

# Renewable Energy - Opportunities in Cambodia

Mark Fogarty UNSW – REEEP

1 March 2013

# Introduction



- Mark Fogarty
  - Chairman of Renewable Energy and Energy Efficiency Partnerships (REEEP) for South East Asia and the Pacific
  - Lecturer in Renewable Energy at the University of New South Wales, Australia
  - Director ‘First Energy Asia’
  - Director CVC Sustainable Investments



# Background

- Acknowledge RUPP and EWBA
- Who – let me background –who I am ?
- ✓ RE – 20 Years , Public and Private, Funds Management
- ✓ REEEP
- ✓ UNSW
- ✓ Private Sector



# This Presentation

- This presentation doesn't pretend to offer strong insight into the Cambodian Energy Economies – far more skill sets in the room who can share their experiences .
- This presentation does want to address what the opportunities and what will assist to facilitate them and they are strong –for proponents and investors
- They represent opportunities for the Government of Cambodia (GoC)
- Not going to focus on technology – ‘ *the hardware* ‘
- I am going to focus on ‘*the Orgware* ‘
- Conclude this presentation - the issue of support for the ‘*software*’ *needs* components. – so it's about RUPP and it's capacity building.

# Theme



- 3 x Messages

- ✓ Cambodia has a lot great opportunities on the clean energy front - opportunities which can contribute to growth - improve services
- ✓ Model maybe different it may be a decentralised model - where orgware issues are resolvable - should we question is it a good spend to push the grid expansion billions of dollars in investment .
- ✓ Increase Skill sets created through education and on the job experience



# Orgware 1

- Tis about ? Organisational issues which underpin successful energy deployment .
- Orgware is the economic policy and regulatory associated with development of clean energy initiatives.
- Orgware if you like is the glue that brings projects to fruition. Pivotal point for successful integration
- In most energy economies it is the national framework - that contributes to the economic/social /environmental success of the project.

# Orgware 2



- Economics – it's broader macro contribution that comes with clean energy deployment .  
GDP
- In a micro economic Cambodia case that is pretty stark – cost advantage – commercial and industrial opportunity in regional development sense.
- Social and environmental contribution
- It about market transformation

# Market Transformation 1



- Market characteristics – energy security issues – access to energy issues – rural electrification – environmental issues – pollution
- Market participants – we have the demand – suppliers
- Available resource – solar/biomass/small hydro.
- Market transformation – usually driven from a top down approach – maybe Cambodia will be a good working model for the reverse.



# Market Transformation 2



- Need a framework Energy Act – its going to take time to secure a national framework
- Logically we need a stable clean energy policy
- Policy that addresses security of supply
- Policy that acknowledges and addresses the key social advantage
- Policy that acknowledges and addresses the key environmental challenges
- For Cambodia maybe the outcome could be the transformation away from traditional centralised power sources to a progressive de-centralised model

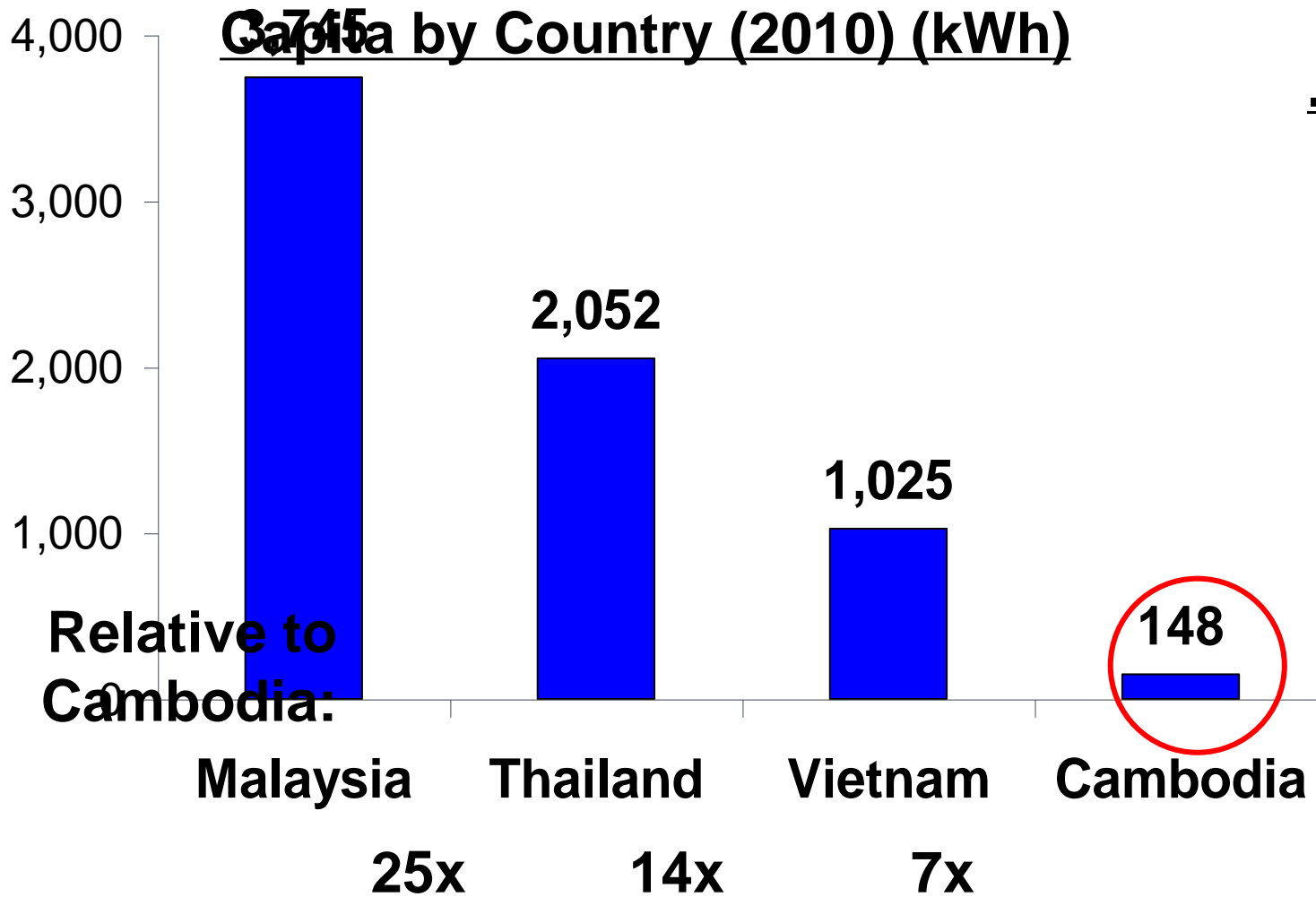


# Role of the Private Sector

- De – centralised model needs the private sector - IPPs
- IPPs need some certainty –this can be achieved at a regional level
- Models are out there which can drive this market
- Price point is there - \$0.40c -\$0.85c US
- Missing is equity/cash to provide funding to create some scale
- Missing ‘Software’ – the skill sets to develop and run the systems
- Missing ‘Hardware’ –cost of kit – import duties are a ‘killer’

Low electricity usage, but set to accelerate

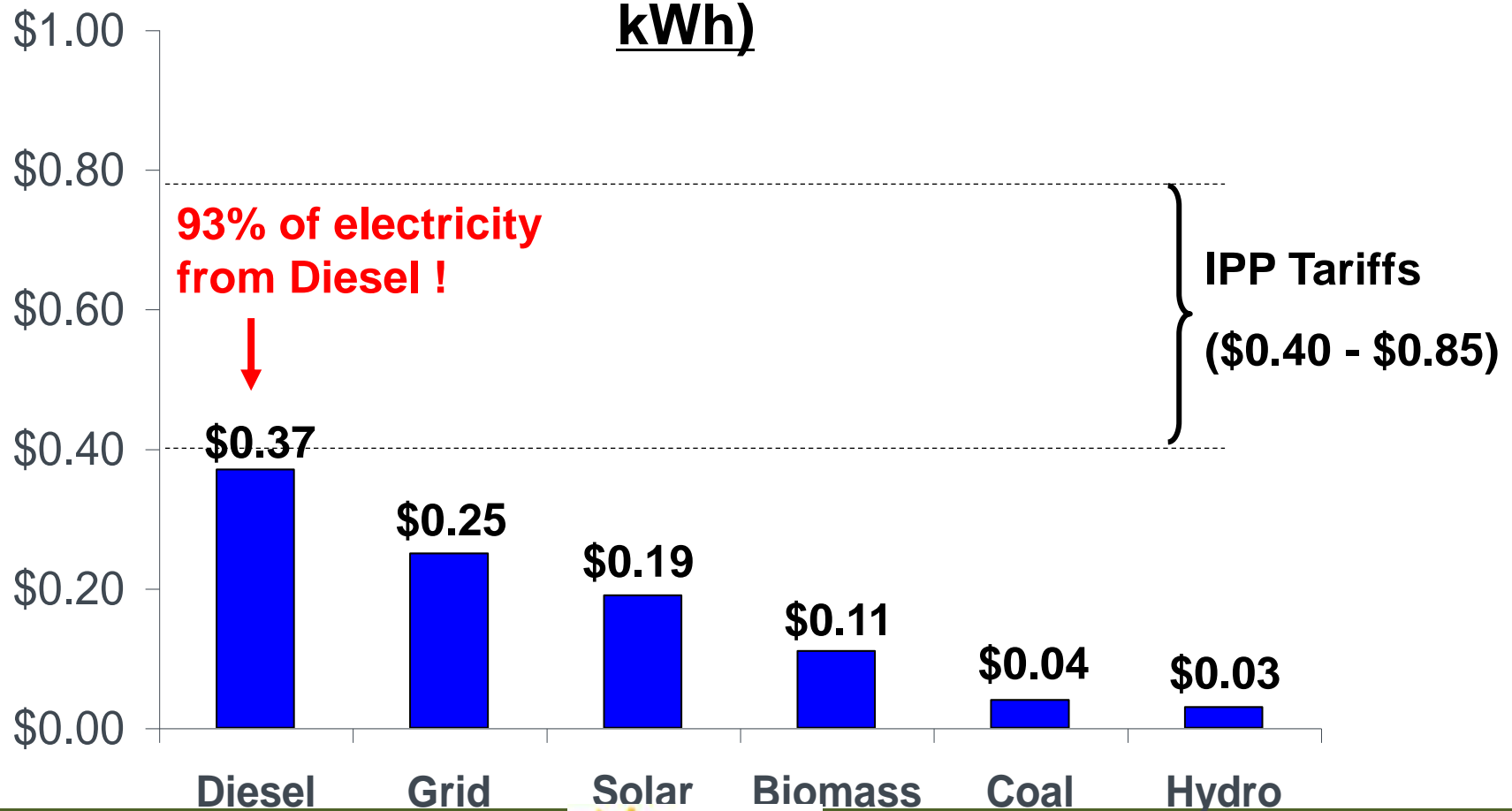
## Annual Electricity Consumption per Capita by Country (2010) (kWh)



Renewable energies are cheaper than incumbent diesel power



## Cost of Production by Source of Energy (per kWh)



# Conclusions



- Importance of Getting some balance Hardware/Software/Orgware
- ‘Orgware’ may take a little more time and may need to be driven from bottom up – rural electrification.
- ‘Hardware’ need to address the import duty issue with Government. Makes little sense.
- ‘Software’ critical RUPP/EWBA

# Great consolidation opportunity in fragmented private sector



## ELECTRICITY AUTHORITY OF CAMBODIA

- Exclusive license in a territory
- Generation + Distribution License
- Regulator

### Electricite du Cambodge (EDC)

- 6 largest cities
- Transmission lines from Thailand and Vietnam
- 48% of Power

### 290 IPPs

- 290 territories
- 52% of Power

# Acknowledgements



**UNSW**  
THE UNIVERSITY OF NEW SOUTH WALES



- This Program has been supported by the Australian Government through the Australian Renewable Energy Agency (ARENA). The Australian Government, through ARENA, is supporting Australian research and development in solar photovoltaic and solar thermal technologies to help solar power become cost competitive with other energy sources. The views expressed herein are not necessarily the views of the Australian Government, and the Australian Government does not accept responsibility for any information or advice contained herein.