



Federal Ministry
for Economic Affairs
and Energy



Solar Energy in Viet Nam

Market overview and the MOIT/GIZ Energy Support Programme

Peter Cattelaens, GIZ Project Manager

Facilitator

Agenda

Vietnam Energy Market Overview

- Development & Outlook
- Policy and Regulatory Framework
- Electricity tariffs

Solar Energy in Vietnam

- Solar potential
- Status quo & outlook
- Solar PV Regulatory Framework (Draft)

MOIT/GIZ Vietnam Energy Support Programme

- Renewable Energy Project Development Programme (PDP)

Agenda

Vietnam Energy Market Overview

- Development & Outlook
- Policy and Regulatory Framework
- Electricity tariffs

Solar Energy in Vietnam

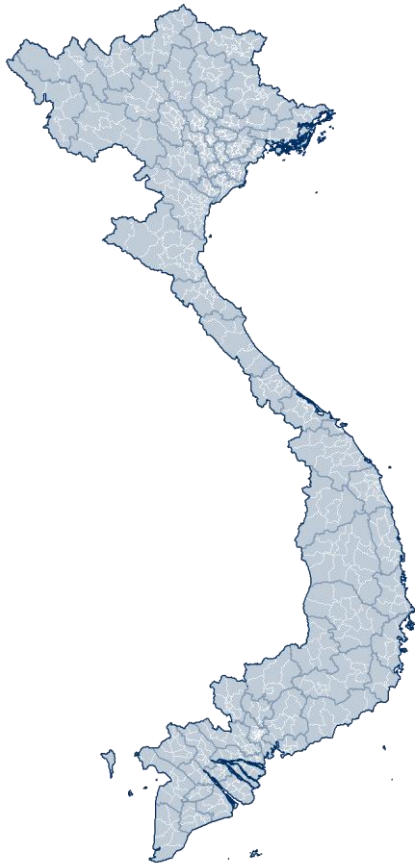
- Solar potential
- Status quo & outlook
- Solar PV Regulatory Framework (Draft)

MOIT/GIZ Vietnam Energy Support Programme

- Renewable Energy Project Development Programme (PDP)

Socialist Republic of Vietnam

Country Overview



Population 2015: ca. 91.7 million



GDP 2015: 214,750 billion USD (+6.68%)



Nominal income per capita 2015: 2,321 USD

Reunification

1975

1986

Đổi Mới

Joined the WTO

2007

Since
2009

Lower middle
income
country

Source: Wikipedia



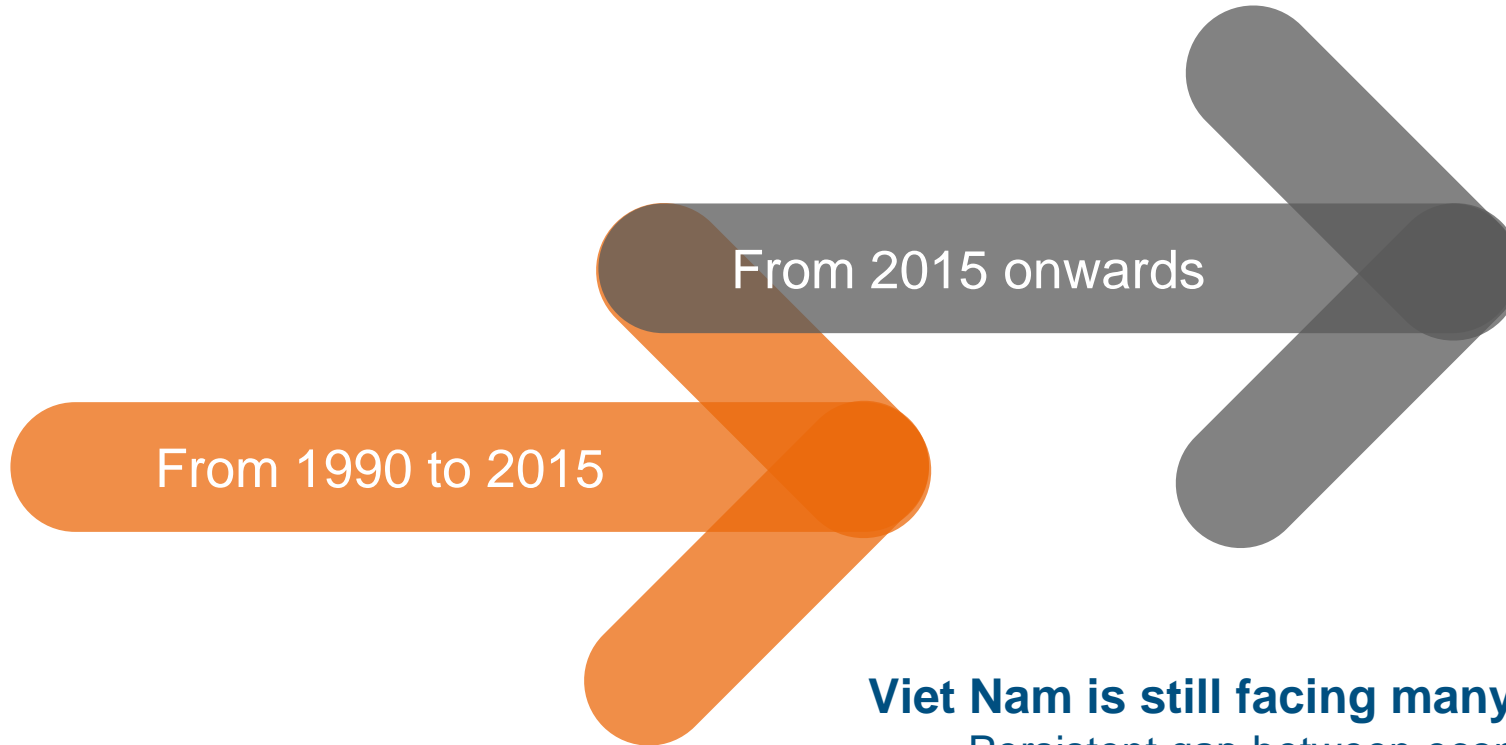
Federal Ministry
for Economic Affairs
and Energy



Facilitator



Energy Situation in Vietnam



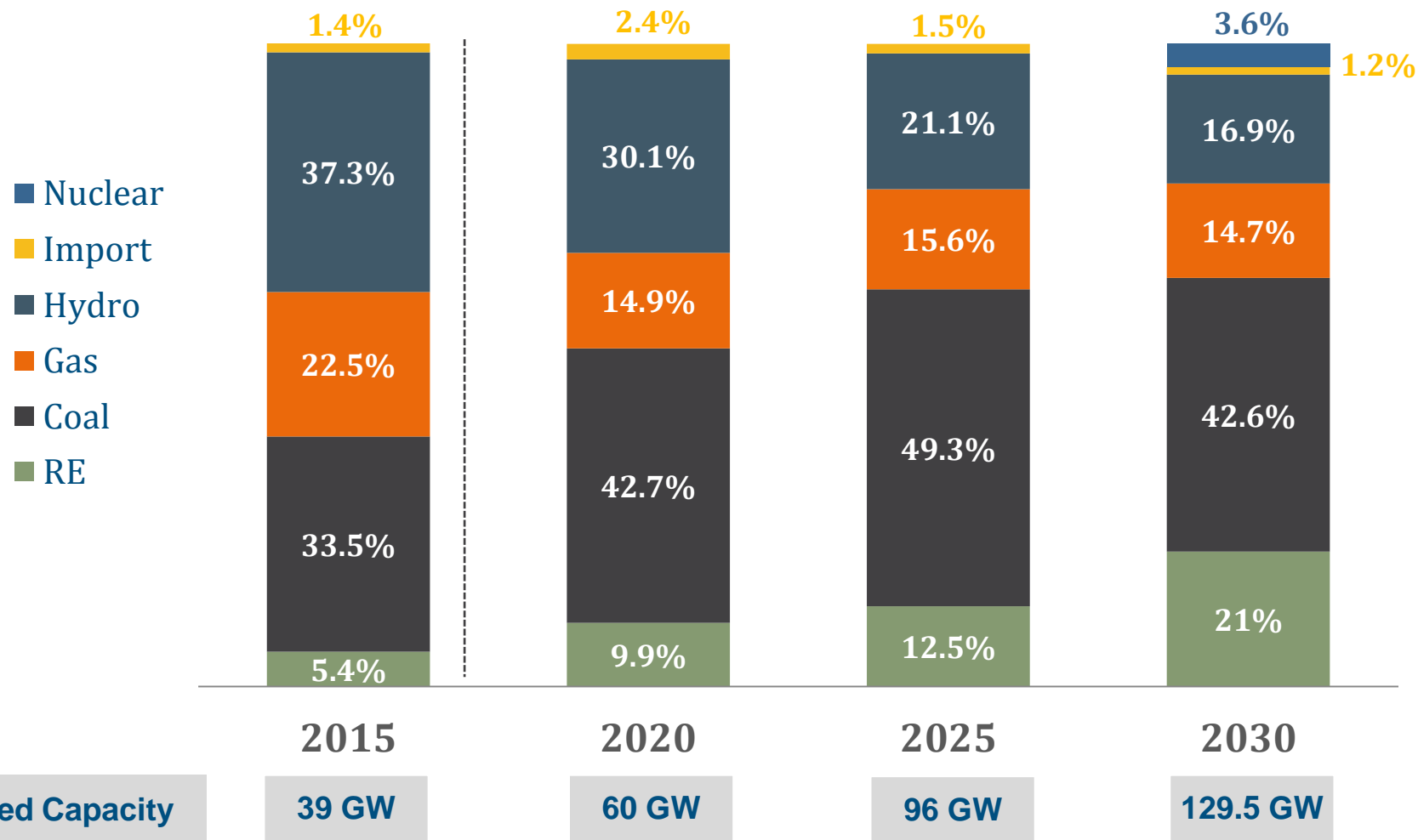
Viet Nam's energy success story

- High electrification rate (98%)
- Installation of ca. 39 GW of power generation (40% hydro)
- All investments publically funded

Viet Nam is still facing many challenges

- Persistent gap between economic and electricity growth rate
- Energy security and environmental/health concerns
- Public investments will not suffice to address future energy infrastructure requirements

Power Development Plan – PDP VII revised



Installed Capacity



Federal Ministry
for Economic Affairs
and Energy

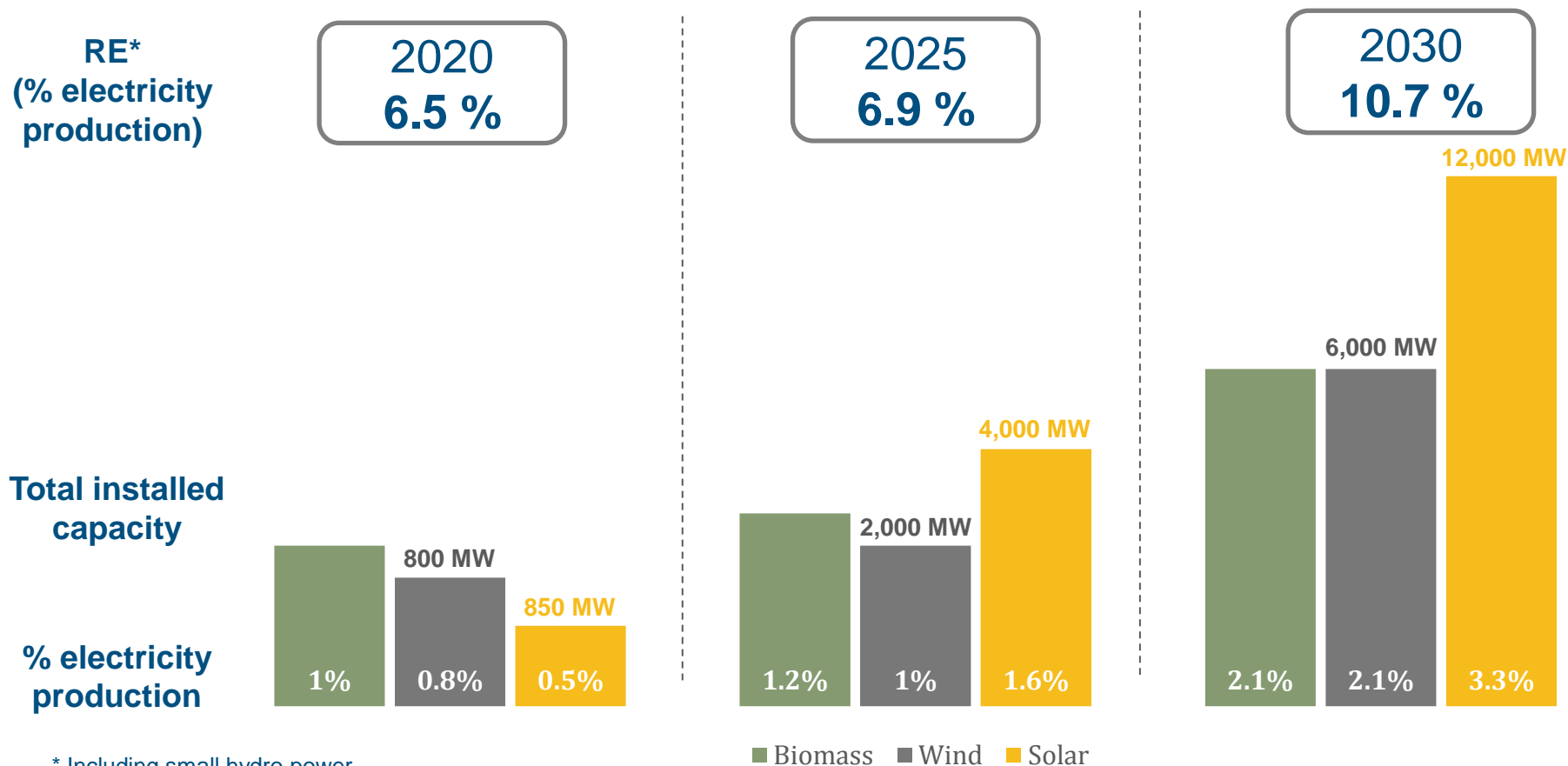


Facilitator



Power Development Plan – PDP VII revised

Solar Energy Targets for 2020, 2025 and 2030



Federal Ministry
for Economic Affairs
and Energy



Facilitator



Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

Electricity Tariffs

- Average retail price currently at ca. 7.4 UScents/kWh (excl. VAT)
- Business sector pays 18 UScents/kWh (excl. VAT) during peak hours
- Increase p.a. 7.5%?

Manufacturing					Business		
	> 110 kV	From 22 kV to 110 kV	From 6 kV to 22 kV	Below 6 kV	> 22 kV	6-22 kV	< 6 kV
Normal hours	1,388 6.3	1,405 6.4	1,453 6.6	1,518 6.9	2,125 9.7	2,287 10.4	2,320 10.6
Low hours	869 4.0	902 4.1	934 4.3	983 4.5	1,185 5.4	1,347 6.2	1,412 6.4
Peak hours	2,459 11.2	2,556 11.7	2,637 12.0	2,735 12.5	3,699 16.9	3,829 17.5	3,991 18.2

Agenda

Vietnam Energy Market Overview

- Development & Outlook
- Policy and Regulatory Framework
- Electricity tariffs

Solar Energy in Vietnam

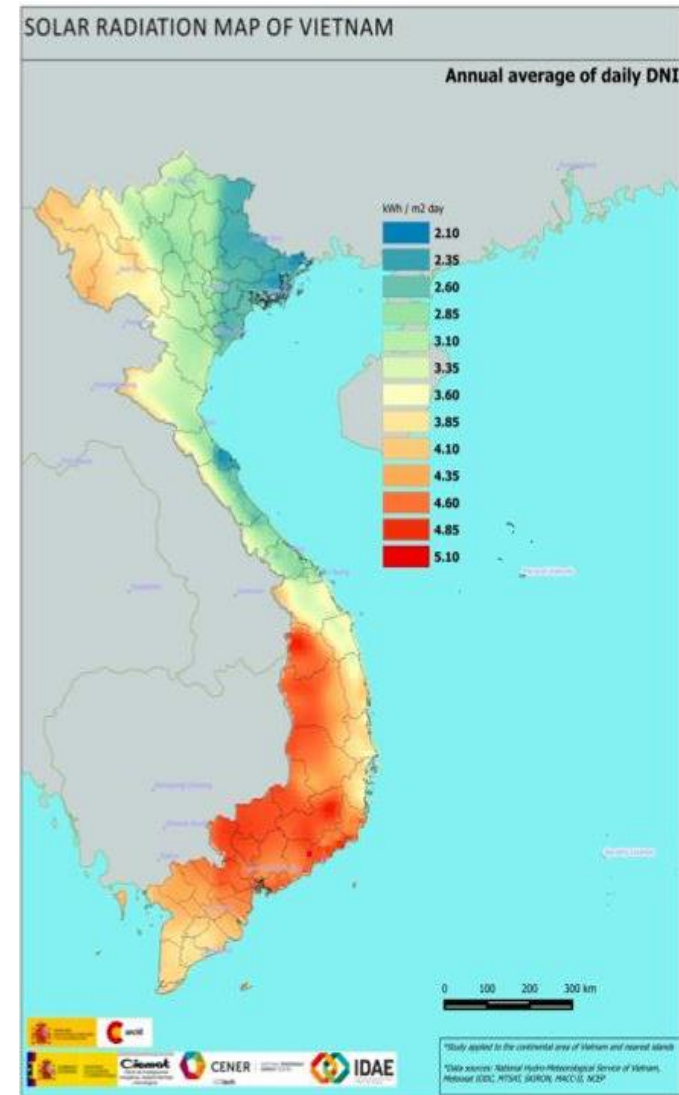
- Solar potential
- Status quo & outlook
- Solar PV Regulatory Framework (Draft)

MOIT/GIZ Vietnam Energy Support Programme

- Renewable Energy Project Development Programme (PDP)

Solar Energy Potential

- Average **direct normal irradiation (DNI)** at **4 - 5 kWh/m² per day**
- Total of sunlight hours are 1,600-2,700 hours/year
- Regions with highest potential: **Southern, and Central Vietnam**
- Data available at: [AECID Spanish cooperation](#)



Status quo & outlook



Solarstrom für Vietnams Parlament



Quang Ngai to switch on \$60m solar power station this year

Update: January, 16/2015 - 09:29



Russian firm plans to build Vietnam's first solar power plant

Thanh Nien News

QUANG NAM - Tuesday, March 24, 2015 10:22

Email Print



Ho Chi Minh City offers financial support to solar power producers



Developing a 25 MW solar power project in Ninh Thuan province

08:15 | 28/08/2015



EVN called on to develop wind and solar energy

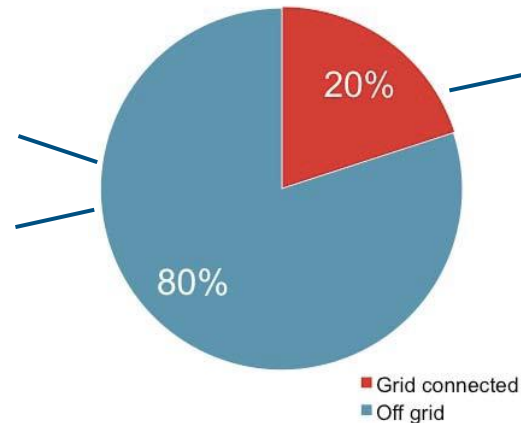
Update: January, 07/2016 - 09:05

Status quo & outlook

- The solar PV market is in a **very early stage**
- At the end of 2014, approximately **4.5 MWp of solar PV capacity** was installed throughout the country
- Potential: **2-5 GW** (residential and commercial rooftops), **20 GW** for ground-mounted PV power plants

60-70% small applications,
such as Solar Home Systems (SHS)
or solar public lighting systems

30-40% are bigger systems,
such as local solar network stations
and off-grid hybrid systems in remote
areas or on islands



a few medium and large
size systems of more than
50 kWp for piloting and
demonstration

Status quo & outlook

Only rooftop installations up to now:

- Only a **few commercial investments** so far such as... Avery Dennison (ex-PUMA, 100kW); Intel Corp. (220kW); X Power (40kWp); Big C Binh Duong (212kWp); DBW (165kWp)...
- Prevailing **business model: Self-consumption**
- **Investment motivation:** CSR, corporate CO₂-reduction programs, green building certification, power tariff increase, energy supply security...



Source: Aschoff Solar

Solar PV Regulatory Framework (Draft)

Current developments open investment options:

- **PV support law** with **net metering** scheme will allow **excess energy remuneration** and improve self-consumption business models.
- **Supporting legal-technical framework** (grid code, standard PPA, etc.) expected.
- **First support programs** already implemented (e.g. HCMC FIT) develop supporting local industry (construction).
- Further **market development/capacity building measures** (e.g. World Bank roof potential assessments, GIZ PDP etc.)



Source: Rainer Brohm/Aschoff Solar

Solar PV Regulatory Framework (Draft)

Draft Decision 654/2015/QD-TTg

	Grid-connected PV systems	Net-metering for rooftop PV
Political targets		4,000 MW (2030)?
Max. installed capacity	100 MW?	500 kW (without license)?
Tariffs	11.2 USCents/kWh (20 years PPA, paid in VND, not indexed)?	15 USCents/kWh for excess of net-balance (10 years; possible extension)? <ul style="list-style-type: none"> • Billing undefined • Connection standards undefined
Other incentives	Duty waiver on all imported RE equipment	Duty waiver on all imported RE equipment

Agenda

Vietnam Energy Market Overview

- Development & Outlook
- Policy and Regulatory Framework
- Electricity tariffs

Solar Energy in Vietnam

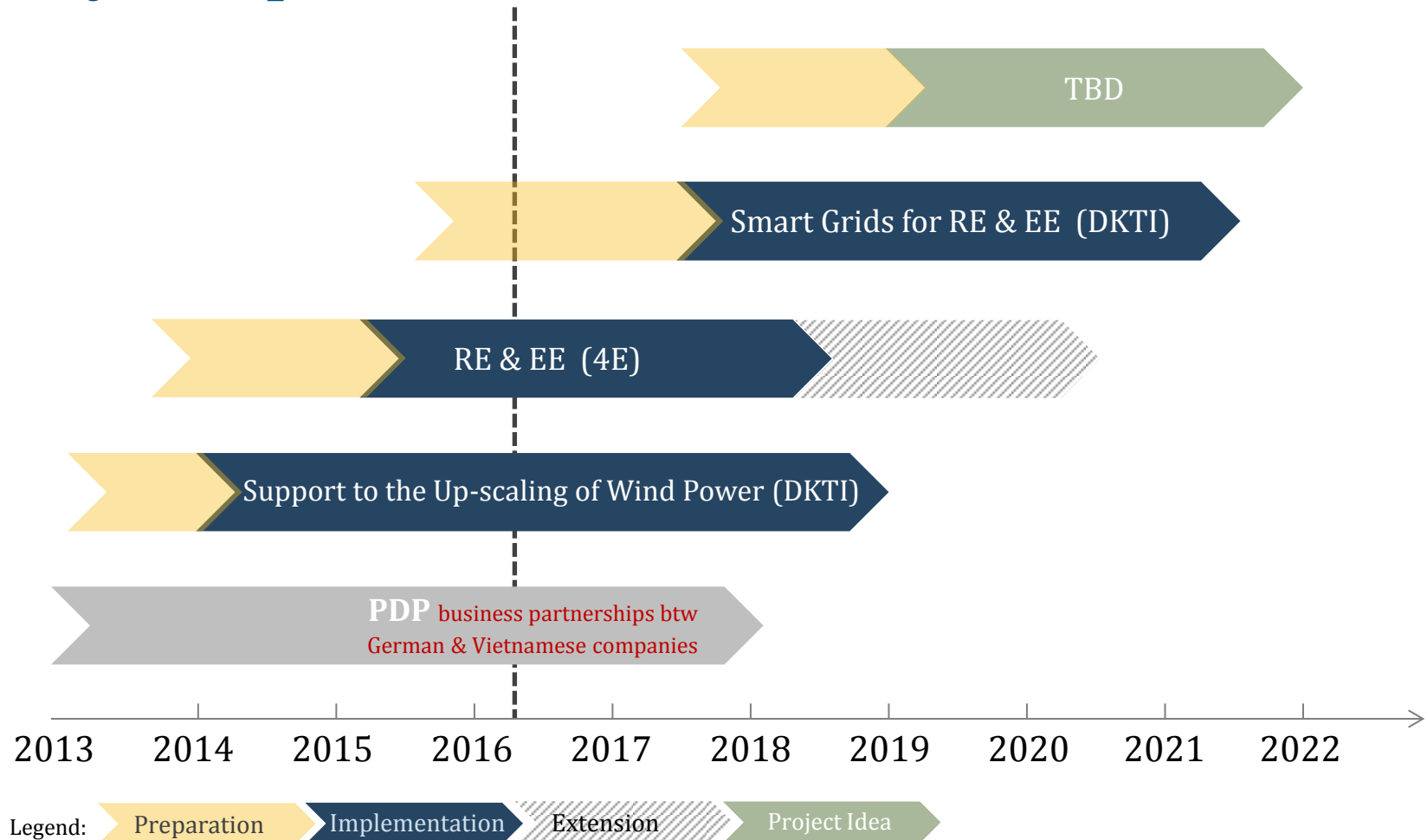
- Solar potential
- Status quo & outlook
- Solar PV Regulatory Framework (Draft)

MOIT/GIZ Vietnam Energy Support Programme

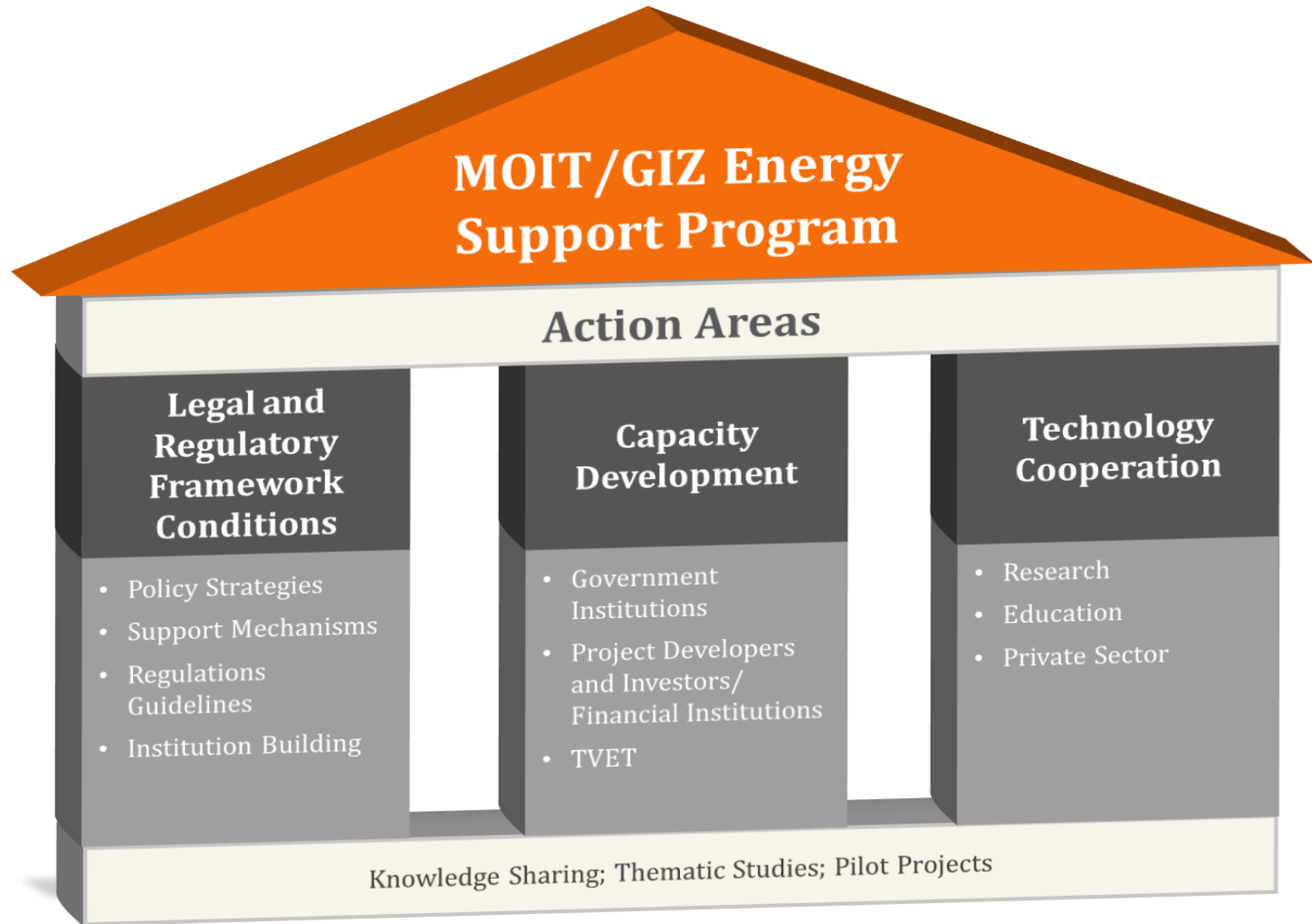
- Renewable Energy Project Development Programme (PDP)

GIZ in Vietnam – Energy Support Programme

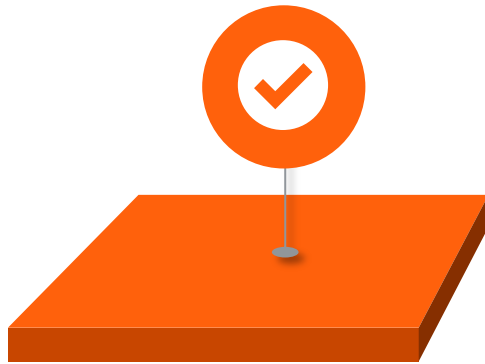
Project Pipeline



MOIT/GIZ Energy Support Programme in Vietnam



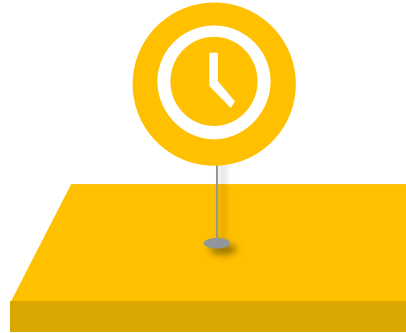
Renewable Energy Project Development Programme



Objectives

PDP, under the “energy solutions – MADE IN GERMANY” initiative:

- Support partnerships between German & local business sectors
- Support reference projects with German technology in developing countries



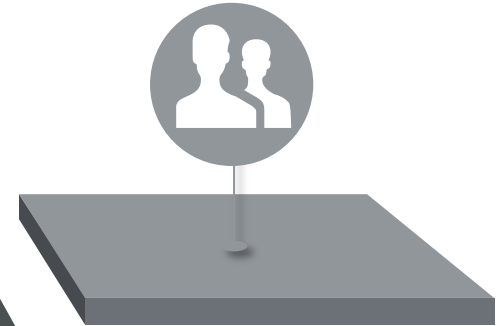
Time Frame

PDP Southeast Asia Phase III:
March 2015- March 2018



Funding Agency

German Federal Ministry for
Economic Affairs and Energy
(BMWi)



Partners

The German Chamber of
Commerce (AHK)
Germany – Trade and Invest
(GTAI)

Renewable Energy Project Development Programme

Services & Activities

Information & Contacts

- **Information Workshop** in Berlin: Solar PV (June 2016)
- **Business trips** of German companies to VN: 12 – 16 September 2016

Reference Projects

- **Project Pre-feasibility study** on Rooftop PV for local manufacturing & commercial companies
- **Solar PV training week** for project developers, engineers (early 2017)

Framework conditions

- Technical consultancy on **Designing PV Net-metering Scheme** (under discussion)
- **Roundtable Discussion on Solar PV framework condition:** German Solar Association – GIZ – GDE (Business trip 2016)

Conclusion: a nascent market for early movers

- Not an easy market (political framework, cultural barriers), but one with high potential
- Solar PV potential high (rooftop and greenfield investments coming)
- Framework conditions under development (hoping for signature in first half of 2016)
- Through BMZ, BMUB, BMWi GIZ supports GoVN since 2009 and renewables market with more than 20 staff
- 1 staff member permanently advising GER companies on market entry – feel free to get in touch 😊





Federal Ministry
for Economic Affairs
and Energy



Thank you for your attention!

Peter Cattelaens

Project Manager
MOIT/GIZ Energy Support Programme Viet Nam

peter.cattelaens@giz.de
+84(0)903210014

Facilitator