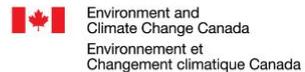




ENERGY
TRANSITION
PARTNERSHIP

Energy Transition Business Centre of Excellence

October 2023



About ETP



History



Fund Manager

15
Years
2020-2035

Duration of the Partnership



Countries of Operations



Organization

ETP Strategic Outcomes



Policy alignment with climate commitments to achieve net zero emissions

We provide high level technical advisory support to improve RE and EE policies, regulations and laws. We work towards aligning energy policy targets with climate action commitments.



De-risking renewable energy and energy efficiency investments

We aim to unlock large-scale renewable energy investments by national and international financial institutions, while increasing de-risking of projects and making them bankable.



Expanding sustainable resilient infrastructure - smart grids

We provide technical solutions to expand smart grids, enable evidence-based planning for national grid systems, and provide capacity building for grid operators.



Knowledge, skills, awareness and capacity development

We developed a comprehensive platform to foster knowledge . We build technical and technology expertise through education programmes and establish state-of-the art centres of excellence.

Impact



Empower Indonesia's main electricity company, PLN, and relevant government agencies to embrace cleaner energy practices, aligning business strategies and policies for a sustainable shift.

Outcomes



A transformed PLN with empowered leadership, informed workforce, and aligned strategies driving a successful transition to cleaner energy in Indonesia.

Outputs



an executive leadership and change management program, widespread energy transition training for PLN's workforce, and exposure to international best-practices and standards to achieve PLN's energy transition goals.

What: The project empowers PLN to transition to cleaner energy sources through strategic development and organizational change management.

Why: Ensuring sustainability and positioning PLN as a proactive player in Indonesia's evolving energy landscape to reduce greenhouse gas emissions by promoting a shift to energy transition business.

How: Providing executive leadership programs, comprehensive workforce training, and strategic alignment with international standards, enabling PLN to lead the energy transition effectively.



Project Duration:

Initial 16 months, with potential extension up to 36 months

Beneficiary:

PLN (main beneficiary),
Ministry of Energy and Mineral Resources (MEMR),
Ministry of National Development Plan (Bappenas),
Coordinating Ministry of Maritime and Investment Affairs
(CMMIA),
National Energy Council (DEN)

Objectives:

Develop business strategies for cleaner energy adoption.
Foster a knowledgeable and committed workforce within PLN.
Align PLN's strategies with international best practices.

Area of learning:

10 subjects, grouped into:

- Global context of energy transition and climate change
- Renewable Energy and Transition Technology
- Grid Technology and Systems
- Support and Enablers



Executive Leadership and Change Management Program

Empowering PLN's top and middle management with skills and strategies to drive and navigate the energy transition effectively.



PLN-Wide Energy Transition Capacity Building

Enabling all PLN employees to understand, embrace, and contribute to the company's shift towards cleaner and sustainable energy practices.

Additional support from development partners **is required** to enhance the ETP support and cover a diverse array of energy transition topics, ensuring employees are well-equipped to actively contribute to PLN's sustainable energy goals.



Exposure to International Best-Practices and Standards

Inform PLN on globally successful approaches, aiding in the efficient achievement of their energy transition objectives.

Additional support from development partners **is welcomed** to scale diversify the best practices to different destination, enriching the PLN perspective to different best-practises around the world



Duration: 12 months (excluding 3 months preparation, 1 month evaluation) for approximately 80 middle to top-level managers and 20 people from the government agencies. A separate president-class will be provided for BOD of PLN and its subsidiary in a more consolidated form.

Components:

- Strategic programs exposing and exploiting energy transition business opportunities.
- Focus on financial sustainability through technology implementation.
- Exposure to the latest materials and information on energy transition.
- Facilitating informed decision-making for energy transition investments within PLN.

Training Format:

- Bespoke courses by global top institutions (in-person/virtual).
- Benchmarking with established global energy utilities.
- Group projects and case studies with expert guidance.
- Expert supervision for case studies and final presentations.
- Presenting actionable ideas for PLN's business transformation.



General term Component 1

program duration	12	months
total participant	120	people
batch duration	6	months
batch per year	2	batches
participant per batch	60	people
class per batch	5	classes
participant per group/class	12	people

Executive Leadership and Change Management Program



	Month - 1	Month - 2	Month - 3	Month - 4	Month - 5	Month - 6
Batch-1 Months 4-9 Batch 2 Months 10-15	Thematic group 1 (fundamental)	Thematic group 2	Thematic group 3	Thematic group 4	Group Work Project and Consultation	Consultation, Final Presentation and Evaluation
Week 1	The global context of the energy transition	Renewable energy acceleration I (solar, wind)	Smart grid and control system I	Energy procurement	Ideation (offline)	Pitching preparation I (consultation)
Week 2	Environmental sustainability and climate change	Renewable energy acceleration II (solar, wind, hydro, geothermal)	Smart grid and control system II	Enablers, including financing, regulations, and certifications	Mentor Consultation (offline)	Pitching preparation II (consultation)
Week 3	Coal-fired power plant operational options (retirement, repurposing, retrofitting) I	Emerging energy technologies I (hydrogen, nuclear, carbon capture, etc.)	Power system modelling I	Non-electricity business opportunities in energy sector I	Sharpened the business ideas	Final Presentation (offline)
Week 4	Coal-fired power plant operational options (retirement, repurposing, retrofitting) II	Emerging energy technologies II (hydrogen, nuclear, carbon capture, etc.)	Power system modelling I	Non-electricity business opportunities in energy sector II	Mentor Consultation	Evaluation & Batch Closing
	<i>Additional: 2 hours per month masterclass to PLN BOD (one teacher), totaling 24 hours over 12 months</i>					

Table shows the indicative courses for the curricula for batch 1 of program 1. The same syllabus will be taught to batch 2 participants in month 7-12

PLN-Wide Energy Transition Capacity Building



Duration:

10 months program for 240 people:

- 1-months mandatory courses
- 3-months for each level, total of 3 levels

Component:

- Strengthening PLN's capacity through energy-transition training.

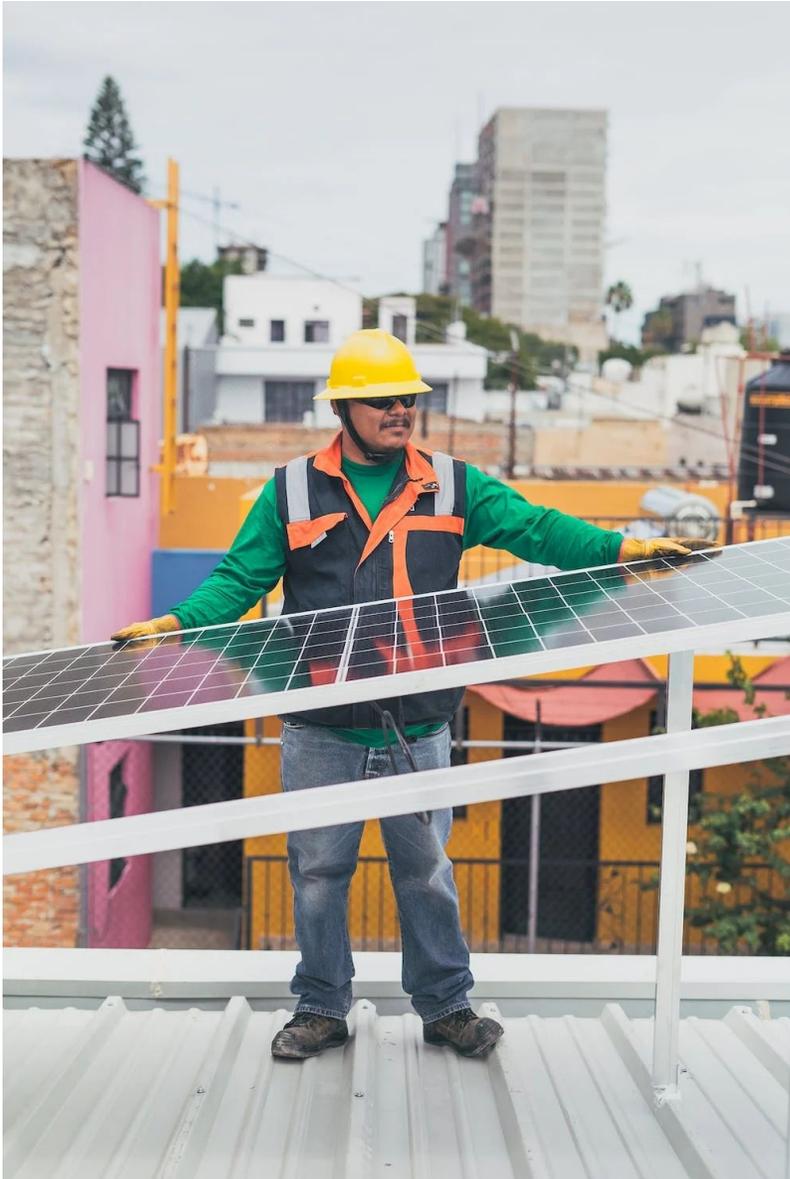
Training Format:

- 6 Thematic syllabus with three expertise levels:
 - Renewable Energy Acceleration
 - Emerging Energy Technologies
 - Smart Grid and Control System
 - Power System Modeling
 - Enablers - energy procurement, financing, regulations, and standard compliance
 - Non-Electricity Business opportunities in energy sector
- Evaluation tests after completing each level.
- Live (online and offline) training for a limited group and online recorded course available to all PLN employees.
- Integration into PLN's digital learning platform.

PLN-Wide Energy Transition Capacity Building



	month-1	month-2	month-3	month-4	month-5	month-6	month-7	month-8	month-9
Renewable Energy Acceleration (REA)	Mandatory course	REA 1: Knowledgeable				REA 2: Practitioner			
Emerging Energy Technologies (EET)	Mandatory course	EET 1: Knowledgeable				EET 2: Practitioner			
Smart Grid and Control System (SGCS)	Mandatory course	SGCS 1: Knowledgeable				SGCS 2: Practitioner			
Power System Modeling (PSM)	Mandatory course	PSM 1: Knowledgeable				PSM 2: Practitioner			
Enablers - energy procurement, financing, etc (ENAB)	Mandatory course	ENAB 1: Knowledgeable				ENAB 2: Practitioner			
Non-Electricity Business Opportunities (NEB)	Mandatory course	NEB 1: Knowledgeable				NEB 2: Practitioner			
Objectives	Awareness & Basic Knowledge (Knowledgeable) <ul style="list-style-type: none"> - Train entry-level professionals to promote awareness and knowledge understanding. - Prepare a capable workforce in taking up new and clean energy technology to support energy transition 					Basic Skill (Practitioner) <p>Improve basic skills, including the use of a range of relevant hardware and software resources and tools</p>			



1. Objectives:

To provide comprehensive information on prospective international certification initiatives, comparative studies (study tour), internship programs, and scholarships as well as possible funding from bilateral and multilateral development partners.

2. Delivery:

The consultant shall assign a dedicated officer to the PLN HR division, focused on gathering, filtering, and presenting relevant information to PLN management. Additionally, the officer will facilitate necessary communication for PLN to undertake these activities.

3. Tasks/activities:

- Stocktake and mapping of international certification, study tour, internship, and scholarship opportunities
- Create a guideline for the execution of such a program
- Identify additional funding opportunities that can support project implementation
- Host, manage and monitor the implementation of the international certification, study tour, internship, and scholarship programs.
- Determine and support relationship-building and twinning programs with strategic organizations such as utilities, universities, IOs, etc.



ENERGY
TRANSITION
PARTNERSHIP

Thank you.

Join ETP and be part of
shaping a clean tomorrow

Sumali sa ETP at maging bahagi ng paghubog
sa isang malinis ng kinabukasan ● Bergabunglah
dengan ETP dan menjadi bagian untuk membangun
masa depan yang lebih bersih ● Tham gia
ETP và cùng kiến tạo một ngày mai trong lành

www.energytransitionpartnership.org



Annex 1: Indicative Curriculum for Renewable Energy Acceleration



Group 1A	Level 1	Level 2	Level 3
REA: Solar	Solar Resource Assessment, System Capacity, and Generation	Site Assessment and Permitting	Project Specific Grid Planning*
	Overview of System Planning, Permitting, and Grid Access	System Sizing, Component Selection, and Design	Addressing Environmental and Social Challenges (from HSE and ESG, below)
	Overview of Environmental and Social Impacts (from HSE/ESG, below)	Grid Access and Grid Codes for High Voltage Grid*	Distribution Grid Upgrades
	Site Selection, System Capacity, and Generation	Environmental and Social Impact Assessment (from HSE/ESG, below)	
	Metering Options and Consumer Economics	Project Feasibility Analysis	
	Impacts on Distribution Grid		
REA: Wind	Wind Resource Assessment, Power Density, Shear and Speed Extrapolation	Measurement Equipment, Wind Speed Variability, Distribution, Shear Profiles	Wind Farm Planning and Design
	Overview of Wind Project Planning, Permitting, and Grid Access	Site Assessment and Permitting	Project Specific Grid Planning*
	Overview of Environmental and Social Impacts (from HSE/ESG, below)	Grid Access and Grid Codes*	Addressing Environmental and Social Challenges (from HSE and ESG, below)
		Environmental and Social Impact Assessment (from HSE/ESG, below)	
		Project Feasibility Analysis	

The curriculum is designed to build a solid foundation in solar and wind energy, progressing from fundamental concepts to advanced considerations, encompassing technical, environmental, and social aspects. The emphasis on addressing challenges and sustainability underscores the importance of responsible renewable energy development for a sustainable future.

Annex 2: Indicative Curriculum for Emerging Energy Technology

Group 1B	Level 1	Level 2	Level 3
EET: Hydrogen	Hydrogen utilization	Fuel cells for stationary and mobile applications	Carbon capture, utilization, and storage with hydrogen
	Types of hydrogen utilization technologies	Hydrogen combustion engines	Hydrogen-based chemical production
	Environmental impacts of hydrogen utilization	Hydrogen turbines	Industrial and residential heating applications
	Market and policy for hydrogen utilization	Hydrogen blending in natural gas pipelines	Hydrogen in transportation, including aircraft and ships
EET: Fuel Cell	Introduction to fuel cell utilization	Transportation Applications (components and systems)	Advanced transportation applications
	Types of Fuel Cells and their Applications	Stationary Power Generation Systems (design & integration)	Grid-scale power generation and energy storage
	Advantages and challenges of fuel cell applications	Portable and micro-power applications	Emerging applications
	Market for fuel cell utilization	Market analysis and deployment strategies	Performance analysis and optimization

This structured curriculum equips learners with a strong foundation in hydrogen technology and fuel cell utilization, progressing to advanced applications and market dynamics. It emphasizes sustainability, efficiency, and strategic planning, preparing individuals to contribute effectively to the rapidly evolving landscape of hydrogen-based technologies.

Annex 3: Indicative Curriculum for Smart Grid Control System

Group 2A	Level 1	Level 2	Level 3
Smart grid and control system	Intro to Phasor Measurement Units (PMU)	PMU and Communication Network for Wide Area Monitoring (WAM)	WAM Architecture
	Intro to Distribution Grid Automation (DA)	DA for Fault Detection and Efficiency Optimization	Conservation Voltage Reduction & Integrated Voltage/Reactive Power (Volt/VAr)
	Intro to Smart Inverters	Smart Inverters for VRE Integration	Smart Inverter Specifications and Trends
	Intro to Advanced Metering Infrastructure (AMI)	AMI for Demand Response (DR)	Manual and Automated DR Programs
	Intro to Cybersecurity	Cybersecurity Implementation for Smart Grid	Advanced Cybersecurity Topics and Trends

This curriculum aims to equip individuals with a solid understanding of smart grid technologies and control systems at varying levels of depth. Starting with foundational knowledge, it gradually progresses to advanced concepts, ensuring learners are well-prepared to contribute to the rapidly evolving field of smart grid technology and its critical role in modernizing the energy sector.

Annex 4: Indicative Curriculum for Power System Modelling

Group 2B	Level 1	Level 2	Level 3
Power system modelling	Introduction to different power generation technologies.	Load Forecasting Techniques	Transmission Planning
	Overview of power generation, transmission, and distribution.	Demand Side Management (DSM)	Distribution Planning
	Concept of generation and load distribution	Generation Mix Planning & Optimization	Integration of Renewable Energy Sources
	Load forecasting, demand-side management, and capacity planning.	Integrated Resource Planning (IRP): Scenario & Sensitivity Analysis	Smart Grid Technologies and Applications

This curriculum is designed to equip individuals with a thorough understanding of power system modeling, planning, and modernization. Beginning with foundational concepts, it progresses to intermediate and advanced levels, incorporating crucial aspects such as load forecasting, renewable energy integration, and smart grid technologies. The comprehensive approach ensures learners are well-prepared to contribute to the dynamic field of power systems and drive sustainable energy solutions.

Annex 5: Indicative Curriculum for Enablers

Group 3A	Level 1	Level 2	Level 3
Enablers, including energy procurement, financing, regulations, and standard compliance	Financial Model Basics (CAPEX, OPEX, Tariffs, Financing)	Using Financial Models	Innovative Procurement Approaches
	Main Actors in Value Chain (Investors, Developers, EPC and O&M Contractors)	Investors, Developers and PPAs	Cost Allocation of Grid Improvements
	Intro to PPAs and Project Financing	Finance Structures (Subsidiaries and SPVs)	
	Business Negotiation	Green Finance (Loans, Bonds, Carbon Credits)	

This curriculum equips learners with a comprehensive understanding of the enablers and financial aspects crucial in the energy sector. Starting with foundational knowledge, it progressively delves into financial modeling, investment strategies, project structuring, and innovative procurement approaches. The curriculum emphasizes the essential role of finance in driving energy projects and addresses sustainability through green finance mechanisms. Learners are prepared to navigate the intricate financial landscape of the energy sector and contribute to sustainable energy initiatives.

Annex 6: Indicative Curriculum for Non-Electricity Business Opportunities

Group 3B	Level 1	Level 2	Level 3
Non-electricity business opportunities in energy sector	Energy Efficiency business opportunities	Introduction to renewable energy certificates (RECs)	Emerging technologies in Renewable Energy
	EV Charging & Infrastructures	Introduction to carbon credits, and other environmental certificates related to clean energy production.	Digitalization and Energy Management Systems
	Business Negotiation	Energy Consulting and Advisory Services	

This curriculum is designed to offer a well-rounded understanding of diverse business opportunities within the energy sector. Beginning with foundational knowledge, learners progress to exploring specialized business opportunities in energy efficiency, renewable energy certificates, and emerging technologies. The curriculum encapsulates the dynamic and evolving landscape of the energy sector, preparing individuals to explore entrepreneurial ventures, consultancy services, and sustainability initiatives, contributing to a greener and more efficient energy future.