



## USAID CLEAN POWER ASIA

# Designing renewable energy auctions: Key considerations for Lao PDR

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# Agenda

- 1. Navigant**
- 2. Auction results worldwide**
- 3. Design challenges in nascent markets**
- 4. Challenges & considerations for Lao PDR**
- 5. Learnings**

# Ecofys – Navigant at a glance



**Global** consulting company founded in 1984 with the **mission** to enable **sustainable energy for everyone** – since 2016, Ecofys has been part of **Navigant's global Energy practice**



Ecofys has **five offices** in four countries: Utrecht, the Netherlands; Cologne & Berlin, Germany; Brussels, Belgium; London, United Kingdom – as part of Navigant, our experts are based in **more than 60 offices in the US and Canada, Hong Kong, and the Middle East**. Navigant is publicly traded since 1996 (NYSE: NCI), with 2015 revenues of \$919 million, and 60 offices globally.



We have over **600 experts** skilled in energy, climate, environment, economy, communication and law– in 2007, 11 of our experts supporting the Intergovernmental Panel on Climate Change were awarded the Nobel Prize

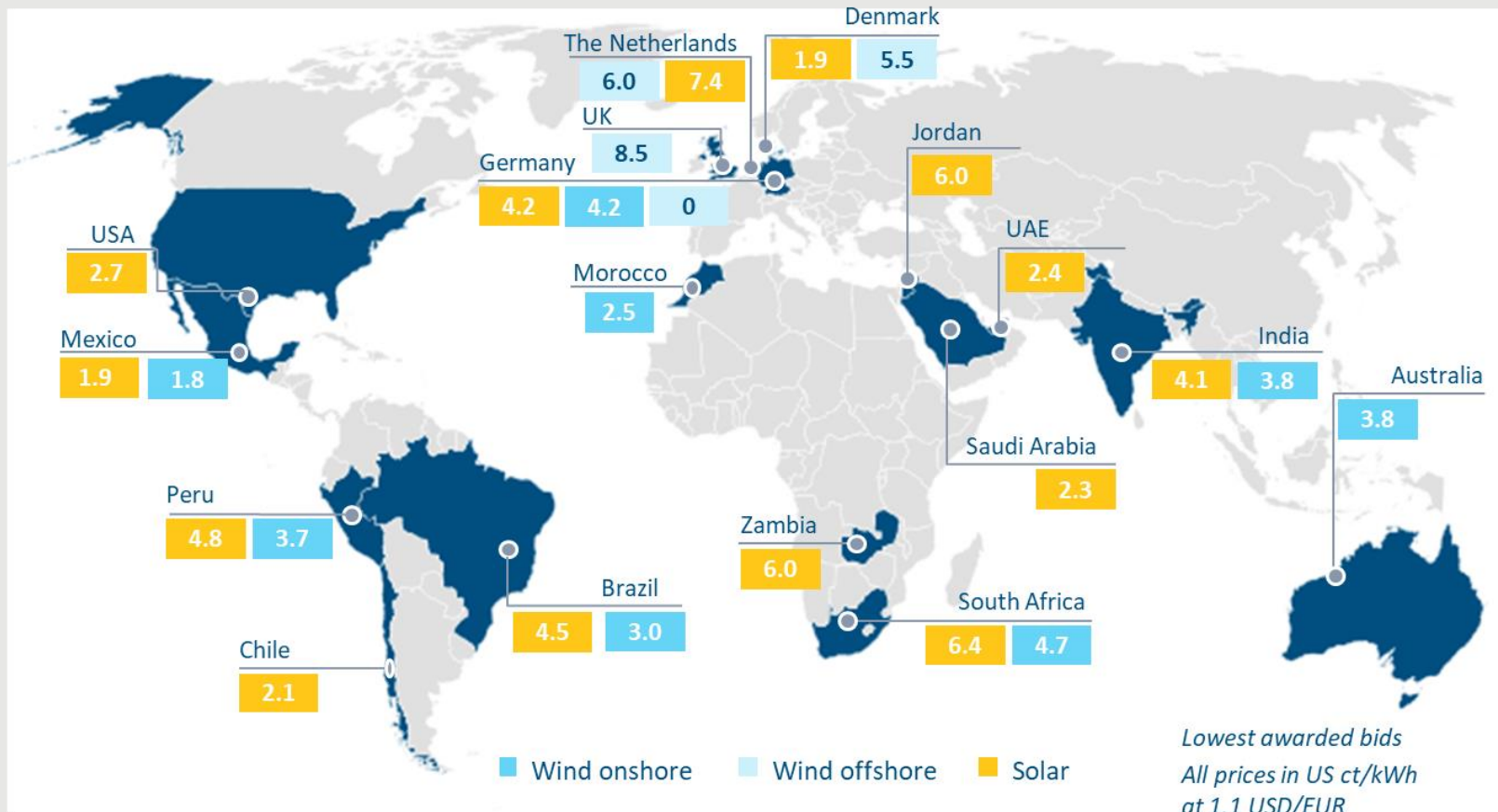


**More than 20 years of experience in designing and implementing competitive procurement schemes and auctions** for energy. Clients include governments, development agencies, utilities and investors all around the globe.



Our strength lies in our strategic understanding of complex energy and climate transition issues: Ecofys **connects the dots** within the triangle between **governments, energy players, and energy-intensive end-users**

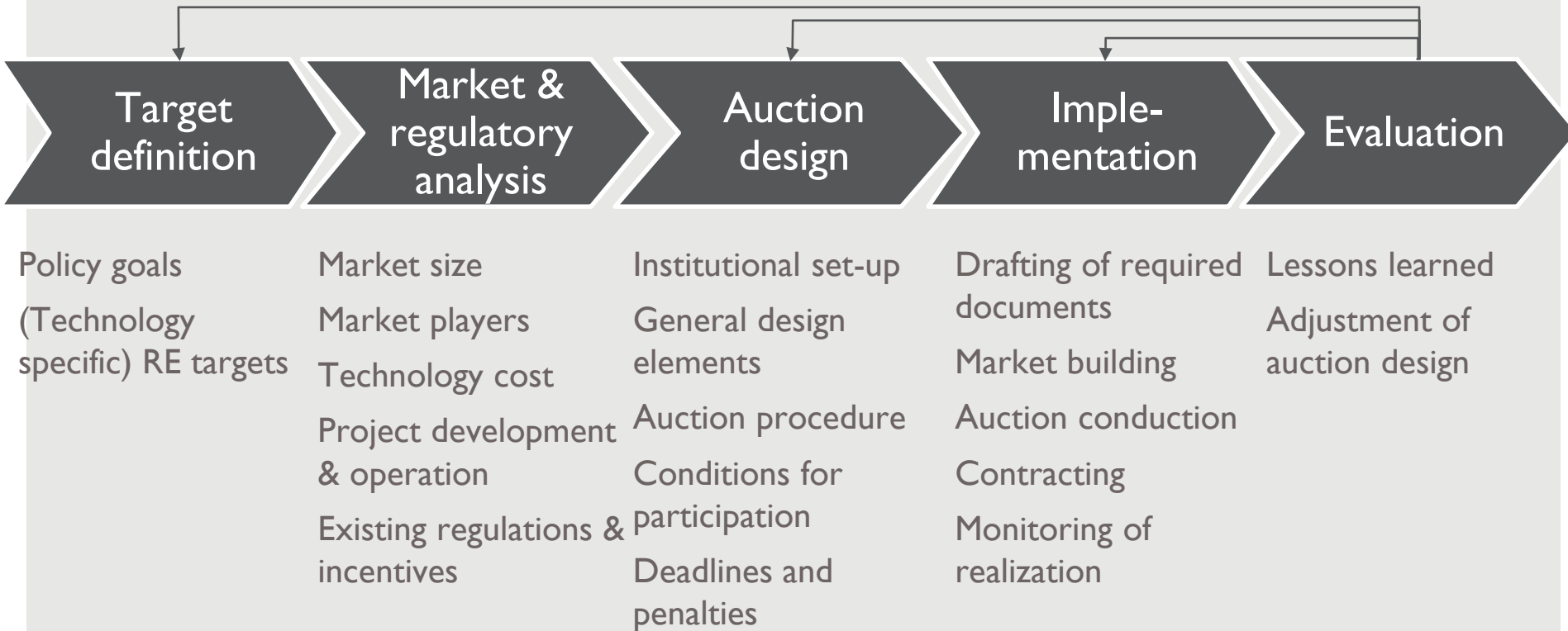
## 2. Recent auctions results reflect & stimulate cost reductions



Source: Ecofys 2018 based on BNetzA 2018, PV Magazine, Bloomberg

Drivers for recent cost reductions: Components (modules & inverters)! Also reduced project margins through competition, growing experience and rapid price adjustment with auctions

### 3. Overview of the auction design process



***In nascent markets, smaller volumes, less experience, lower grid capacity and higher investor risks are often challenges that need to be considered in the design***

### 3. Challenges in nascent markets: Limited competition through small market size

Challenge	Solution
Not enough actors that bid → higher prices & risk of collusion	Market analysis at initial stages of the auction design ➤ Tailor auction volume to market
Limited experience in project development & familiarity with auctions → risk of winners curse	Build interest & knowledge in market ➤ Timely information, seminars/trainings for key stakeholders, pre-bidders conference  Keep the auction simple - ideally a price-based, static auction
Risk of sunk costs if no multi-year auction schedule → deterts participation	Provide multi-year auction schedule

### 3. Challenges in nascent markets: Limited grid capacity can increase system costs

Challenge	Solution
<p>In vast countries with small population, pace of grid development often unable to keep up with increasing demands</p> <p>Stress on the grid is accentuated as RE deployment gains pace → In price-only auctions renewable energy project will be located at best sites, not optimal grid connection</p>	<p>Align grid capacity with RE deployment, restrict project sites to areas with existing/planned grid availability</p> <ul style="list-style-type: none"><li>• E.g. government-sited auctions (Zambia, Dubai)</li><li>• E.g. Renewable Energy Development Zones (South Africa)</li></ul>

### 3. Bankable PPAs address off-taker, political and currency risks

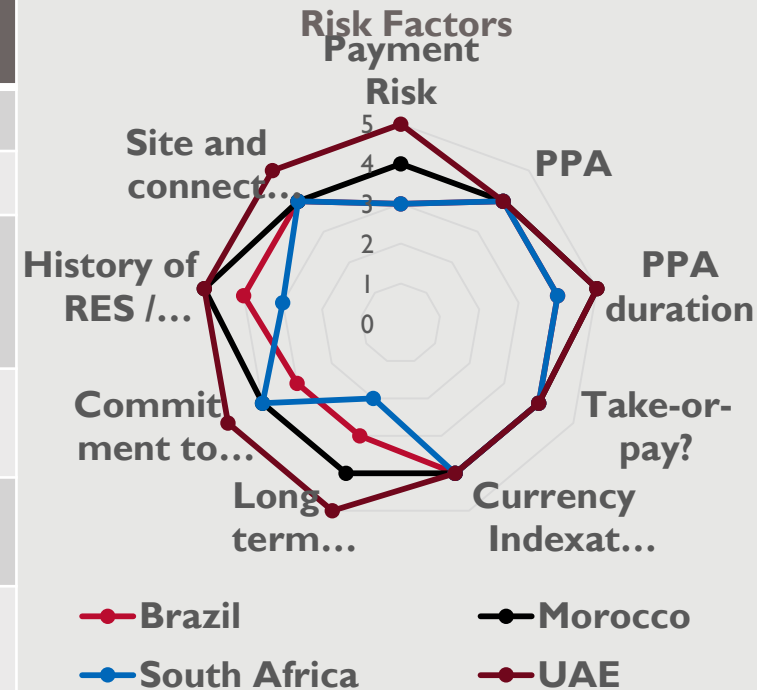
*Often nascent RE markets struggle with investor security*

Challenge	Solution
<b>Off-taker risk</b> Dispatch risk: Risk that off-taker curtails Credit risk: Risk of default of off-taker	<b>Off-taker risk</b> Dispatch risk: Curtailment compens. Credit risk: Partial risk guarantees
<b>Political risks</b> Expropriation, contract breach, changes in law/tax	<b>Political risks</b> Political risk insurance, include risk elements in PPA, international arbitration for dispute settlement
<b>Currency risk</b> Currency fluctuations & exchange controls	<b>Currency risk</b> Denominated/linked tariff to debt currency, allow transfer of revenues abroad



# 3. Elements of bankable PPAs: Country examples for benchmarking

	Brazil	Morocco	South Africa	UAE	Your country
Payment	3	4	3	5	?
PPA	4	4	4	4	?
PPA duration (>15y)	4 (20y)	5 (25y)	4 (20y)	5 (25y)	?
Take-or-pay offtake?	4	4	4	4	?
Currency Indexation	3	4	2	5	?
Long term Finance	3	4	4	5	?
Commitment to RES	4	5	3	5	?
History of RES / IPPs	4	4	4	5	?
Site and connection	3	5	3	5	?



5 = Highly attractive | = Unattractive / high risk

# 4. Examples from Lao PDR: Conditions, challenges and solutions



## Conditions in Lao PDR

- Small market (~7GW installed capacity)
- Large hydro capacities, costly imports in dry season yet overcapacity (& exports) in wet season
- Aim to increase renewable energy to 30% of demand by 2025
- Some experience with roof-top PV, less with ground-mounted (but several projects predeveloped)
- Experience with hydro Independent Power Producers
- Solar auction will be a pilot

## Challenges & solutions considered in auction design

- New, small PV market → Auction marketing, considering selection & predevelopment of site by government to reduce bidder risk
- Limited grid capabilities → Auctioned sites near load centers, either preselected site or area with sufficient grid capacity
- Low country & off-taker ratings → int. arbitration of contract, (some) compensation if curtailment, considering off-taker guarantees
- Complex land-use regulation → Predevelopment of site with permits considered

***Note that solar auction design for Lao PDR is not yet concluded***

## 5. Learnings

- Renewable energy auctions are increasingly implemented worldwide, with resulting bid prices reflecting and stimulating further cost reductions.
- Policy makers have to adapt the auction design to the policy goals and the market environment.
- Limited competition, grid capacity, and the level of risk and cost finance are key challenges nascent markets face when designing and implementing RE auctions.
- Knowing & building the market, simple and transparent auction rules, aligning RE and grid deployment, and designing bankable PPAs can contribute to addressing these challenges.



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