Solar rural electrification

Potential for solar for rural electrification in Cambodia, Laos, Vietnam and Thailand

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About Kamworks

- registred ltd 2006
- 'social' business
- Providing high quality energy solutions for off-grid people
- Therefore we are:
  - Developing products and services for rural people
  - Setting up assembly in Cambodia
  - launching the MoonLight, Cambodia's first home grown solar lamp (photo)

Gross market potential

	Insolation [kwh/m2/day]***	Population [mln]	Electrification rate [% of hh]*	People without grid [mln]
Cambodia	4.85	14.8	20%	11.8
Laos	4.63	6.3	48%	3.3
Thailand	4.27	64	90%**	6.4
Vietnam	3.89	85.8	84%	13.7
Total		170.9		35

*human development report 2007/8
** estimate based on'hdr 2007/8 and PEA (2001)
*** based on 10 year average

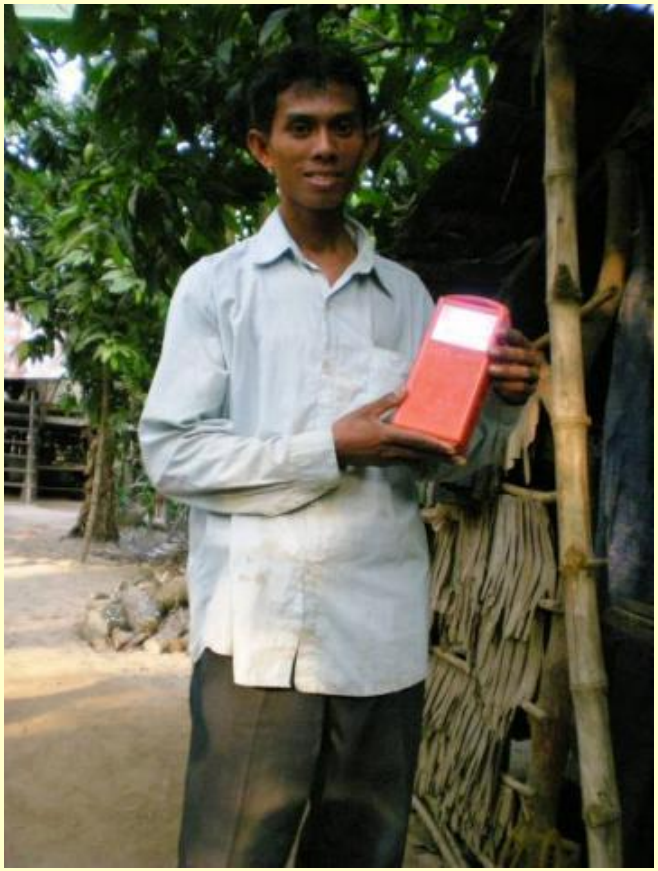
Alternatives to solar energy

Conventional:

- generator for charging batteries or lanterns (photo (ProSeed))
- public or private (mini) grid

Renewable energy

- hydro power: especially in mountainous areas
- biofuels (ethanol, biogas, bio oil)
- wind energy (especially on hill tops and along the coast)



Solar energy is very competitive below a consumption of 1-200Wh per day

Technological developments

Many technological developments have occurred during the last 5 years:

- Improved cell and panel efficiency
- Development of efficient and affordable LEDs
- Larger production leading to cheaper solar panels

Constraints and barriers

Technical:

- Battery maintenance and life
- Quality of the installation work
- Availability of spare parts

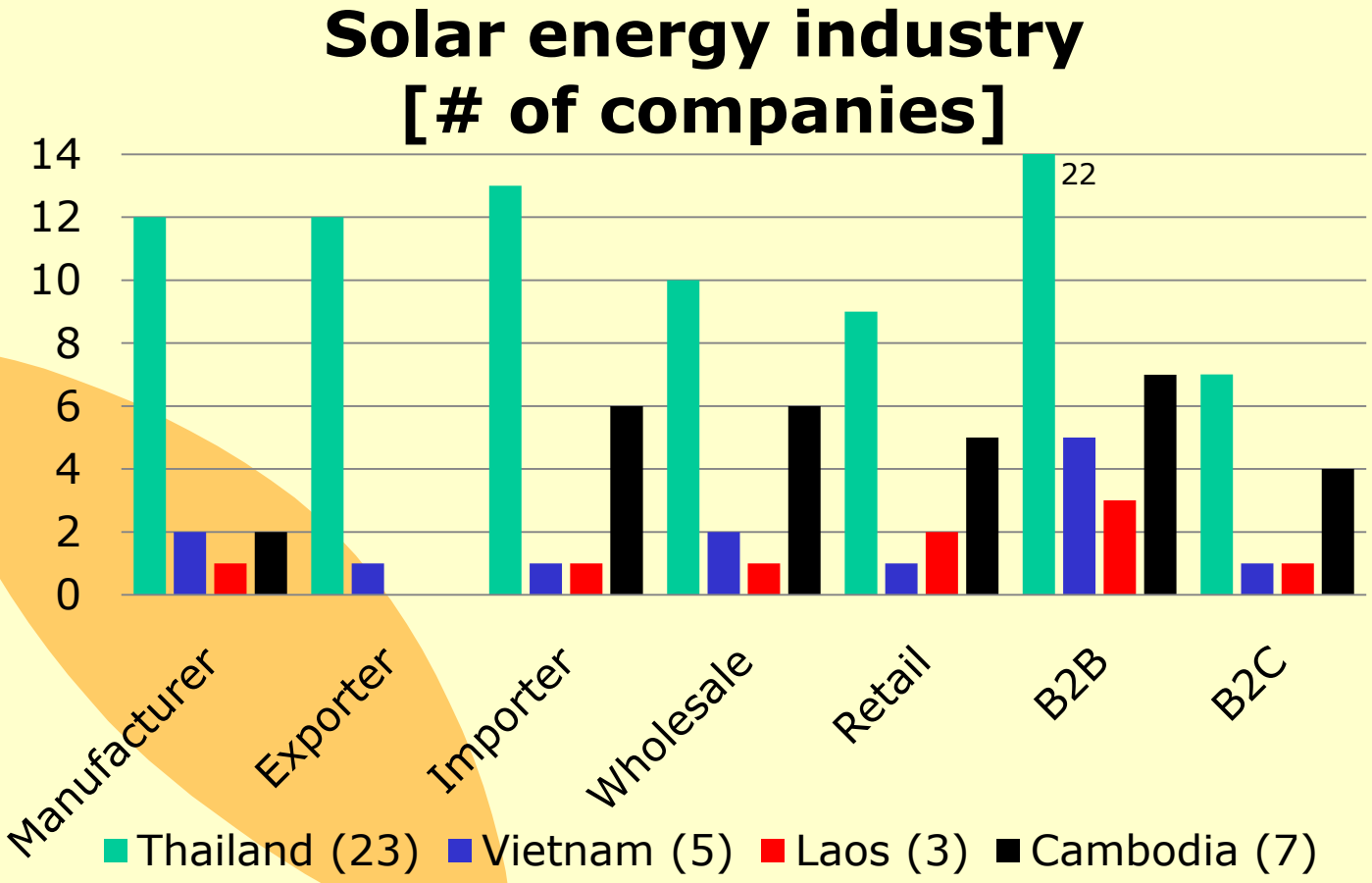
Institutional

- High import taxes on solar products (Cambodia 35%)
- Low awareness about solar energy (in Cambodia, 10-20% of rural people knows what solar energy is)

Financial:

- High upfront investment compared to some alternatives

Market development



National targets (long term)

Cambodia

-Rural electrification target: 75% on grid in 2020

Laos

-Rural electrification (phase 1) project 2006-2010

Vietnam

-Second Rural Energy Project 2004-2014

-Renewable Energy Development Project 2009-2014

Summary

- Large potential in region: 30M+ people
- With good solar insolation, solar energy is very competitive esp at low rates consumption
- Difficult market due to accessability, low awareness and high upfront investment
- Large regional differences in market development
- High import tax on solar products in Cambodia
- Promising technological break throughs are expected to reduce prices and accellerate solar rural electrification

Conclusions

- As the market potential is significant, it allows for a small indiginous solar industry
- Such an industry would not only create jobs, but also help to overcome some of the barriers:
  - Service and repair
  - upfront investment (through micro finance)
  - reduce the sensitivity on fuel price fluctuations
- Such an industry could be accelerated by:
  - Scrapping the 35% import tax on solar products (Cambodia)
  - Awareness raising and educational campaigns

Thank you

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Post script from author

- The day after giving this presentation on the conference, on Sept 30, 2009, it was announced that the 35% import tax on solar products in Cambodia has been reduced to 7 and 0% .

Jeroen Verschelling, Sept 30, 2009, Phnom Penh