

# **Sustainable Power Sector Development in the GMS**

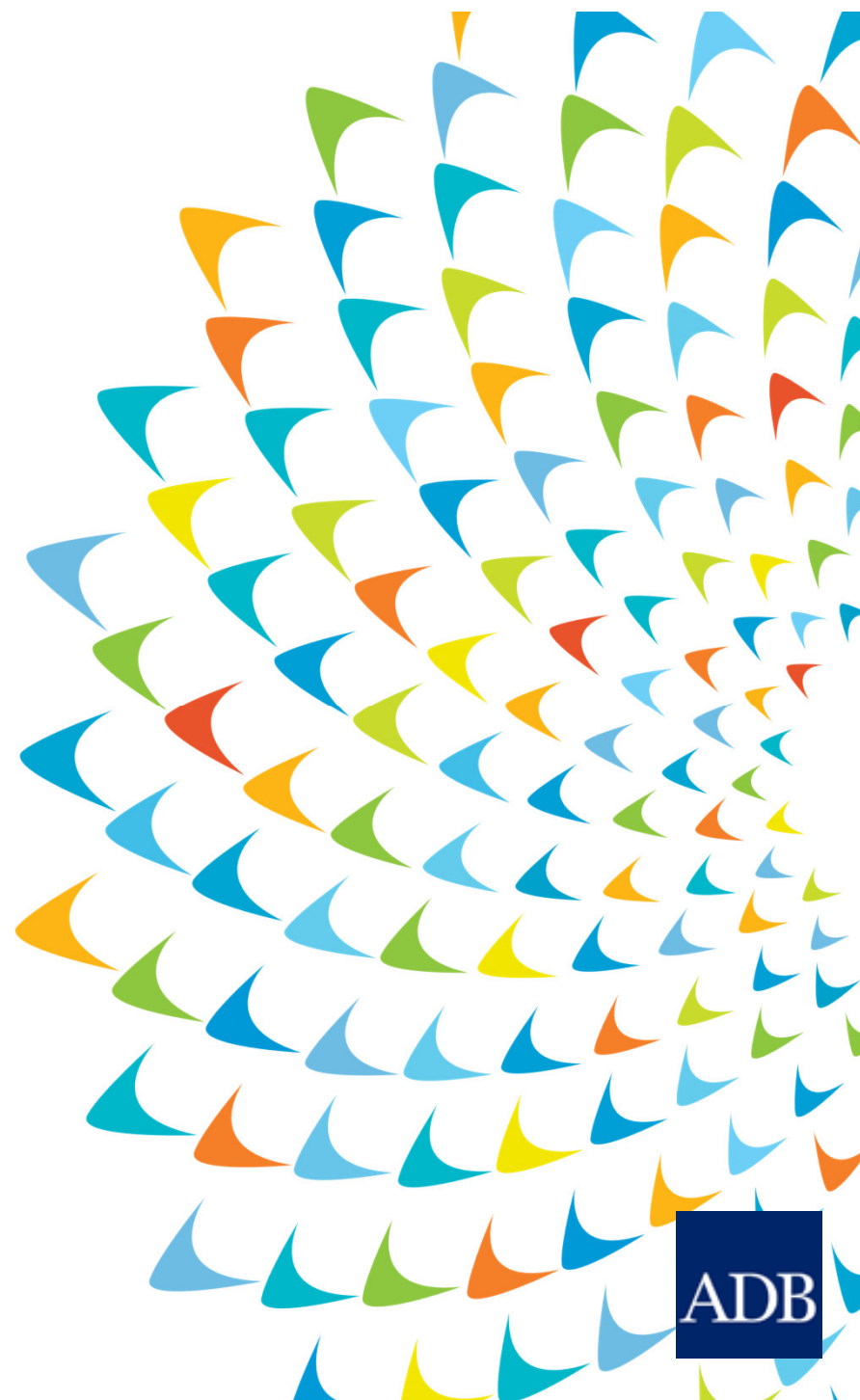
## **Update and Additional Scope of RETA 9003**

**RPTCC 26**

**Ha Noi, Viet Nam**

**26 November 2019**

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Asian Development Bank**



# Climate Change Challenges

## ASIA AND THE PACIFIC IS KEY

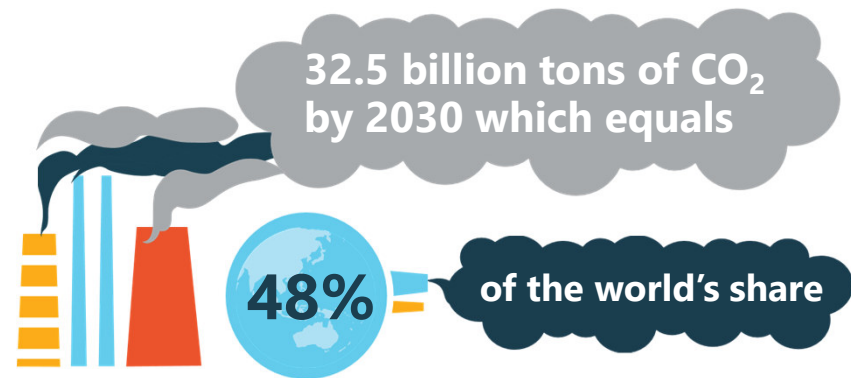
2017 CO<sub>2</sub> emissions:



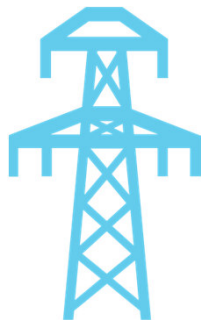
**43%** Asia and the Pacific

**57%** Rest of the world

Without radical changes, Asia and the Pacific will emit



Developing Asia's share of world electricity demand will grow to\*

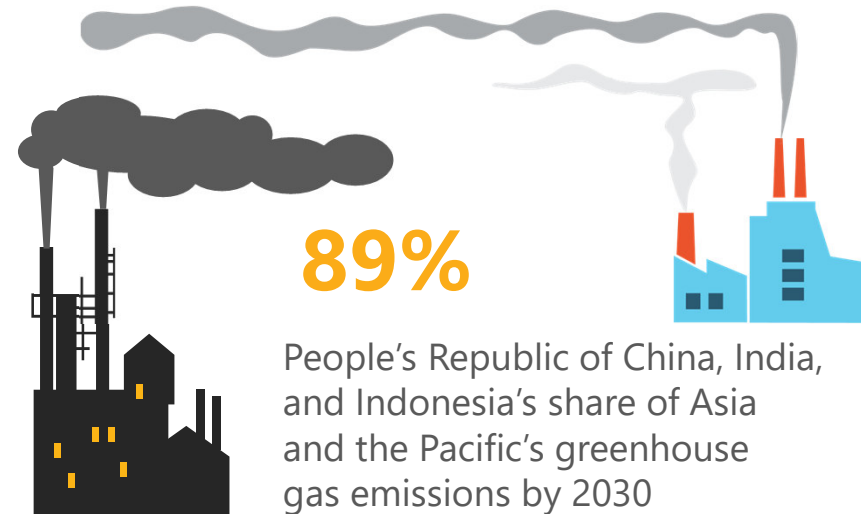


**43%**  
in 2030

The PRC and India will make up

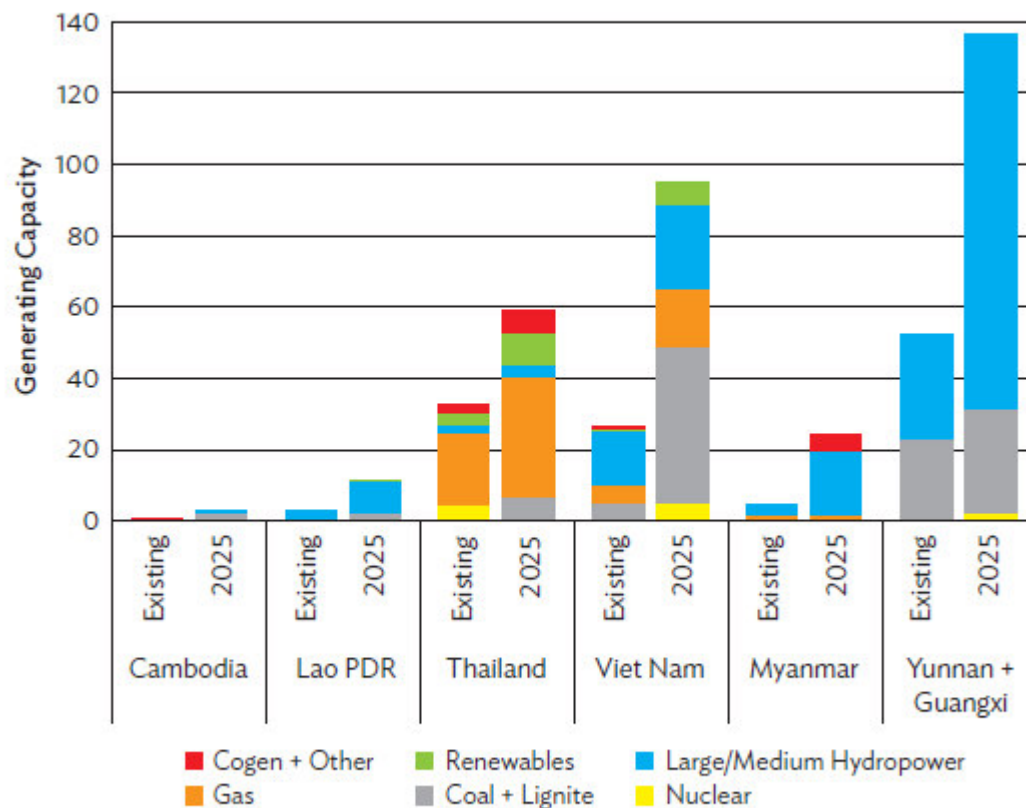
**64%**  
of Asia's power consumption

\*projection under New Policies scenario



# Power Sector Sustainability at risk in the GMS

Figure 1. Projected Installed Capacity by Country in the Greater Mekong Subregion, Current Power Development Plan Scenario (gigawatt-hours)



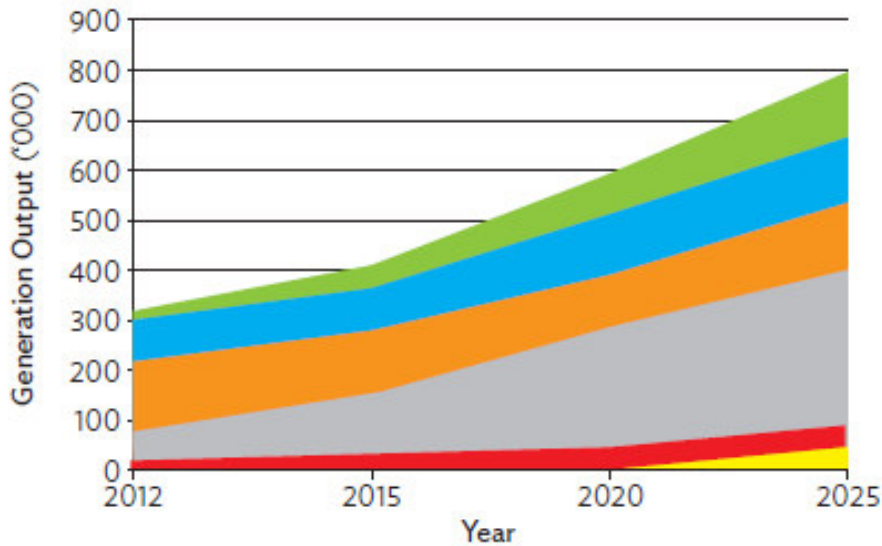
- GMS economic growth has been strong; demand for electricity growing even faster
- Previous PDPs presents high environmental and social pressures
- The total installed capacity is projected to reach 210 GW by 2025 from 120 GW in 2012,
  - ✓ Notably contributed by large hydro and coal-fired generation
  - ✓ Renewable will increase by more than three times but from a very low level of 3,500 MW

Cogen = cogeneration, Lao PDR = Lao People's Democratic Republic.  
Source: ADB. 2013c.

# GMS Clean Energy Scenarios

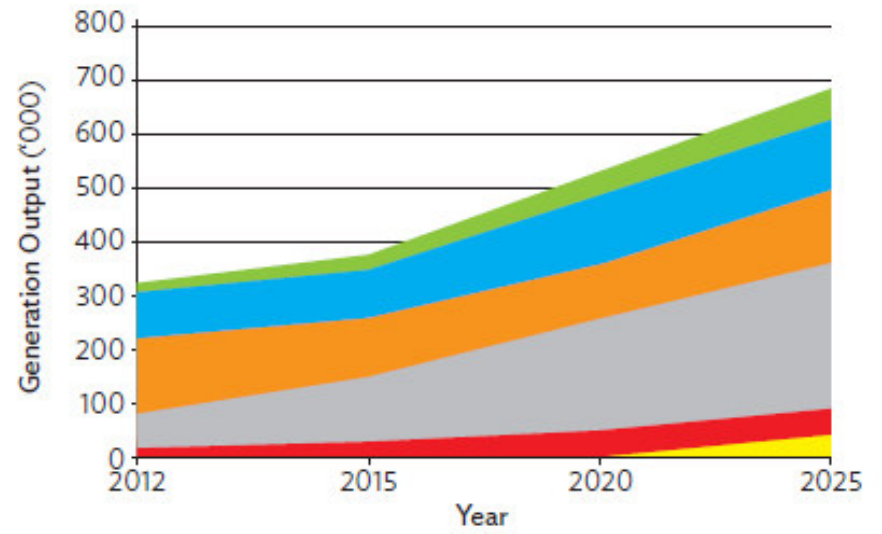
## Renewable Energy Scenario

*Global impacts displacement case*



## Energy Efficiency Scenario

*Global impacts displacement case*



■ Renewables ■ Hydropower ■ Gas ■ Coal + Lignite ■ Cogen + Other ■ Nuclear

Source: ADB RETA 7764 Report

- **RE Scenario:** extra 27 GW of RE capacity can be deployed, displacing 9 GW of fossil capacity
- **EE Scenario:** 16 GW fossil capacity can be reduced

# ADB TA 9003 (2016-2020)

## 1. Integrated Resource Planning and Strategic Environmental Assessment

- Review of integration of SEAs in PDP (completed)
- Report on feasibility of including externalities in Vietnam's IRP modelling (completed)
- Strengthening the Policy Framework for Power Sector Planning in Vietnam for PDP VIII (draft completed)

## 2. Capacity Building in GMS countries

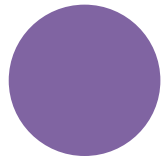
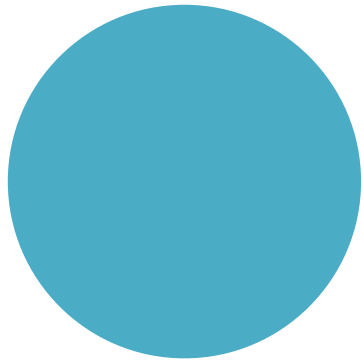
- Gap analysis and training needs assessment (completed)
- Regional and country workshops (5 workshops completed)
- 2 twinning programs on **RE integration (PRC)** and **SEA (Viet Nam)** (completed)
- Regional Workshop on **EE with Thailand** (completed)

## 3. Knowledge Products (KPs)

- KP1 - **Vietnam's SEA in PDP** (completed)
- KP2 – **Integrated and Strategic Power Sector Planning Guideline** (draft completed)
- **Country Guidelines and Briefing Notes for IRP and SEA** (draft circulated to the countries)

## 4. (New) RE and EE pipeline and business models development

- **Cambodia, Myanmar, Laos – EE market assessment**
- **Viet Nam and Thailand – utilities EE service and financing models**
- Myanmar solar park study
- A regional investors' workshop and other country workshops as needed to be organized



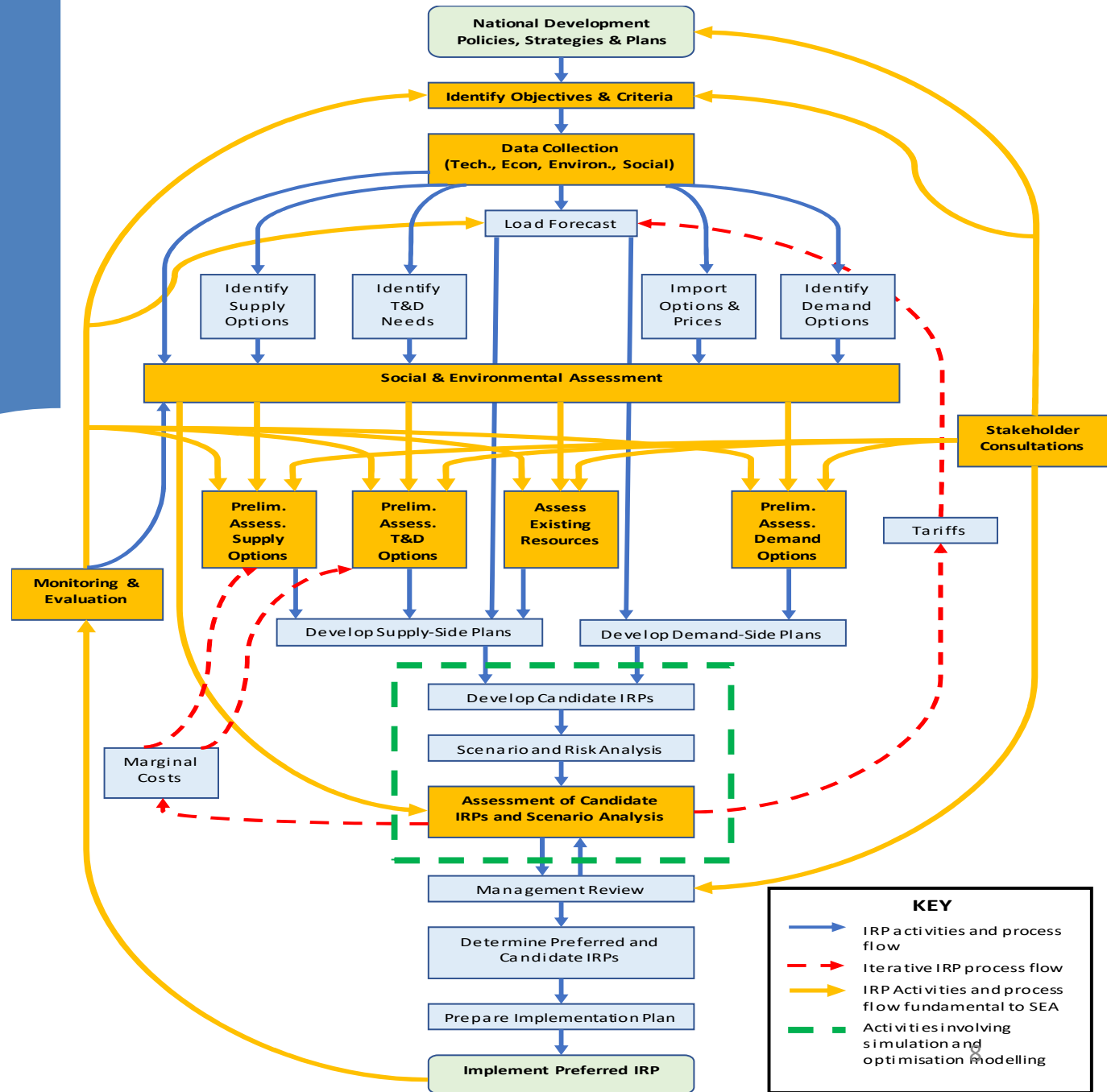
Progress since last  
RPTCC 25 (March 2019)



**KP2:**  
**Transforming**  
**Power**  
**Development**  
**Planning**  
**through**  
**Integrating**  
**SEA into an**  
**IRP Approach**  
**in the GMS**  
**Region**

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# Typical IRP Process Flowchart



**KEY**

- IRP activities and process flow
- - - Iterative IRP process flow
- IRP activities and process flow fundamental to SEA
- - - Activities involving simulation and optimisation modelling





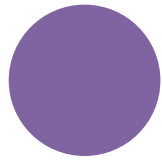
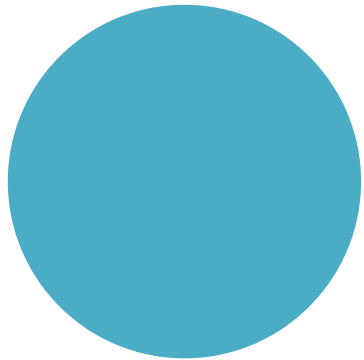
## **A Twinning Workshop on SEAs in Power Sector Planning in Phnom Penh, Cambodia with Viet Nam (October 3-4, 2019)**

- 87 representatives from NCSO, Ministry of Environment (MoE), Ministry of Planning (MoP), Ministry of Economy and Finance (MEF), Ministry of Mines and Energy (MME), the electricity utility, Electricité du Cambodge (EDC) as well as international and donor organizations such as Japan's International Cooperation Agency (JICA), United Nations Development Program (UNDP), and the French Development Agency (AFD).
- Viet Nam experts from the Institute of Energy of Vietnam, delivered a series of presentations on Vietnam's experience with applying SEAs in the power development planning such as Vietnam's SEA legislation as well as technical guideline and approach for applying SEA in each power subject of hydro, other renewable energy and thermal power.
- NCSO provided the status of the SEA preparation in Cambodia and related legislation and institutions. Workshop participants identified key challenges to implementing SEAs in Cambodia are (i) lack of resources (i.e. human, finance, etc.), (ii) lack of coordination between economic and environment objective, (iii) coordination and institutional arrangements, (iv) adoption of a legal framework, and (v) availability of political wills.



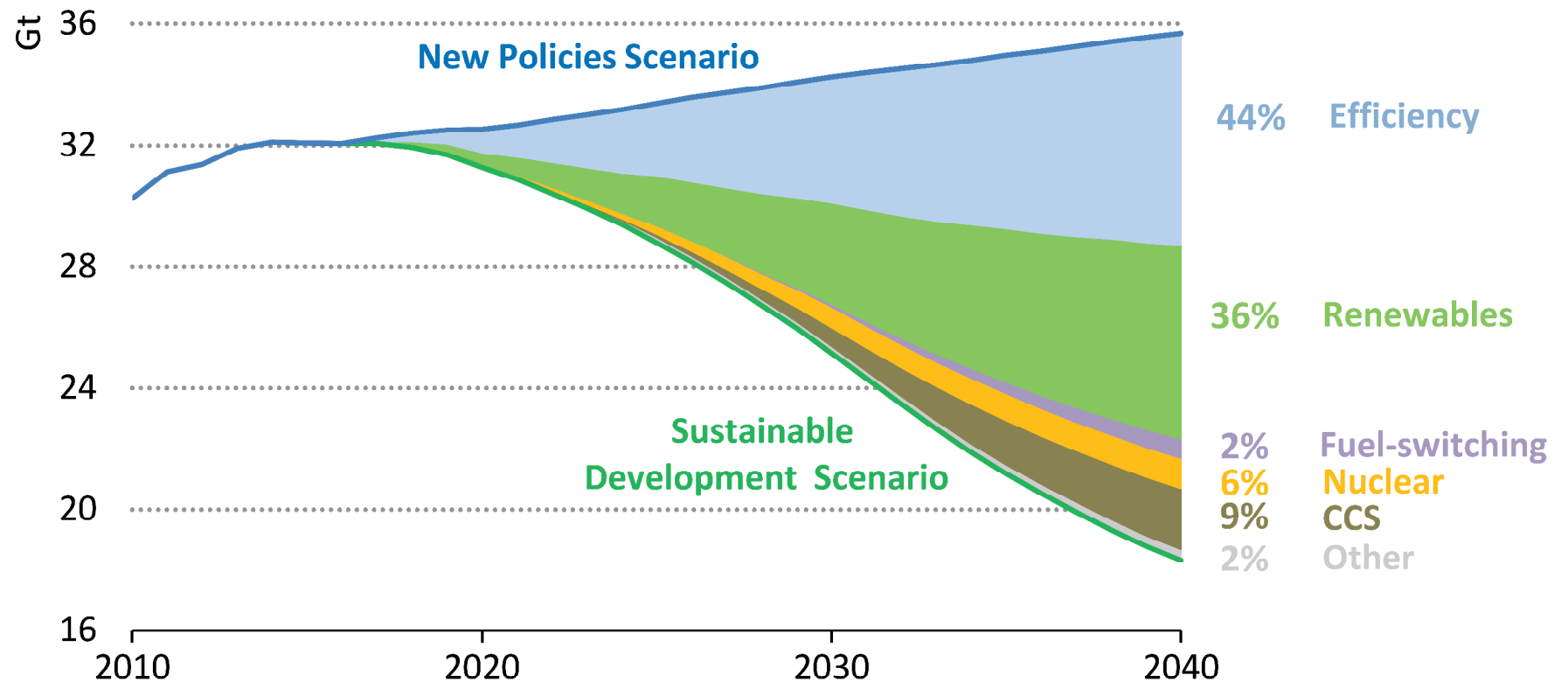
**GMS Energy Efficiency  
Workshop in Bangkok,  
Thailand with  
Department of  
Alternative Energy  
Development and  
Efficiency (DEDE)  
(November 19-21, 2019)**

- 50 representatives from GMS ministries, regulators, and utilities, and development partners participated to
  - understand specific experiences on the implementation and enforcement mechanism of national EE policies and regulations in Asian countries;
  - share GMS/ASEAN countries' process and challenges of setting up their implementation mechanism for national EE programs; and
  - explore wider applicability of international good experiences to address the current challenges and to upscale financing options in GMS/ASEAN countries.

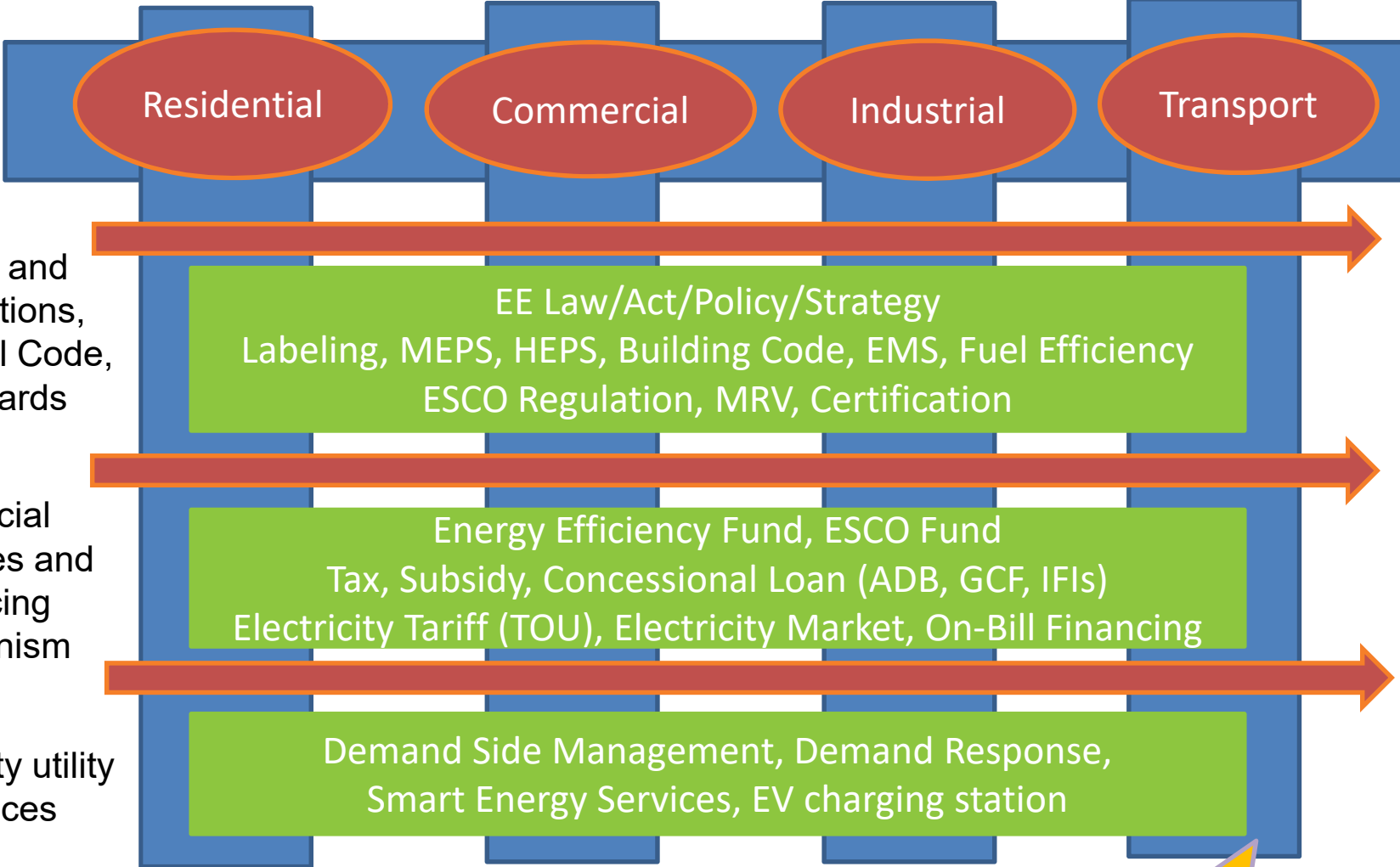


New Scope of TA 9003 |  
for RE and EE |

# 44% carbon emission reduction from energy efficiency



Source: IEA. Energy Efficiency 2018: Analysis and Outlooks to 2040

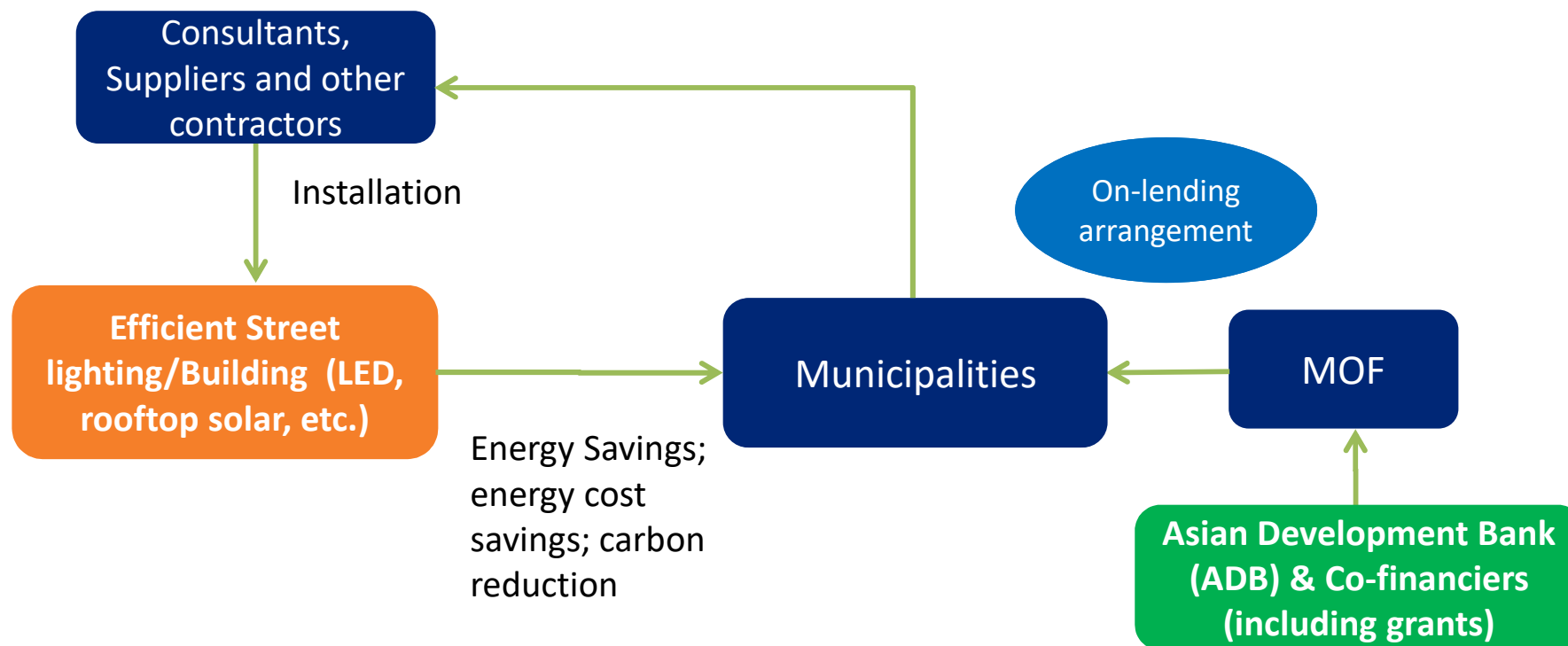


Awareness and Capacity Building



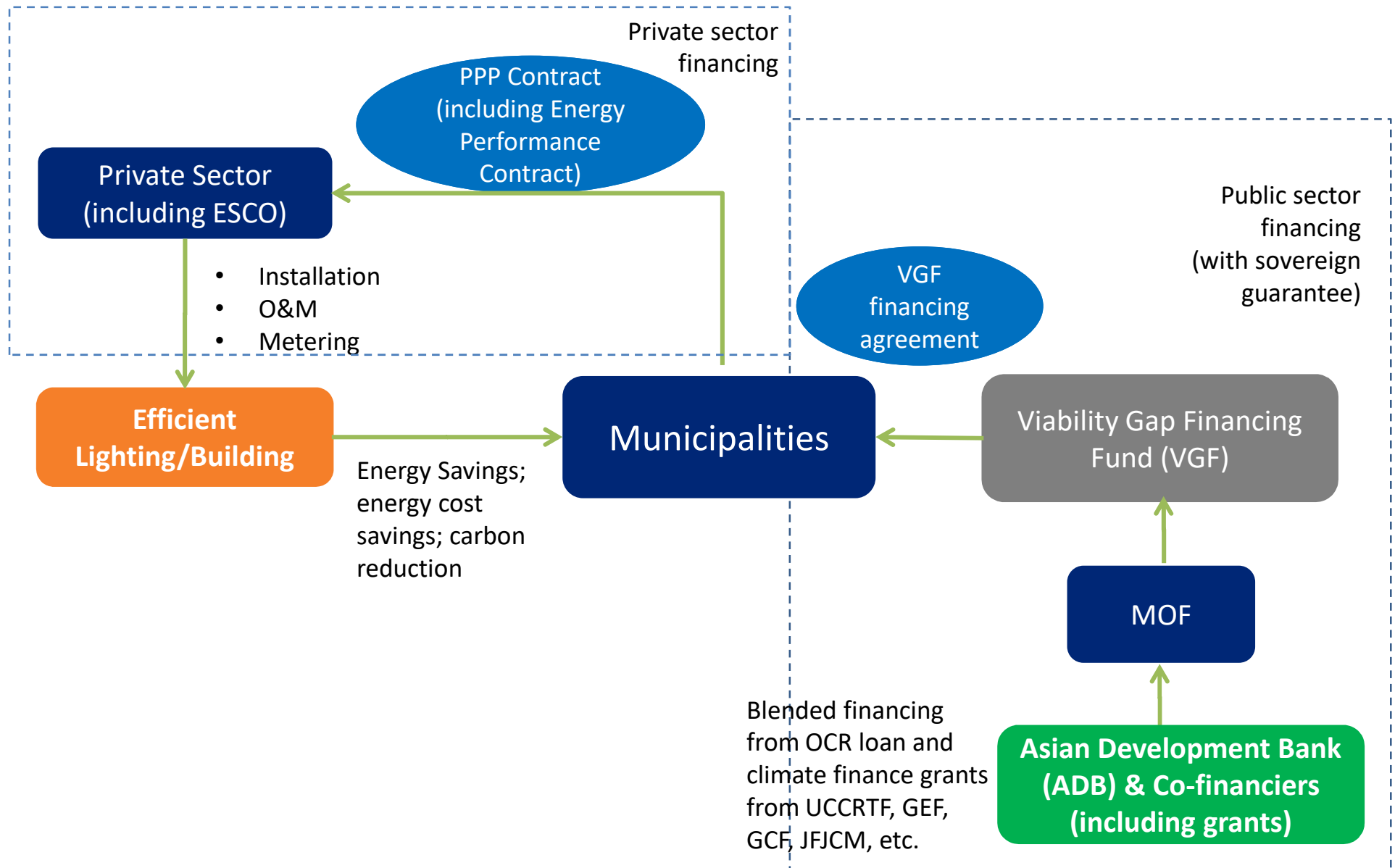
EE Demand  
EE Market

# Possible business model/financing mechanism I – Public direct financing through municipalities

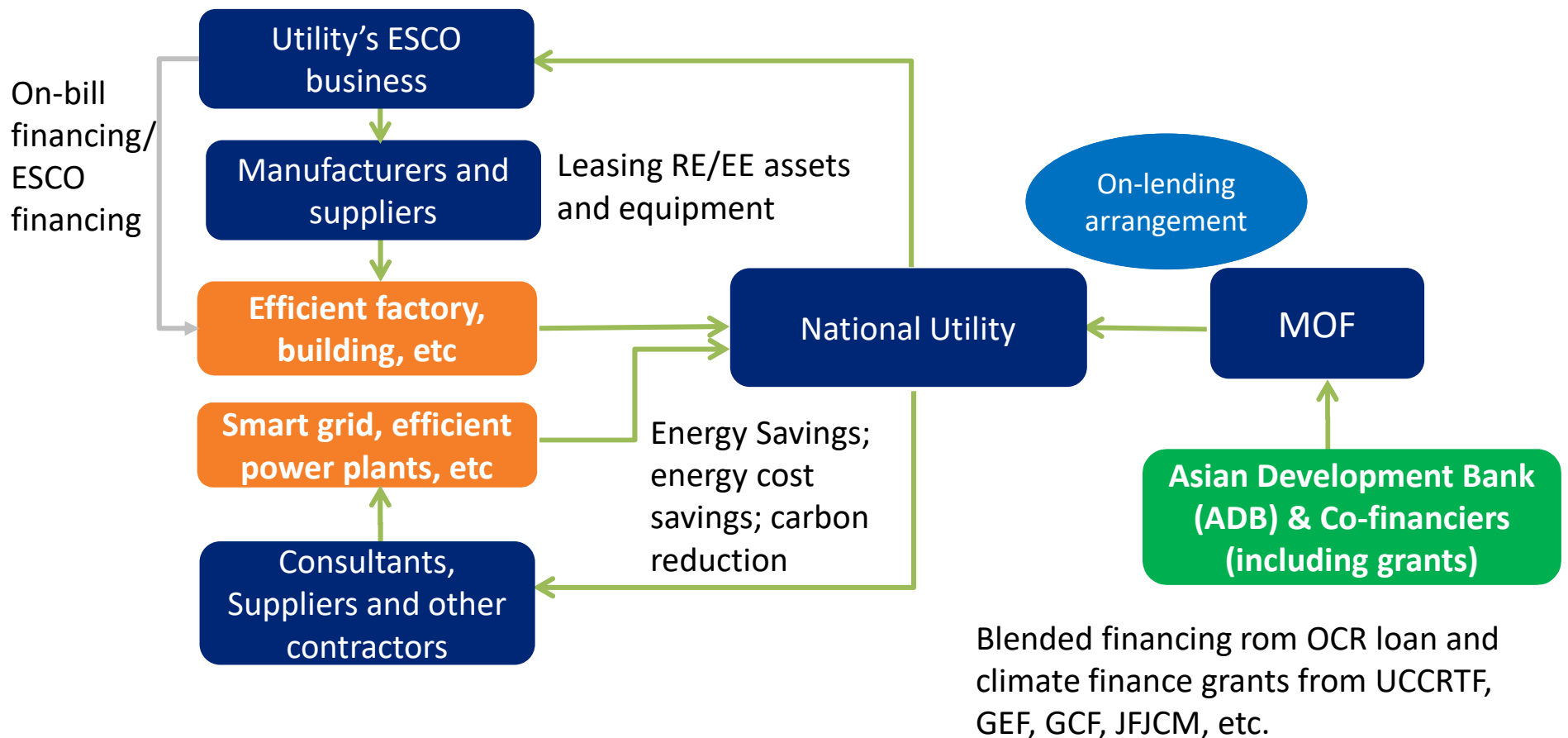


Blended financing from OCR loan and climate finance grants from UCCRTF, GEF, GCF, JFJCM, etc.

# Possible business model/financing mechanism II – Public and Private Partnership (PPP)

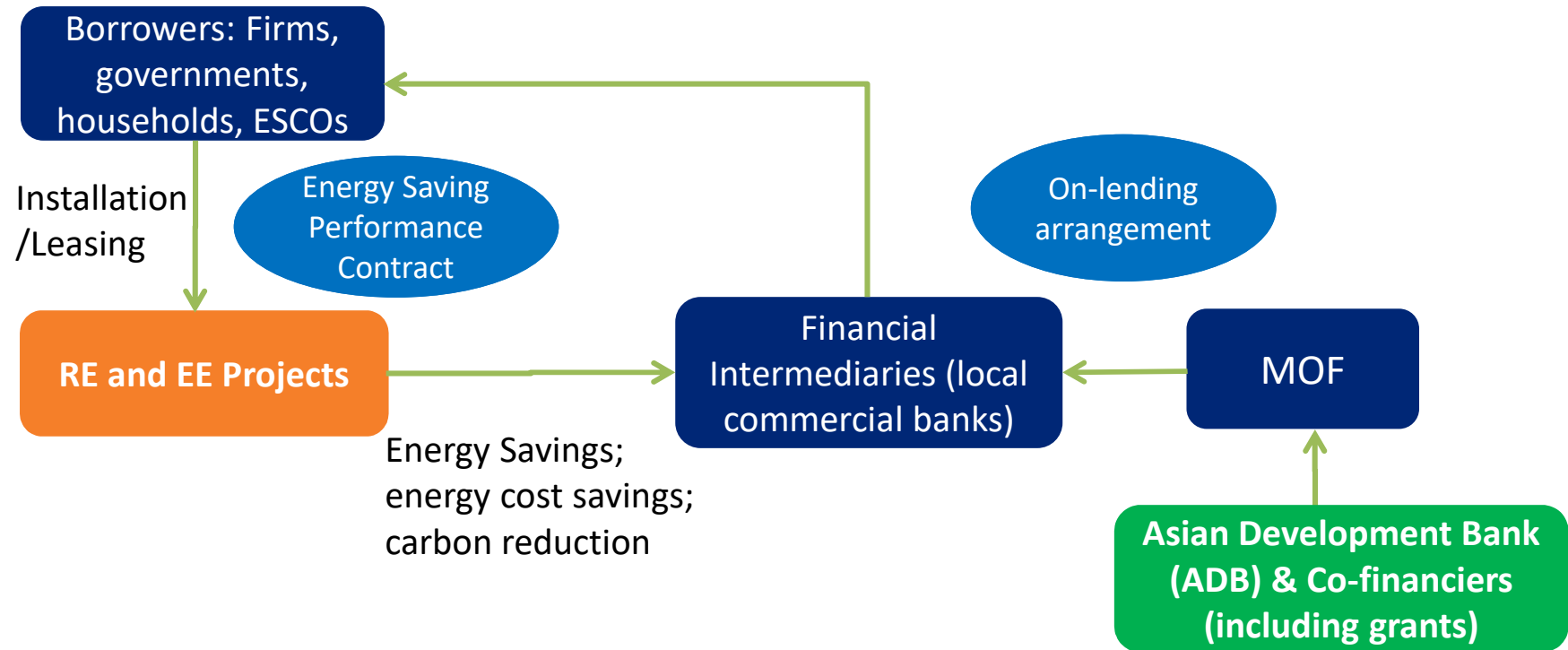


# Possible business model/financing mechanism III – Public direct financing through a national utility



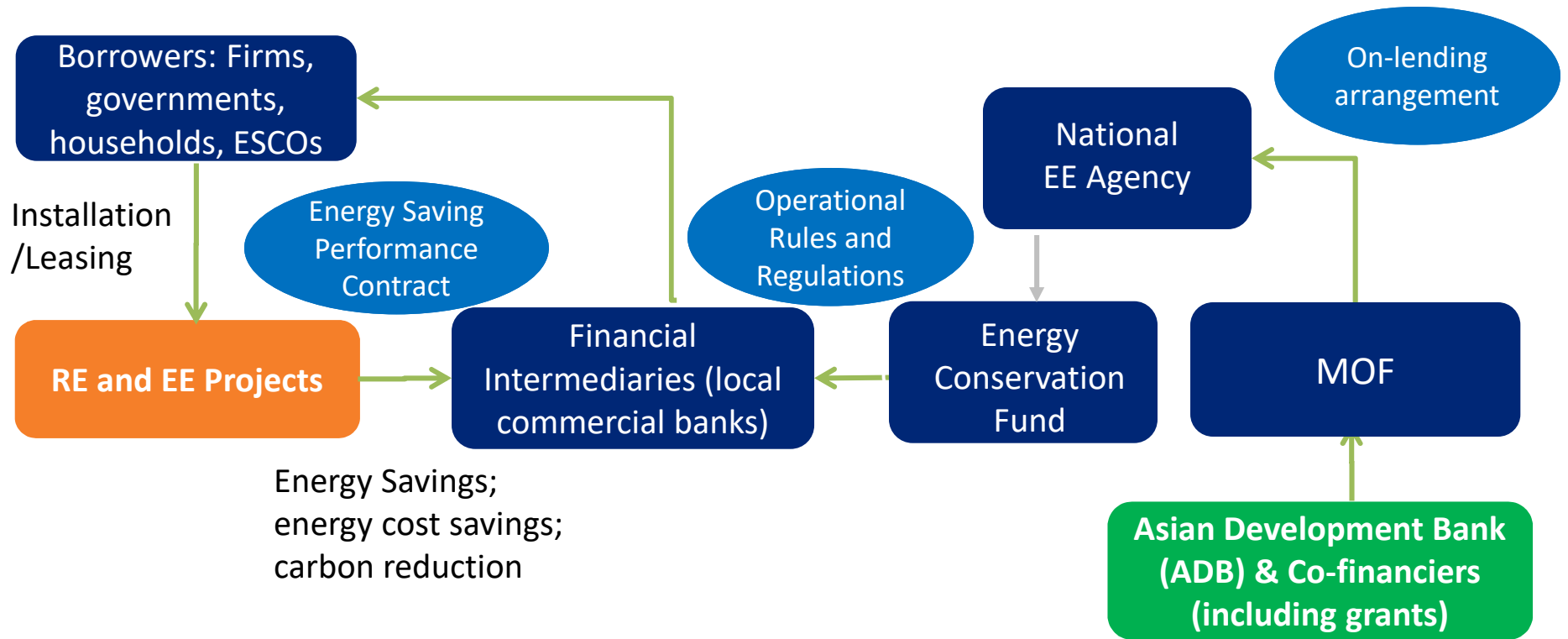


# Possible business model/financing mechanism IV – Public indirect financing (Financial Intermediary)



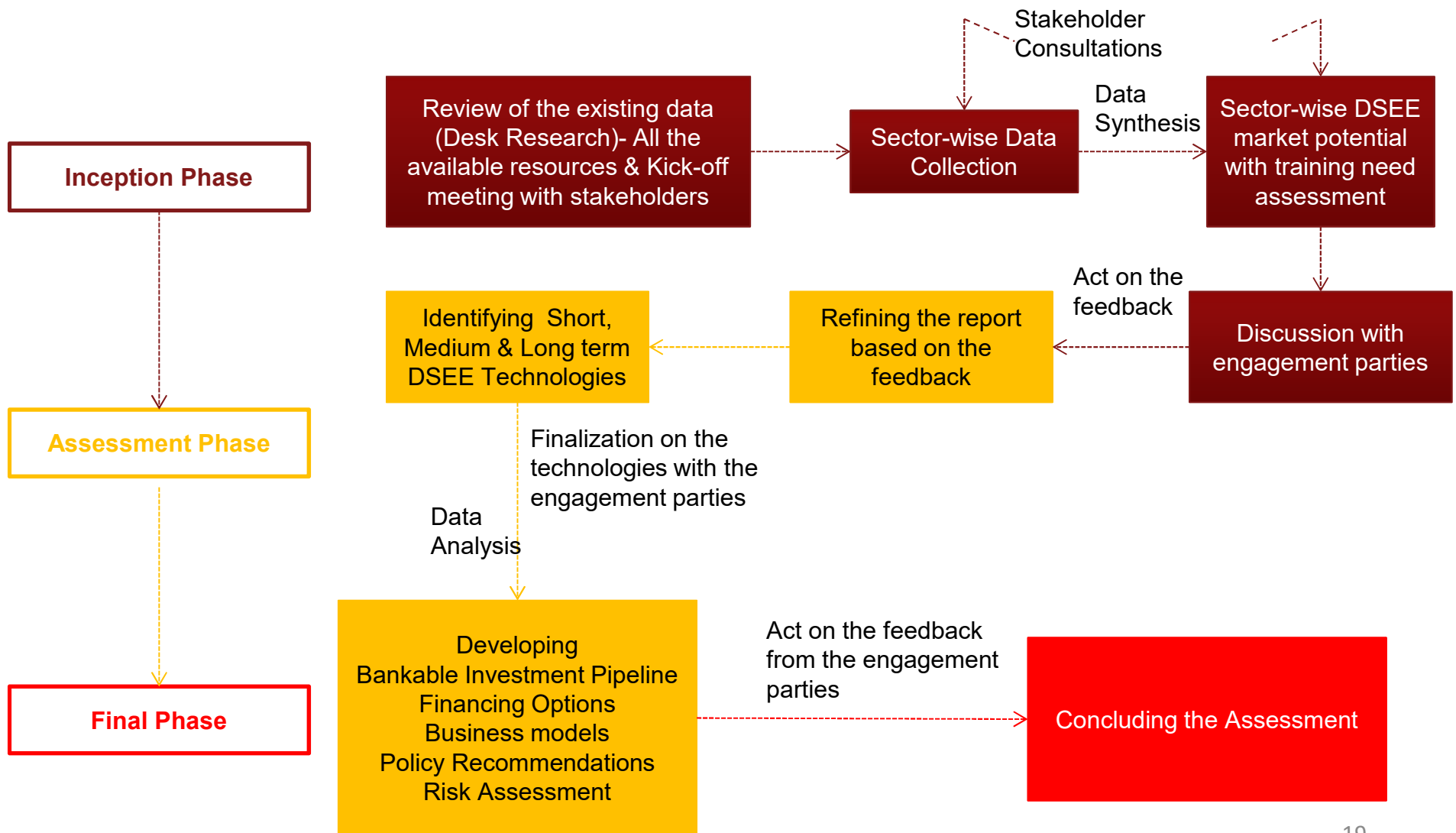
Blended financing from OCR loan and climate finance grants from UCCRTF, GEF, GCF, JFJCM, etc.

# Possible business model/financing mechanism V - Energy Conservation Fund financing



Blended financing from OCR loan and climate finance grants from UCCRTF, GEF, GCF, JFJCM, etc.

# (1) Cambodia, Laos, Myanmar – Energy Efficiency Market Assessment Study Methodologies



# (1) Cambodia, Laos, Myanmar – Energy Efficiency Market Assessment Study **PwC India Consulting Firm**

Over 20 years of exp in Standards & labelling of electronic products in industrial, domestic & commercial sector, EE policy development, market assessment, Stakeholder engagement & capacity building

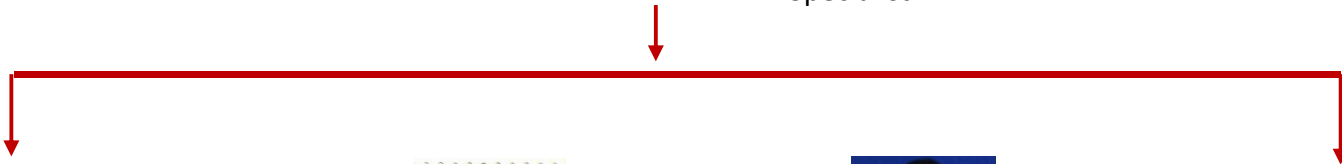


**Rajeev Raihan**  
Project Director & EE Technology Expert



**Manoj Bansal**  
Team Leader & Energy Specialist

Over 20 years of exp in EE policy development, DSEE market assessment, Strategy, Financial & business analysis for EE, Energy audits, management & capacity building



**Pradeep Singhvi**  
EE Financing Expert

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**Sengratry Kythavone**  
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Over 20 years of exp in D SSEE project development & implementation, DSEE policies & strategies, Understanding of Energy sector in Lao PDR



**Thoung Win**  
EE Analyst (Myanmar)

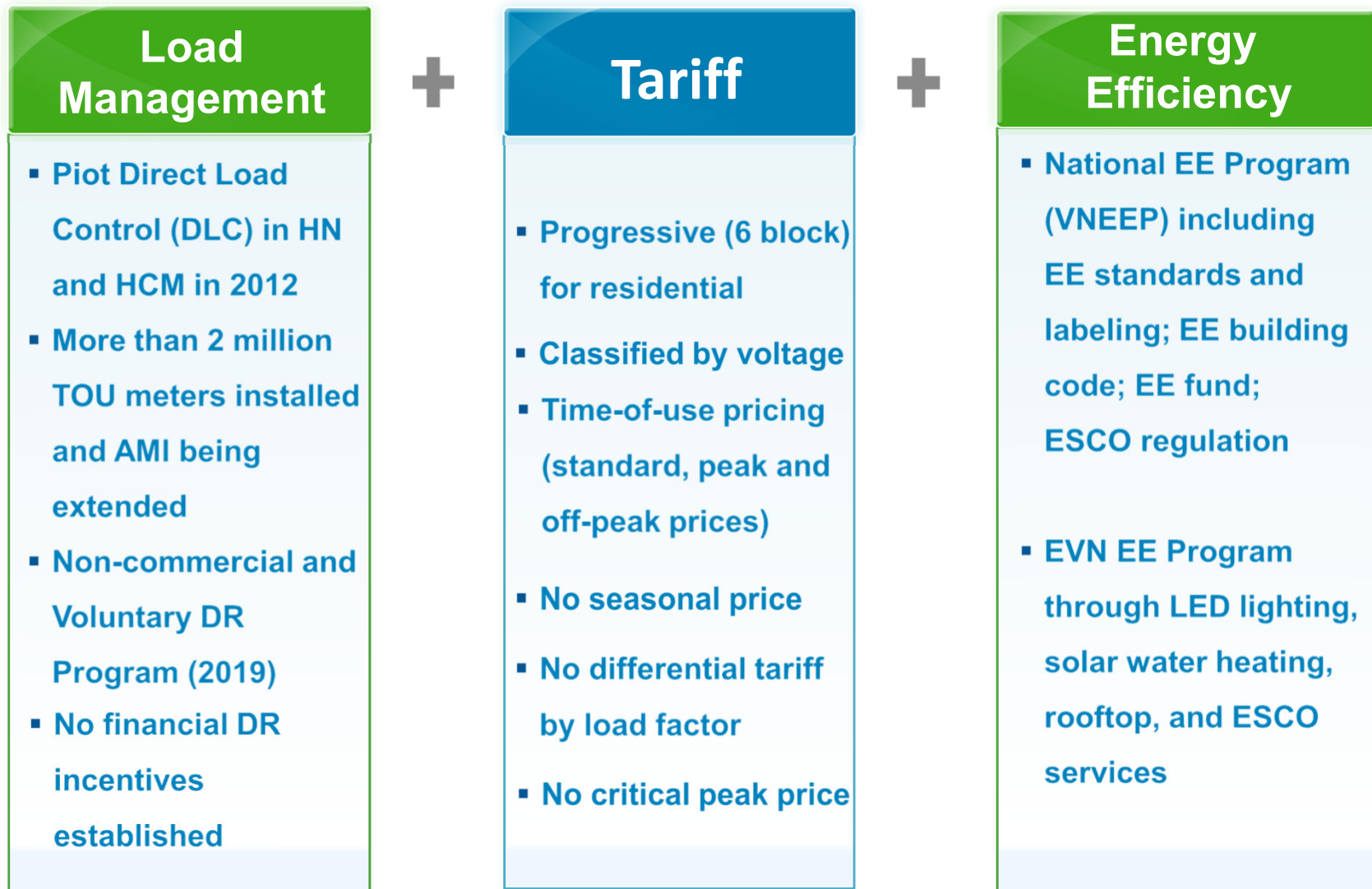
Over 12 years of exp in DSSEE project development & implementation, DSEE policies & strategies, Understanding of Energy sector in Myanmar

## (2) Thailand PEA EE Service Model

### รูปแบบธุรกิจ (Business Model)



### (3) Viet Nam DSM and DR Financing Mechanism



Seconds

hours

Days

months

Years

# Thank you



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