

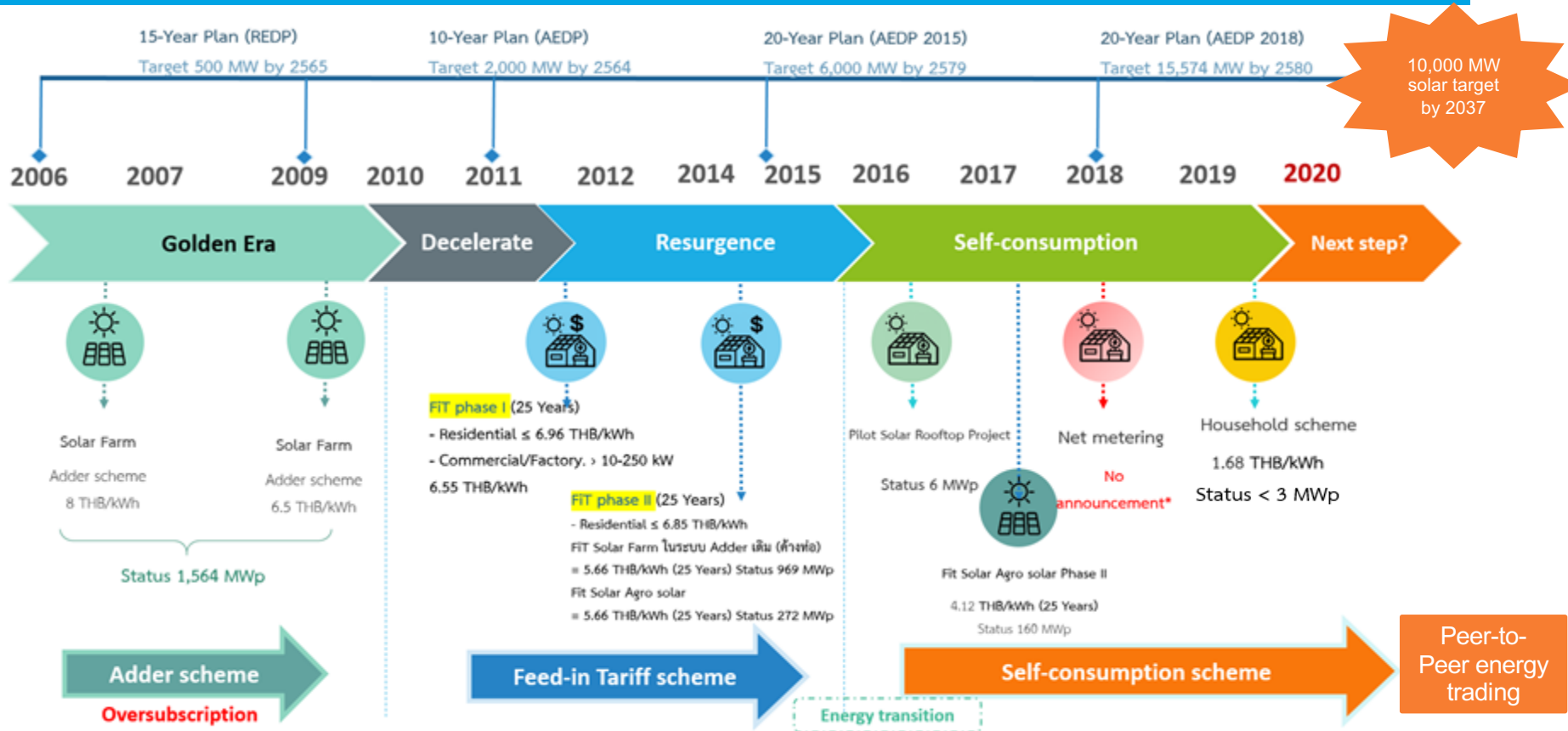
Emerging trends towards innovative and smart business models for energy sector in Thailand.

Dr. Phimsupha Kokchang

Researcher, Energy Research Institute, Chulalongkorn University

June 19, 2020

Evolution of Thailand's Solar PV Policy



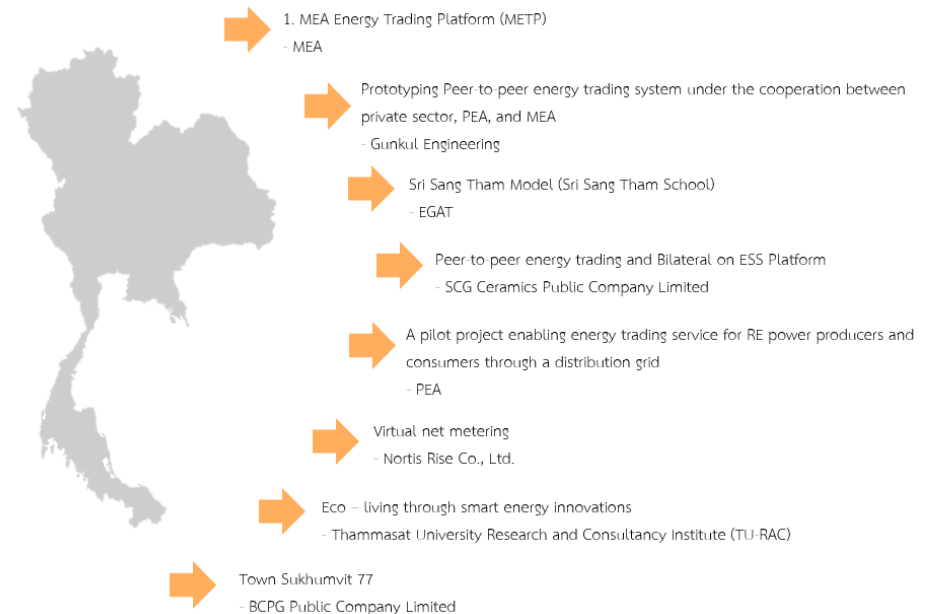
Innovative and smart business models in energy sector

Types of projects	Submitted Projects	Approved projects
1. Peer-to-peer energy & Bilateral trading	137	8
2. New tariffs such as net metering, net billing	7	6
3. Microgrid	17	4
4. Battery storage	11	4
5. New business model such as Supply and load aggregators.	8	2
6. Natural gas	2	1
Total	183	25

Source: Energy Regulatory Committee (2019)

ERC approved 25 projects under ERC sandbox.

Peer-to-peer energy & Bilateral trading 8 projects



Case 1: University Smart Campus under ERC sandbox

Project detail:

- Chulalongkorn University has a vision to develop smart city in Chula campus under the concept of SMART 5, comprising of Smart energy, Smart environment, Smart security, Smart mobility and Smart community.

Location: Chulalongkorn University campus

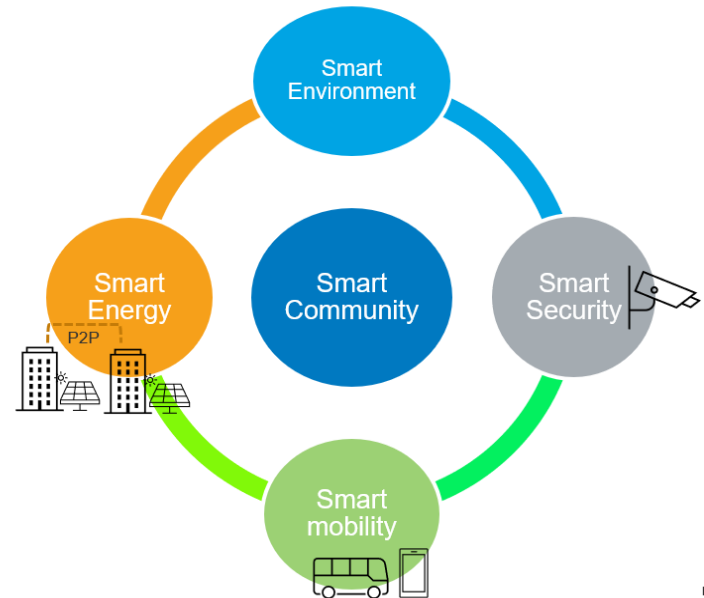
Project owner and partners: Chula, MEA, Energy Absolute (E@)

Objective of the project:

- To test the operation of the peer-to-peer energy trading platform between buildings in Chula campus.
- To develop smart contract and test new market mechanisms.
- To provide the guidelines of designing wheeling charge and understand its impact to P2P energy trading.



การไฟฟ้านครหลวง
Metropolitan Electricity Authority



Case 1: University Smart Campus under ERC sandbox

Existing regulation barriers:

- Grid code issue - -> Not allow excess generation fed back into the grid.
- Wheeling charge on power grid connection

Expected implications and lessons learnt:

- Relax grid code - -> allow excess generation fed back to the grid without installing Reverse power flow relay.
- Design smart contract for business operation.
- The recommendation on designing appropriate wheeling charge of P2P energy trading for regulator.

Case 2. TOWN T77

Project Detail:

- Develop a P2P solar rooftop trading platform using Blockchain technology developed by Power Ledger
- *Project participants:* a shopping mall, apartments, a school, and a dental hospital
- *Installed capacity:* 635 kilowatts of solar rooftop systems combined with battery storage, supplying 20% of the electricity needs of entire community.

Location: Town Sukhumvit (T77), Bangkok

Objectives of the project

- To test the operation of the peer-to-peer energy trading platform.
- To understand the implementation of Blockchain technology for electricity trading.
- To study the guideline for determining the wheeling charge of MEA.



Project owner and partners:
BCPG (RE business) and MEA

Power ledger P2P platform goes across the meter with BCPG at T77 precinct, Bangkok. Medium; 2018. [Online]. Available: <https://medium.com/power-ledger/power-ledger-p2p-platform-goes-across-the-meter-with-bcpg-at-t77-precinctbangkok-62df5aba3d0a>

Case 2. TOWN T77

Existing regulation barriers:

- licensed energy supplier issue
- Tax issue
- Billing and settlement process
- Wheeling charge on power grid connection

Expected implications and lessons learnt:

- Enhanced single buyer concept need to be revised/updated.
- The recommendation on designing appropriate wheeling charge of P2P energy trading to commercial buildings customer for MEA.
- The recommendation on collection of income tax and value-added tax should be exempted for individuals in P2P trade to facilitate transactions and bill payments in the future.

Key Takeaways

1. DER Deployment policy

a solar target 10,000 MW household solar scheme (PDP 2018).

2. P2P Energy trading Model

a solution to enhance the uptake of solar PV installation in the household sector.

Take lesson learnt and recommendations from ERC sandbox projects to inform regulatory changes

- Design appropriate market mechanisms for P2P energy trading.
- Design smart contracts for business operation.
- Determine appropriate wheeling charge and the impact on electricity rate.
- Resolve the issues related to licensed energy suppliers, billing and settlement.



Chulalongkorn University
จุฬาลงกรณ์มหาวิทยาลัย
Pillar of the Kingdom

Thank you

Resources

[[Phimsupha.k@chula.ac.th, www.eri.chula.ac.th]]