



**USAID**  
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USAID CLEAN POWER ASIA

# Regulatory Incentives to Promote RE Investment

International Forum on Unlocking Investment Opportunities in  
Renewable Energy for the ASEAN Region

July 22, 2019

Imperial Hotel and Convention Center Korat, Nakhon Ratchasima,  
Thailand





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“A transition to clean energy is about making an investment in our future.”  
- **Gloria Reuben** (Actress)

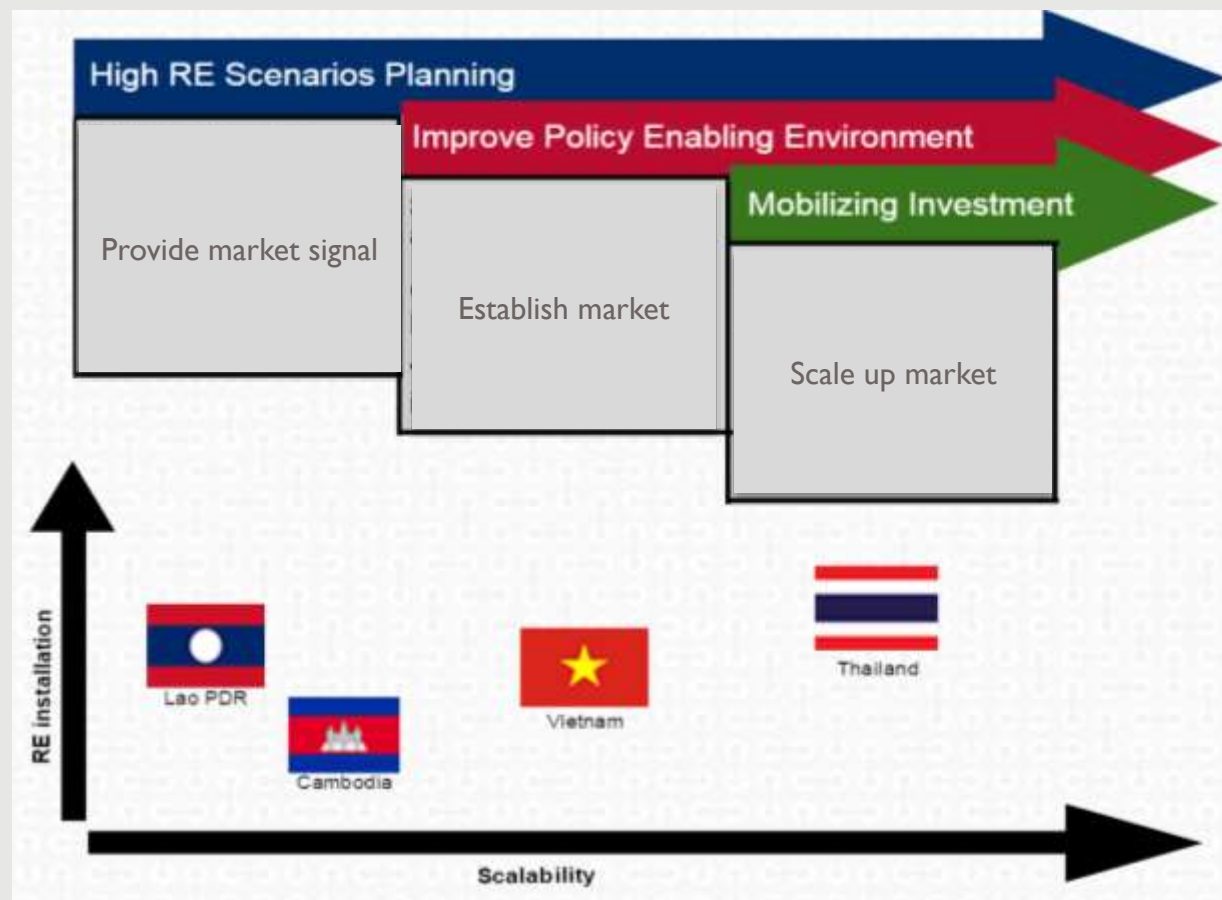
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# USAID Clean Power Asia – Overview

Aims to increase deployment in 'grid-connected' renewable energy in SE Asia

- ❑ 5 years: June 2016 – June 2021
- ❑ Regional clean energy program
- ❑ Focus on Lower Mekong countries (Lao PDR, Thailand, Vietnam and Cambodia) + SE Asian countries (the Philippines, etc.)
- ❑ Goals:
  - 15 laws/policies/regulations
  - \$750 M USD investment mobilization
  - 500 MW of installed RE
  - 3.5 M tCO<sub>2</sub>e reduction
- ❑ Implemented by Abt Associates and partners
- ❑ Funded by USAID (United States Agency for International Development)



# USAID Clean Power Asia – Overview

## Focused on individual country (LM and Southeast Asia)

- Improved data and tools
- Consideration of RE in power sector planning
- Incentivizing RE and removing policy and regulatory barriers
- Mobilizing investment through improved bankability and facilitating financing

## Regional Activities

- Promote RE Data Explorer and other planning tools
- ASEAN Interconnection Masterplan Study 3<sup>rd</sup> update (AIMS III)
- Scaling up data, planning approaches and tools, policies and regulations and investment mobilization regionally

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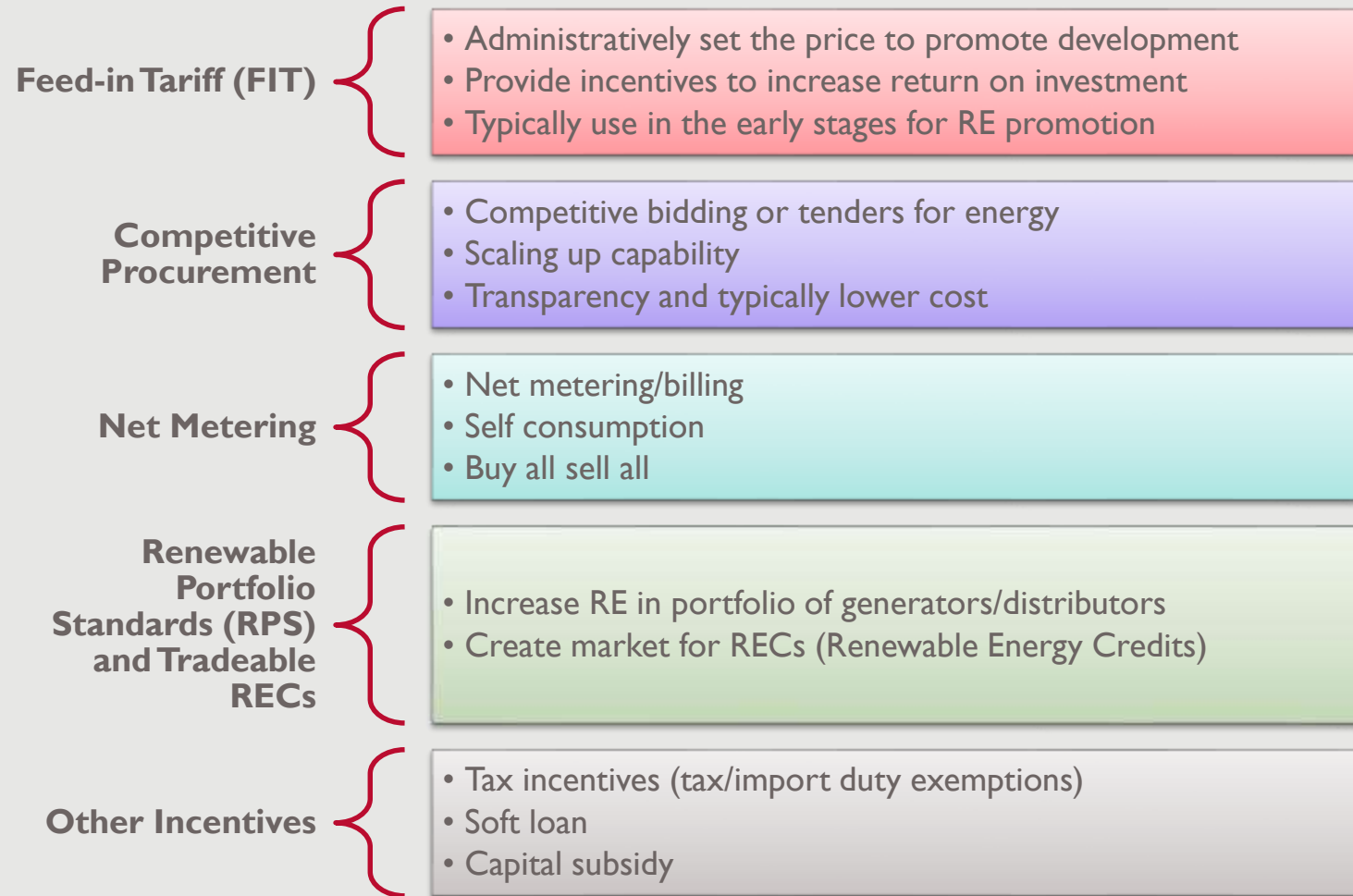
## Regional Activities

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# Policy and regulatory incentives for RE



# Policies supporting RE



Source: Smithsonianmag.com



## Existing RE targets and incentives in ASEAN

ASEAN countries		RE Targets	FIT	Self-consumption scheme	Competitive Bidding (or Auction)	Tax incentive	Soft loan	Capital subsidy	Tradable RECs
BRUNEI		✓							
INDONESIA		✓	✓	✓	✓	✓	✓		
MALAYSIA		✓	✓	✓	✓	✓	✓		
MYANMAR		✓				✓			
PHILIPPINES		✓	✓	✓		✓			✓
SINGAPORE		✓			✓	✓			
LM Countries	CAMBODIA				✓	✓			
	LAO PDR	✓				✓			
	THAILAND	✓	✓	✓	✓	✓	✓	✓	
	VIETNAM	✓	✓	✓		✓			

Note: ✓ means the RE targets or incentives or auction has been implemented in the country.

Source: USAID Clean Power Asia data collection

# Barriers for RE investment

## Lack of understanding and awareness of RE

- Technical know-how
- Impact understanding
- Capacity

## Funding and resources

## Technical limitation

- RE resource availability
- Equipment/Supply availability
- Grid access

## Financial risks

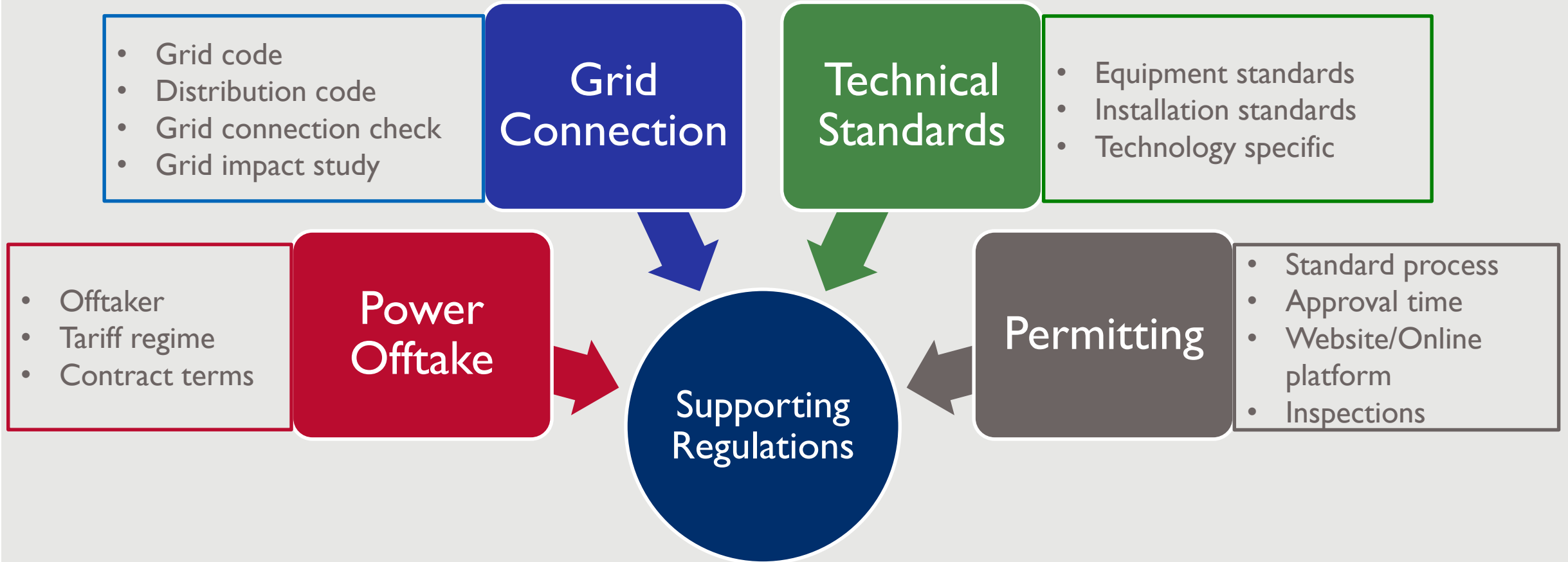
- Lack of financing options
- Off-taker risks
- Country risks

## Lack of / unclear / inconsistent supporting regulations

## Permitting and Approval Processes

## Policy Uncertainties

# Supporting regulation to promote RE investment



# Summary of regulation gap analysis in LM countries

	<b>Cambodia</b>	<b>Lao PDR</b>	<b>Thailand</b>	<b>Vietnam</b>
<b>Supporting regulations related to power purchasing</b>	<ul style="list-style-type: none"> <li>Need supporting regulations for solar development</li> </ul>	<ul style="list-style-type: none"> <li>Need supporting regulations for VRE development</li> </ul>	<ul style="list-style-type: none"> <li>Inconsistency among utilities</li> <li>Tariff for rooftop is still being decided (ERC)</li> </ul>	<ul style="list-style-type: none"> <li>Least acceptable contract term – 20 years</li> <li>Limited time for PPA regime – until June 2019 (waiting for new/revised Decision)</li> <li>Offtaker risk</li> </ul>
<b>Grid connection regulations</b>	<ul style="list-style-type: none"> <li>Need distribution code</li> <li>Out-of-date transmission code (since 2009)</li> </ul>	<ul style="list-style-type: none"> <li>Need update for national grid code (since 2014 and focused mostly for hydro)</li> <li>Need distribution code</li> </ul>	<ul style="list-style-type: none"> <li>Inconsistent grid connection requirements between EGAT, MEA, PEA</li> </ul>	<ul style="list-style-type: none"> <li>Need detail regulation of performance standards and technical connection requirements (such as real-time communication for capacity &gt;1MW) in grid code</li> </ul>
<b>Technical standards</b>	<ul style="list-style-type: none"> <li>Need installation standards</li> </ul>	<ul style="list-style-type: none"> <li>Need technical and installation standards</li> <li>Current LEPTS* focused on hydro</li> </ul>	<ul style="list-style-type: none"> <li>Need revision to building and fire code to accommodate solar rooftop</li> </ul>	<ul style="list-style-type: none"> <li>Need installation standards</li> <li>Need revision to building and fire code to accommodate solar rooftop</li> </ul>
<b>Permitting process</b>	<ul style="list-style-type: none"> <li>Need permitting process for solar</li> </ul>	<ul style="list-style-type: none"> <li>Need permitting process for solar</li> </ul>	<ul style="list-style-type: none"> <li>Much paperwork needed</li> <li>Difficult to track application status</li> <li>Lack of support to answer questions</li> </ul>	<ul style="list-style-type: none"> <li>Unclear permitting process</li> <li>Need convenient platform and clear guidelines</li> <li>Involves many government authorities and varies across the different provinces</li> </ul>

\*LEPTS – Lao Electrical Power Technical Standards

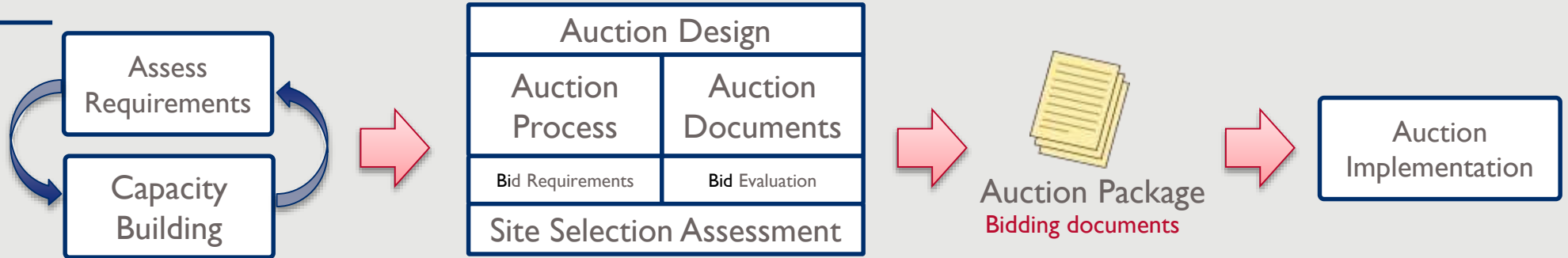
Source: Review of Supporting Regulations (USAID Clean Power Asia, 2017), Why are grid code important (ERAV)

# Supporting activities of USAID Clean Power Asia

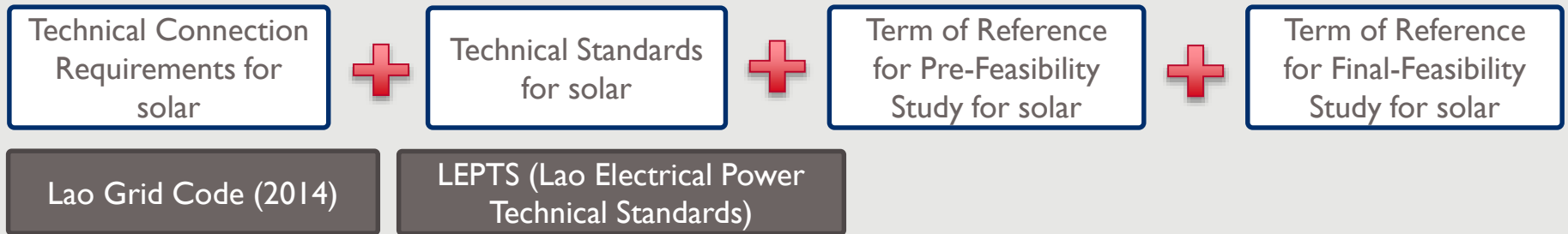


# Supporting activity – Solar pilot auction in Lao PDR

## Policy Support



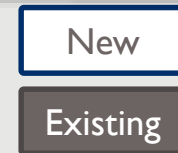
## Regulation Support









## Coordination







## Legend



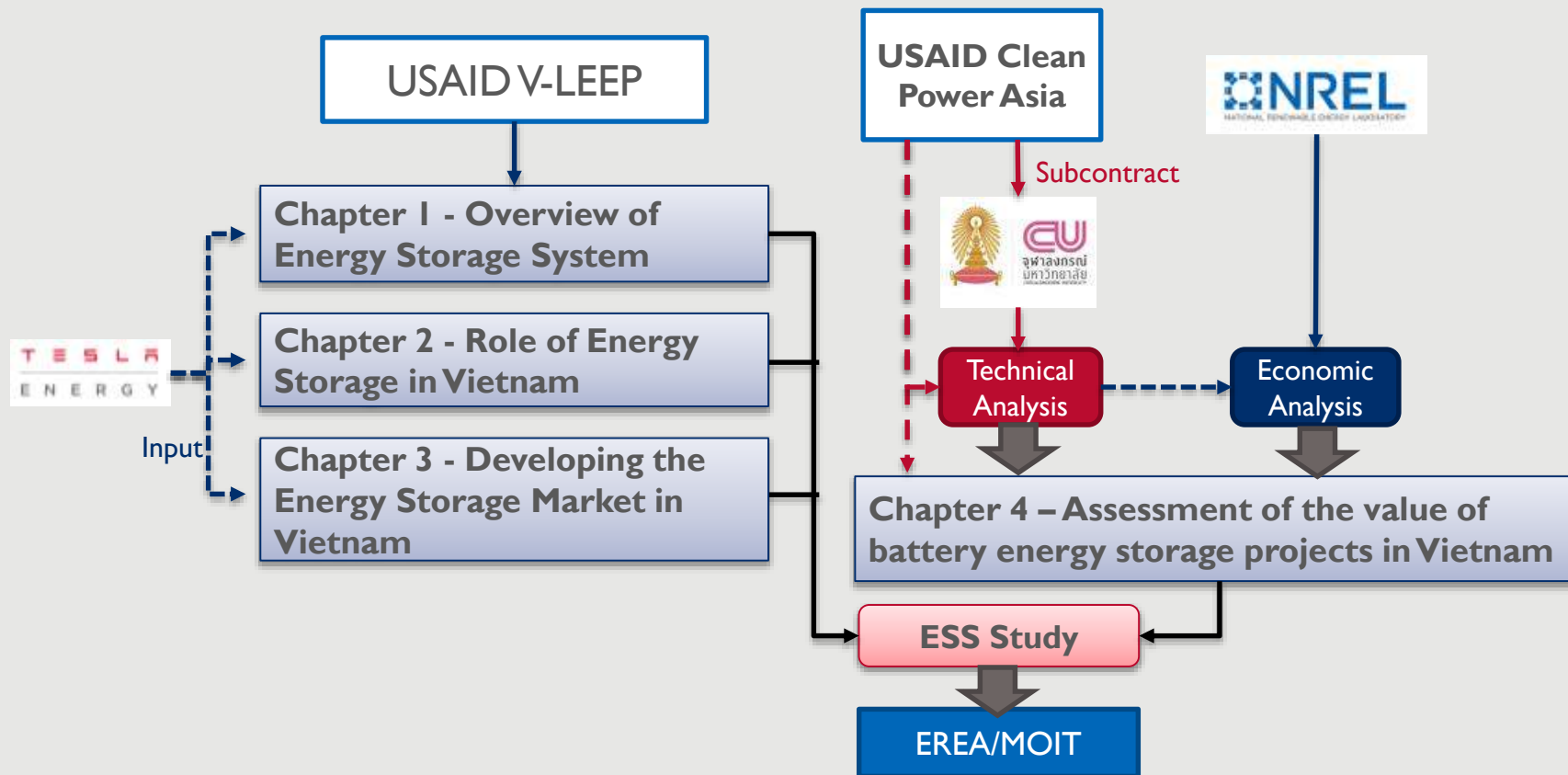
# Supporting activity – DPV economic and technical impacts and policies in Southeast Asian countries

	Previous activities		
	Thailand	Philippines	Vietnam
Activities	Study of DPV impact on utility revenue and rate 	Study three DPV impact analyses   	International review  Customer Economics 
Output	Report - DPV impact on utility revenue and rate (Nov 27, 2017) Policy Brief (Aug 17, 2017)	Report – DPV economic and technical impacts for the Philippines (Mar 15, 2019)	Report – Chapter 1 on international review (Jan 17, 2019) Report – Chapter 4.2 on customer economics (Mar 13, 2019)
Partners	NREL, ERI (Chula)	NREL, LBNL	USAID V-LEEP, NREL
Policy Impact	Proposed net billing policy (DEDE)	Revised net-metering policy (DOE, ERC)	Revised net-metering policy to replace Decision 11 (EREA)

Current activities
<b>Philippines</b>
<b>Activities: Support Department Circular (DC) on NM policy</b>
1. Technical input to DC (May-July 2019)
2. Experts for public consultation events (Aug 2019)
3. Post-public consultation support (Aug-Sep 2019)
<b>Output</b>
Technical input to DC (similar to policy brief) – July 2019

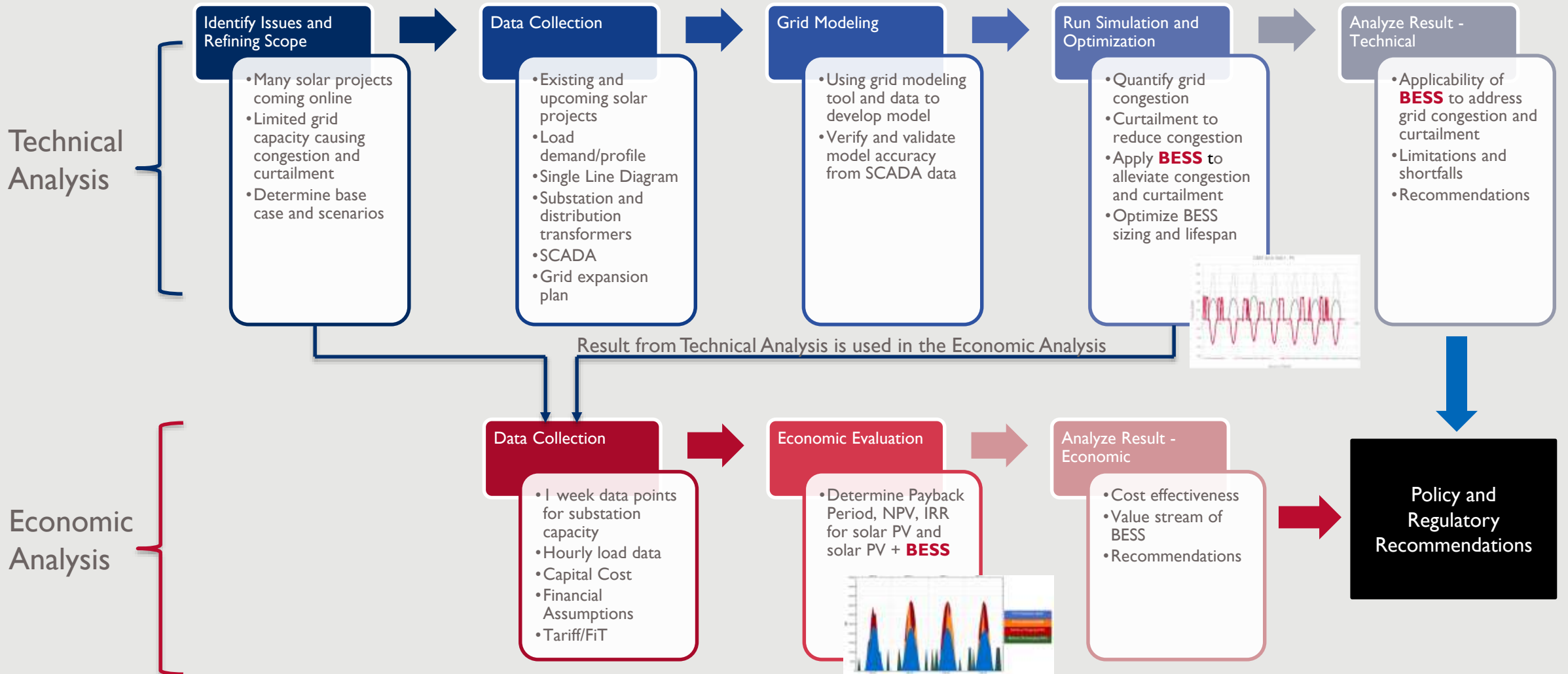
- DPV impact studies**
-  Customer economics
  -  Utility revenue and rate
  -  Technical impact
  -  International review

# Supporting activity – Energy Storage System in Vietnam (1/2)





# Supporting activity – Energy Storage System in Vietnam (2/2)



**BESS = Battery Energy Storage System**

# Looking forward to the future – Emerging trends



# Renewable energy emerging trends

- Declining prices for RE generation
- Energy storage allowed dispatchability
- Becoming more competitive with fossil fuel

Grid Parity and Declining RE Prices

- Digital ledger used for decentralized transaction
- Enable peer-to-peer energy trading
- Facilitate prosumer growth

Energy Blockchain and Prosumers

- Machine learning to help with optimization and efficiency
- Automation and forecasting

DER Management and DRP

- Management and planning of distributed resources or decentralized generators (rooftop PV, energy storage, wind, behind-the-meter generation, etc.)

Energy Storage

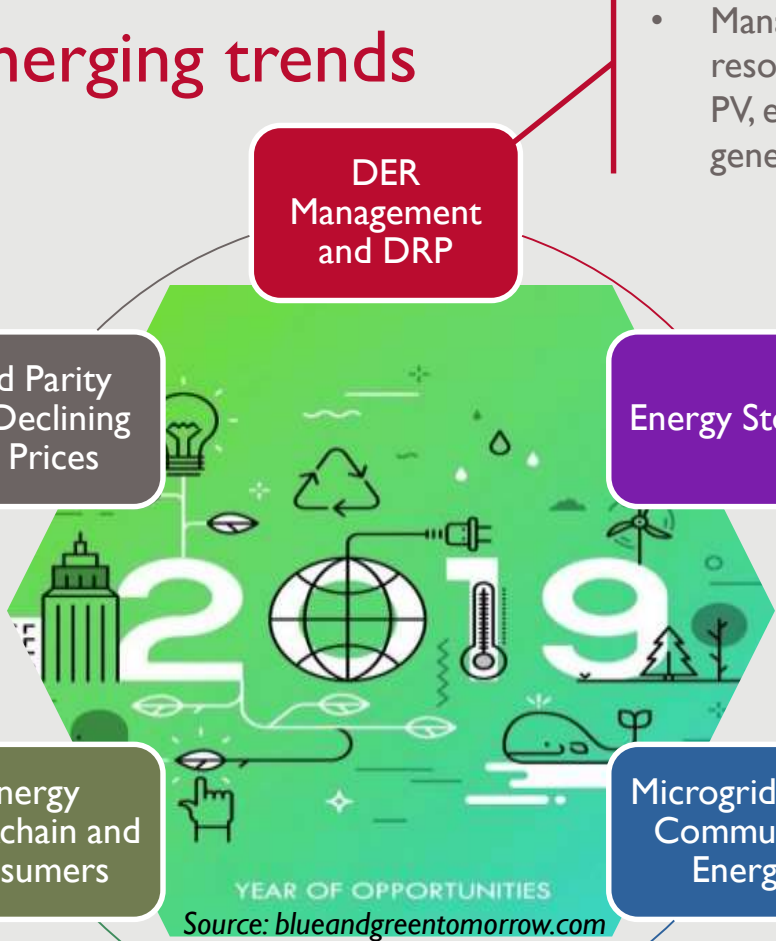
- Storage prices are declining
- Technology is improving for charging and discharging
- Deployment at project site or grid level
- Backup for commercial/industrial (replacing diesel engine)
- Small home use + rooftop

Microgrids and Community Energy

- Grid connected microgrid for community with self generation (PV, wind, storage, etc.)
- Reduce loss in transmission
- Self managed, secure driven by consumer
- Smart Grid

Data Analytics, IoT and AI

DER – Distributed Energy Resources  
 DRP – Distributed Resource Planning  
 AI – Artificial Intelligence  
 IoT – Internet of Things





“One of the fastest ways to build the clean energy economy is to allow more people to benefit from it.”  
- **Billy Parish** (CEO of Mosaic Inc.)

THANK YOU!

# Additional information



# International best practices for VRE integration

Power offtake	Grid connection	Technical standards	Permitting
<ul style="list-style-type: none"> <li>• &gt; 20 years contract term</li> <li>• Local utilities should be regulated to buy electricity from electricity producers</li> <li>• Take and pay all electricity</li> <li>• Determine a fixed tariff</li> <li>• Denominate in a foreign currency</li> <li>• Offtaker takes risk if law changes</li> <li>• Exempt producers from force majeure</li> <li>• Allow offshore arbitration</li> <li>• Limit termination by offtaker</li> <li>• Allow collateral assignment</li> <li>• Offtaker payment support</li> <li>• Offtaker bears risk of interconnection</li> </ul>	<ul style="list-style-type: none"> <li>• Grid connection rules are required at first stage of solar integration</li> <li>• A basic grid code rather than a complex one at the first stage</li> <li>• Learn and adapt grid codes from experienced countries</li> <li>• Grid code often comes closely with supporting mechanisms</li> <li>• Each stage of VRE penetration needs different grid connection requirements</li> </ul>	<ul style="list-style-type: none"> <li>• Modify building code, fire code, electrical code to accommodate VRE facility</li> <li>• Refer to international practice for technical specific equipment standards, installation standards, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Online permit processing</li> <li>• Website for information</li> <li>• Reasonable permit fees</li> <li>• Expedited permit process</li> <li>• Permitting checklists</li> <li>• Permitting templates</li> <li>• Consistency process across jurisdictions</li> <li>• Eliminate excessive inspections</li> <li>• Train permitting staff in VRE</li> <li>• Set point of contact</li> </ul>

Source: Review of Supporting Regulations (USAID Clean Power Asia, 2017)

**Ms. Amanda Van den Dool**  
**USAID Regional Development Mission for Asia**  
**Athenee Tower, 25th Floor**  
**63 Wireless Road**  
**Patumwan, Bangkok**  
**Tel: +66 2257 3000**  
**Email: [avandendool@usaid.gov](mailto:avandendool@usaid.gov)**

**Ms. Dana Kenney**  
**USAID Clean Power Asia**  
**Abdulrahim Place, Suite 501**  
**990 Rama IV Road**  
**Bangrak, Bangkok 10500**  
**Tel: +66 2026 3065**  
**Email: [Dana\\_Kenney@abtassoc.com](mailto:Dana_Kenney@abtassoc.com)**

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