleum net exporter
- Primary energy consumption : 11 Mtoe

■ Morocco

- Importation for more than 96% of its energy needs
- Primary energy consumption : 15 Mtoe

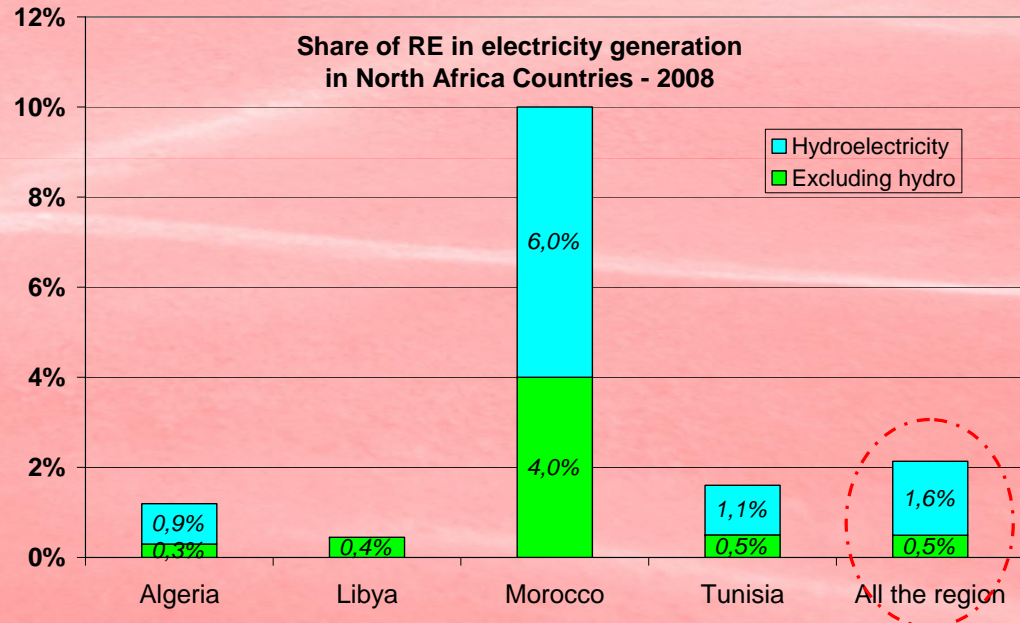
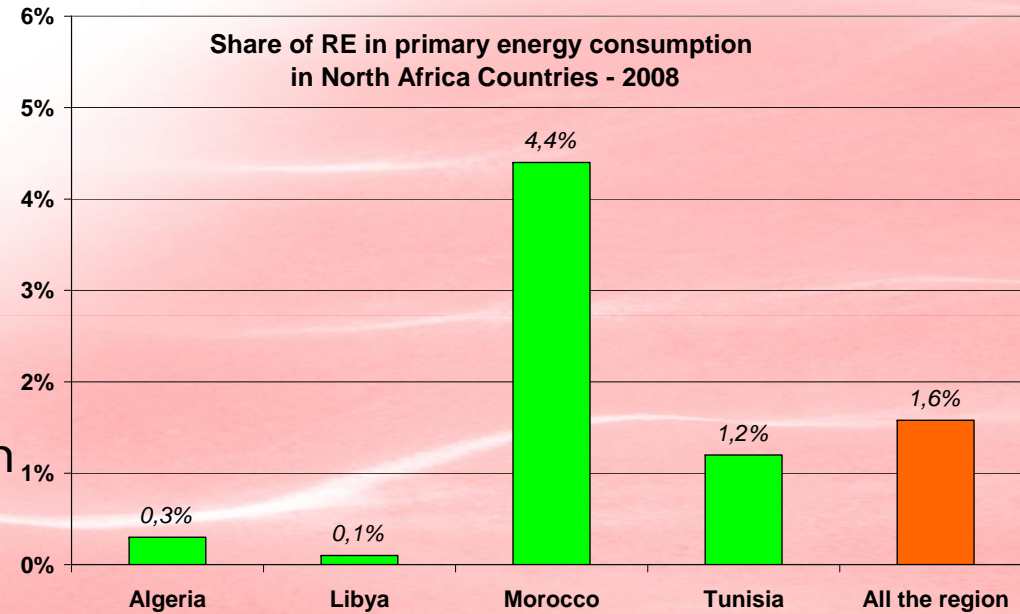
■ Tunisia

- Net importer since 2000
- Primary energy consumption : 8 Mtoe

Energy context and RE status in the region

RE contribution

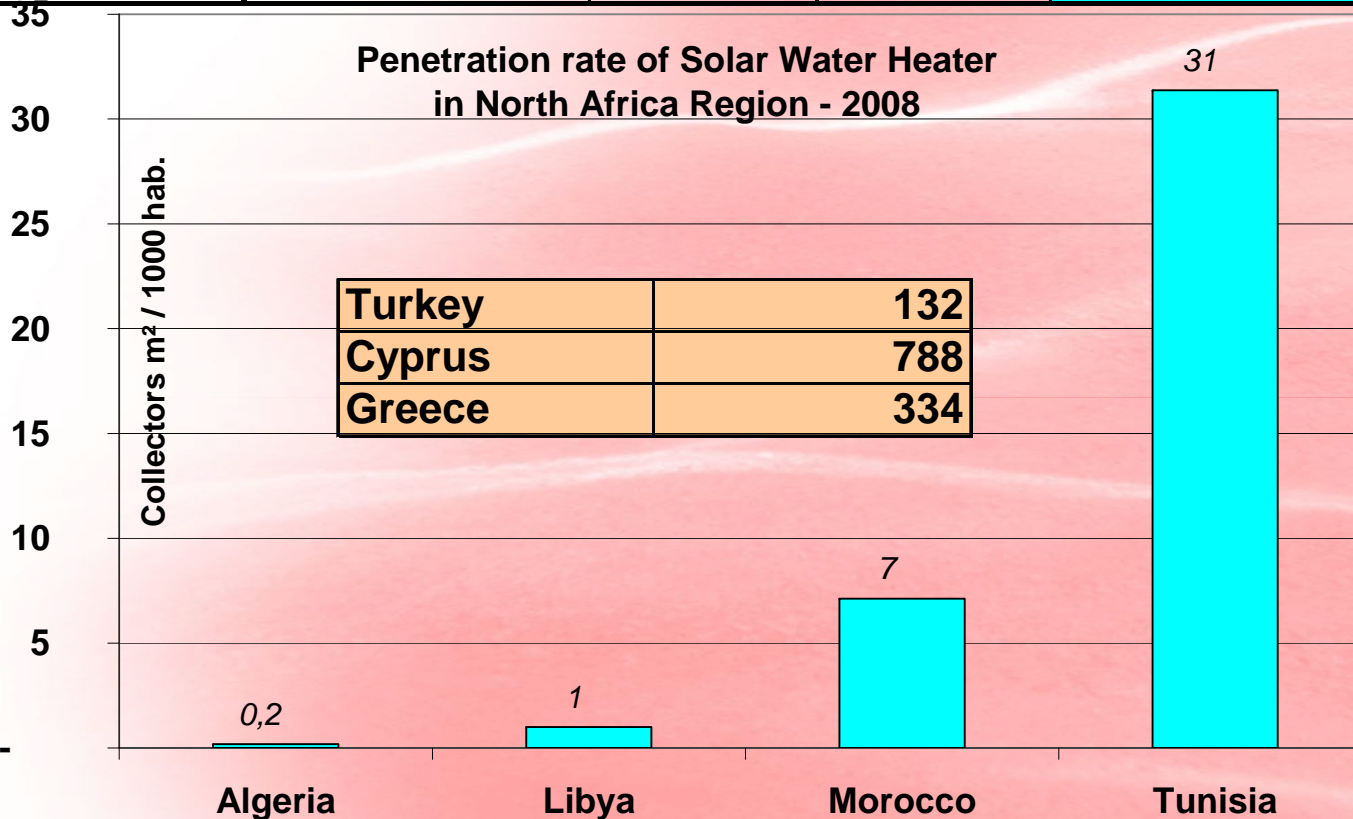
- RE contribution in the region is still very low: around 1.6% of the primary energy consumption (including Hydro)
- Less than 2.1% of total electricity generation (including Hydro and excluding traditional biomass)
- Morocco and Tunisia show the highest rates



Energy context and RE status in the region

Installed capacities

Countries	Biomass (% Primary energy consumption)	Installed capacities		
		Wind (MW)	Solar PV (MWp)	Solar thermal (1000 x m ² collectors)
Algeria			0,6	6
Libya			0,5	6
Morocco	16%	124	10	240
Tunisia	11%	54	1,3	320



RE institutional and regulatory frameworks

General overview

Algeria	Centre for the Development of RE Agency for the Promotion of the Rational Use of Energy
Libya	Centre of Research and Studies on Solar Energy Renewable Energy Authority of Libya
Morocco	Centre of Renewable Energy
Tunisia	National Agency for Energy Conservation

Countries	Specific regulation for RE	Public incentives & subsidies	Specific fund	Feed in Tariffs
Algeria	Elec. & Gas Law 02-01 Law on RE 04-09	Yes	Yes	Yes
Libya	No	No	No	No
Morocco	On going	Yes	On going	On going
Tunisia	Law n°2009-7 Decree n°2009-362	Yes	Yes	On going

RE institutional and regulatory frameworks

Algeria

■ Regulation framework

- Private bodies can install and operate RE power plants, but under concession regime.
- Transmission system operator or the holders of the distribution concessions must purchase RE-based power generation.
- Annual quotas for power generation from RE can be set by Regulatory Commission who ensure compliance to such obligations.
- A premium of 100% to 300% over the electricity price as established by the market operator is given to every kWh from RE supplied to the network. The premium depends on the RE sources (ex: PV and wind 300%, CSP maximum 200%, waste 200%, etc.).
- The excess costs associated to these measures can be financed by the State or can be imputed on tariffs.

■ Incentives

- Investment subsidies provided by the national energy conservation fund which can go until 50%, depending on the RE technology.

Institutional and regulatory framework for RE Morocco

■ Regulation framework

- Private operators can produce electricity from RE for its own consumption for less than 50 MW
- Private operators can produce electricity from RE for the national network
- The operators needs simple declaration for small capacities (less than 2 MW) and authorization for upper capacities.
- The purchase tariff is defined by a Power Purchase Agreement to be signed between the operators and the national utility.

■ Incentives

- Customs duties : 2,5% for all RE
- Other subsidies in the framework of the foreseen energy conservation fund

Institutional and regulatory framework for RE Tunisia

■ Regulation framework

- A company (or a group of companies) is allowed to produce electricity from RE for its own consumption, with no capacity limitation.
- The company is allowed to use the transmission network for electricity transportation to other consumption facilities belonging to the same company or group.
- The national utility has the obligation to buy electricity in a proportion below 30% of the generated RE electricity by the company, with a price defined by decree.

■ Incentives

- Investment subsidies provided by the national energy conservation fund with a level that depends on the RE technology:
 - 70% of cost for immaterial investment (feasibility study, etc.)
 - 70 \$/m² for the SWH, 30% for PV systems connected to the network, 40% for solar and wind water pumping and small biogas systems, etc.
- VAT and Customs duties exemption for all RE and EE equipments

RE country policies and their objectives

Strategic goals

- Reduce the weight of the energy expenses in the economy (in 2007 the share of energy expenses in the GDP was around 12% in Tunisia and 20% in Morocco)
- Reduce the amount of public subsidies to conventional energy by displacing energy fossil consumption
- Reduce the energy dependence of the country by diversify the energy mix in the mid and long term

RE country policies and their objectives

Quantitative objectives

Countries	Target horizon	% RE in electricity generation (1)	% RE in primary energy consumption (1)	Additional forecasted capacities
Algeria	2010	5%		400 MW solar PV and CSP
Libya	2020	10%		* Wind: 1000 MW * PV: 16 MW * CSP: 100 MW * SWH: 10.000 m ²
Morocco	2012	20%	10%	* Wind: 1420 MW * PV: 20 MW * CSP: 20 MW * SWH: 200.000 m ²
Tunisia	2011	8%	4%	* Wind: 190MW * Biogas: 10 MW * Pomace olive valorisation: 40 MW * PV: 4 MW * SWH: 480.000 m ²

(1) Including hydro

Strengths of the RE policies in the region

- Raised awareness of policy makers in the region for energy efficiency and RE
- Existence of RE official policies development in the countries
- Reinforcement of energy efficiency and RE policies since the last oil international price increase, particularly in energy importer countries (Tunisia and Morocco)
- Establishment of new regulatory frameworks more open to private-public partnership
- Increase of financial support from the international donors to RE in the region, mainly for Tunisia and Morocco
- More and more mobilization of CDM to support RE projects in the region (Tunisia and Morocco).

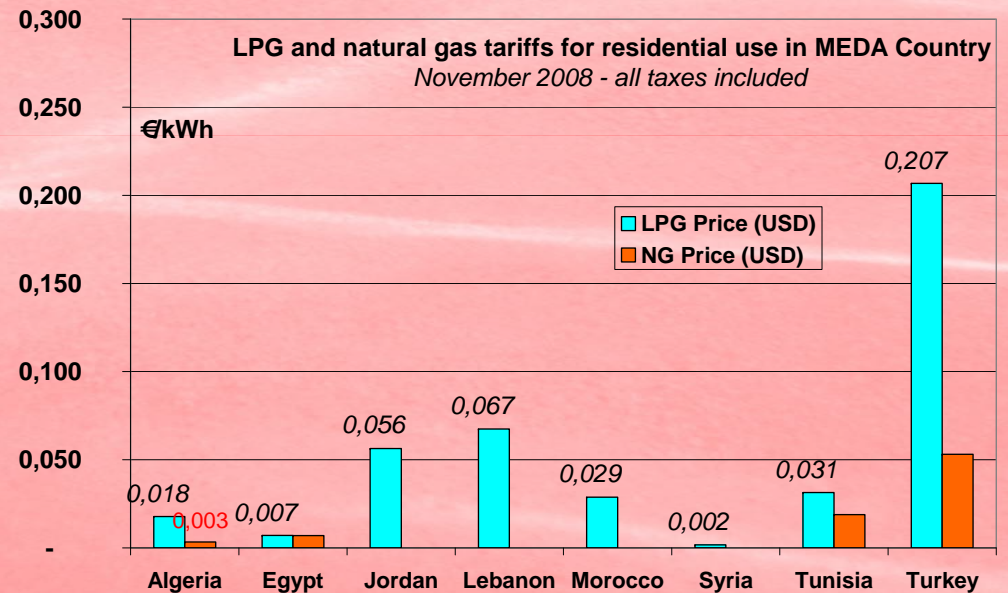
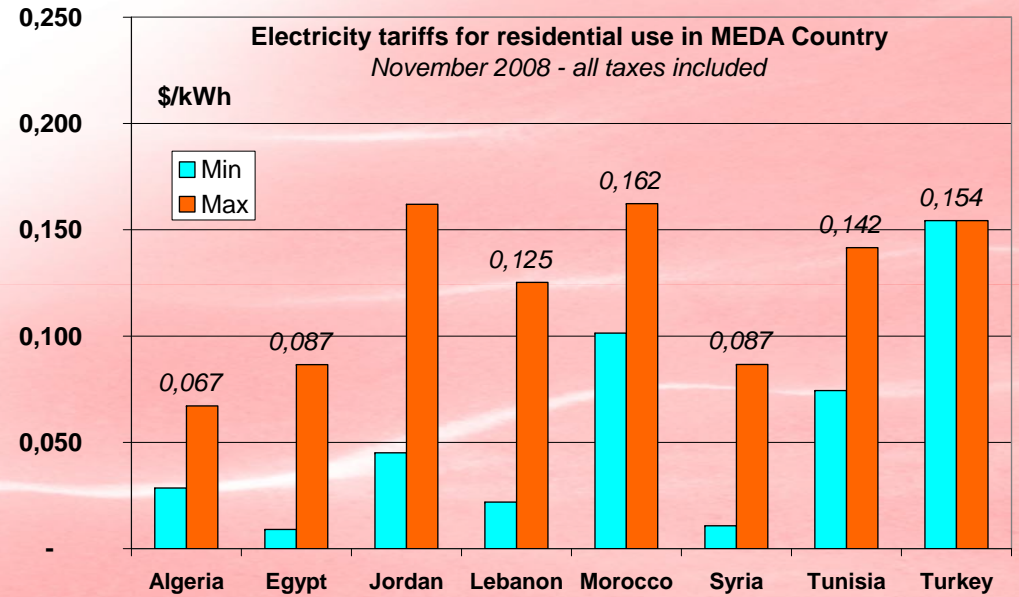
Main weaknesses of the RE policies in the region

- Legal frameworks still not enough attractive for private investment
- Subsidies to **conventional energy tariffs** make RE not profitable for the end user and not attractive for private investors
- Strategy targets are based some time on political issues and not taking in account the real bottlenecks that will make them not feasible
- Development approach focusing on demand stimulation only: **But**, market transformation needs to work also on the development of local industries and suppliers of RE energy technologies
- Countries don't focus enough on financing mechanisms to mobilize required resources.
- Lack/absence of concrete **integrated mechanisms to operationalize** the adopted strategies
- Capacities building

Main weaknesses of the RE policies in the region

Impact of the subsidies to conventional energy tariffs

Energy tariffs in MENA countries



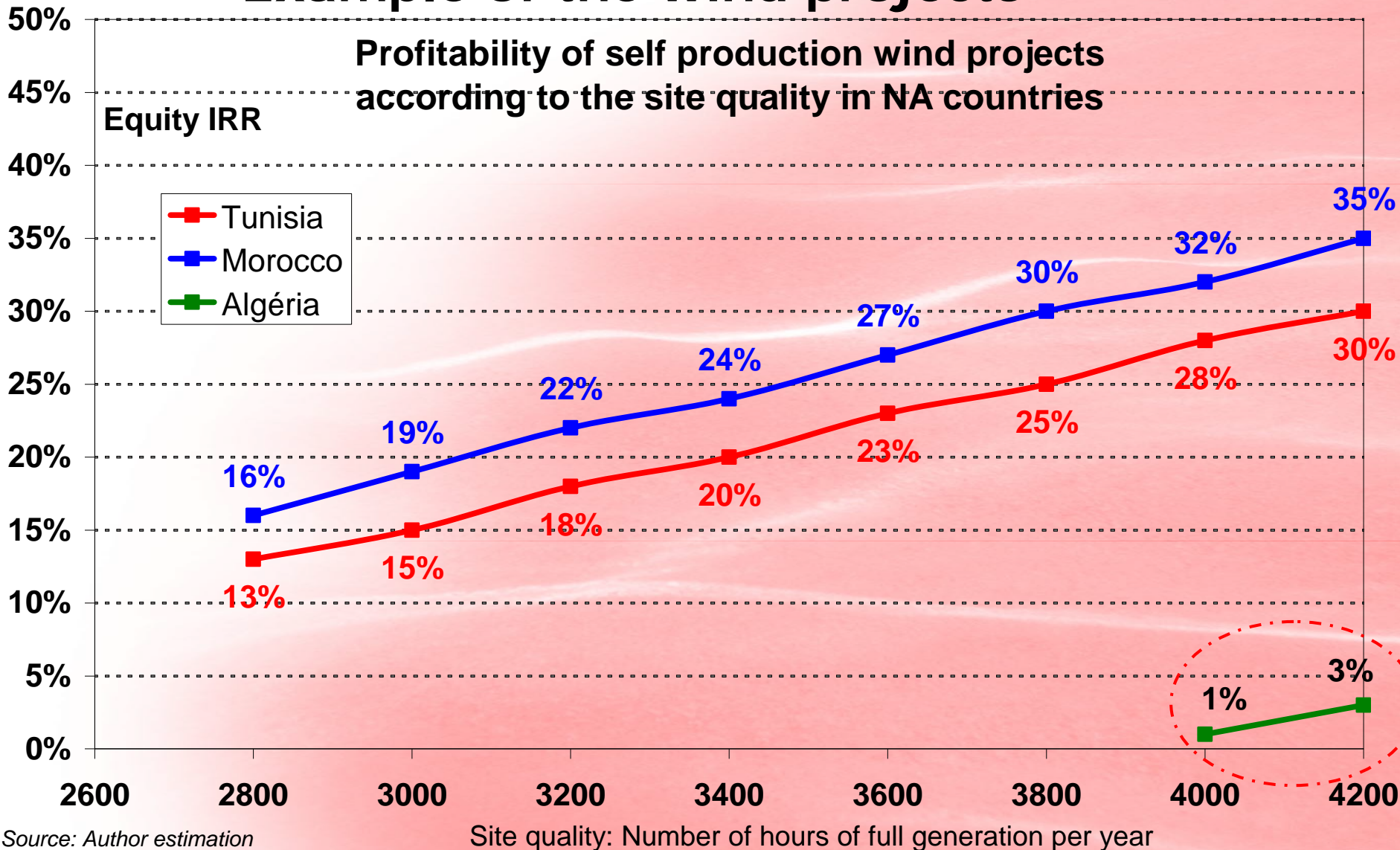
Main weaknesses of the RE policies in the region

Impact of the subsidies to conventional energy tariffs

Example of the wind projects

Profitability of self production wind projects according to the site quality in NA countries

Equity IRR



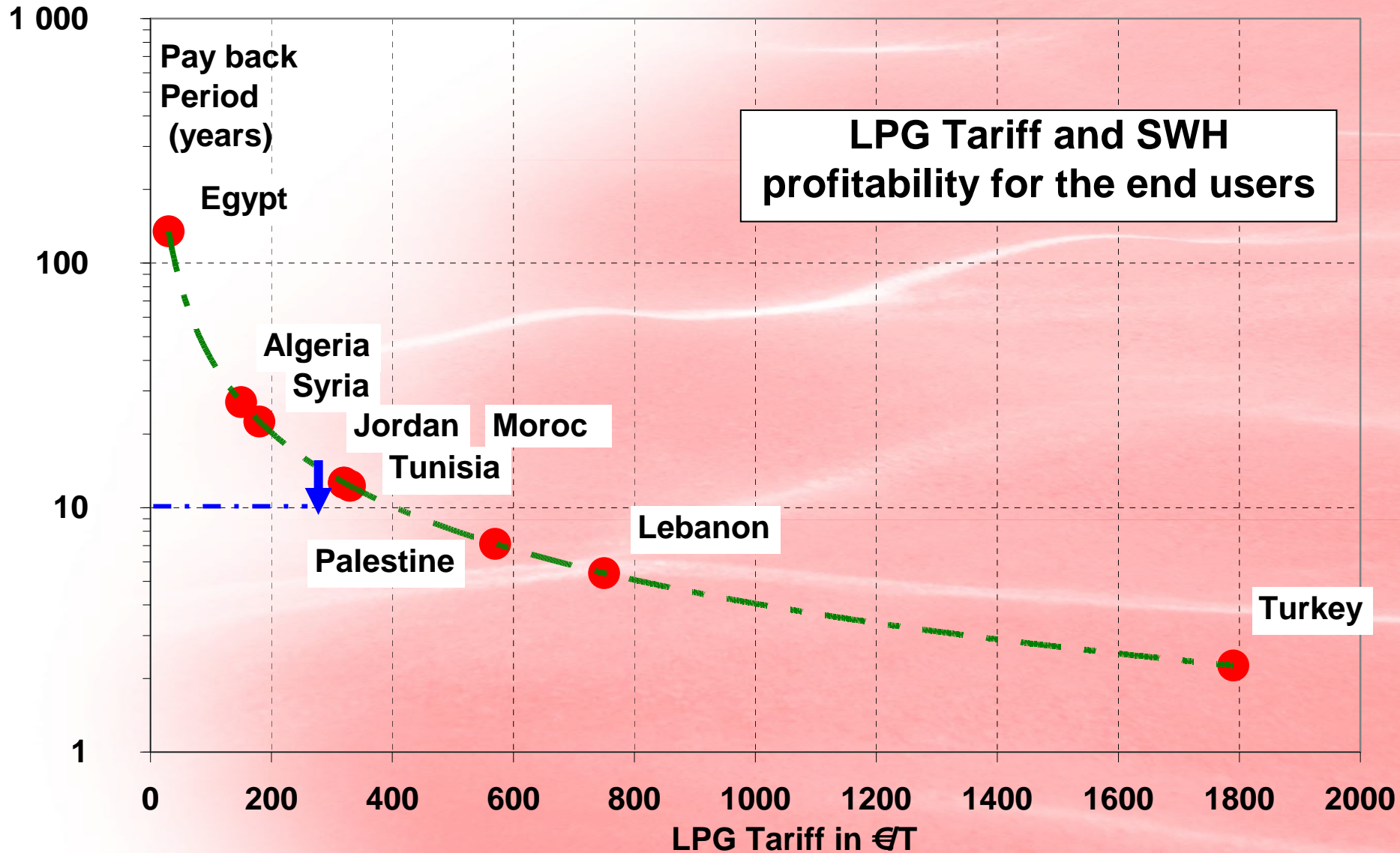
Source: Author estimation

Site quality: Number of hours of full generation per year

Main weaknesses of the RE policies in the region

Impact of the subsidies to conventional energy tariffs

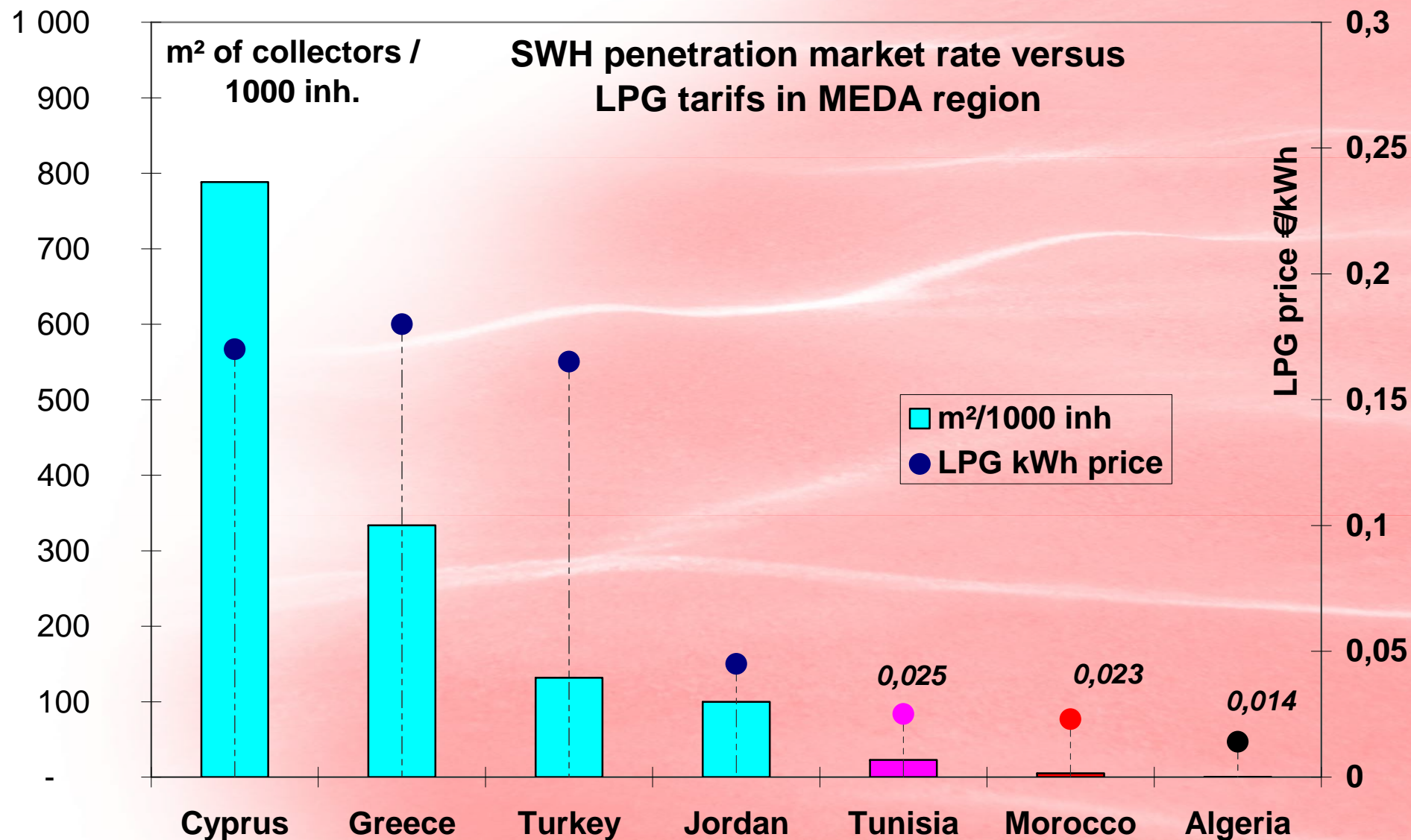
Example of the SWH market



Main weaknesses of the RE policies in the region

Impact of the subsidies to conventional energy tariffs

Example of the SWH market



Success stories of integrated RE approaches

Solar water heater program in Tunisia: PROSOL

■ Principles

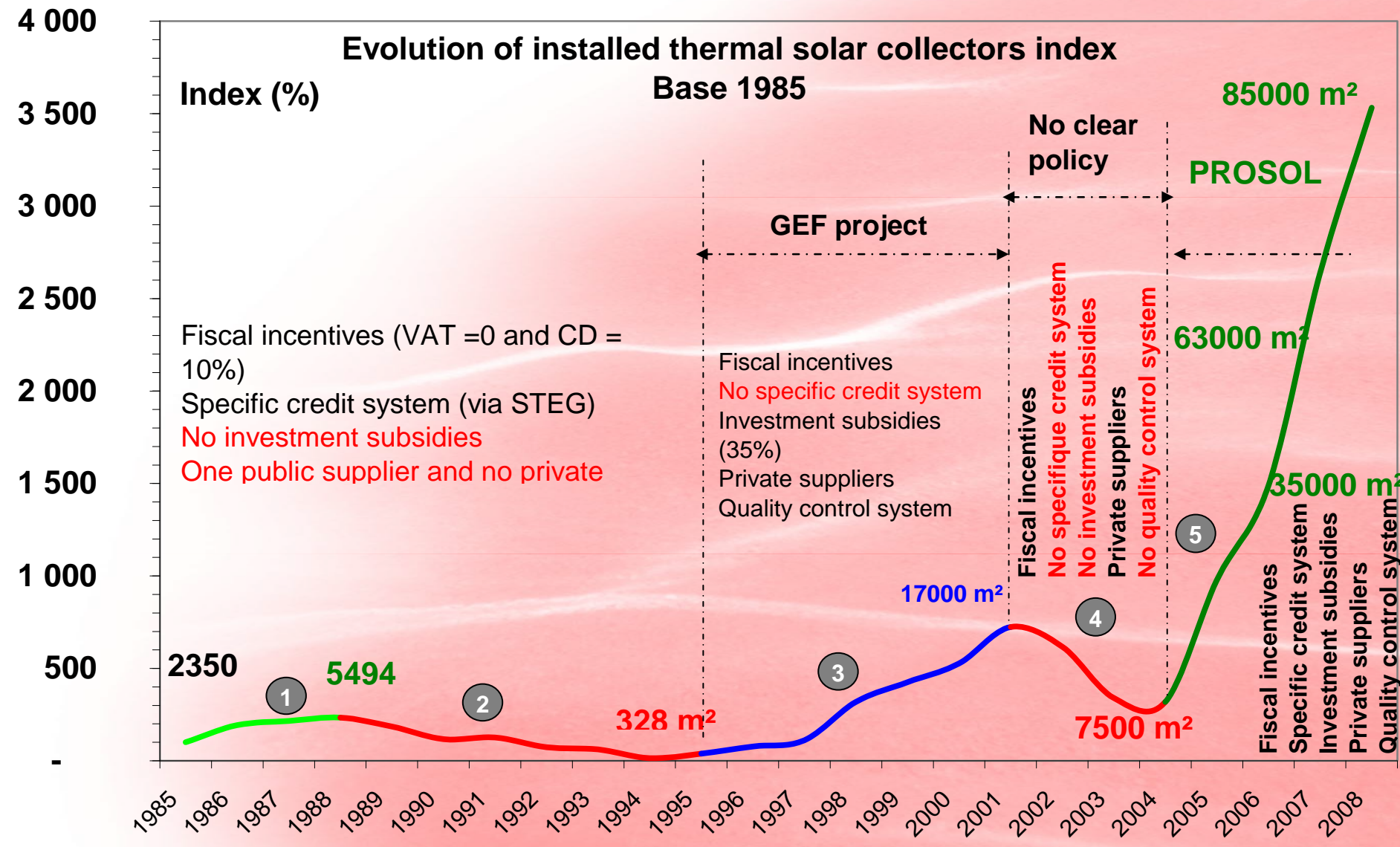
- Integrated approach including technical, financial and organizational issues
- Win-Win negotiated multi-stakeholders approach,
- Public-private partnership approach,
- Strong involvement of stakeholders: suppliers, bank sector, Utility

■ Mechanism description

- NECF subsidizes the SWH cost (around 20%) **to improve the pay back** period for the end-user
- 5 years loan reimbursable through the electricity bill to face the constraints of limited household capacity of investment
- Public quality control mechanism by NAEC (suppliers and models accreditation)
- Monitoring and information management system

Success stories of integrated RE approaches

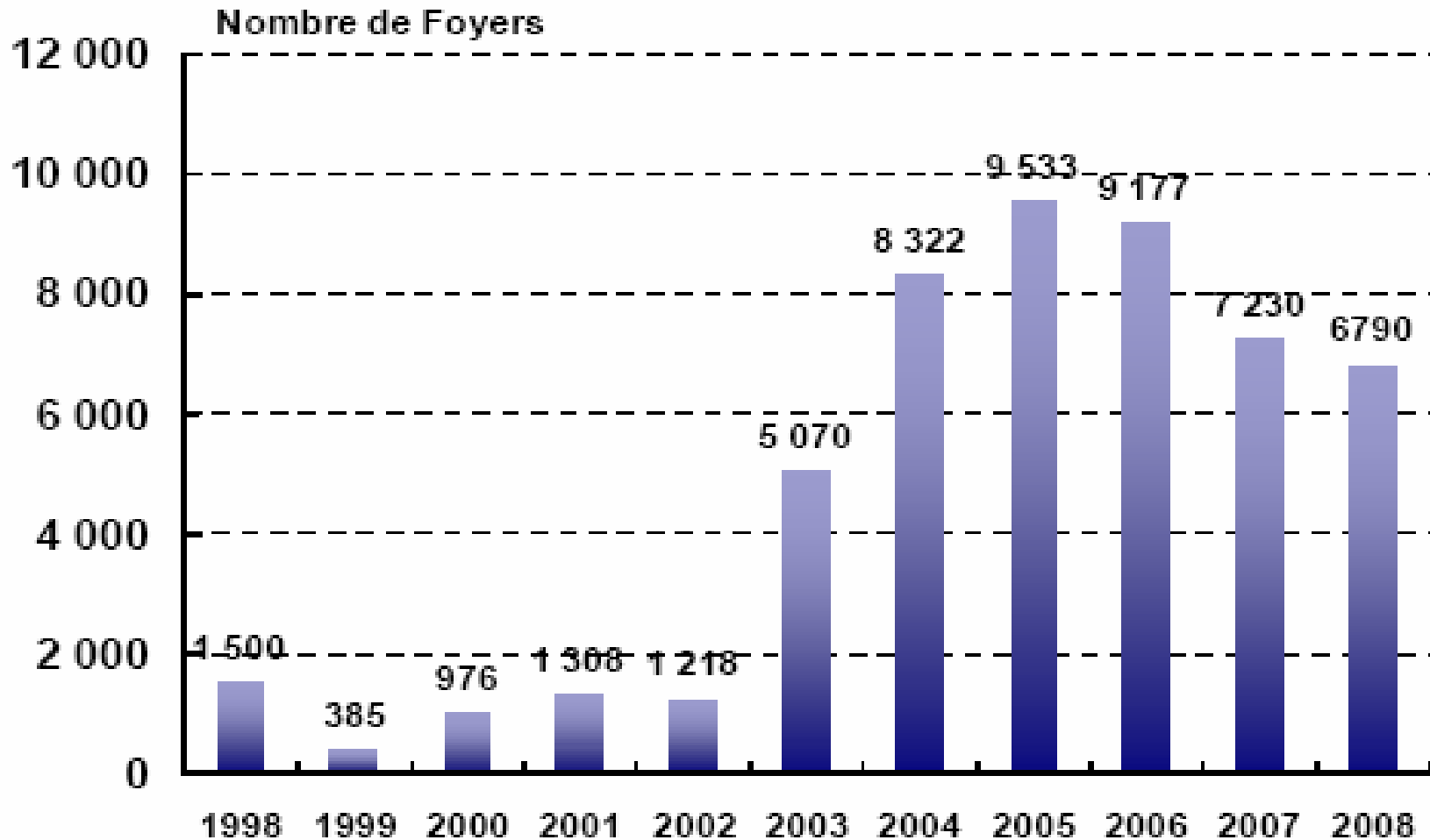
Solar water heater program in Tunisia: PROSOL



Success stories of integrated RE approaches

PV rural electrification program in Morocco

- Strong Public-private partnership : concession approach
- Cost sharing between Utility, local collectivities and customers



Success stories of integrated RE approaches

CSP project in Algeria: Hassi Rmel project

■ Project description

- Project developer: New Energy Algeria (NEAL)
- Project under implementation
- Installed capacity 150 MW
- Energy mix : solar and natural gas

■ Developing approach

- Project finance implying private sector
- 66% Spanish private developer and 33% public and private Algerian investors
- BOT approach

Conclusion

- The region knows recent dynamism for RE development through:
 - Regulatory frameworks reform
 - RE development strategies setting up
- There is a need to operationalize these strategies through innovative mechanisms
- Need for win-win financial mechanism that conjugate
 - Public investment subsidies to overcome the constraint of low energy conventional tariffs
 - Appropriate financial facilities (credit, guarantee, etc.)
 - Downstream financial resources mobilization mechanisms (dedicated credit lines, investment funds, etc.)
 - CDM mobilization as a financial supporting mechanism

Conclusion

- Technology transfer and local industry support in order to maximize indirect benefits of RE programs
- Capacity building
- Monitoring system for strategies and programs
- Enhancement of regional cooperation