Promoting Energy Entrepreneurship in Rural Communities

Dr. Abed el hadi Zein

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Introduction

- To create a truly robust and sustainable RE infrastructure, with a view to stimulating the market and thereby attracting project developers & finance in ESCWA countries, the following policy toolbox and ancillary services, should provide a *basic set of guide lines* , which should be carefully considered:

1. Reforming energy subsidies;
2. Simple RE system design;
3. Assurance of maintenance and repair service for RE systems;
4. Market-based instruments to exploit cost effectiveness of RE;
5. Attracting investors in RE facilities in rural areas;
6. Encouraging partnerships and voluntary agreements with rural communities as partners;
7. Rural credit options;
8. Capacity building;
9. Raising public awareness of the benefits of RETs.

1. Reforming Energy Subsidies

- Getting market signals right so that prices better reflect the true costs of producing and consuming energy – i.e. taking account of the environmental and social consequences – should be a key guiding principle in all cases.
- Energy subsidies worldwide amount to about $300 billion annually (IEA, 2006).
- Energy subsidies are unproductive and distortive government subsidies and should be phase-out.
- Main drawbacks of energy subsidies:

a) Lead to energy waste;
b) Reduce incentives to use energy efficiently, act as a drain on government finances and hold back economic development;
c) Do not encourage the use of RETs in rural areas if the prices of oil derivatives and transport fuels are subsidized.

2. Simple RE System Design

- The cost of the RE system is always a major consideration for low-income customers.
- An affordable and hence marketable RE devices for use in rural communities in the ESCWA region should be carefully selected. Minimal technical knowhow with respect to installation, operation and maintenance is a must.
- Examples of suitable systems and RE devices:

a) Solar water heating: Thermosyphon and integrated collector-storage (ICS) systems. Moving parts such as circulating pumps and motorized and tempered valves are not included;
b) Solar cookers and solar dryers;
c) Solar home systems: Maximum power point trackers (MPPTs) are not included. Reliable batteries are essential;
d) Photovoltaic water pumps (PVPs): without storage batteries;
e) Mechanical wind pumps;
f) Biogas plants;
g) Small hydropower.

3. Assurance of Maintenance and Repair Services for RE Systems

- Services, especially after-sale services include training, maintenance and repair are essential components of rural energy delivery network.
- The lifetime of RE systems is somewhere between 20 and 30 years; so that system monitoring of RE systems in addition to maintenance and repair work is always carried out throughout the lifetime of the RE systems.
- RE maintenance and repair service should be properly carried out i.e. socially acceptable and sustainable. If maintenance and possible improvements is to be the responsibility of the community after installation and commissioning, then rural communities, and in particular women, need to be involved in the planning processes.

3. Maintenance and Repair Service (cont.)

- In the early nineties, the French oil company *Total* funded and implemented a PV pumping system in an African country. The system was telemetrically connected to *Total's* office in Lyon. Few months after project completion, the PV system showed a tangible deterioration in its performance which lasted for several weeks. As there seemed to be no obvious reason for this deterioration, *Total* decided to send a technician to the Project site. When the said technician arrived on site he discovered to his unpleasant surprise that some women had been using the PV array to place their laundry on to dry.
- The funding from GEF- Small Grant Projects (SGPs) via exclusively local NGO's means that maintenance and repair service of the RE system cannot always be guaranteed. NERC (Syria) proposed to UNDP office to undertake the responsibility of maintenance and repair service for all RE projects granted by GEF. After obtaining the agreement from the headquarter in New York, UNDP-Damascus office and NERC signed a Memorandum of Understanding on this issue.

3. Maintenance and Repair Service (cont.)

- A PV pilot project funded by JICA in Syria (Aleppo region) was implemented over the period 1995-2000. Early in the discussions, the Japanese delegation raised the question of responsibility of the operation and maintenance (O&M) of PV systems during its life span of about 20 years which, among other things, entailed buying and installing new batteries every 7 years (battery life). When the Aleppo pilot project was completed in the year 2000, the last Japanese expert to leave for Japan felt it his duty to check that the battery bank was replaced in a certain PV pilot project located near Damascus.
- The moral of the above story is that assigning the O&M activities to a qualified partner contributes to project success.

4. Market-Oriented Instruments to Exploit Cost Effectiveness of RE

- Market-oriented instruments which presuppose the cost effectiveness of RE are typically taxes and tradable permits to reduce pollution emissions.
- Two cases may be cited:

a) **Sudan**: In the annual 2004 national development budget, the parliament passed a resolution exempting PV-system components from import duties and VAT (value added tax).

b) **Syria**: In 2005, The Syrian Government agreed to exempt the thermal insulation materials, absorbers for flat-plate solar collectors, and evacuated-tube solar collectors from all import duties.

5. Attracting Investors in RE Facilities in Rural Areas

- Attracting investors calls for:

a) Establishment of undistorted, cost-reflective prices in the RE market to create an investment climate to attract private investors.
b) Creating incentives for cost-effective technological and commercial solutions aimed at benefiting the poor or the low-income customers.

5. Attracting Investors in RE Facilities in Rural Areas (Cont.)

- **China, a case in point:**

- To encourage competition, a direct grant is provided to PV systems companies to assist them in marketing, selling, and maintaining 10 MWp of PV systems, i.e., an estimated of 300,000-400,000 systems, in remote rural villages lying in isolated rural areas with no access to electricity.
- Solar Home System (SHS) companies receive a grant of US$ 1.5 per Wp per system with a capacity of 10 Wp or greater.
- This financial support is meant to assist companies in:
    a) Improving photovoltaic product quality,
    b) Improving warranties and after-sales services,
    c) Strengthen business capabilities,
    d) Increase market efforts.

6. Encouraging Partnerships and Voluntary Agreements with Rural Communities as Partners

- There is a need in ESCWA countries for joint public/private programmes or enterprises to develop and deploy sustainable RE in the industrial sector.
- A variety of technological options of RE should become available, and the communities will be expected to opt for those choices suited to their special needs. Furthermore, they will be expected to pay for energy services.
- The most important NGOs are those based in rural communities, because they are closest to the rural people, have their confidence and are in a better position than any other organization to mobilize community participation in rural RE projects.
- Many donor agencies are becoming far more willing to provide direct funding to NGOs thus abandoning their earlier policy of dealing exclusively with governments (e.g. GEF Small Grants Programme).
- In 2010, The Syrian Ministry of Industry signed an accord with private investor aimed at establishment of a company for the manufacturing of flat-plate solar collectors.

Why Startups Fail (Putting the Cart before the Horse)

- Setting the infrastructure before market development might cause as much harm as launching a market for RE technologies with no technical support. A balanced strategy is needed where both tracks are pursued in parallel.
- A case in point **(Syria):**

- In 2010, The Ministry of Industry established a 5.3MW/year PV module assembly line. This was a public-private partnership (S.U. SOLAREC) between the Ministry of Industry (40%), the Ministry of Electricity (30%) and a private Ukrainian investor (30%).
- After producing the first 1.5MW PV panels at the beginning of the year (2011) production was stopped. The number-one reason for failure in this case was lack of market demand for this product.
- The high price of PV panels rendered the product unmarketable and the government intervention was of no consequence.

7. Rural Credit Options

- **Possible options:**

a) Provision of interest-free loans;
b) Formation of committees responsible for ensuring that each beneficiary repay the loan;
c) Lending intermediary non-governmental organizations that are more likely to recover loan repayments than commercial organizations;
d) To promote, for example, policies that encourage solar home systems companies to lease basic equipment to rural households and communities;

- **Syria, a case in point:**

- Unfortunately, Government banks do not provide interest-free loans.
- Few years ago, a public fund was set up for promoting the sale of domestic solar water heaters (thermosyphon type) to the public. The government offered to pay SL 20,000 as part of the purchase price of each SWH unit sold, the balance to be paid by the buyer. Unfortunately again, this public fund did not see the light of day.

8. Capacity Building

- Capacity building in local rural communities is a pre-requisite for trading in RETs.
- Proper training is essential if we are to minimize (or better to avoid) those common mistakes committed in completed or on-going RE projects.
- For capacity building to yield concrete results a number of conditions, have first to be satisfied. The following summarizes the main conditions:

a) Arab governments ought to work with the international and local agencies to develop and implement training programmes for engineers and most of all technicians;
b) Need to involve local authorities and communities to ensure that the RE services are suitable, affordable, socially acceptable and environmentally sustainable;
c) Training efforts should be carried out mainly by research institutions to disseminate their research together with government agencies and/or technical consultants for specific projects;

9. Raising Public Awareness of the Benefits of RETs

- Raising public awareness of the benefits of RETs both at the level of potential users and traders.
- Awareness raising campaigns would do well to concentrate on the following points:

a) RE regulation and policy tools;
b) Increased RETs penetration for rural electrification;
c) Sustainable use of energy through energy generation efficiency in rural RE sector.

Concluding Remarks

- The following recommendations are proposed to be included in the final recommendations of our meeting:

a) Energy services and RETs must be explicitly addressed within the planning for poverty reduction and for meeting the broader MDGs;

b) Provide access to modern energy services at the community level for all rural communities;

c) Enable the use of improved cook stoves in order to reduce the adverse health effects from cooking with biomass;

d) Ensure reliable access to electricity to all rural areas in ESCWA countries. National Governments should focus on the concrete investments and public policies needed.