COORDINATING MINISTRY FOR ECONOMIC AFFAIRS
THE REPUBLIC OF INDONESIA

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INCLUSIVE ENERGY TRANSITIONS IN SOUTHEAST ASIA AND BEYOND

Cross-Regional Learning from South Asia

10–12 February 2026 • Jakarta, Indonesia

In collaboration with UNOPS, The University of Melbourne, NOSSAL INSTITUTE

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ENERGY TRANSITION PARTNERSHIP

Powering Prosperity and Enabling Sustainability in South East Asia

Developing a Skills Roadmap for a Just and Inclusive Transition

February 2026

UNOPS AFD Federal Ministry for Economic Affairs and Climate Action Department for Energy Security & Net Zero Environment and Climate Change Canada / Environnement et Changement climatique Canada Australian Government Department of Climate Change, Energy, the Environment and Water CIFF CHILDREN'S INVESTMENT FUND FOUNDATION SEQUOIA CLIMATE FOUNDATION

Specialised Workforce for Indonesia's Future Transition in Energy (SWIFT)

Project Summary:

- Develop a roadmap to help Indonesia build a skilled, future-ready workforce for its energy transition.
- Review institutional roles and governance mechanisms to ensure coordinated and effective workforce planning in the energy sector.

Focus Areas:

- Reskill and upskill the workforce to ensure workers can adapt to the changing energy landscape.
- Establish a pipeline of skilled professionals to meet the growing demand in the RE and EE sectors.
- Strengthen Governance of key ministries (MEMR, MECRT, MOM, MOI) to ensure effective delivery of skilling programmes
- Drive increased public awareness and enthusiasm for RE and EE solutions, highlighting job opportunities

Indonesia's Energy Transition

- Several plans have communicated targets for **increasing new and renewable energy (NRE) penetration** and expanding **energy efficiency** in Indonesia.

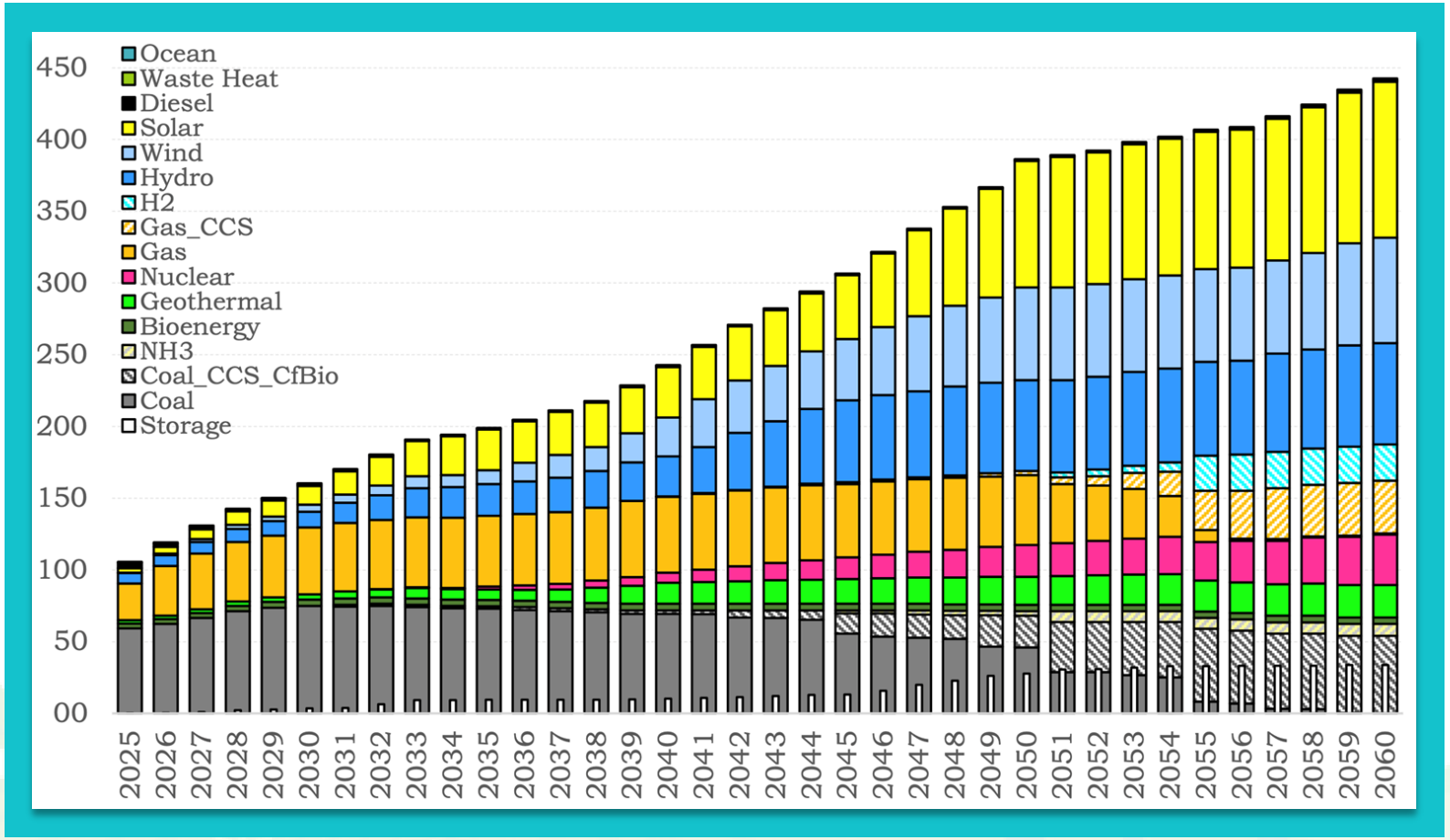
New and renewable energy (NRE)

NRE	Fossil fossil
Solar	Diesel
Ocean	Gas H2
Waste heat	Gas + CCS
Wind	Gas
Hydro	Ammonia
Nuclear	Coal + CCS + biomass cofiring
Geothermal	Coal
Bioenergy	
Storage	

- The draft National Energy Plan (Kebijakan Energi Nasional, KEN) has set a target of 58-61% NRE for the country's primary energy supply by 2050 and 70-72% by 2060.
- RUKN 2025-2060 has set a target of 443 GW, with 73.6% powered by NRE.

Power generation capacity increase

- Overall power generation capacity growth until 2060, according to the RUKN 2025-2060.
- Significant capacity increase in NRE from 2025-2060
- Retrofits for gas- and coal-fired plants
- Some job losses in coal (including retrofitted CFPPs)

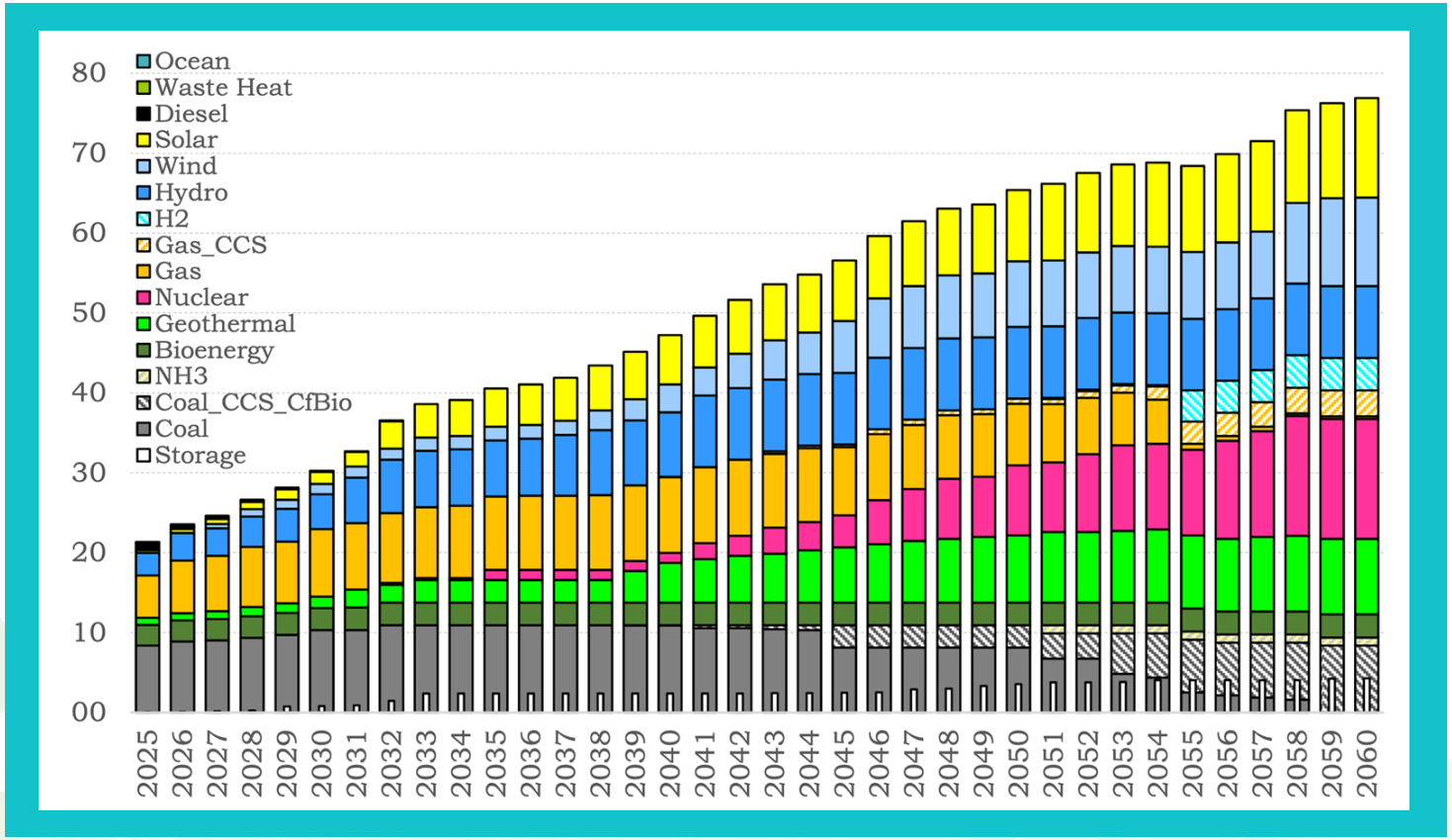


Source: MEMR, *Rencana Umum Ketenagalistrikan Nasional*, 2025

Power generation capacity increase

- Regional capacity increase provided for:
  - Sumatra
  - Java and Bali
  - Kalimantan
  - Sulawesi
  - Maluku, Papua, and Nusa Tenggara (MPNT)

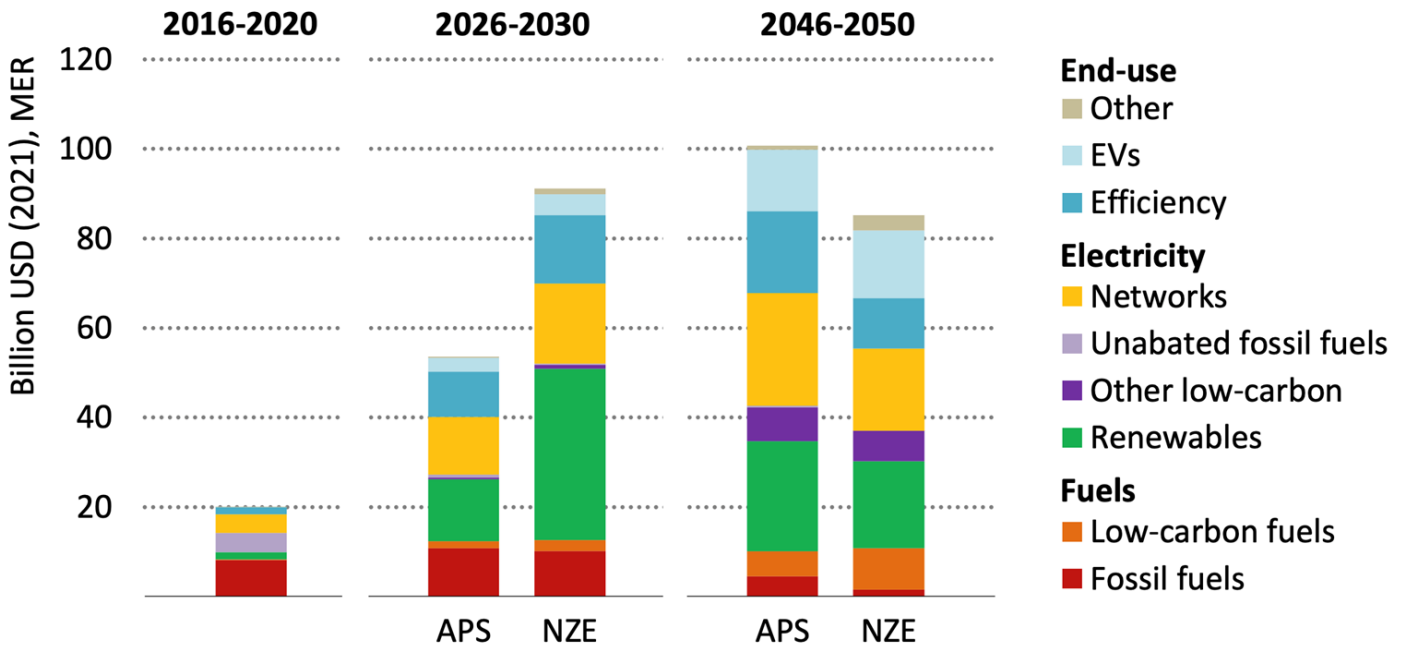
Projection of Regional Electric Power Generation Capacity in Sumatra



Source: MEMR, *Rencana Umum Ketenagalistrikan Nasional*, 2025

Energy efficiency

- Little data on energy efficiency plans and strategies in Indonesia
- Investment in energy efficiency climbs to USD 10 billion annually by 2030, a fivefold increase on today.



Source: MEMR and IEA, *An Energy Sector Roadmap to Net Zero Emissions in Indonesia*, 2022

Workforce Demand Projections

Overview

Workforce Demand

- Effective planning for workforce development requires an adequate understanding of the trajectory of the job market, including the **types of jobs, how many, and where they are expected to be needed**.

- The number of **direct jobs** from planned activities in power generation and energy efficiency were calculated based on **employment factors**.

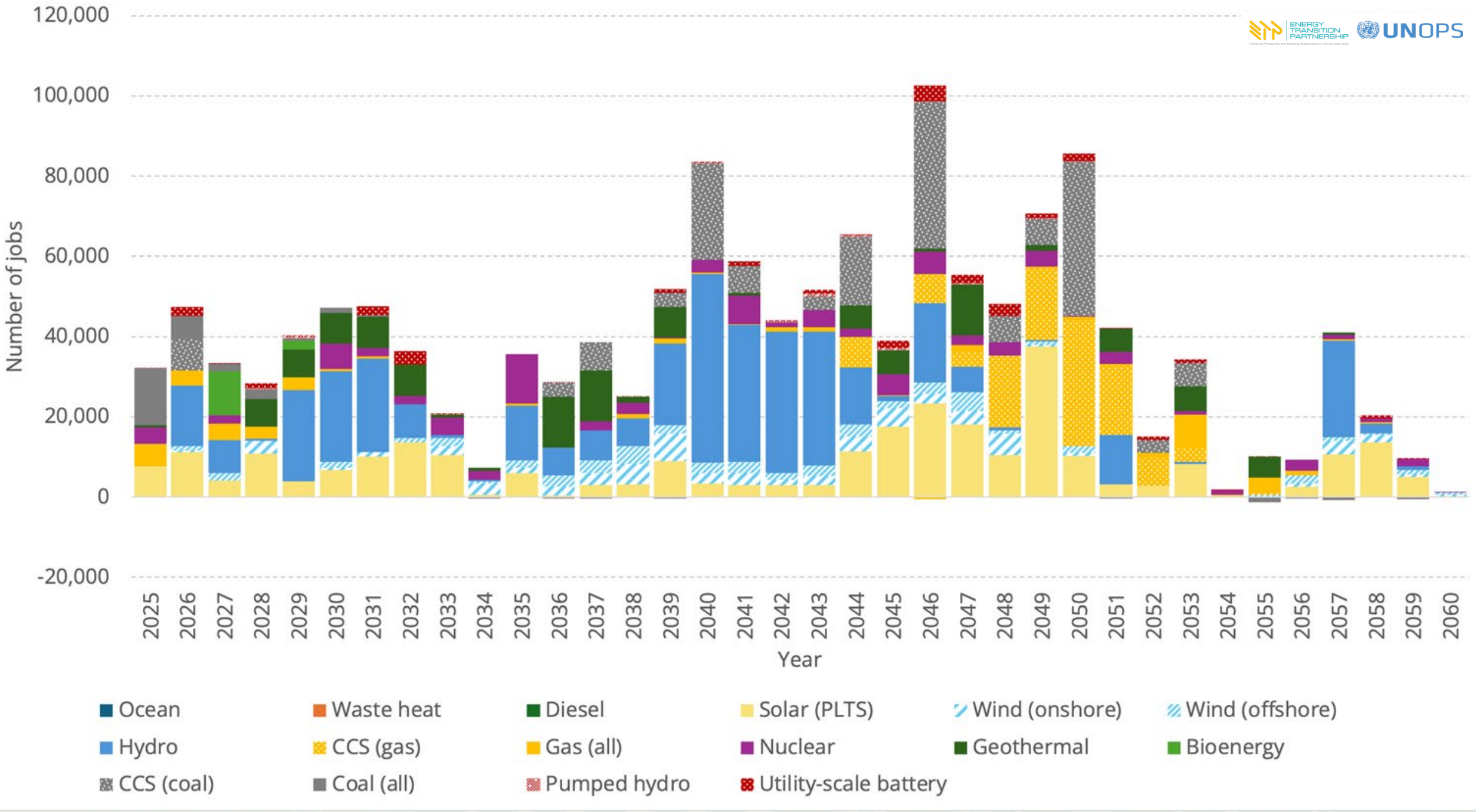
Workforce Demand Projections

Power generation

National Projections

- The number of jobs were estimated for **(1) the construction and installation** **(2) the operation and maintenance** of the various technologies planned to be integrated into Indonesia's energy system

Total number of jobs to be created by 2060	1.41 million
Technologies with largest job creation	• Hydro • Solar • CCS (coal)


120,000
100,000
80,000
60,000
40,000
20,000
0
-20,000
Number of jobs
2025
2026
2027
2028
2029
2030
2031
2032
2033
2034
2035
2036
2037
2038
2039
2040
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2048
2049
2050
2051
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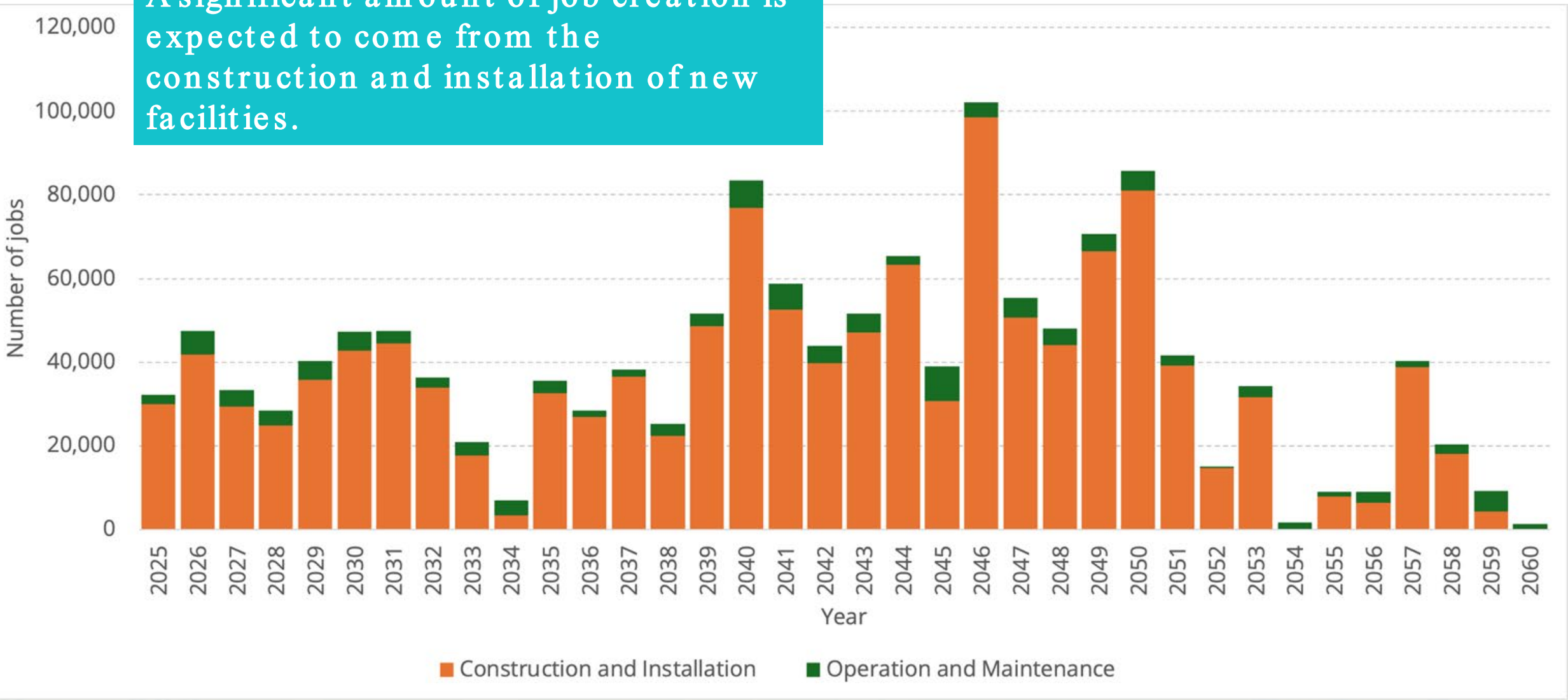
2053
2054
2055
2056
2057
2058
2059
2060
Year
Ocean
Waste heat
Diesel
Solar (PLTS)
Wind (onshore)
Wind (offshore)
Hydro
CCS (gas)
Gas (all)
Nuclear
Geothermal
Bioenergy
CCS (coal)
Coal (all)
Pumped hydro
Utility-scale battery

A significant amount of job creation is expected to come from the construction and installation of new facilities.



Workforce Demand Projections

Power generation (by sub-national region)

Job creation per region

KALIMANTA
377,000 jobs created

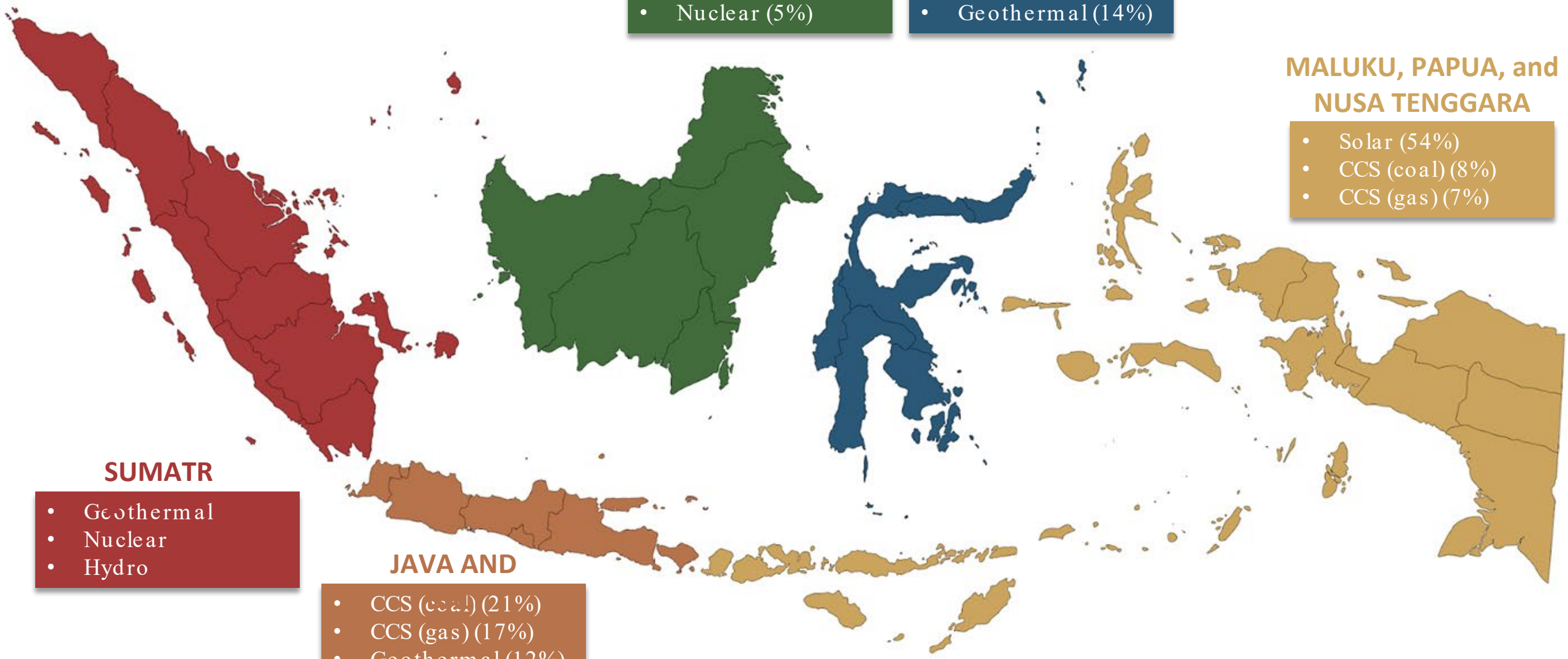
SULAWESI
131,000 jobs created

MALUKU, PAPUA, and NUSA TENGGARA
313,000 jobs created

SUMATR
259,000 jobs created

JAVA AND
414,000 jobs created

Highest job creating-NRE sector per region



KALIMANTA

- Hydro (78%)
- Solar (6%)
- Nuclear (5%)

SULAWESI

- Hydro (29%)
- CCS (coal) (16%)
- Geothermal (14%)

MALUKU, PAPUA, and NUSA TENGGARA

- Solar (54%)
- CCS (coal) (8%)
- CCS (gas) (7%)

SUMATR

- Geothermal
- Nuclear
- Hydro

JAVA AND

- CCS (coal) (21%)
- CCS (gas) (17%)
- Geothermal (12%)

Workforce Demand Projections

Power generation (by technology)

	SOLAR	WIND ONSHORE	WIND OFFSHORE	HYDRO	GEOTHERMAL
TOTAL NUMBER OF JOBS TO BE CREATED	285,000	69,000	54,000	389,000	120,000
YEARS OF GREATEST JOB CREATION	2045 - 2050	2038 - 2048	2037 – 2050	2039 - 2043	2028; 2031; 2036-2038
SUB-NATIONAL REGION WITH LARGEST JOB CREATION	MPNT	Java and Bali	Java and Bali	Kalimantan	Sumatra; Java and Bali
PERCENT OF TOTAL	58.5%	57.8%	58.5%	75.2%	58.5%

	NUCLEAR	CCS GAS	CCS COAL	STORAGE PUMPED HYDRO	STORAGE UTILITY-SCALE BATTERIES
TOTAL NUMBER OF JOBS TO BE CREATED	94,000	114,000	171,000	3,000	29,000
YEARS OF GREATEST JOB CREATION	2035 – 2060	2048 – 2051	2040; 2046; 2050	2048 – 2051	2031-2032; 2045 – 2048
SUB-NATIONAL REGION WITH LARGEST JOB CREATION	Sumatra	Java and Bali	Java and Bali	Java and Bali	MPNT
PERCENT OF TOTAL	43.8%	61.6%	51.4%	87.3%	52.2%

Breakdown of jobs

SOLAR

KKNI LEVEL	CONSTRUCTION & INSTALLATION		OPERATION & MAINTENANCE	
7-9 EXPERT	Civil engineers and foremen	15,991	Safety experts	2,954
	Health and safety experts	5,562	Industrial, electrical and telecommunication engineers	2,230
	Electrical and mechanical engineers	2,642	Administrative and accountant personnel	202
	Environmental experts	2,086	Lawyers, experts in energy regulation	129
	Quality-control experts	695	Management	64
4-6 TECHNICIAN/ ANALYST	Construction workers and technical personnel	246,818	Operators	1,243
			Technical personnel	1,177
1-3 OPERATOR			Construction workers	7,323

Breakdown of jobs

WIND (ONSHORE)

KKNI LEVEL	CONSTRUCTION & INSTALLATION		OPERATION & MAINTENANCE	
7-9 EXPERT	Engineers and construction foremen	3,137	Telecommunication engineers	1,315
	Health and safety experts	2,483	Industrial engineers	1,244
	Environmental experts	1,176	Safety experts	533
	Electrical and mechanical engineers	621	Administrative and accountant personnel	444
	Logistics experts	392	Lawyers, experts in energy regulation	284
	Quality control experts	163	Environmental experts	284
			Management	142
4-6 TECHNICIAN/ ANALYST	Construction workers and technical personnel	43,459	Operators	3,910
	Professionals managing cranes, trucks, etc.	4,901	Technical personnel	533
1-3 OPERATOR			Construction workers	782

Breakdown of jobs

WIND (OFFSHORE)

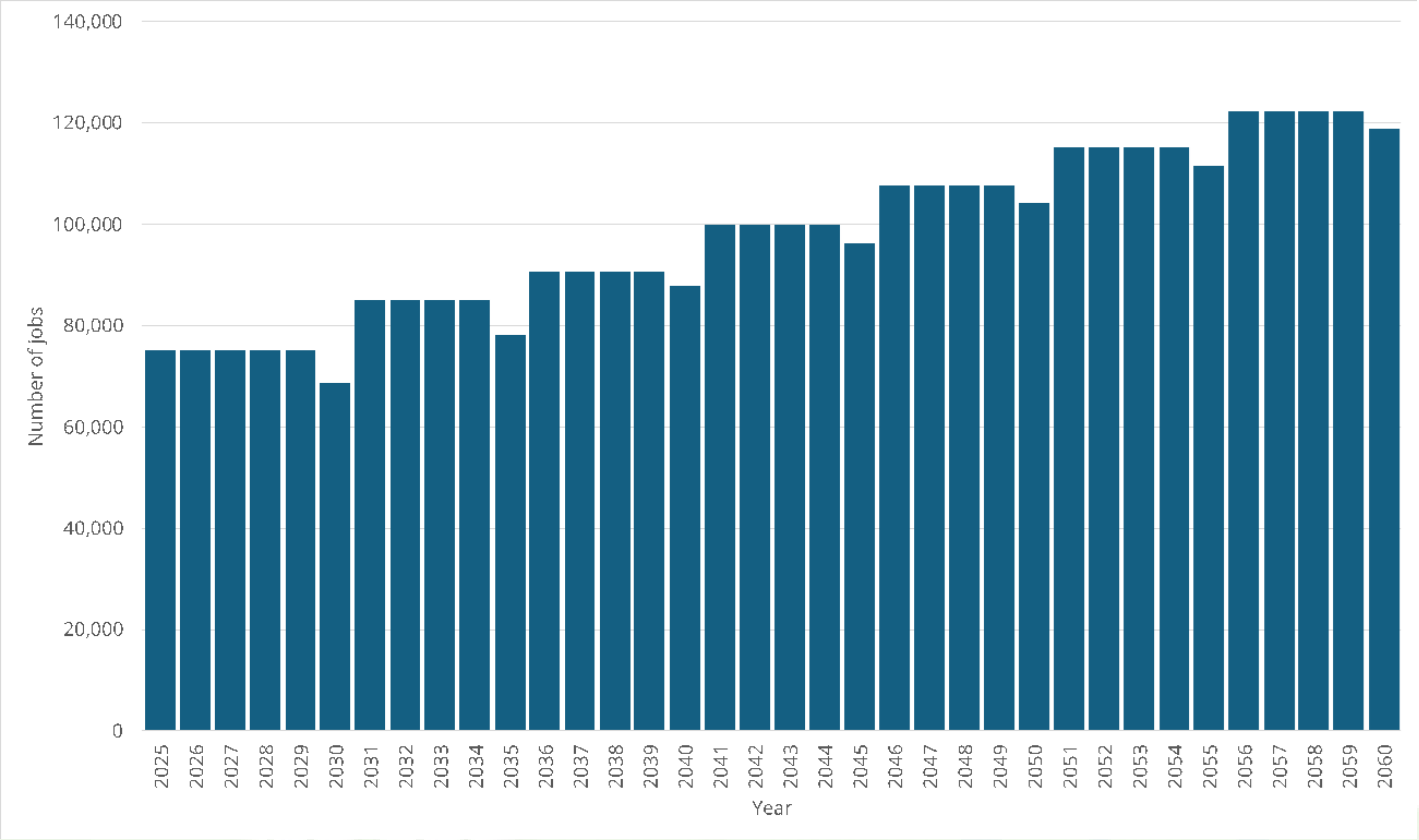
KKNI LEVEL	CONSTRUCTION & INSTALLATION		OPERATION & MAINTENANCE	
7-9 EXPERT	Naval, electric and electronic engineers	1,278	Administrative personnel	2,007
	Quality, Health and Safety experts	690	Industrial, mechanical and electrical engineers	1,662
	Regulation experts	681	Telecommunication and computer engineers	1,082
			Legal experts	1,004
			Safety experts	659
			Environmental experts	502
			Naval Engineers	329
4-6 TECHNICIAN/ ANALYST	Crane operators	2,471	Technicians	3,292
	Drilling systems operators	1,401	Civil Workers	3,292
	Cable plough operators	605	Helicopter pilots	659
	Trenching ROV operators	589	Crane operators	659
	Jetting systems operators	303		
	Technicians	86		
1-3 OPERATOR	Ship crew	25,146	Ship crew	3,292
			Site security and cleaning personnel	1,317

Workforce Demand Projections

Energy efficiency

National projections

- By 2060, a total of **3.53 million jobs** are expected to be created in energy efficiency, based on estimated investment needs in energy efficiency provided in MEMR's Net-Zero Emissions Roadmap.

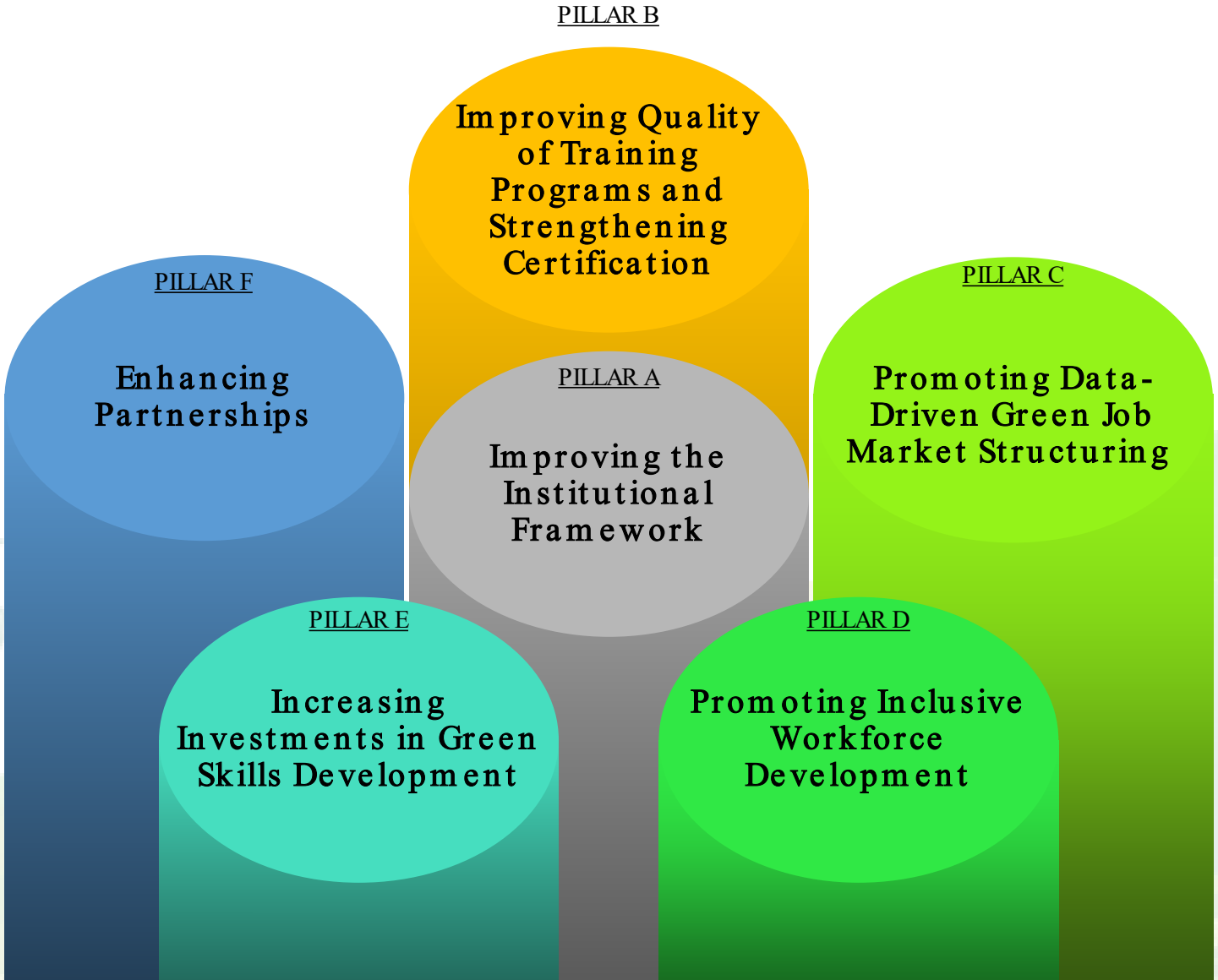


Strategic Framework for Workforce Development

Vision

To realize a inclusive workforce development
and build a skilled workforce
to power Indonesia's transition to clean energy

Key Pillars of the National Roadmap



Improving the Institutional Framework

PILLAR A

Improving the Institutional Framework

- The success of policy recommendations for specialized workforce development will ***rely on a framework of institutions with distinct but related roles and responsibilities***.
- The coordination of these institutions can ***avoid inefficiencies, redundancy, and policy misalignment***, leading to a more effective and enduring process for workforce development.

Improving Quality of Training Programs and Strengthening Certification

PILLAR B

Improving Quality of Training Programs and Strengthening Certification

- This pillar ensures that Indonesia's workforce is ***equipped with globally competitive, industry-relevant skills through modernized training and robust certification***.
- By ***aligning education with labor market needs and leveraging international partnerships***, Indonesia can build a future-ready workforce for its energy transition.

Promoting Data-Driven Green Job Market Structuring

PILLAR C

Promoting Data-Driven Green Job Market Structuring

- This pillar lays the groundwork for a future-ready, adaptive labor force by ***anchoring workforce development in robust, real-time, and granular labor market intelligence***.
- Through the establishment and institutionalization of a dynamic ***labor market information system (LMIS)***, Indonesia will be able to ***anticipate skill demands, reduce labor market mismatches, and foster inclusive and efficient human capital deployment*** across its vast archipelago.

Promoting Inclusive Workforce Development

PILLAR D

Promoting Inclusive Workforce Development

- Inclusive workforce development aims to ***increase access to groups that have not previously had substantial access to training programs and therefore relevant employment opportunities***.
- This considers ***underrepresented groups such as women, as well as communities in more remote regions*** that historically have not been offered opportunities for education in training in the energy sector.

6. Increase Inclusivity in Long-Term Workforce Planning

Recommendation :

Integrating Inclusivity in Long-Term Workforce Planning

Integrate gender equality, regional access, social inclusion and support for people with disabilities as key components in workforce planning.

Implementing the Lifelong Learning Model

Optimize modular and flexible training pathways that allow learners to complete programs in smaller, structured units. This approach can balance education with individual needs such as work or family responsibilities.

Roles and Obligations of Ministries/Agencies:

Ministry of Manpower	Oversee modular training pathways at BLK, align programs with SKKNI, and provide flexible learning options for workers and vulnerable groups.
Ministry of Primary and Secondary Education	Integrating the concept of lifelong learning in the vocational school curriculum through modular training and certification pathways.
Ministry of Higher Education, Science and Technology	Encourage universities and polytechnics to implement flexible learning models, such as online courses & hybrid programs, and micro-credentials.
Department of Manpower, Department of Energy and Mineral Resources, & Technical Implementation Unit	Implement modular training at regional level, adapting the program to the workforce needs of the renewable energy sector.
The Ministry of Women Empowerment and Child Protection	Ensure gender equality in labor policies, develop training with a gender perspective, and monitor women's participation in the renewable energy sector.
Ministry of Social Affairs	Support the inclusion of people with disabilities and marginalized groups, ensure training accessibility, and develop a socio-economic monitoring framework.
NGO	Advocate for gender equality, social inclusion, and disability rights in workforce programs, support implementation, and contribute to monitoring and evaluation.

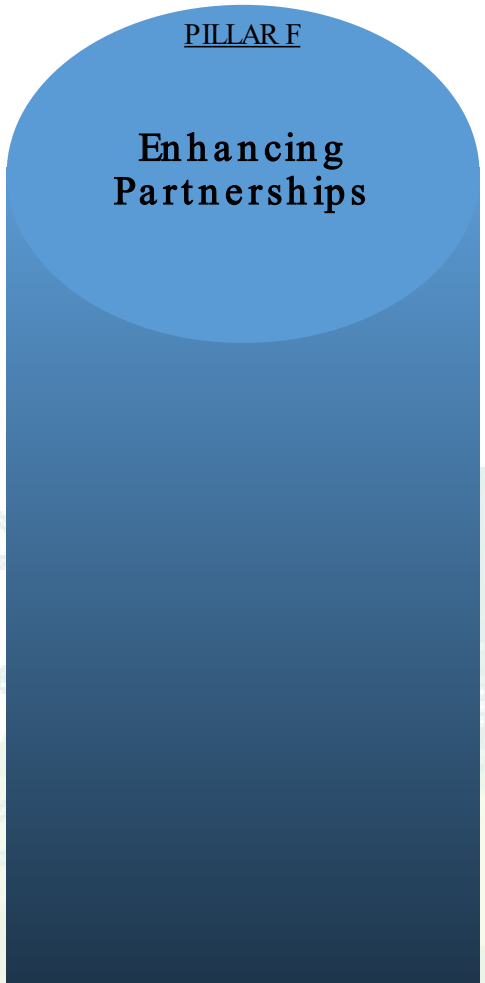
Increasing Investments in Green Skills Development

PILLAR E

Increasing Investments in Green Skills Development

- The success of workforce development in the energy sector will ***need substantial, reliable, and inclusive investment*** in human capital.
- This pillars aims to ***build the financial infrastructure for Indonesia's just energy transition***, emphasizing the importance of mobilizing both public and private finance for workforce development.

Enhancing Partnerships



- ***Strategic partnerships*** can serve as catalysts for the success of workforce development in the energy sector.
- With ***collaborations between government bodies, industry, academia, and international organizations***, Indonesia's workforce development strategy is market-driven, globally competitive, and scalable.

ENERGY TRANSITION PARTNERSHIP

Powering Prosperity and Enabling Sustainability in South East Asia

THANK YOU

Questions and discussion

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