Investment climate for solar PV in Southeast Asia

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juwi has installed over 3,100 MW Wind, Solar & Bio Investment volume >7.6 Billion USD
juwi at a Glance

**Company structure**
- Founded in 1996
- juwi AG headquarter in Germany
- Renewable Energy specialist

**Employees**
~ 1,250 employees (worldwide)

**Total capacity**
> 3,100 megawatt
Wind, Solar and Bio

**Investment volume (since 1996)**
more than 7.6 billion USD

**Annual energy output**
- around 5.5 billion kilowatt-hours
- Supplies power for ~ 1.5 million households
International Offices & Major Project Locations
Our Services: All about the Project
2. Asia Pacific organisation & references
Asia Pacific, more than 237 MWp completed or in construction

Thailand 61 MWp, Japan 67.5 MW India 95 MWp
Malaysia 10 MWp, Philippines 4.2
Off-Grid Hybrid System & Solar Fuel Saver
Replace Diesel with Solar with or without Batteries

Picture: South African On-grid plant, similar to future Australian hybrid sites
3. Financing landscape in South East Asia
Development funding – A function of maturity

Pre-development
- Project promoter’s equity
- Co-development between developers
- Private Equity
- Few development funding institutions

Development I
- like previous plus:
  - Co-development with future asset owners
  - Various development funding institutions

Development II
- like previous plus:
  - Paper Deals
  - Late stage development equity
  - Module manufacturers
  - EPCs

Project Financing stage
Project funding – A function of maturity

Shovel ready
- Equity sale pre-construction
- Full equity deal
- Mezzanine finance
- Non-recourse debt: short or long tenor
- Development funding agencies

Construction
- Full equity deal
- Re-financing development finance
- Mezzanine to long term project finance
- Leasing
- Equity sale COD
- Development funding agencies

Operational
- Re-financing of operational asset
- Selling to low cost capital like, IPPs utilities, yieldcos
- Securitization
- Listing with other assets
South East Asia – Risk & Return profile

15%-17%
SEA regional focus
Private Equity/Infrastructure Funds

10%-12%
Independent Power Producer, Utilities, Corporates
Specific country focused

5%-8%
Yield Co, Bonds, REIT, IPO
In emerging phase

Low
Operating Projects
Construction/Operating projects
Green field/Late stage development
Development Risk

High
South East Asia funding options still in emerging phase

- Thailand only market in ASEAN with mature non-recourse project financing
  - Several Thai banks understand solar and are lending at competitive rates

- Other markets such as Philippines or Malaysia operate either on initial full equity financing or mostly with international banks
  - This is changing slowly and Philippines likely to follow Thailand

- More and more private equity funds in Asia
  - Development financial institutions like IFC and ADB expanded mandates
    - Equity, mezzanine, debt for development or construction stages
More capital coming to South East Asia

- Solar & RE IPP’s plus international utilities are expanding into South East Asia
- Full equity deals are seen
- Corporate finance facilities and other lower cost global capital possibly next

- USEXIM or OPIC can provide subsidised long term financing. Other countries such as Germany also provide vendor financing options
- Construction finance from few selected institutions in Asia.
  - The exception, due to higher costs or complex contractual requirements

- Yieldcos are the big buzz in the USA. Emerging markets versions in the making
- Aim is lower cost capital and thus cheaper solar.
Changing financial landscape in South East Asia

- Increasing trend for panel manufacturers, EPCs and financial investors to be involved in development process

- Panel manufacturers establishing JV with capital providers to co-develop PV Solar projects and moving down stream

- Tier 1 investment banks, Private Equites and infrastructure funds creating dedicated PV solar platform by backing strong management team and taking more green field risks and maximizing returns

- Multilateral banks are now seen backing more expensive source of capital i.e private equities, dedicated renewable energy funds to stimulate financing and support growth
4. South East Asia vis a vis International markets
## International Markets vs. South Asia

<table>
<thead>
<tr>
<th>International markets</th>
<th>South East Asia</th>
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<tbody>
<tr>
<td>Non recourse financing the norm</td>
<td>Only Thai &amp; International banks are experienced</td>
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<tr>
<td>Comprehensive mix of debt and equity providers</td>
<td>Few equity and debt providers</td>
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<tr>
<td>Low cost of capital</td>
<td>Higher cost of capital plus premium for new technology</td>
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<tr>
<td>Solid secondary market</td>
<td>Hardly any secondary market</td>
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<tr>
<td>Solar or RE bonds issued</td>
<td>Project bonds only in India</td>
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<tr>
<td>rIPPs and Yieldcos growing</td>
<td>Few rIPPs, no Yieldcos yet</td>
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<tr>
<td>Development funding agencies relevant</td>
<td></td>
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</tbody>
</table>
South East Asia can follow international market

**Cost of Capital**

1. Project finance  
2. Business Trust  
3. Multi lateral banks  
4. Private Equities  
5. IPP

**PHASE 1:** Project finance in emerging phase

**PHASE 2:** More innovative & low cost capital structures as market matures

1. Leasing  
2. Securitization  
3. Initial Public Offer  
4. Green Bonds  
5. Yield Co  
6. IPO’s  
7. Crowd funding

**Maturity**
Conclusions

- Thailand & Philippines are main destinations for capital for RE projects in ASEAN
- Only Thai and International banks experienced so far with solar
- More investment for RE is coming to South East Asia
- Energy needs & energy imports form fundamentals for continued growth
- Good projects have increasing options to find financing for development, construction and long term project finance
- More South East Asian countries will follow in the coming years
juwi is here to help make your project a success

**Organisation**
- active in Asia since 2009
- Regional Headquarter in Singapore
- ~ 130 employees
- Offices in Singapore, India, Japan, Australia, Thailand, Philippines

**Portfolio**
- Thailand: 61 MWp completed
- India: 95 MWp completed or in construction
- Japan: 67.5 MWp completed or in construction
- Philippines: 4.2 MWp in construction
- Australia: Various utility scale hybrid and On-grid projects
- ~300 MWp to be completed in 2015/16
Thank You Very Much for Your Attention!

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