Global Climate Action Partnership

regional leadership, global change

Solutions for Enabling a High Share of Renewables

October 3, 2024 10:30 am -12:30 pm

Salon: Senderre III

MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E INOVAÇÃO

GOVERNO FEDERAL BRASIL UNIÃO E RECONSTRUÇÃO

ASIA LEDS PARTNER SHIP

PLATAFORMA REGIONAL LEDS LAC

African Climate Action Partnership

Partnering on climate action in Africa

United Nations Climate Change

UNDP

NDC PARTNERSHIP

Session Overview

This session will explore the technical aspects of expanding and scaling the renewable energy sector. Participants will hear from field experts about **strategies for achieving high levels of renewable energy** integration globally. Speakers will highlight lessons learned, gaps and opportunities, and success stories based on their own experience in the field. Additionally, participants will engage in small group discussions on **regional initiatives**, key enabling conditions for RE integration, **impactful international cooperation**, and renewable energy modeling. Join us for an insightful analysis of **strategies to enhance renewable energy deployment** worldwide.

Session Outline

1. Welcome and introduction – Daniella Rough, GCAP / NREL
2. Main presentation: Solutions for enabling a high share of renewables –Mr. Kenichi Kitamura, UNFCCC
3. RE flyswatter game - Moderated by NREL
4. Panel Presentations – Regional Perspectives – LAC, Asia and Africa
5. Table discussions on key questions for achieving high RE integration? – Facilitated by Panel of Subject Experts
6. Debrief presentations from each group – Group representatives
7. Final reflections from the Panelists – Facilitated by Daniella Rough (NREL) and supported by Panelists

Global Climate Action Partnership

Keynote Speaker

Kenichi Kitamura
UNFCCC

Kenichi Kitamura joined UNFCCC in 2019 and currently works for NDCs, LT-LEDS (Long-term strategies), and sectoral intergovernmental unit of the Mitigation division where he supports inter-governmental negotiation, analysis and technical work on NDCs, LT-LEDS and sectoral policies such as energy to reduce greenhouse gas emissions.

United Nations Framework Convention on Climate Change

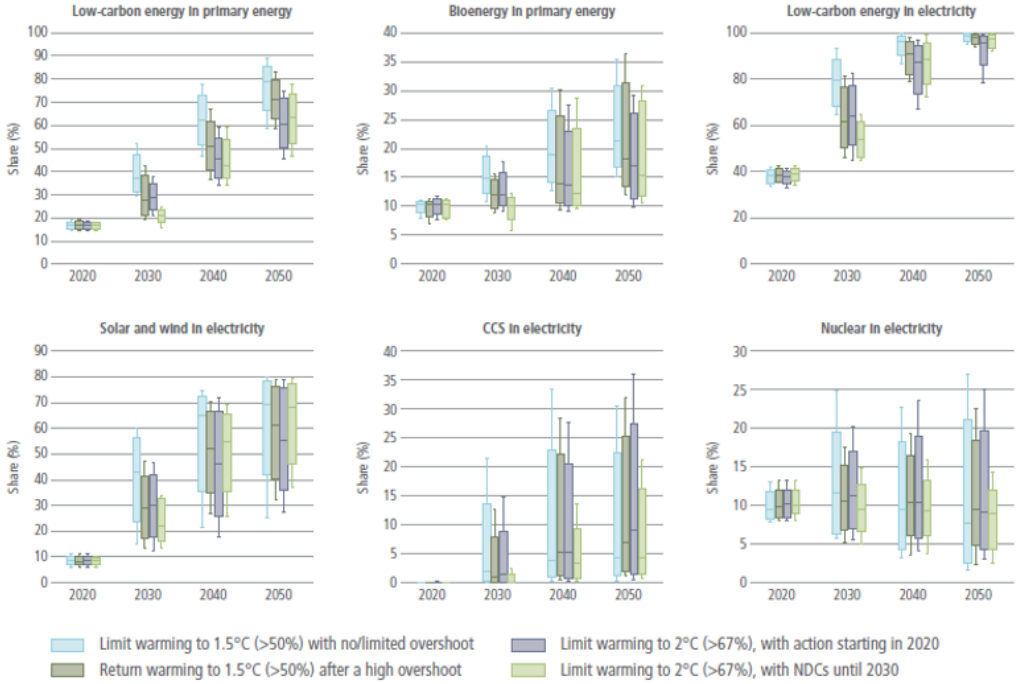
Solutions for Enabling a High Share of Renewables

GCAP Global Workshop

3 October 2024

Kenichi Kitamura
NDC, LT-LEDS, Sectorial Intergovernmental Support Unit
Mitigation Division, UNFCCC Secretariat

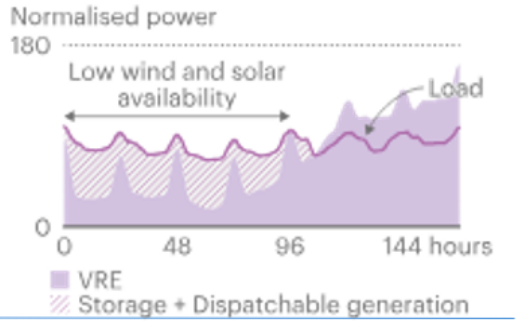
High share of renewable – How much? Energy mix



Source: Figure 6.30 in IPCC, 2022: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA. doi: 10.1017/9781009157926

High share of renewable – How much? Wind and solar PV

Phase1-2	Variable Renewable Energy (wind and solar PV) has no to moderate impact on the system
Phase3	VRE determines the operation pattern of the power system
Phase4	During a few hours of the year, almost all demand is covered by VRE
Phase5	Significant volumes of surplus VRE across the year
Phase6	Secure electricity supply almost exclusively from VRE



Source: IEA (2024), Integrating Solar and Wind, IEA, Paris https://www.iea.org/reports/integrating-solar-and-wind, Licence: CC BY 4.0

Issues (example) - Enabling a High Share of Renewables

Technical

- Balancing electricity demand and variable supply from wind & solar PV (e.g. uncertain weather conditions, numerous distributed generation)

Financial

- Pay-back period of upfront investment (e.g grid infrastructure)
- Cost of capital (credit rating, financial market development, currency risk)
- Availability of long-term large-scale funding (domestic and international source)

Political

- Balancing multiple policy objectives (e.g. economic, social, environmental)
- Cost allocation (e.g. who pays cost of grid expansion / feed-in tariff surcharge)

National circumstances

- Resource endowment (e.g. sunlight, wind, land space)
- Power market structure (e.g. private/public ownership, wholesale retail market)
- Local supply chain and workforce skill

Solutions (example) – Global overview

"A broad portfolio of options, such as integrating systems, coupling sectors, energy storage, smart grids, demand-side management, sustainable biofuels, electrolytic hydrogen and derivatives, and others will ultimately be needed to accommodate large shares of renewables in energy systems." *(Summary for Policymakers C4.3)*

"There are many balancing options in systems with very high renewable"

(Chapter6 Energy System, Box 6.8 | 100% Renewables in Net-zero Energy Systems)

- ✓ **Energy storage** Long and short-duration (e.g. batteries, pumped hydro, hydrogen)
- ✓ **Transmission and trade** Investments in transmission capacity, changes in trade, expanded balancing regions to take advantage of geographical smoothing
- ✓ **Dispatchable ('on-demand') generation** (e.g. flexible fossil units, low-carbon fuels, hydropower, geothermal, biomass, flexible nuclear)
- ✓ **Demand management** Energy efficiency, demand response, and demand flexibility to better match demand profiles with power supply
- ✓ **Sector coupling** Increased end-use electrification and Power-to-X electricity conversion (e.g. synthetic fuels)

Source: IPCC, 2022: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA. doi: 10.1017/9781009157926

Solutions (example) – Energy system integration

"Integrated whole-system approaches can reduce the costs of low-carbon energy system transitions." *(Chapter6 Energy System, 6.4.3 Energy System Integration)*

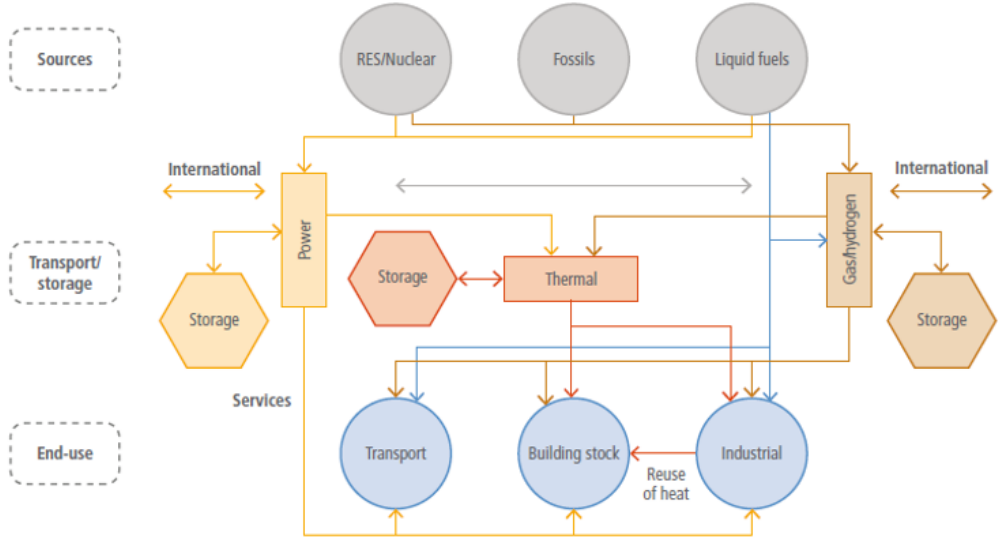


Figure 6.16 | Interaction between different energy sectors

Source: IPCC, 2022: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA. doi: 10.1017/9781009157926

Solutions – No one size fits all

"Deployment of integration options depends on their relative costs and value, regulations, and electricity market design.

There is considerable uncertainty about future technology costs, performance, availability, scalability, and public acceptance.

Deploying balanced resources likely requires operational, market design, and other institutional changes, as well as technological changes in some cases.

Mixes will differ based on resources, system size, flexibility, and whether grids are isolated or interconnected."

(Chapter6 Energy System, Box 6.8 | 100% Renewables in Net-zero Energy Systems)

Source: IPCC, 2022: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA. doi: 10.1017/9781009157926

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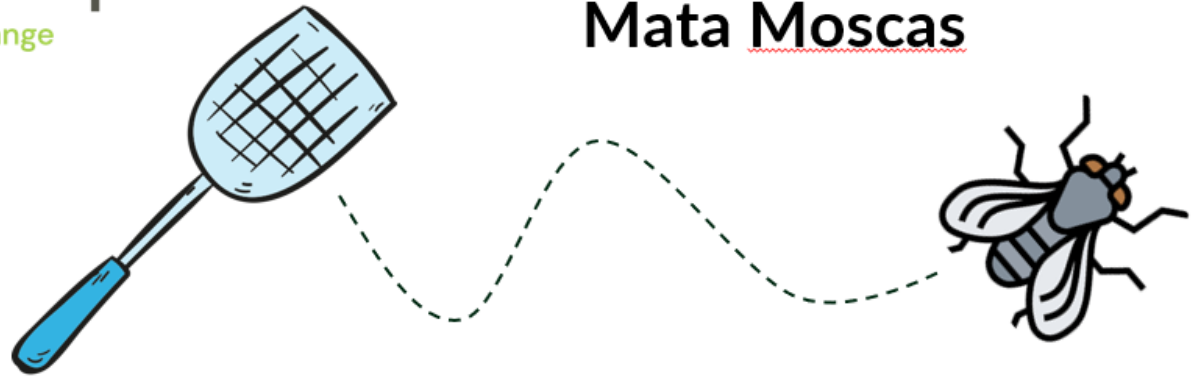
High Renewable Mata Moscas



Resource Adequacy

Inertia

Flexibility

Stability

Grid-Forming

Grid Integration

Instantaneous Renewable Energy

Ancillary Services

Hydrogen

Variable Renewable Energy (VRE)

Net Demand

Synchronous Generation

Operating Reserve

Inverter-based Resource (IBR)

Curtailment

Regional Perspectives

Esther Wang'ombe

Esther is a Director Renewable Energy at the State Department for Energy, Ministry of Energy and Petroleum co-ordinating the Kenya Energy Sector Social Responsibility Programme Fund (KEEP) and Climate Change activities.

Ha Dang Son

Mr. Ha Dang Son is Director of the Center for Energy and Green Growth Research (Vietnam), with more than 20 years involving in various consulting and policy advisory activities related to clean energy, climate change and green growth in Vietnam.

Marcelino Madrigal

Dr. Marcelino Madrigal is currently the Chief of the Energy Division of the Inter-American Development Bank (IDB) since 2022, spearheading the IDB's initiatives on energy transition, access to energy, decarbonization of the energy sector, among others.

Regional Perspectives

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RELAC INITIATIVE

Renewables in Latin America & The Caribbean

Towards a regional energy transition

THE INITIATIVE: RENEWABLES IN LATIN AMERICA AND CARIBBEAN (RELAC)

1. Created in 2019 during the **United Nations (UN) Secretary General's Climate Action Summit.**

2. Represents an **increase in climate ambition** by harmonizing economic growth and reducing greenhouse gas (GHG) emissions **in the energy sector.**

3. Supported by leading entities in the region:

IDB Inter-American Development Bank

Latin American Energy Organization olade

Vision

To be the **climate action platform** of the electricity sector in the region that promotes the countries' energy transition through a greater participation of renewable energy in their electricity matrices.

MEMBER COUNTRIES

RELAC is open to all countries in the region. Currently, there are **16 member countries** that are part of the initiative


BARBADOS


BOLIVIA


CHILE


COLOMBIA


COSTA RICA


DOMINICAN REPUBLIC


ECUADOR


EL SALVADOR


GUATEMALA


HAITI


HONDURAS


NICARAGUA


PANAMA


PARAGUAY


PERU


URUGUAY

BENEFITS OF JOINING RELAC

Coordination Agencies

- **Identification** of technical assistance needs
- **Dissemination** of international best practices
- **Optimization** of work with agencies to increase RE participation

Regulatory and Institutional Framework

- Proposals for the adoption of **regulatory and institutional models**
- **Market mechanisms and business models** to facilitate private sector participation
- Exchange of lessons learned between countries

Financial Matchmaking

- **Financing schemes** for Generation & Transmission expansion plans
- **Channeling** of climate finance resources.
- **Co-financing** between agencies

Climate action platform

- Monitoring of climate goals for the energy sector
- **Alignment** of objectives of the electricity sector with NDCs and Paris Agreement

INTERNATIONAL RECOGNITION

RELAC

EL PAÍS

ENERGÍAS RENOVABLES > COLUMNA

América Latina puede convertirse en un referente mundial de la transición energética justa

Que el 70% del consumo de energía eléctrica en la región venga de energías renovables para 2030 es una meta alcanzable

THE WHITE HOUSE

APRIL 22, 2021

FACT SHEET: President Biden's Leaders Summit on Climate

- ***Supporting ambitious renewable energy goals and pathways in Latin America and the Caribbean.*** The Department of State announced scaled-up technical assistance to countries participating in the Renewable Energy for Latin America and the Caribbean (RELAC) initiative, a regional effort led by Colombia, Chile, and Costa Rica to increase renewable energy capacity to at least 70 percent by 2030. Expanded U.S. support through the

The Rockefeller Foundation

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Latin America and the Caribbean's historic commitment towards renewable energy

New Collaboration to Boost Renewable Energy in the Latin America and Caribbean Region

THEDIALOGUE

Leadership for the Americas

RELAC Initiative: An Opportunity to Raise Climate Ambition While Leaving No One Behind

reNEWS.BIZ

INCREASING THE AMBITION (Q4 2023):

RELAC

Ambitious renewable energy target:
16 countries in the region committed to achieving
80% of renewable energy in their electricity matrix
by 2030

	Renewables in installed capacity	Renewables in generation
Start 2019	58.0%	66.0%
to 2022	62.0%	69.0%
Goal 2030	**73.0%**	**80.0%**

RELAC Knowledge Transfer:
Technical visit on energy storage to the
U.S. National Renewable Energy Laboratory.

IDB

Activities/Results 2023

National workshops

- El Salvador (26.07) (50pp)
- Honduras (21.09) (94pp)
- Costa Rica (21.11)

Follow-up

- **Ecuador**: 8 bilateral meetings with NREL to support the Galapagos Energy Transition Plan (evaluation and improvement of the grid code) and 7 internal expert meetings.
- **Ecuador**. IDB support for study incorporating energy storage in electricity planning (CENACE).
- **Panama**: Meeting with partner agencies (Jun 22)

New partner agencies

Economic Commission for Latin America and the Caribbean (ECLAC)

Committee Meetings

- Committee meetings
  - 2X Coordination Committee
  - 2X Technical Committee

El Salvador National Workshop

July 26, 2023

Identified Needs

- Modernization regulation: introduction of technologies and market stability.
- Studies decongestion fromof the lines transmission lines.
- Regulatory studies storage.

- Regulatory development for the creation of a retail market for greater RE penetration.
- Studies on current installed capacity of Distributed Generation injected to the grid.
- Identify opportunities to provide ancillary services with storage technologies

National Workshop Honduras

September 21, 2023

Identified Needs

- Evaluation of grid capacity to incorporate RE.
- Updating regulations for RE integration.
- Modernization regulations for storage and distributed generation.
- Citizen participation and training strategy to manage RE and storage.

- Practices practices practices for the viability of RE projects.
- Identification of strategies: reduction of energy losses in the network.
- Technology implementation: data collection and forecasting of intermittent RE generation.
- Vulnerability assessment to define minimum technical limits and regulations necessary for system operation.

Activities/Results 2023

Knowledge agenda

- **"Accelerating geothermal development in LAC: Lessons Learned. and Technological Advances"** organized by IRENA, JICA and IDB (07.06).
- Workshop on **"Offshore Wind Generation Development: Challenges and Opportunities Institutional and Regulatory"** organized by GWEC and IDB (11.10).

Positioning

"The decade of truth: time to make decisions for a just, resilient and sustainable energy transition in Latin America and the Caribbean" in the framework of the United Nations Climate Change Conference in Dubai, United Arab Emirates, (05.12)

Activities/Results 2023

National Workshops
Identification of Warehousing as a relevant issue

Meetings with agencies
IDB and NREL define support for storage issue

Technical support
Advanced training design and execution

Agenda knowledge

- **"Accelerating Energy Storage in RELAC Countries"** NREL and IDB (16-20.10).
- 7 webinars and a one-week technical view.
- 24 participants from 11 countries (45% female).
- 51 NREL experts supporting the webinars, country action plans and the technical visit.

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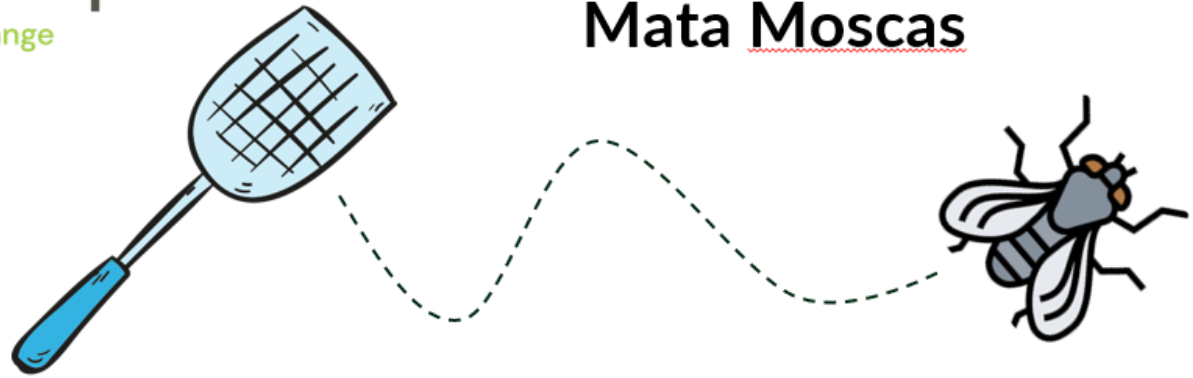

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Ha Dang Son

Mr. Ha Dang Son is Director of the Center for Energy and Green Growth Research (Vietnam), with more than 20 years involving in various consulting and policy advisory activities related to clean energy, climate change and green growth in Vietnam.

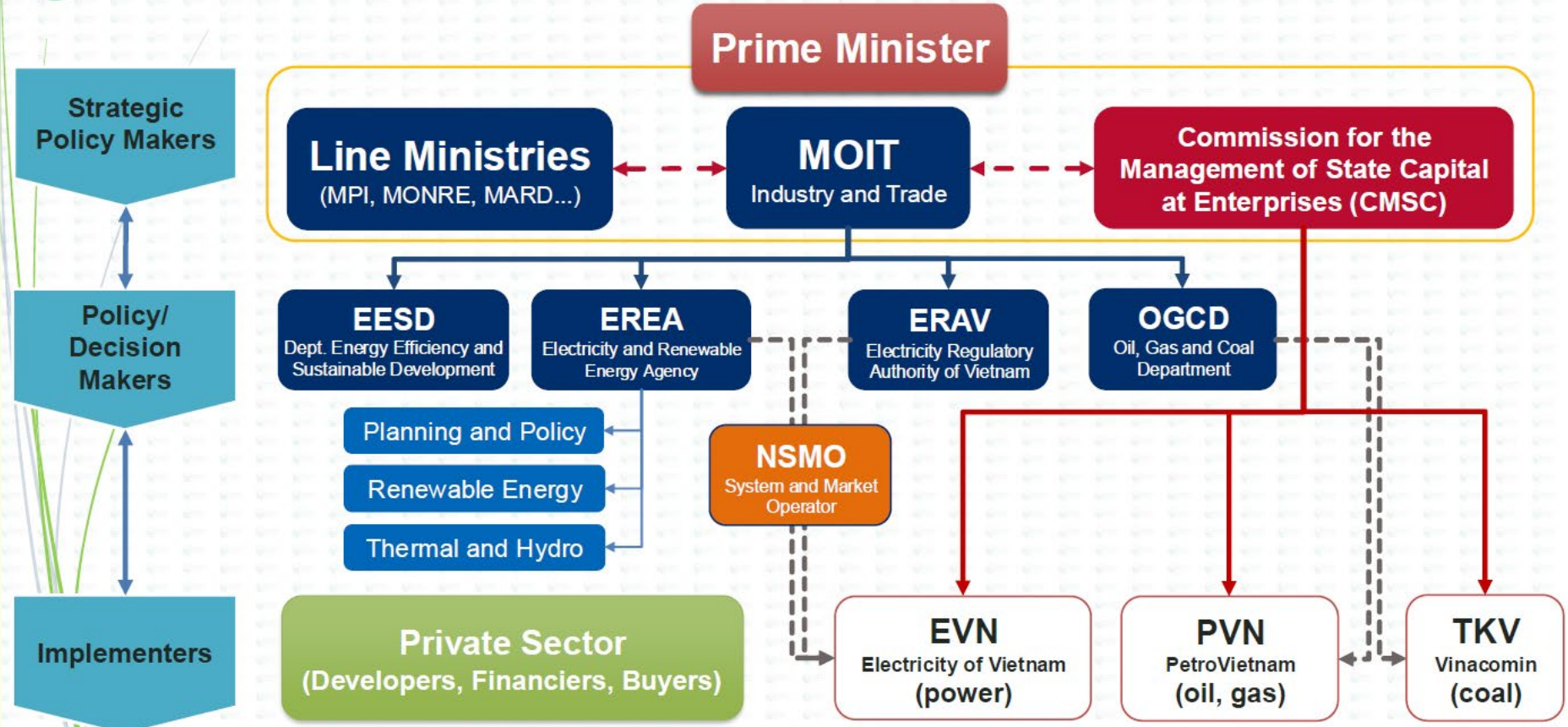
High RE Integration and Enabling Conditions for Vietnam

Ha Dang Son

Director, Centre for Energy and Green Growth Research

@GCAP Global Workshop 2024, Foz do Iguaçu (Brazil)

Vietnam's Energy Sector Key Players



Overview of Vietnam's Clean Energy Legal Framework

Other Relevant Laws:

- Law on Planning (2018)
- Investment Law
- PPP Law
- Procurement Law
- Law on Land
- Construction Law
- Law on Price

Electricity Law (2018)

Proposed amendments to the Electricity Law is under review

Energy Efficiency Law (2010)

Decree 17/2020/ND-CP (Business conditions in power sector)

- **Circular** 21/2020/TT-BCT (Electricity operations licensing)

Decree 137/2013/ND-CP (Detailing implementation of Electricity Law)

- **Relevant Circulars**
  - Tariff bracket: 57/2014/TT-BCT
  - Transmissions: 25/2016/TT-BCT
  - Dispatching and System Operations: 31/2019/TT-BCT
  - Gen. price, PPA: 07/2024/TT-BCT

Decree 134/2013/ND-CP (Sanction against administrative violation in electricity, hydro dams, EE)

- **MEPS Regulations**
  - Labelling and MEPS: 04/2017/QĐ-TTg
  - Beverage: 19/2016/TT-BCT
  - Steel: 20/2016/TT-BCT
  - Plastics: 38/2016/TT-BCT
  - Pulp and paper: 24/2017/TT-BCT
  - Fishery: 52/2018/TT-BCT
  - Sugar and sugarcane: 39/2019/TT-BCT

Decree 21/2011/ND-CP (Detailed guidelines and measures to implement EE Law)

- **Circular** 25/2020/TT-BCT (EE planning, EE reporting, and energy auditing)

Vietnam's Commitment to Climate Action

2030

Total national GHG emissions reduced by **44%** compared to the BAU scenario

Renewable energy accounts for at least **33%** of electricity produced

2050

Total national GHG emissions reach **net-zero** emissions

Renewable energy accounts for at least **55%** of electricity produced

Public investment

	SPECIAL URBAN AREA	CLASS 1 URBAN AREA
	2030	2030
Ratio of public transport	≥ 20%	5%
	2050	2050
	≥ 40%	15%

	2030	2050
No. of urban areas implementing green growth & smart city model	≥ 10	≥ 45

Consumers

	2030	2050
Green public purchase	≥ 35%	≥ 50%
Human development index	≥ 0.75	≥ 0.8

GHG emission reduction

	2030	2050
Reduction of GHG intensity per GDP compared to 2014[1]	≥ 15%	≥ 30%
Reduction of primary energy consumption per GDP	1-1.5% per year	1% per year
Proportion of Renewable Energy[2]	30,9 - 39,2%	67,5 - 71,5%

Others

	2030	2050
Ratio of solid waste collected & treated	95%	100%
Safely managed water source	≥ 70%	≥ 90%

Source: Decision 1658/2021/QD-TTg approving the National Strategy on Green Growth

[1] Decision 687/2022/QD-TTg approving the Project on development of circular economy in Vietnam

[2] Decision 500/2023/QD-TTg National Power Development Plan for 2021-2030 with a vision to 2050

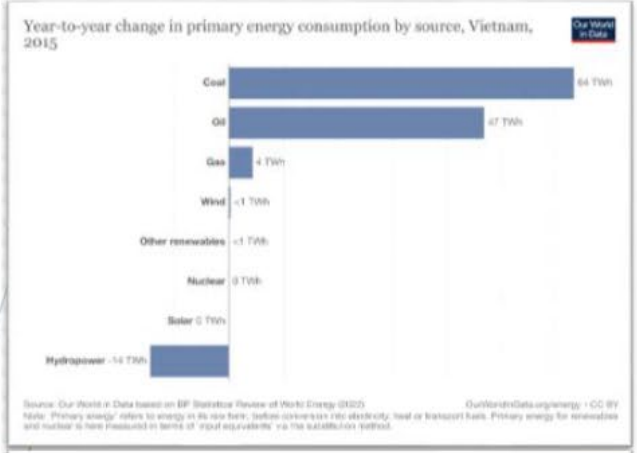
BAU scenario definition: The land use and emissions profile for a forest carbon project area prior to intervention, serves as a benchmark to measure the impact of REDD actions, also referred to as "baseline"

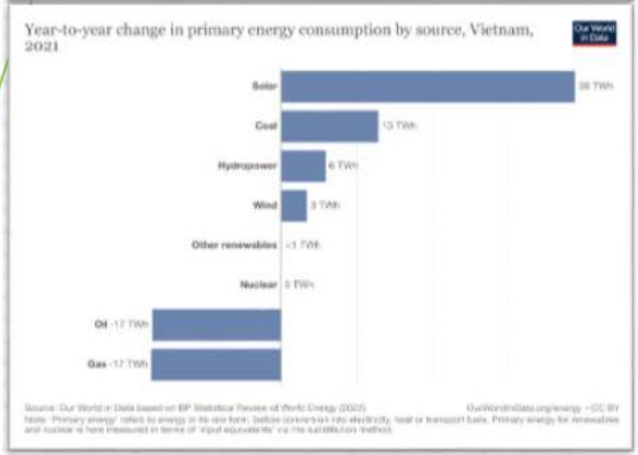
Energy Transition: Challenges and Solutions

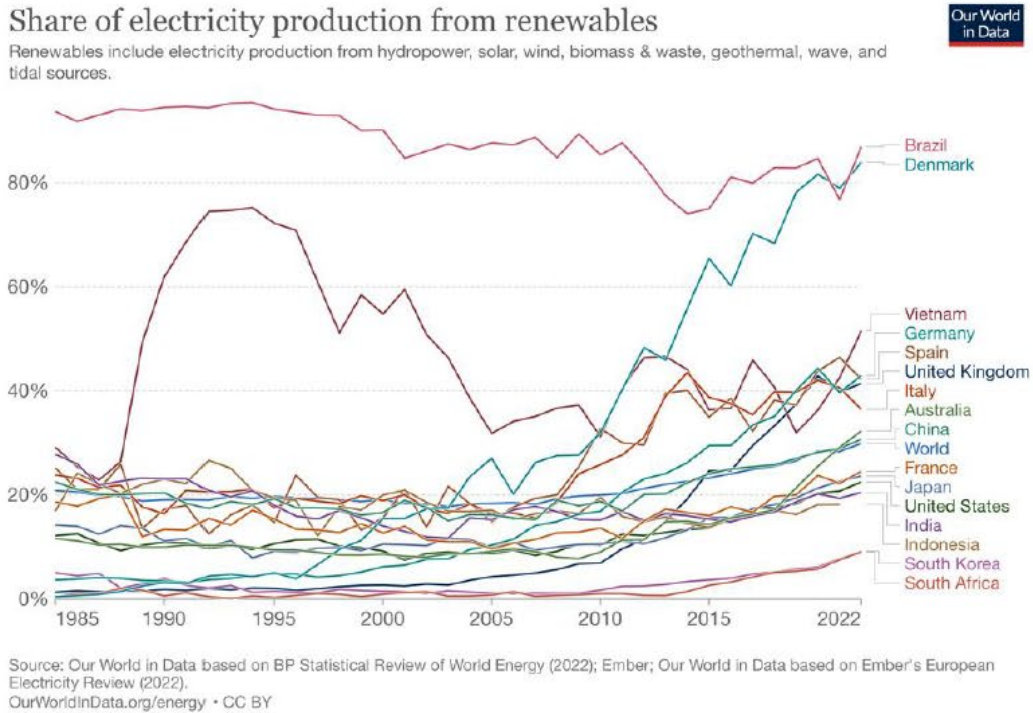
	1 "Coal is still king in APAC"	2 Volatility vs. grid stability	3 Infrastructure
CHALLENGES			
SOLUTIONS	Expand renewables, biogas and clean fuels, using gas as a bridge technology	Flexible, fast-starting, dispatchable power and tri-generating solutions	Flexibility at point of use for fluctuating hydrogen mixes in the gas network

Source: Presentation by Carsten Dommermuth (VP & MD APAC, INNIO's Jenbacher) at ACEF 2023

Energy Transition in Vietnam

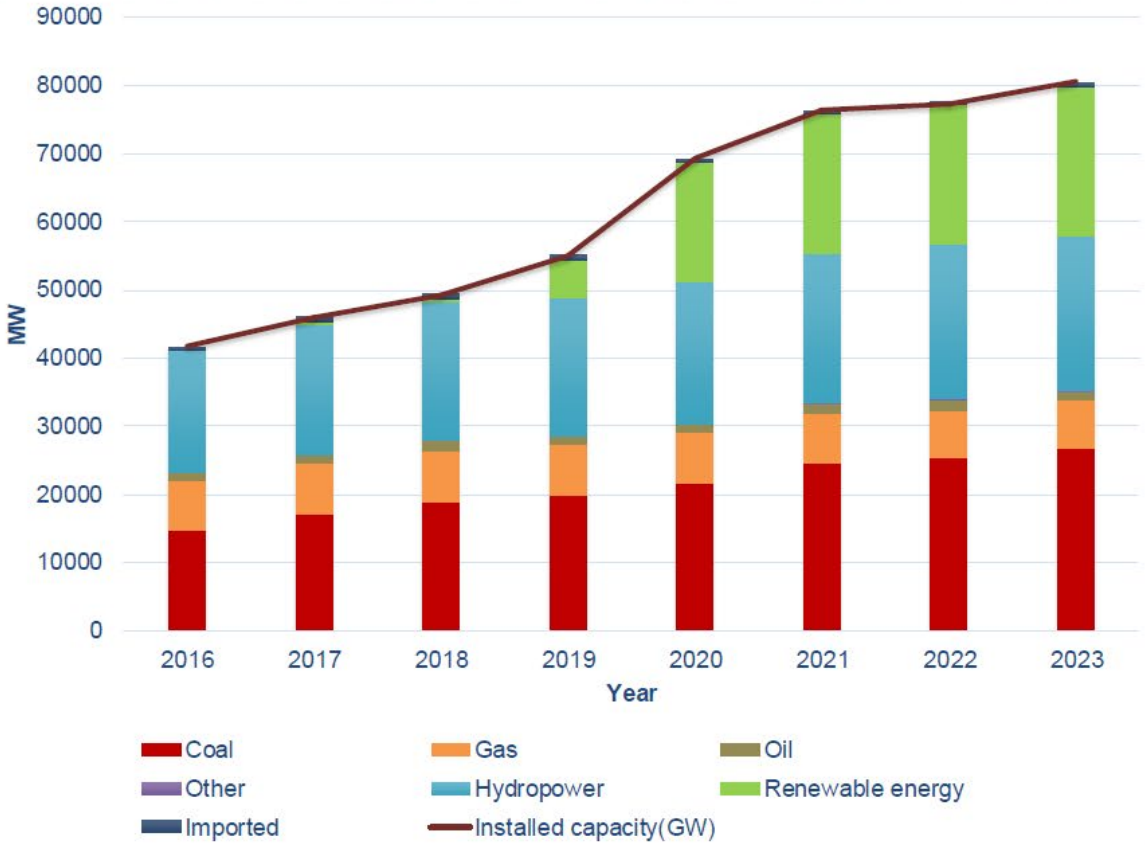




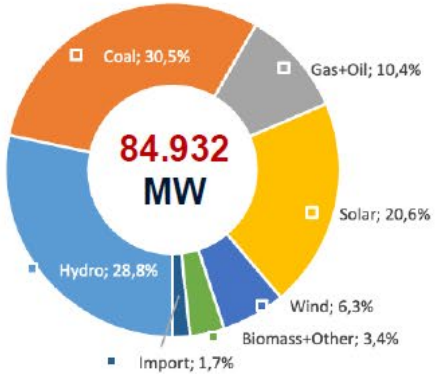


Vietnam is among leading countries with high RE penetration in the power mix!

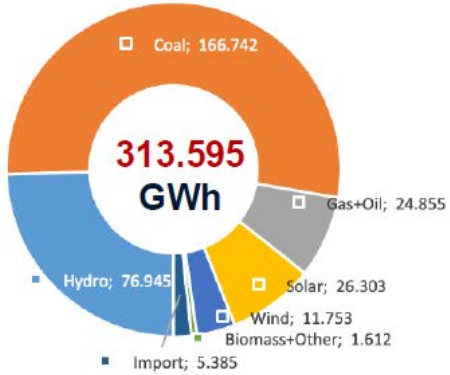
Greening the Power Mix



Installed capacity mix by June 2024

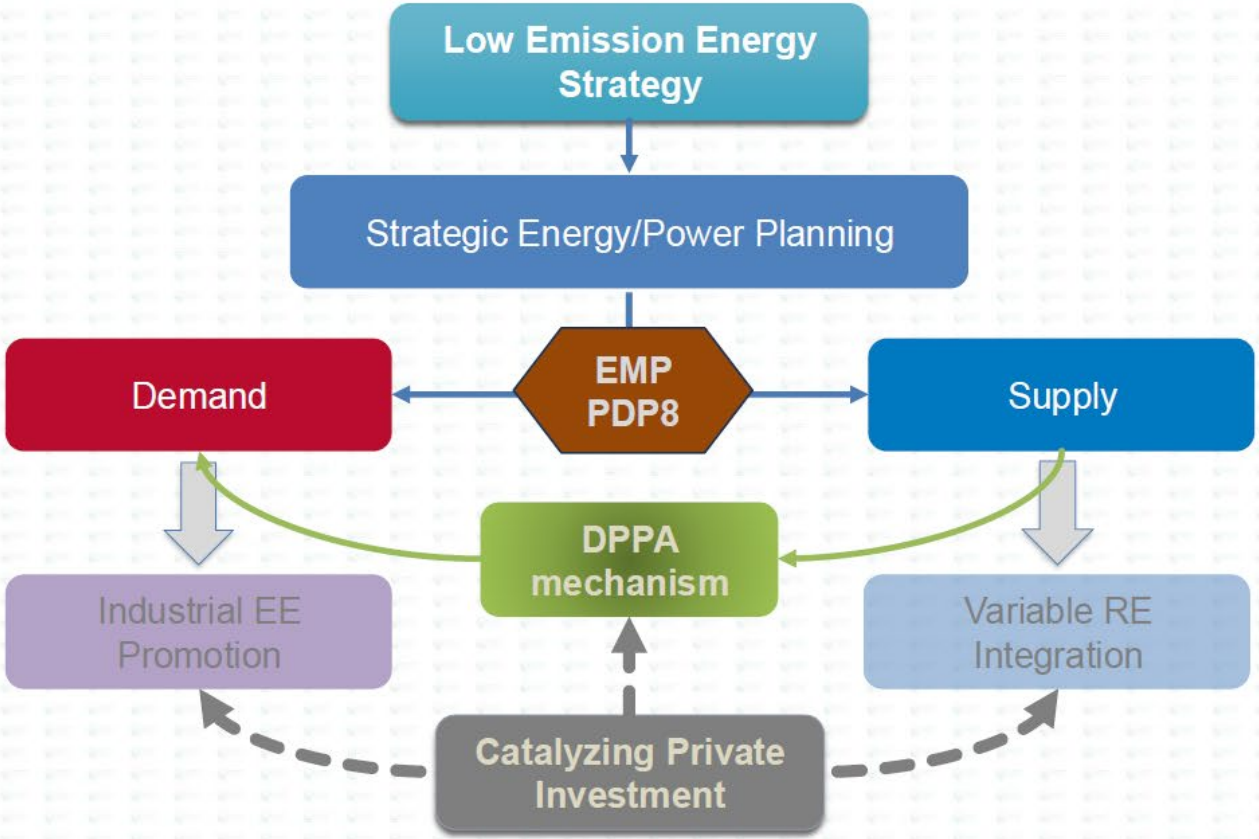


Generation mix by June 2024



Source: NSMO's presentation at the 8th Vietnam Clean Energy Forum

From LEDS Strategy to LT Policies & Action Plans



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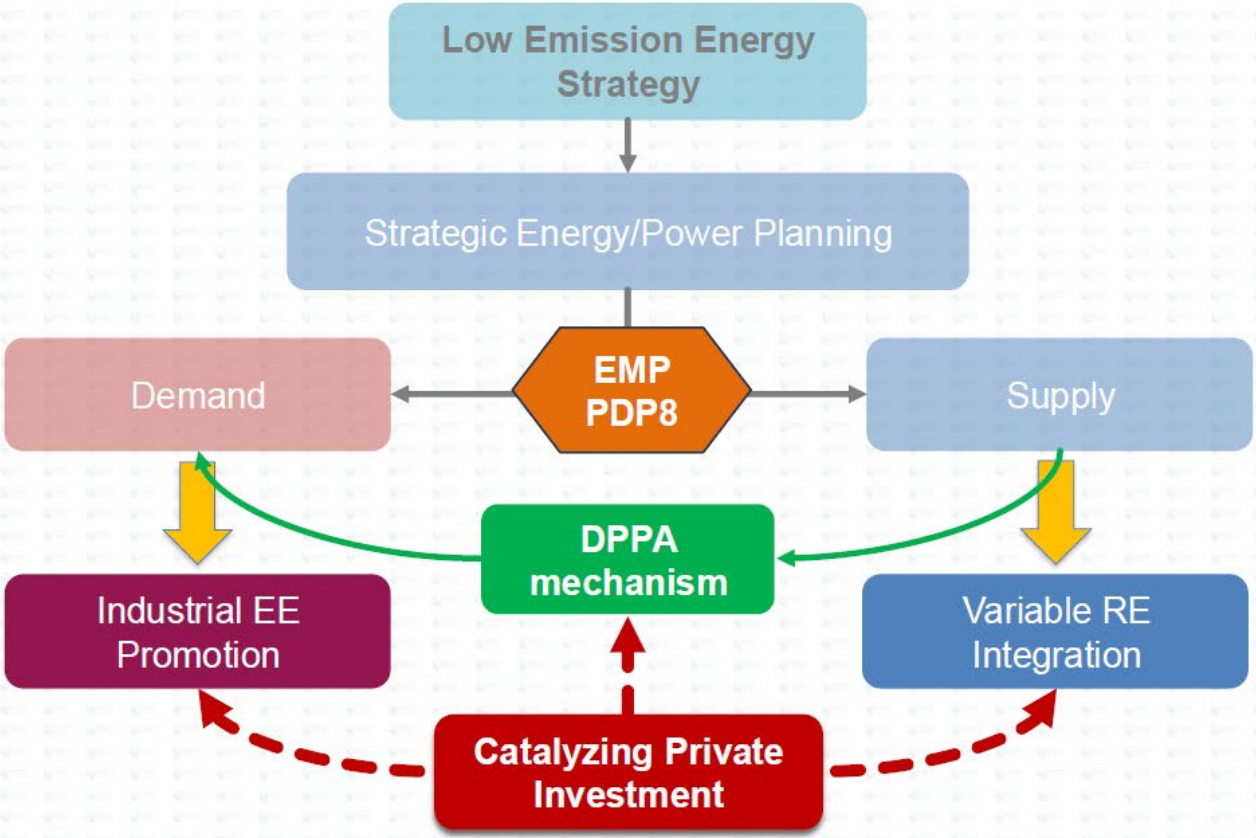
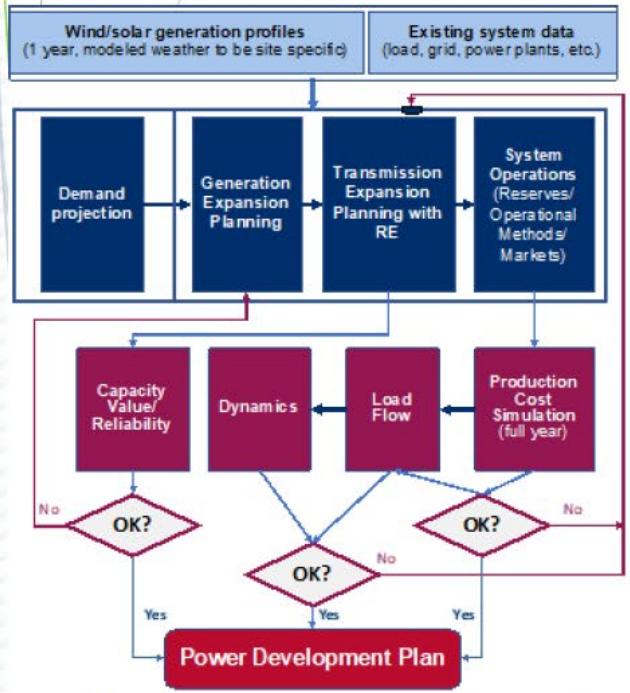


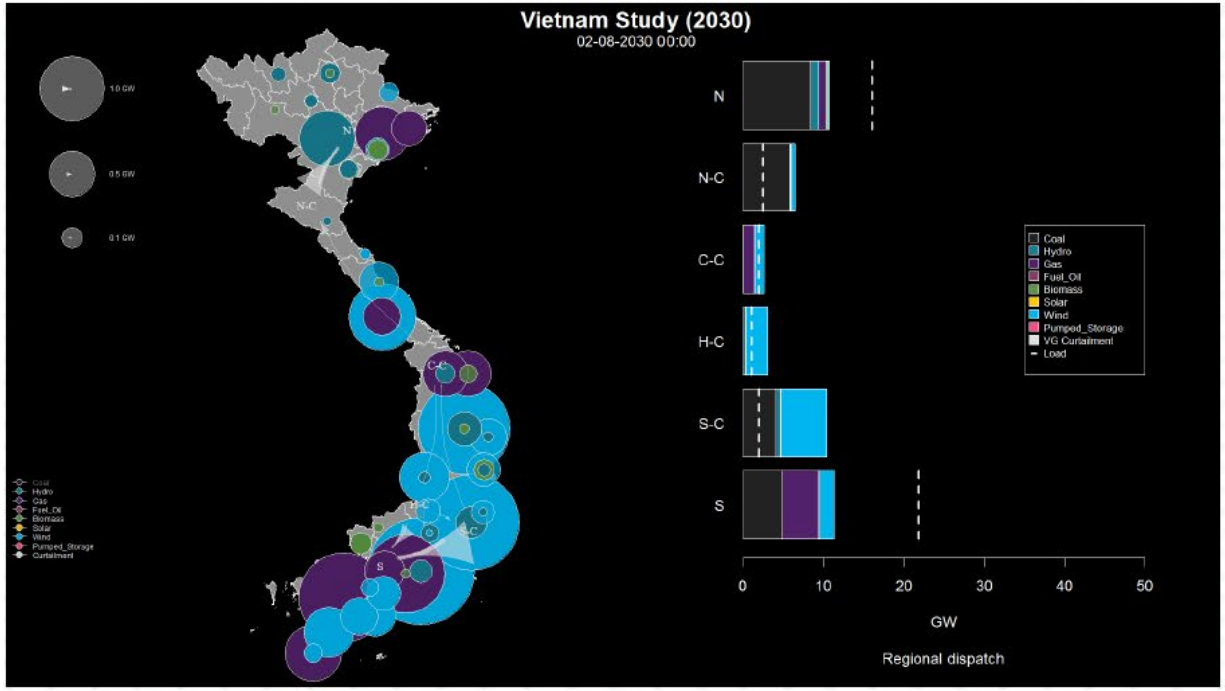
New Methodology and Tools for PDP8 with High RE Integration

USAID FROM THE AMERICAN PEOPLE

NREL NATIONAL RENEWABLE ENERGY LABORATORY

HNEI Hawai'i Natural Energy Institute
University of Hawai'i at Mānoa

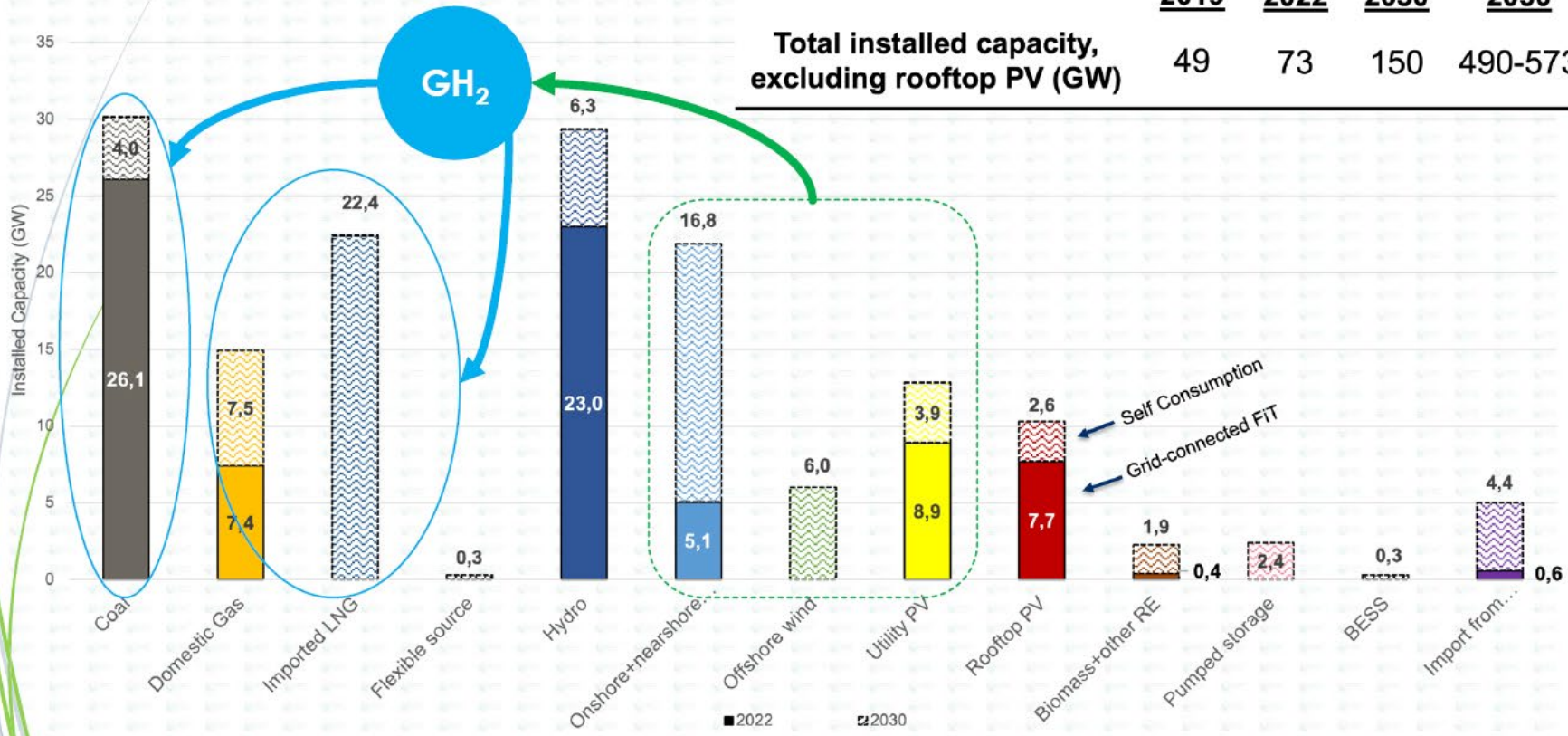




Source: USAID Vietnam Low Emission Energy Program

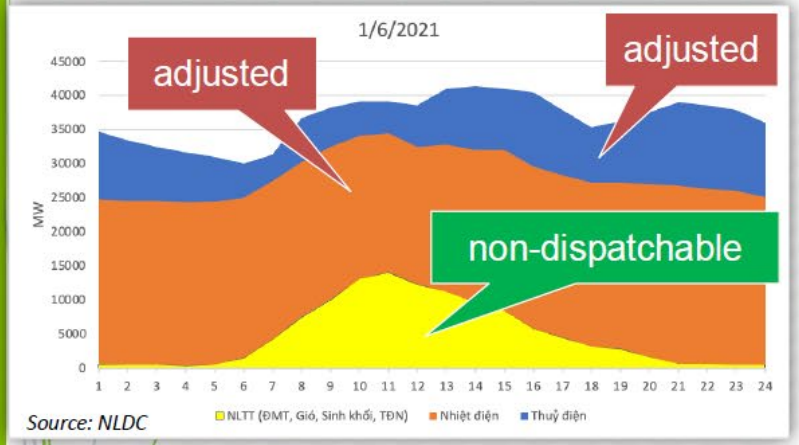
Energy Transition toward Net-zero 2050 in PDP8

	2019	2022	2030	2050
Total installed capacity, excluding rooftop PV (GW)	49	73	150	490-573

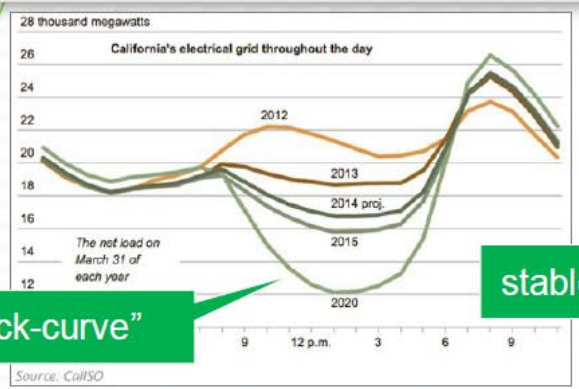


Source: USAID Vietnam Low Emission Energy Program II

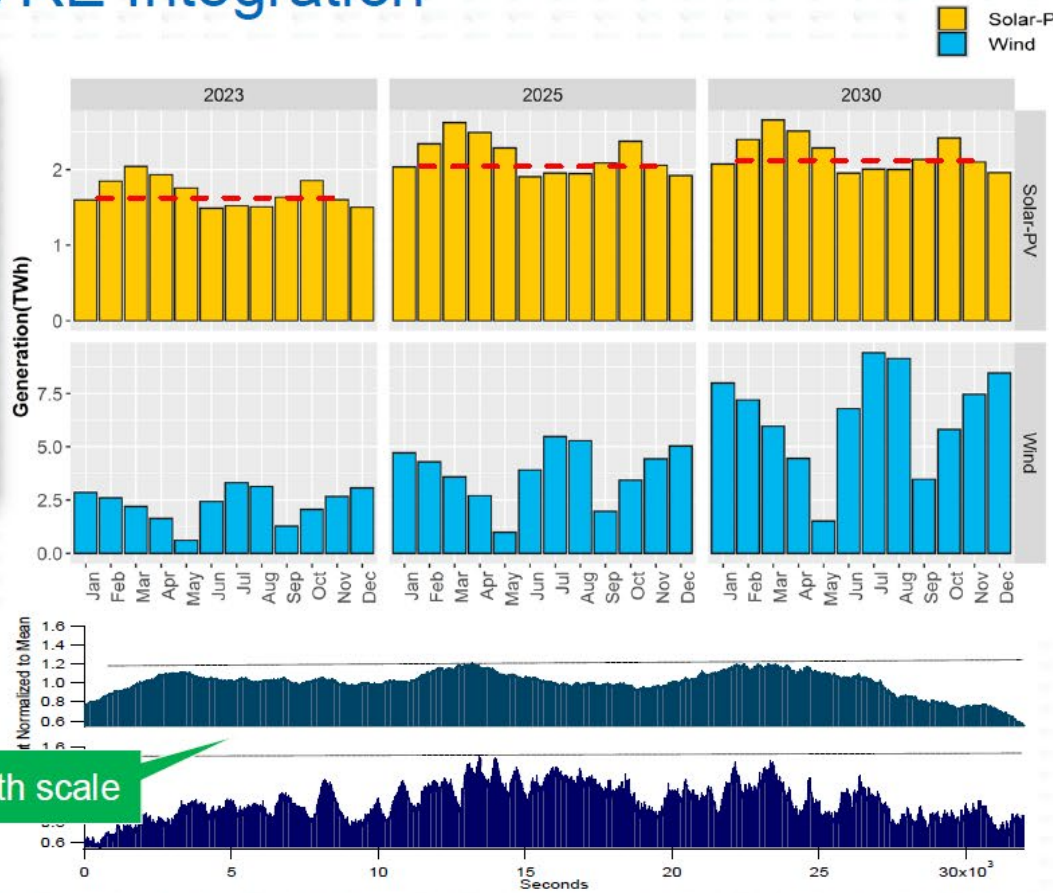
Challenges in High-VRE Integration



Source: NLDC

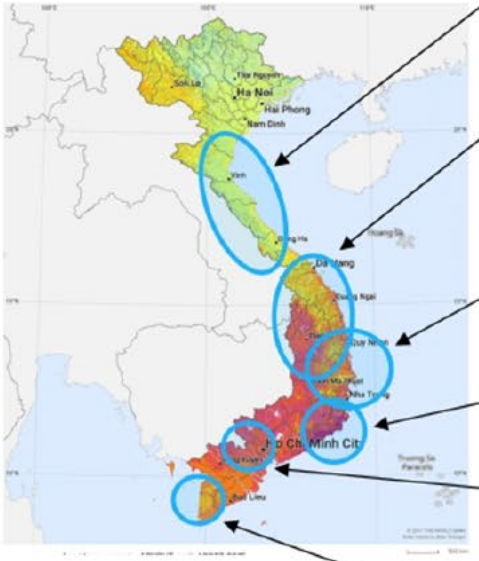


"duck-curve"



stable with scale

Transmission Constraints due to High-VRE Penetration



Source: NLDC

500kV North-Central interface line (a limit of 2000 MW)

ĐZ 500kV North Central – South Central interface line (a limit of 1900 MW)

Overloaded 220kV line in Binh Dinh, Phu Yen: Quy Nhon – Tuy Hoa, Quy Nhơn – An Khe HPP – SK An Khe - Pleiku

Overloaded 220kV line/transformer /MBA in Ninh Thuan, Binh Thuan
220kV line: Nhi Ha – Thuan Nam, Ninh Phuoc – Thuan Nam, Da Nhim – Duc Trong – Di Linh
220kV transformer: Ninh Phuoc 2x250 MVA
110kV line: Thap Cham – Ninh Phuoc – Phan Ri

Long An province
Overloaded 110kV An Thanh – Thu Thua line

An Giang province
Overloaded 110kV Chau Doc – Tinh Bien

Causes

- ✓ The electricity grid investment included in the plan is not synchronous with the RE source development
- ✓ Reduced demand due to Covid.

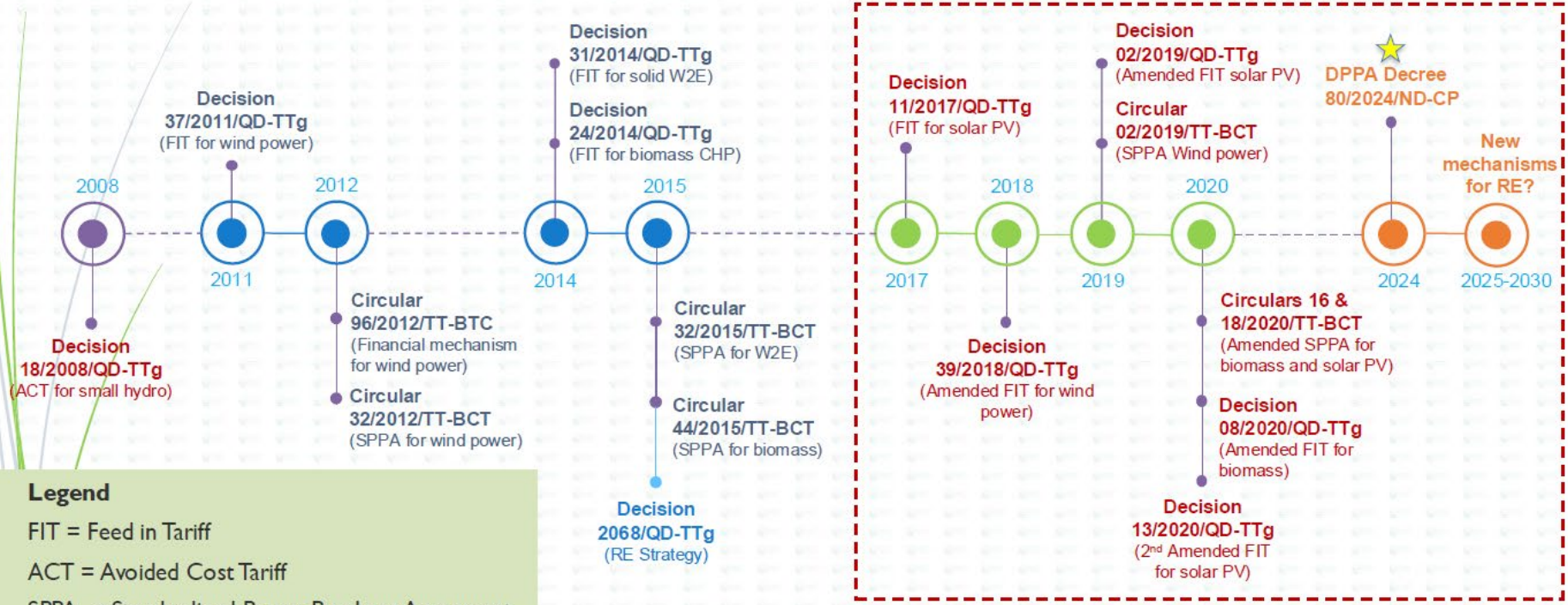
Allocation and curtailment

- ✓ Solar power: curtailment of 13.3% of the capacity
- ✓ Wind power: curtailment of 4.8% of the capacity
- ✓ RE curtailment: 15-20% of the total installed capacity

Hydropower must have significant flexibility → could violate water limit levels and affect dry season security or continued curtailment of RE

Startup of coal and gas units must increase → increased risk of generation faults

Timeline of Key Policies on Renewable Energy



Legend

FIT = Feed in Tariff

ACT = Avoided Cost Tariff

SPPA = Standardized Power Purchase Agreement

W2E = Waste to Energy

CHP = Combined Heat and Power

Key Takeaways

- Amendment of the Electricity Law is an important regulatory and legal reform for high RE integration
- Impact assessment of high RE integration in Vietnam's power system has been carried out with state-of-the-art methodology and tools
- New policies e.g. Direct Power Purchase Agreement (DPPA) mechanism will enable private sector's access to green electricity

Thank you!

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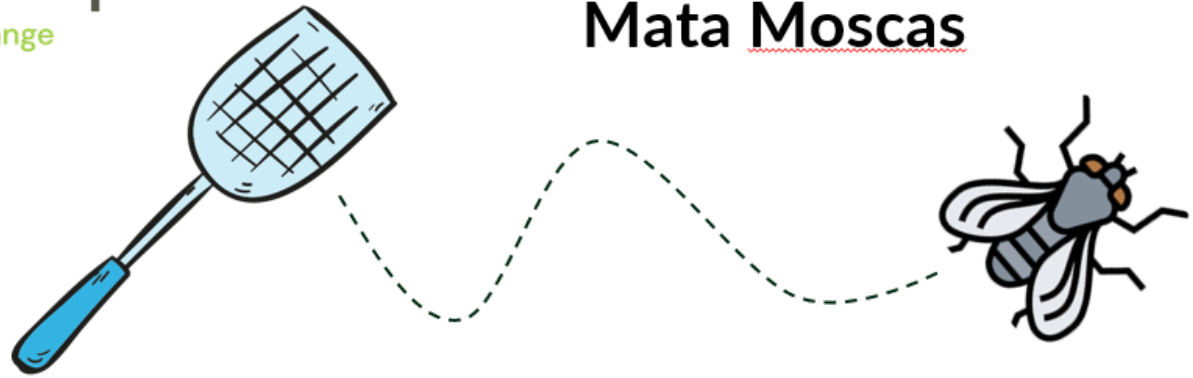
High Renewable Mata Moscas



Resource Adequacy

Inertia

Flexibility

Stability

Grid-Forming

Grid Integration

Instantaneous Renewable Energy

Ancillary Services

Hydrogen

Variable Renewable Energy (VRE)

Net Demand

Synchronous Generation

Operating Reserve

Inverter-based Resource (IBR)

Curtailment

Regional Perspectives

Esther Wang'ombe

Esther is a Director Renewable Energy at the State Department for Energy, Ministry of Energy and Petroleum co-ordinating the Kenya Energy Sector Social Responsibility Programme Fund (KEEP) and Climate Change activities.

INCREASING RENEWABLE ENERGY CAPACITY IN KENYA

By
Esther Wang'ombe, OGW
Director, Renewable Energy
State Department for Energy
Ministry of Energy and Petroleum
KENYA

3rd October 2024

INTRODUCTION

- Energy is a public good and a crucial factor in boosting productivity across all levels of society.
- Kenya has an environmentally friendly electricity grid, with over 90% of electricity coming from renewable and clean energy sources.
- Over 70% of Kenyans have gained access to electricity through government-led electrification efforts.
- Successful efforts to mobilise both public and private sector investment have enabled investments in renewable energy.
- human capital, international connections, and support from various stakeholders,

Renewable Energy Sources.

Significant investments have been made in

- geothermal power generation,
- hydropower plants
- provide technical support for the construction of small community hydropower plants; tea factories
- small hydro resource atlas for the country
- Wind (Turkana Wind Power is a prime example of this, Africa's largest wind farm)
- small-scale solar systems (solar PV systems in public institutions and Community boreholes)
- promote energy efficiency in Industry and commercial enterprises through investment grade and general energy efficiency Audits, training and awareness creation.

Essential Enabling Conditions And Strategies For Achieving High Renewable Energy Integration

- Develop, implement, and review policies, strategies, standards, and regulations.
- Periodically review the Energy Act, Energy policy, and other statutory documents.

Lessons Learned

- Planning, Promotion and development of renewable energy
- Resource mobilisation: ensure the country has a well-defined strategy for resource mobilisation
- Heavy investments are needed to increase the installed capacity
- Diversifying funding sources for energy investments, including mobilizing innovative green financing and domestic funds to de-risk local projects and attract investors
- Leveraging Kenya's competitive advantage to tap into regional power pools
- Stimulating a 24-hour economy
- Coordinated approach to engaging partners to strengthen collaboration

Challenges

Energy equity and energy security.

- energy equity means having access to affordable, sufficient, safe, and reliable energy for domestic and commercial use.
- Energy security is the ability to meet current and future energy demands
- Most households can only use electricity for limited purposes, such as lighting and powering appliances, while biomass and fossil fuels are utilized for cooking
- people in remote areas lack access to the national grid; unsustainable cost of reaching these remote areas; sparse populations; low per capita consumption; difficult for mini-grid developers to reach viable returns, and therefore, these investments may not be initially profitable, but they are expected to spur development that will eventually become sustainable.
- Low productive energy use means Kenya cannot adequately balance energy demand and supply.

Opportunities

- Kenya has a large and mostly untapped supply of renewables
- presence of policy enablers
- long-term strategy toward global net zero; NDCs
- strong government commitment; the allocation of resources and reforms to support energy sector development
- technical expertise in renewables: willingness to embrace new and emerging technologies, necessary skills, expertise,
- increasing productive use of green energy.
- pay for the cost of decommissioning existing thermal plants while building new renewable energy plants.
- investment in off-grid solutions

Opportunities

- Smart power grids to enhance efficiency, including a fully digitally connected electricity system that incorporates generation, and storage
- increasing the availability and affordability of clean cooking technology
- Learning from global and regional peers

Conclusions

- Kenya's rapid rate of urbanisation, together with its need to provide access to remote communities, will require not only increased generation capacity but a diverse range of solutions.
- Mini-grids and standalone systems continue to offer a smart-integrated, less infrastructure-intensive, and more cost-effective way to connect remote areas.

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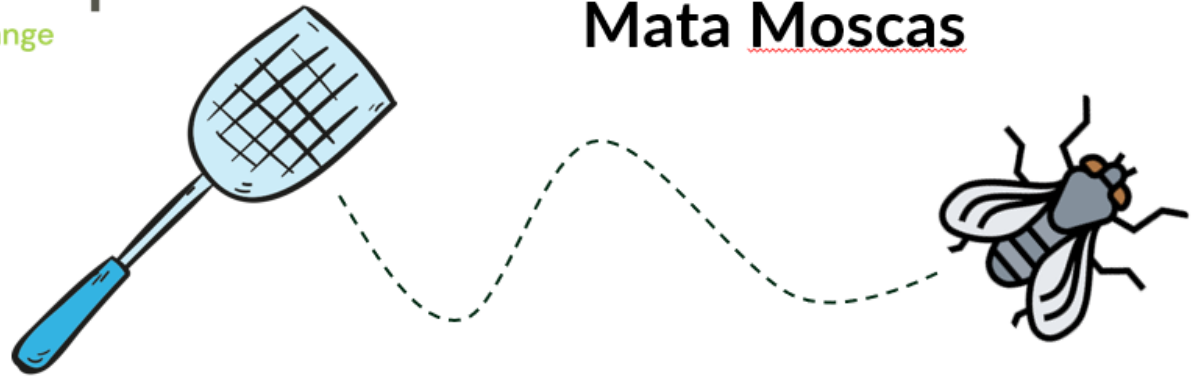

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Facilitators

Kenichi Kitamura

Kenichi works for UNFCCC's NDCs, LT-LEDS and sectoral intergovernmental unit of the Mitigation division

Esther Wang'ombe

Esther is a Director of Renewable Energy at the Kenyan State Department for Energy, Ministry of Energy and Petroleum

Marcelino Madrigal

Dr. Madrigal is currently the Chief of the Energy Division of the Inter-American Development Bank (IDB)

Rosilena Lindo

Rosilena is a climate energy lead and the former National Energy Secretary of Panama 2023-2024

Carlos Echevarria

Carlos oversees IDB´s energy operations in Costa Rica and has more than 22 years of experience in financing infrastructure projects.

Nina Kolybashkina

Nina is Gender and Social Inclusion Lead with the Climate Investment Funds (CIF).

Asami Miketa

Dr. Miketa serves as Head of Energy Transition Planning and Power Sector at IRENA

Samet Bulut

Samet is a Climate Change Specialist at the Asian Development Bank (ADB) where he supports the low-carbon transition work

Florencia Mitchell

Florencia works as a climate policy and action specialist with Asociación Sustentar

Elisabet Viñes

Elisabet works as a Project Manager and climate change specialist at UNOPS, focusing on key initiatives in renewable energy and electromobility

Group Discussions

35 minutes per table

Group 1 Facilitators: Rosilena Lindo and Florencia Mitchell

Is 100% the goal? What's a realistic goal, when is enough enough? What should we be aiming for and how to inform RE targets (regional or national)?

Group 2 Facilitators: Kenichi Kitamura and Esther Wangome

If RE is considered a low-hanging fruit, why are we not seeing more deployment globally? How can we overcome barriers to RE deployment when it’s already the cheapest option in many areas?

Group 3 Facilitators: Asami Miketa and Samet Bulut

Should international support and finance step up more in the near term to accelerate the transition to renewable energy in developing countries? How so? What's most needed and what is most effective? How can the G20 process/proposal for Global Coalition on Energy Planning support this? What categories are most important for international cooperation to accelerate RE deployment (finance, TA, modeling, stakeholder engagement, etc.)?

Group 4 Facilitators: Marcelino Madrigal and Carlos Echevarria

How can regional high ambition targets (e.g. RELAC) help to drive and increase national scale ambition?

Break-Out Session Title: Enabling Conditions for High RE Integration

Key Insights
(Gaps, Needs, Opportunities, Successful Approaches and Lessons Learned)

Next Steps/Actions/Requests

Opportunities for Collaboration and Champions

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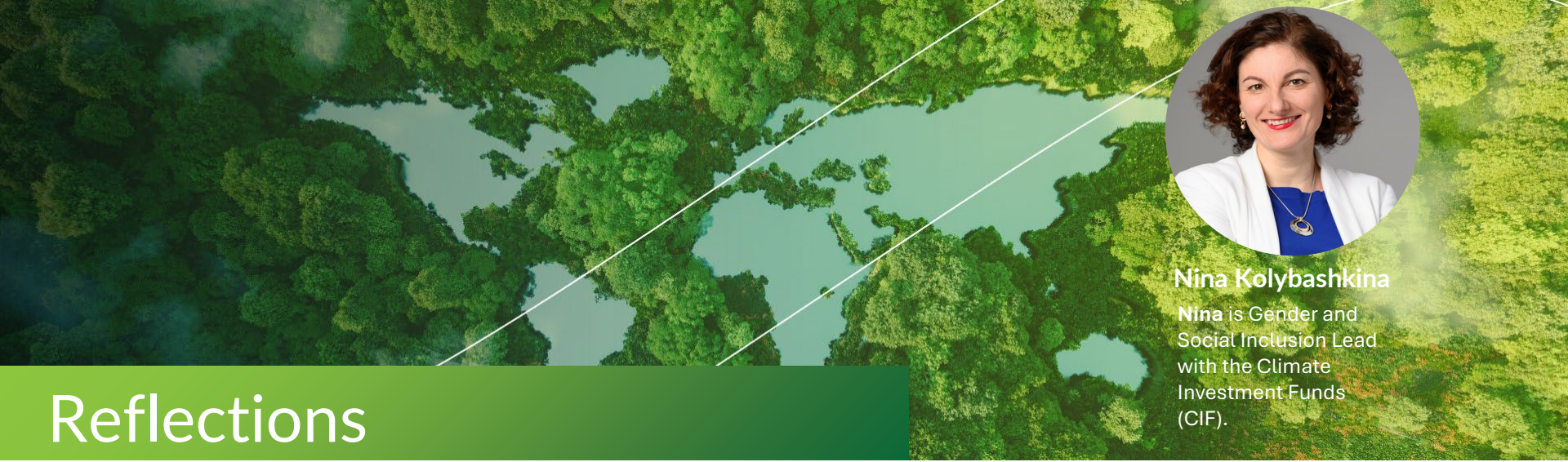
Summary of Key Takeaways

5 min per group representative



Reflections

Nina Kolybashkina

Nina is Gender and Social Inclusion Lead with the Climate Investment Funds (CIF).

Reflections on Integrating Gender and Social Inclusion in RE Planning

Thank you!

Learn more and join
globalclimateactionpartnership.org

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