

ENERGY - RENEWABLES ADVISORY

Innovative Climate Financing in South East Asia

Ragna Schmidt-Haupt (Head of Policy, Strategy and Renewables)

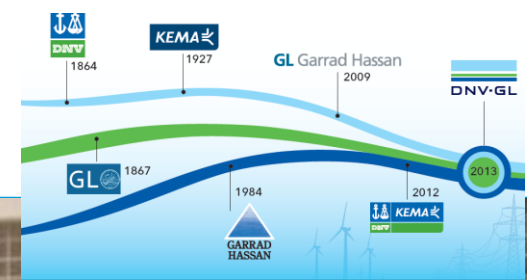
ASIA CLEAN ENERGY FORUM, Manila, June 2015

Introductory remarks



DNV GL Energy

An energy technology powerhouse



No. 1

in high power and high voltage testing

25

Leading certification body with more than 25 standards and guidelines published

Largest

independent technical advisor on renewable energy

2,500

independent energy experts

10

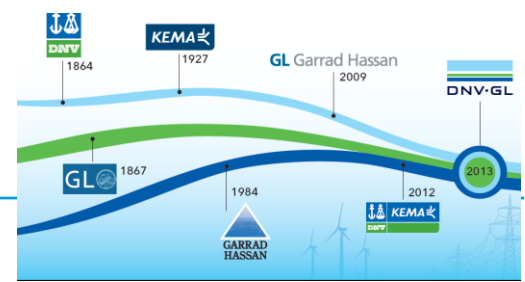
laboratories including world's largest high power and high voltage test lab

90

years experience, including 30 years in energy efficiency and wind energy

Global Advisory | Wind 160+ GW | Solar 45+ GW

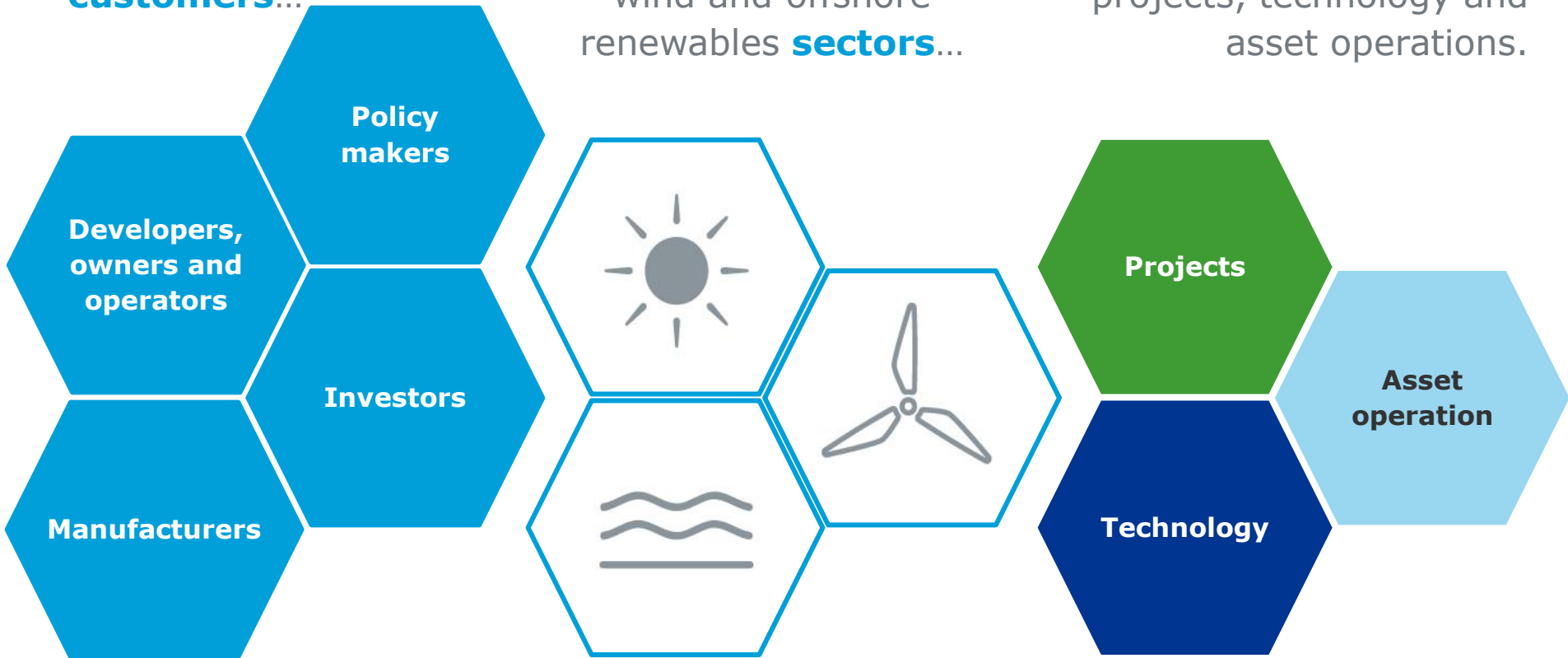
Our work in renewables



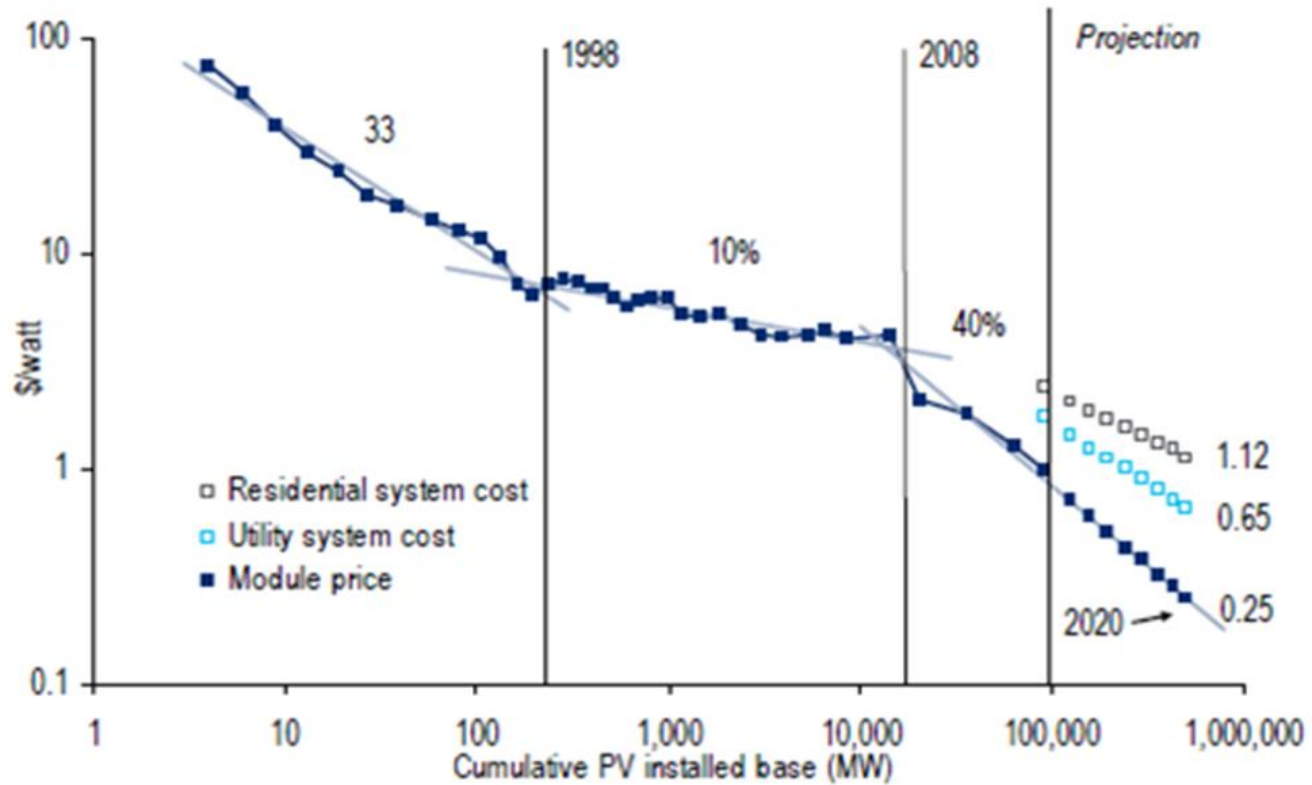
We work with our **customers...**

...in the solar, onshore wind and offshore renewables **sectors...**

..to **enhance** their projects, technology and asset operations.

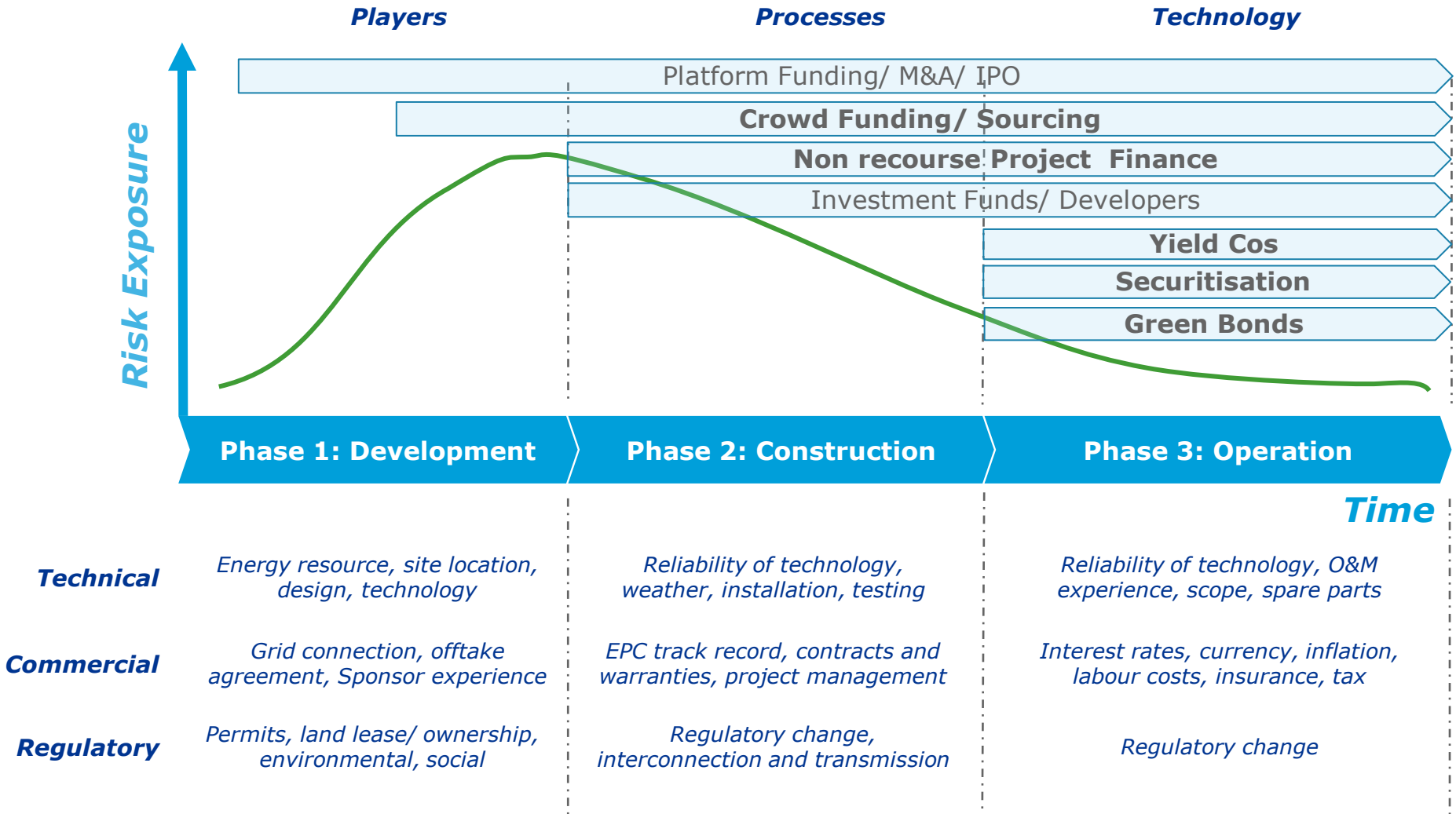


Solar Technical Innovation



Source: Bloomberg New Energy Finance, Citi Research

Risk profile of renewable energy projects



Bright Ideas - Financial Innovation



Case Study - Securitisation

US SolarCity's Securitisation

Company: SolarCity

Location: US

Size: 44 MW (Round 1), 5,033 PV systems (71% residential)

na MW (Round 2), 6,596 PV systems (87% residential)

118 MW

Technology: PV

Capital raised: USD 54

USD 70

USD 20

Yield: 4.8% (1)

- Asia next?
 - Australia, China?
- What is needed?
 - Scale
 - Standardisation of equipment, contracts, design etc
 - Experienced players EPC partners
 - Streamlined connection processes
 - Quality equipment
 - Geographic diversification
 - "Relatively stable" policy environment

Case Study – Yield Co

Solar Yield Co

Company: Foresight Solar Fund Limited

Location: UK

Technology: 145,

Capital Raised: 150

Dividend: 6%

- Asia next?
 - Thailand, Singapore, Hong Kong, China?
- What is needed?
 - Scale
 - Experienced players with pipeline of operational projects
 - Stable/reliable offtake agreements
 - Proven processes
 - “Relatively stable” policy environment

Case Study – Green Bond

Green Bond in Singapore



Company:	Greenko Plc
Location:	India
Technology:	Hydro and wind assets (~650MW)
Capital raised:	USD 550 million
Yield:	8% (Senior Fixed Rates Notes)

Source: Standard Chartered Bank

Case Study – Solar Bond

• Solar Bond issue by Standard Chartered



Company:	Singyes Solar, China
Location:	Singapore
Technology:	Solar assets
Capital raised:	CNH 560 million
Yield:	7.875% (Senior Fixed Rates Notes)

Case Study – Green Bond

Green Bond issued by various Thai Banks

Company: SPCG Public Company Limited

Location: Thailand

Technology: Solar

Capital raised: NTE

Yield: 5.5%

- Asia now
 - Singapore, Thailand
 - Hong Kong, all developed solar markets next?
- What is needed?
 - Green bond issuance is linked to credit rating of issuer.
 - Proven pipeline of RE assets
 - “Relatively stable” Policy, regulatory and Grid connection environment

Case Study - Crowd Funding

PV Crowd Funding

Company: United Photovoltaics Group

Location: China

Size: 1MW

Technology: PV

- Asia now
 - China, Singapore
 - Thailand, Philipp., AU, NZ, Indo, Mal next?
- What is needed?
 - Scale in terms of number of projects, less relevant is project size
 - Standardisation of equipment, contracts, design for multiple projects investment
 - Experienced players , Proven processes
 - "Relatively stable" Policy, regulatory and Grid connection environment

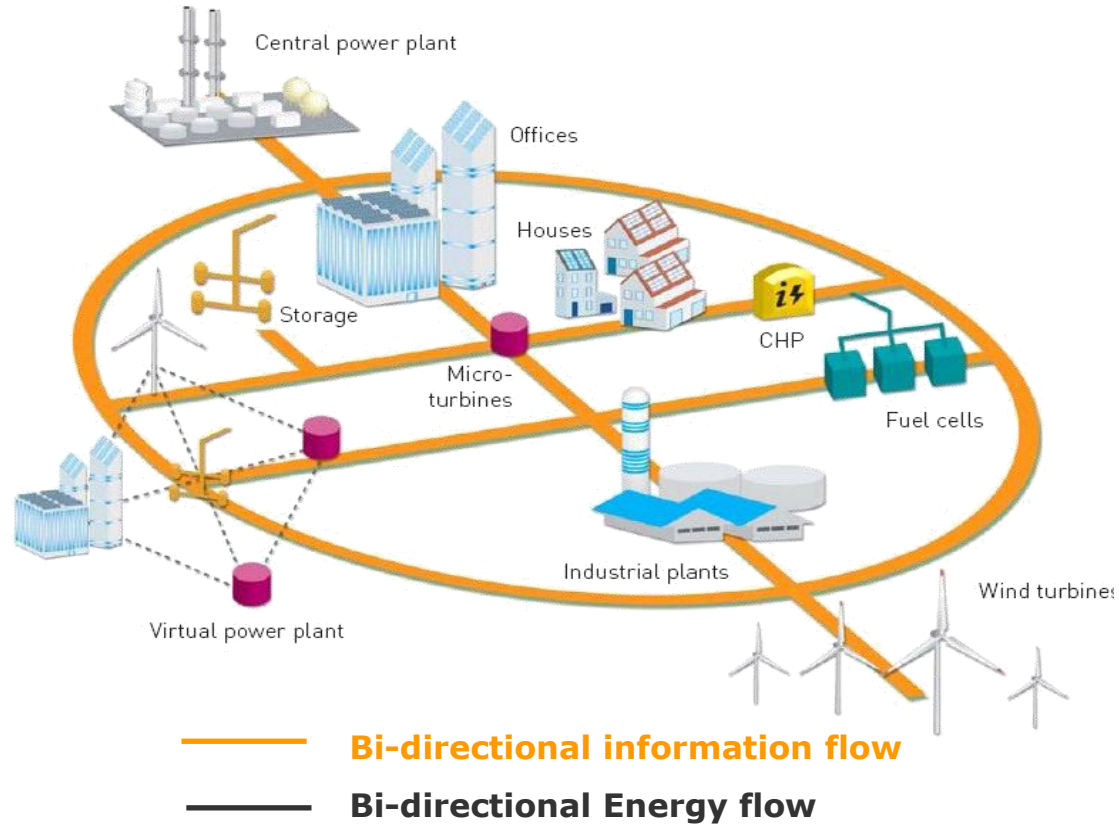
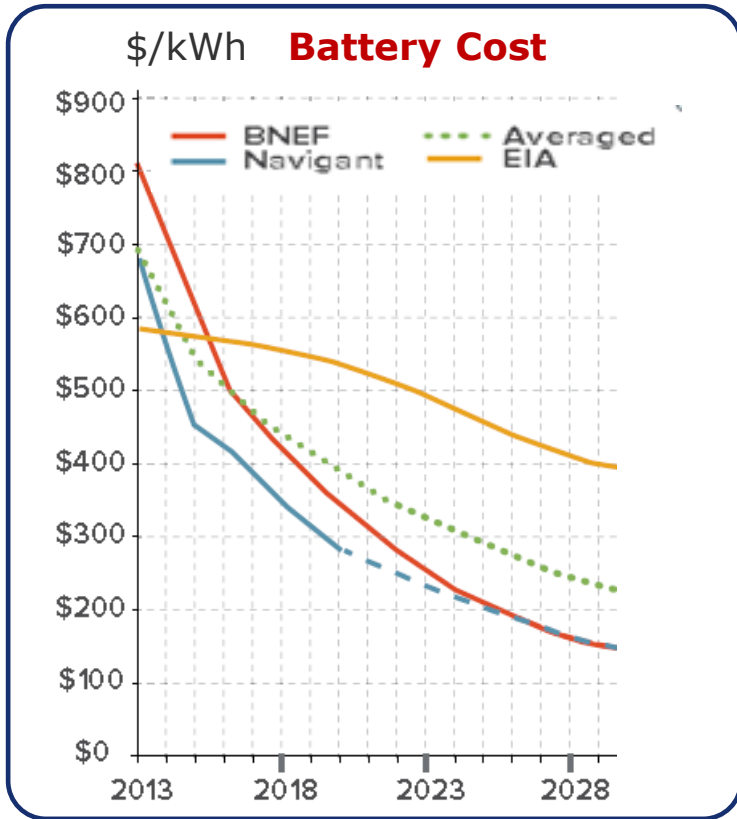
Concluding Remarks



Private and confidential

Technical Innovations & Trends

The cost of **Storage** and PV (its key driver) are both dropping, and the wider use of **Smart Grid technology** is at our doorstep.



The next wave of technical innovation, around Storage and Smart grid solutions, will accelerate business and finance models further.

It's an exciting time for solar energy finance

The bright ideas discussed are financial innovations that are happening somewhere in the world right now, and in APAC too!

- Confidence in the technology, processes, markets and players is the starting point
- We are there to help!



Any questions?

Thank you!

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SAFER, SMARTER, GREENER