



Ministry of Industry and Trade



Implemented by

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH



Developing wind power projects in Vietnam: From regulatory to technical considerations

Power and Electricity World Vietnam 2017

Content

- 1. Guidelines on legal procedures of wind power investment**
- 2. MOIT/GIZ Wind measurement campaign from 2012 – 2017: assessment of resource**
- 3. Wind project development clinic (PDC): technical concerns and expert's support**

Guidelines on legal procedures of wind power investment

Investment into wind power projects in Vietnam

Needs a for a guidelines

- ▀ Too many steps
- ▀ Applied differently in different provinces
- ▀ Too complicated and must follow different regulations: **38**
 - ▀ Legal documents related to power system: **14**
 - ▀ Legal documents related to wind energy: **2**
 - ▀ Legal documents related to investment: **2**
 - ▀ Legal documents related to construction, environment: **15**
 - ▀ Legal documents related to completion & operation: **5**

Project development procedure

WIND POWER INVESTMENT GUIDELINES PROJECT DEVELOPMENT

PHASE A

PRELIMINARY DEVELOPMENT

7 PROCESS
Min: 30 – 31 months

8 AGREEMENTS
From 25 to 29 weeks

PHASE C

IMPLEMENTATION

3 PROCESS
Min: 15 days

0 AGREEMENTS

PHASE E

DECOMMISSIONING

To be developed



PHASE B

DEVELOPMENT

6% PROCESS
Min: 12 – 23 months

11 AGREEMENTS
From 50 to 57 weeks

PHASE D

OPERATION AND MAINTENANCE

2 PROCESS
Min: 15 days

3 AGREEMENTS
Up to 36 weeks

STAKEHOLDERS

- Project developers/ investors
- Vietnamese authorities: PM, MOIT, GDL, ERW, EVN and its institutions, DOT, DPL, COMRE, Provincial People's Committee, local governments.
- Land owners, community



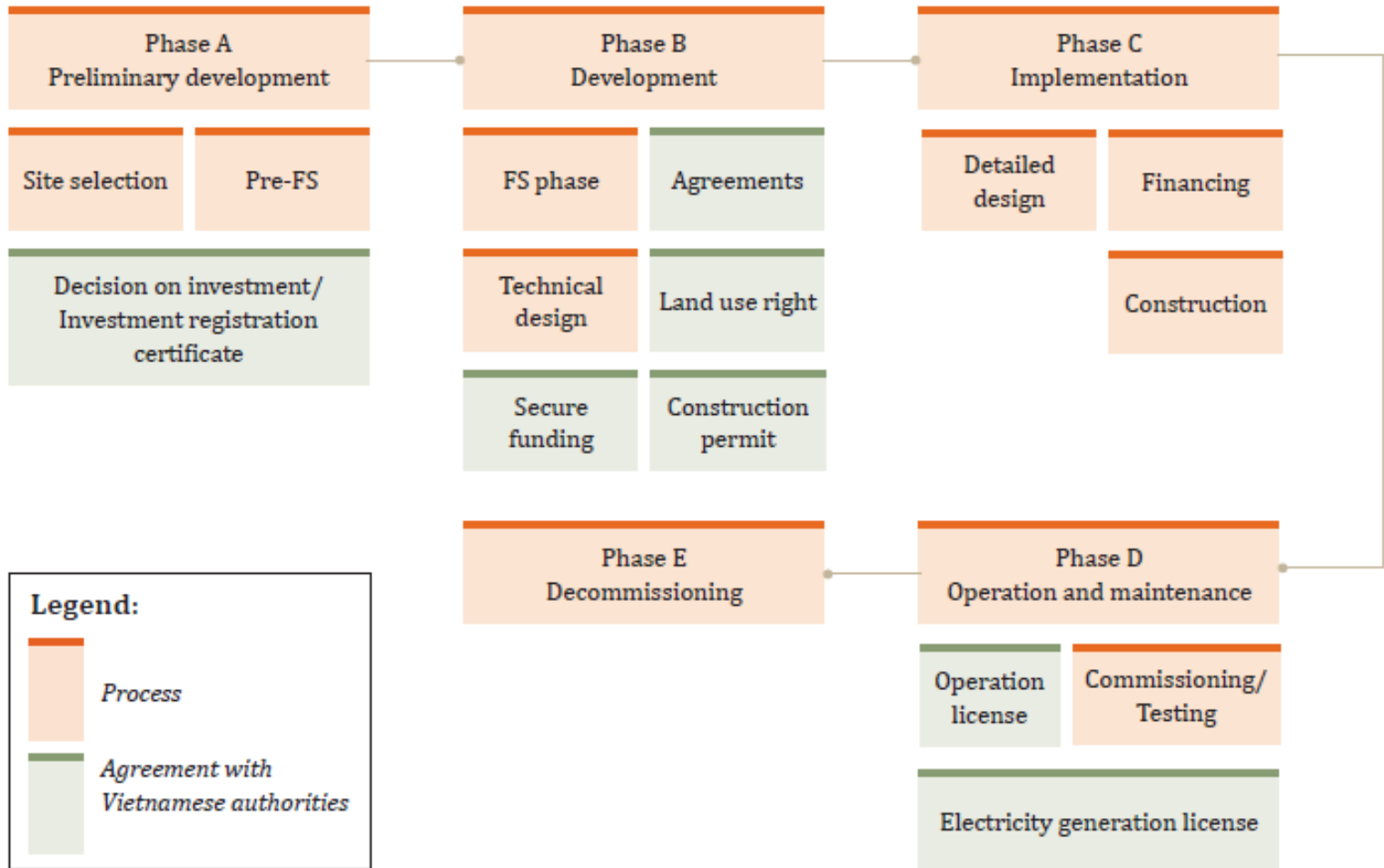
LEGAL DOCUMENTS RELATED: 42

- Power systems: 14
- Wind power: 2
- Investment in VN: 3
- Construction & environmental: 13
- Completion & operation: 5



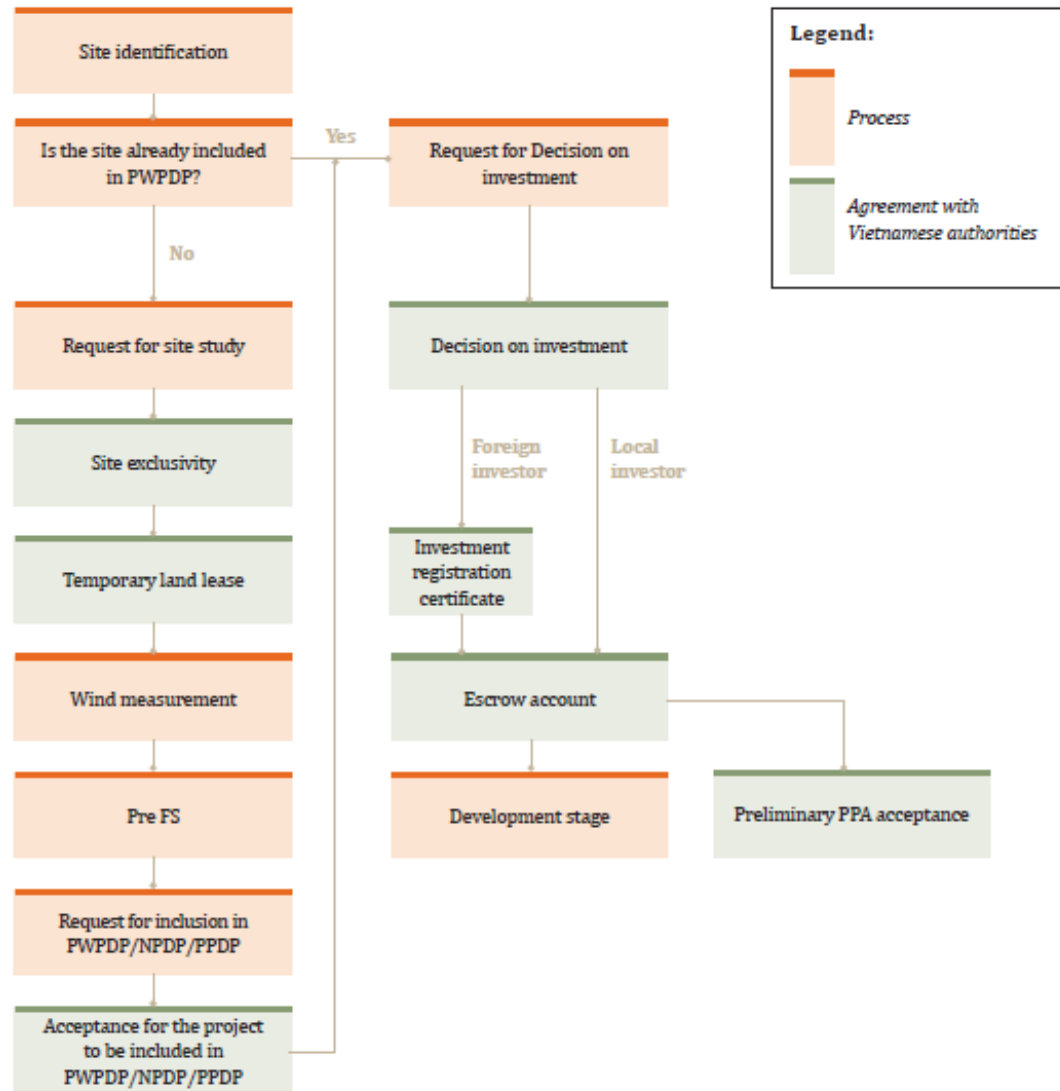
OTHER IMPORTANT INFORMATION

Overview of Wind Investment Guidelines



Process – Preliminary development phase

Critical steps



Process – Preliminary development phase

Site survey & Wind measurement



Requirements for Wind measurement:

- Minimum measurement period is 12 consecutive months;
- Projects of more than 50 MW, at least 2 wind measurement masts (met masts)
- Recording of all measured data shall be at least in 10- min intervals



Process – Preliminary development phase

Inclusion in Power Development Plan

Request for inclusion in the PWPDP/ NPDP/ PPDP

- Project > 50 MW: included in the NPDP
- Project ≤ 50 MW: included in the PWPDP/ PPDP
- Process:
 - + Project > 50 MW: request from GDE/ MOIT, PM; to the NPDP
 - + Project ≤ 50 MW: request from Provincial PC, MOIT to the PWPDP/ PPDP.

Contents of the requested documents:

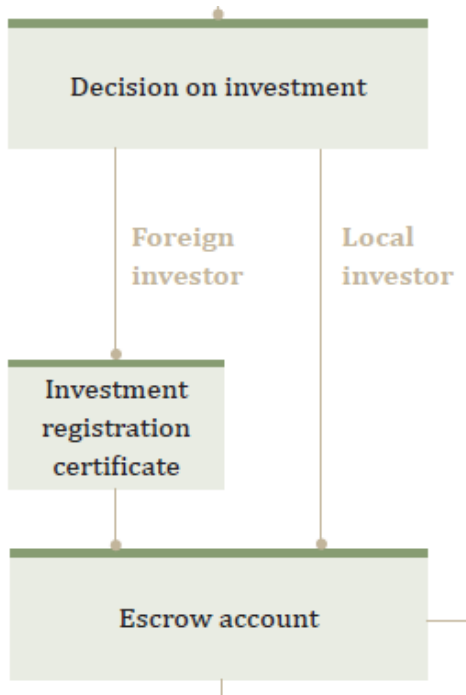
- + Rationale and description of the project: key figures in terms of size, capacity, energy production, location and layout, land requirement.
- + Connection grid alternatives, analysis of the impact to power network.
- + Preliminary total investment amount, determination of socio-economic impacts.
- Time line:
 - + For NPDP: around 120 working days
 - + For PWPDP/ PPDP : around 60 working days

Request for inclusion in
PWPDP/NPDP/PPDP

Acceptance for the project to
be included in PWPDP/NPDP/
PPDP

Process – Preliminary development phase

Escrow account

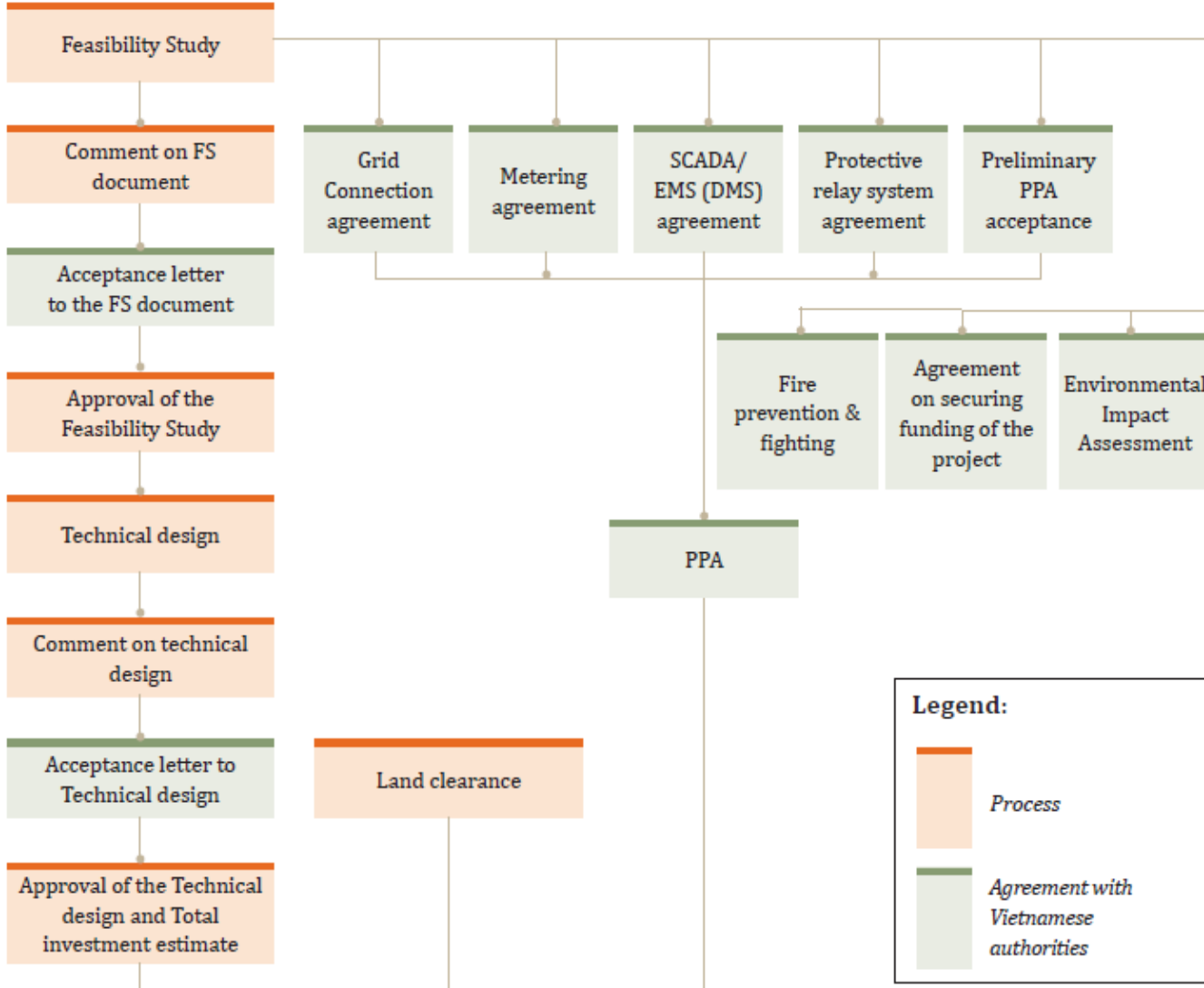


The deposit is divided into **three levels** depending on volume of total project investment. Wind power project belongs to special preferential industries, a reduction of 50% for the value of escrow account can be applied as compared to normal projects.

- Projects \leq 300 mil. VND: 1.5%
- Projects from 300 – 1,000 mil. VND: 1.0%
- **Projects > 1,000 mil. VND: 0.5%**

Process – Development and Implementation phase

Critical steps



Legend:

- Process
- Agreement with Vietnamese authorities

**MOIT/GIZ Wind measurement
campaign from 2012 – 2017:
Assessment of resource**

Wind measurement campaign

Objectives

- Reliable wind data: wind atlas, provincial wind power development plan, open data
- Capacity building on technical requirements and standards

Approach

- National and international consultant
- IEC standard of installation, commission and report
- Ammonit equipment; changed after 3 years
- Site visit and criterion to select sites

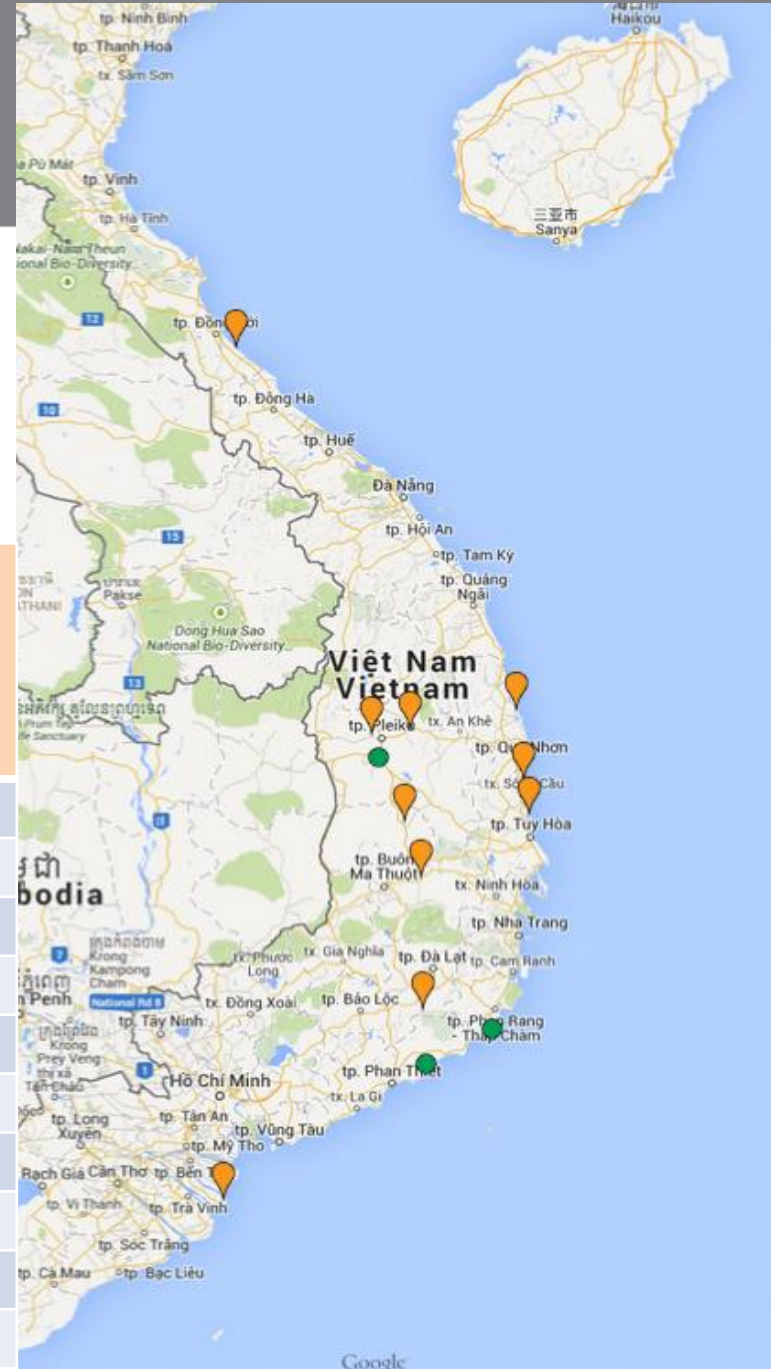
Assessment

At height of 80m, sensors at 40, 60 and 80m

2012-2015: 10 sites

2015-2017: 5 sites

No.	Station	Province	Average wind speed results (period 2012-2015)
1	Ia Der	Gia Lai	5,44
2	Kon Dong	Gia Lai	5,57
3	Ea Phê	Dak Lak	5,19
4	Ea Drăng	Dak Lak	4,41
5	Đà Loan	Lam Dong	5,10
6	Hải Ninh	Quang Binh	5,68
7	Mỹ Thành	Binh Dinh	5,56
8	Xuân Hòa	Phu Yen	5,09
9	An Ninh Đông	Phu Yen	5,88
10	Thạnh Hải	Ben Tre	6,15



Thank you

MOIT/GIZ “Support to the Up-Scaling
of Wind Power” Project

mai.vu@giz.de



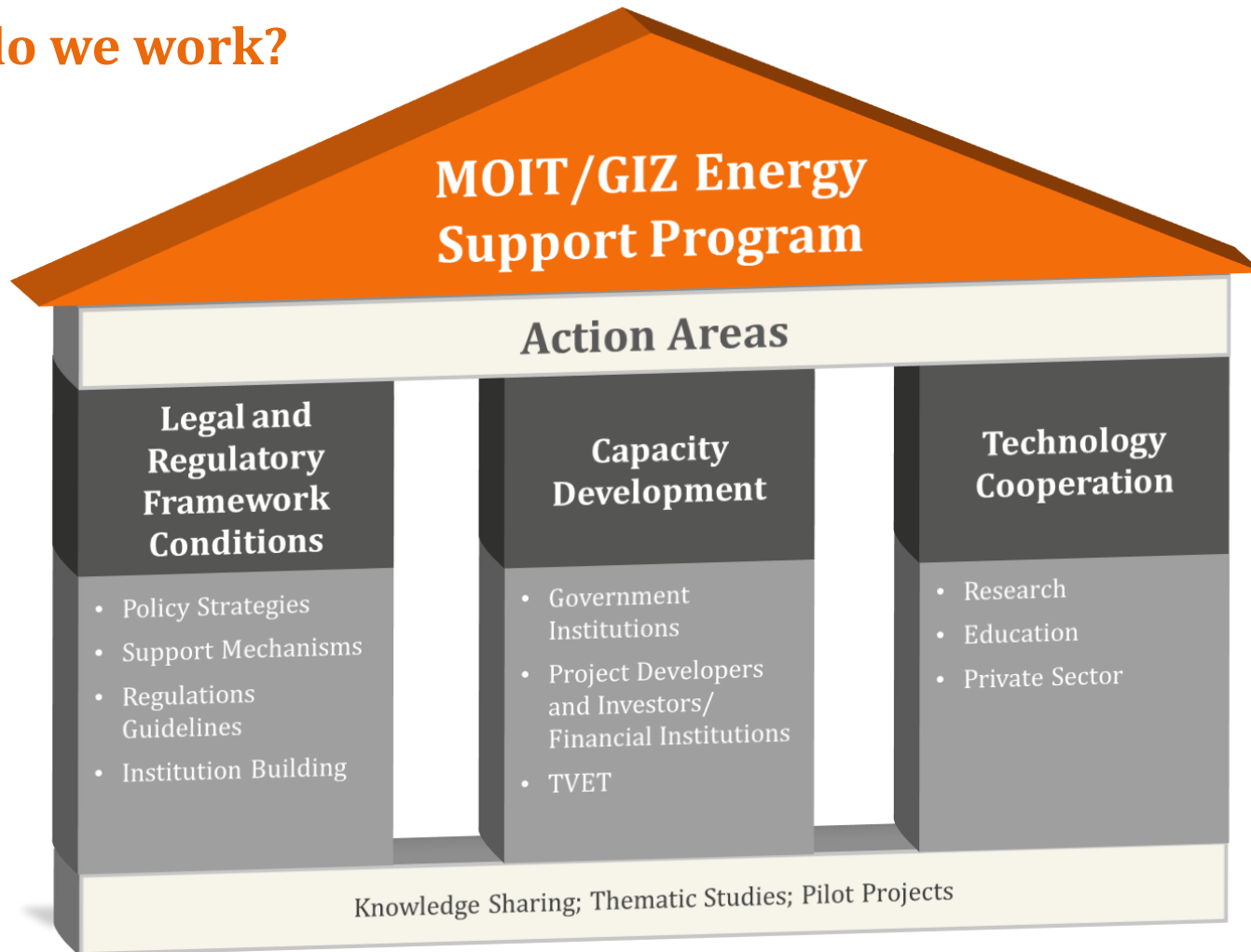
**Wind project development clinic:
technical concerns and expert's
support**

Agenda

1. Overview of MOIT-GIZ-Lahmeyer **capacity building mission**
2. Insights in **GIZ wind development clinic (PDC)**

Overview of MOIT-GIZ-Lahmeyer mission

How do we work?



Organization for delivery of Capacity Development



Ministry of Industry and Trade



Hợp tác
Đức

DEUTSCHE ZUSAMMENARBEIT

Implemented by

giz
Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

Lahmeyer
(3 intl. + 3 local experts)



RENAC
(2 intl. experts)

Financial trainings

BZEE
(1 intl. expert)

Wind turbine technician trainings



Technical trainings

Capacity Development for the Up-Scaling of Wind Power in Viet Nam

Capacity Development Support to the Up-scaling of Wind Power (Wind DKTI)

- **Capacity needs assessment** / capacity development strategy
 - Trainings on **project development** (technology, measurements, project design, etc.)
 - Trainings on **project financing** with local commercial banks (due diligence, project valuation, risk assessments)
 - Advanced trainings for local **consultants**
 - Trainings for **Ministry authorities** (DoITs)
 - Trainings for **EVN-NLDC** on power grid issues (study trip to GridLab in Germany, practical expert training on grid integration of wind farms)
 - **Wind Power Class** for universities in Hanoi, HCMC, Danang, Can Tho
 - Technical training for **O&M (TVET)**
- **Project Development Clinic (PDC)** – response facility for local developers and banks)

Lead expert of PDC - Roland Ries



1984-1991

Master Course **Nuclear** Physics, Johannes Gutenberg University of Mainz, Germany

1991-1995

Research **Atmospheric** Physics, University of Mainz (Mesoscale and Microscale Modelling of Wind Flow and Air Pollution Dispersion)

since 1993

Employee **Lahmeyer International** GmbH (Department **Wind Energy**)

since 2001

assigned to Lahmeyer International **Korean Office**

since 2015

Head of Lahmeyer International Korean Office

since 2016

assigned to Vietnam to execute Capacity Development for Wind Power under GIZ

→ 2 Research → 7 years Head Office → 15 years Korea → 2 years Vietnam

(26 years in wind)

Contact

roland.ries@de.lahmeyer.com or capdev-wind-vietnam@giz.de

PDC – Philosophy and Purpose

- **Knowledge base for WPP Development**
- Assist particularly **domestic WPP developers**
- Provide **Technical Support and Advice** for specific project issues
- **One-stop E-Mail contact** to access our German network of wind power experts
- Service **free of charge** during the Up-Scaling of Wind Power Project



PDC – Examples of expected inquiries

Siting/Planning /Permit Issues

- Provide evidence cases from other countries

Wind Measurement Issues

- Advise specifications of measurement for bankable requirements;
- Review suspicious wind data and advice for troubleshooting

Project Documentation Issues

- Respond to any specific question in relation to preparation of a bankable FS Report or a Tender Specification for Wind Turbines



PDC – Terms of Use

Language

- The preferred language is English, because our German wind power experts have to understand the issue;
- Inquiries sent in Vietnamese may need longer response time

Information & Confidentiality

- Depending on the nature of the inquiry GIZ will require certain documentation of the issue in form of project relevant documents and data (e.g. installation report or data samples of wind measurement)
- GIZ commits to have measures in place to ensure that all received documents and data are kept internal and confidential, however, GIZ cannot be held responsible for any documents or data becoming known to public by others than our internal organization or our engaged expert network

PDC – Inquiry Form

1. Personal information:

Company data and contact person - optional information	
Company/Institution Name/Department:	<input type="text"/>
Last Name, First Name:	<input type="text"/>

2. Your questions/issues (fill or attach separate documents):

No.	Question/issue	More explanation and background if needed
1		
2		
3		
4...		

3. PDC's responses and discussion:

No.	PDC's responses	Your opinion
1		
2		
3		
4...		

PDC – Contact

Initial contact shall be by E-Mail to: capdev-wind-vietnam@giz.de



"THE BAD NEWS IS YOU HAVE A DISEASE THAT ONLY A HIGHLY-PAID SPECIALIST CAN PRONOUNCE."

PDC insights 1/5

Topic	Category	Services provided
already constructed wind farm with foundation issues	Consultant	advice on handling /responding to the following issues: (1) Repairs were performed, but no documentation on procedure and execution (2) As-built situation different from design (3) Insufficient available QA/QS documentation
intent to build small wind farm to promote tourism	Developer	pre-assessment of wind situation for 2 sites
planning wind farm, status: MM installation	Developer	wind data analysis and support in using wind farm planning software
Design review	Consultant	<ul style="list-style-type: none"> independent wind data analysis review of proposed wind farm layouts (developer /turbine supplier layouts)
planning to develop wind farm from scratch	Developer	Site visit, pre-assessment of wind resource, advice for further steps
planning wind farm, status: MM installation	Developer	<ul style="list-style-type: none"> advice on measurement location advice on measuring equipment specification general support to ensure bankable wind measurement

PDC insights 2/5

Topic	Category	Services provided
feasibility report review	Consultant	review wind potential assessment part of report
project funding	Bank	advice on structure and content of a Project Information Memorandum and required key documents for project valuation
planning wind farm, status: wind measurement completed	Developer	independent wind data analysis
intent to install small wind turbine on university campus	Research	<ul style="list-style-type: none">• provide wind data and reports from GIZ campaign• connect to concerned authorities for questions on permitting
learning project finance	Bank	provide materials and models for self-study of project finance topics
turbine market overview, how to chose the right turbine model for a site	Research	provide relevant available specification documents of wind turbines from suppliers who are active in the VN market
planning wind farm, status: wind measurement completed	Developer	site visit, wind data analysis, preparation and sharing of WindPRO model including CFD wind map, sample calculations for various layouts

PDC insights 3/5

Topic	Category	Services provided
considering investing in two planned wind farms with completed FS reports	Investor	<ul style="list-style-type: none"> re-evaluation of feasibility based on different support (e.g. tariff) scenarios general review of projected AEPs incl. losses general advice on technology choice (in terms of IEC Class) advice on key drivers for project value
planning wind farm, status: Pre-FS completed, seeking investment support	Developer	<ul style="list-style-type: none"> advice on strategic options /timings for selling project advice on location for new additional wind measurement
various questions (1) how to chose a suitable wind turbine, (2) rotor blade maintenance, (3) negative environmental impacts of wind farms in VietNam	Research	provide answers with explanations, back data, evidence documents
acquisition of wind farm planning software	Research	overview on required software /modules for their purpose and its cost
reviewing a small planned wind farm and curious about its feasibility	Research	pre-assessment of wind conditions, sample calculations with different wind turbine models, discussion of results

PDC insights 4/5

Topic	Category	Services provided
wind farm in early planning stage, wants general learning about wind power	Developer	provide training materials and sample reports
planning wind farm on industrial park area	Developer (foreign)	<ul style="list-style-type: none"> • site visit, advice on wind resource, turbine choice, overall feasibility • comment on proposed PPA /metering options
wind resource pattern of VietNam	Research	discuss /teach on wind flow dynamics on different scales
offshore cable lines	Research	provide information on construction of cable lines for offshore projects
seeking information on ESS for planned island project	Developer	provide show cases with capacity, maker, cost from Korean projects
Wind turbine blade design	Research	provide guidance to relevant articles and applied software

PDC insights 5/5

Topic	Category	Services provided
planning nearshore wind farm - various questions	Developer	<ul style="list-style-type: none">• wake loss differences onshore <--> offshore• give examples for installation methods in intertidal areas (e.g. Pakistan)• general advice on selecting suitable foundation types• advice on offshore specifics, such weather windows for installation and O&M, specific turbine requirements, cost of sea cable vs. pier solution, etc.
wind farm in tendering stage	Developer	advice on preparing RfQ to turbine suppliers
considering acquiring a wind farm in early planning stage	Developer (foreign)	opinion on expected wind resource in the area based on data from GIZ campaign, sharing of available information
acquisition of wind farm planning software	Consultant	overview on required software /modules for their purpose and its cost

Thank you

GIZ Capacity Development

capdev-wind-vietnam@giz.de

