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Partnering to Power Southeast Asia's Clean Energy Economy

Fostering Climate Champions

Asia Clean Energy Forum

June 14, 2023

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With its vulnerable landscapes and dense urban centers, Southeast Asia is on the frontlines of climate change.

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Climate change and the rapid and just transition to a clean energy economy are top U.S. priorities

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"We have the ability to invest in ourselves and build an equitable clean-energy future and in the process create millions of good-paying jobs and opportunities around the world."

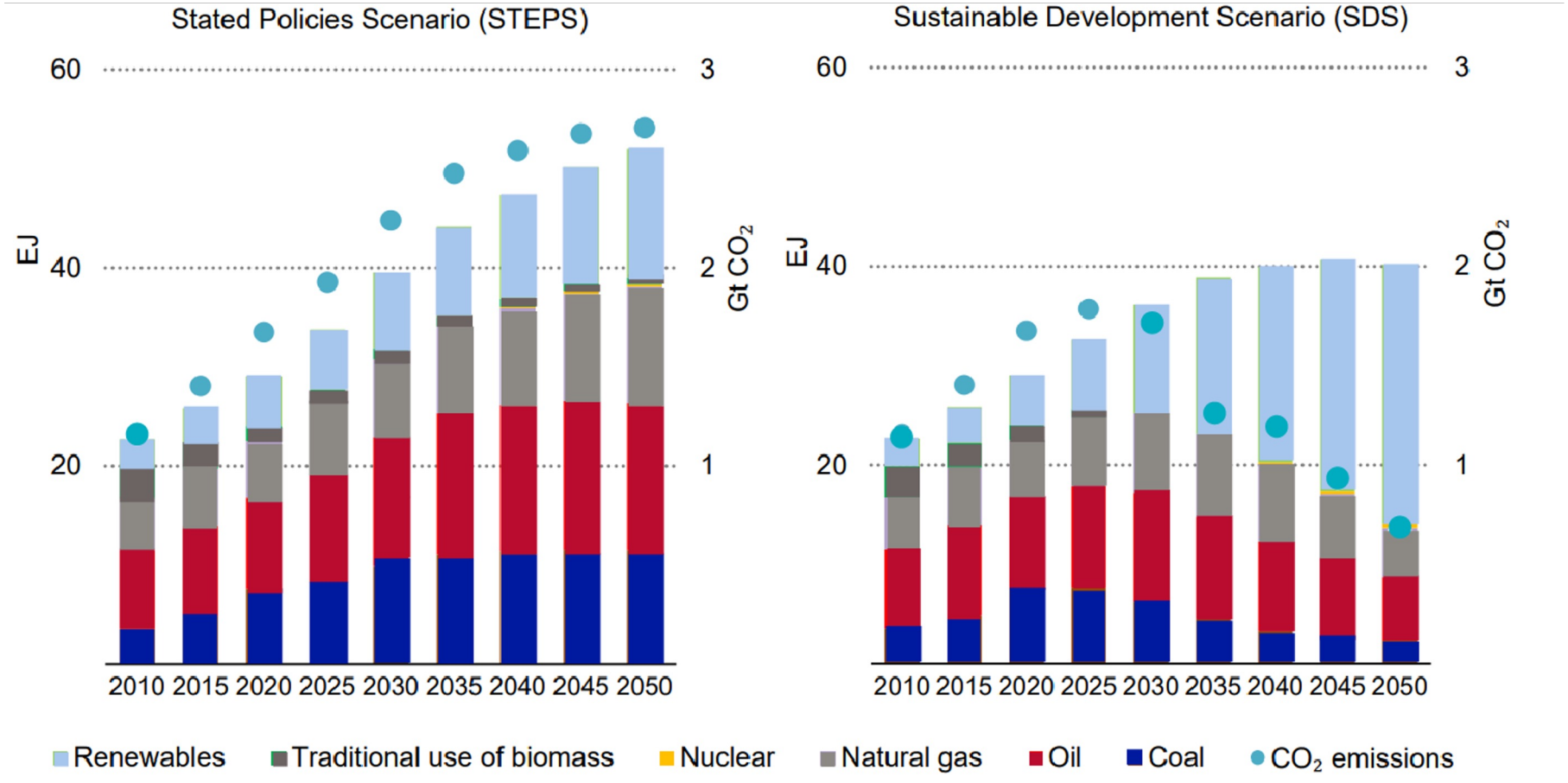
- *President Joe Biden at the COP26 Leaders Statement*

President Joe Biden speaks during a visit to the NREL Flatirons Campus in Arvada, Colorado. Photo by Werner Slocum, NREL

"We will also partner with countries to reduce, avoid, or sequester the equivalent of six billion metric tons of carbon dioxide by 2030, and that is the equivalent of taking more than one billion cars off the road for a year."

- *USAID Administrator Samantha Power at the COP26 Event*

Projected Energy supply and CO_2 emissions in SE Asia



Total energy investment in Southeast Asia will need to reach $190 billion a year by 2030 to meet the region's climate goals, up from around $70 billion a year between 2016 and 2020.

Source: SEA Asia Energy Outlook, IEA, 2022

Southeast Asia's transition to clean energy depends critically on the strength of state policies.

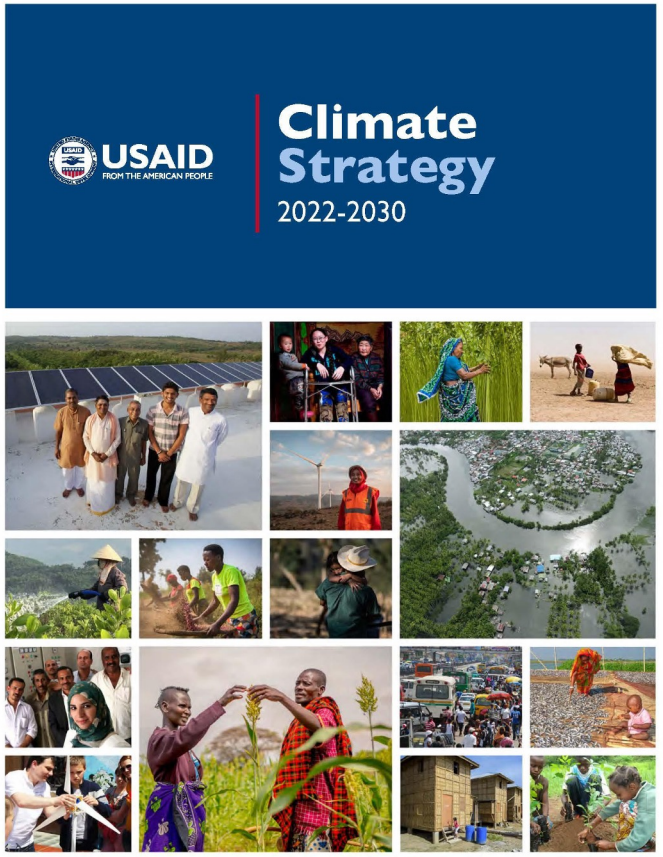
Renewables can grow to two-thirds of total energy supply by 2050 if countries can achieve announced climate aspirations.

USAID Climate Strategy, 2022-2030

USAID Climate Strategy
To accelerate equitable, resilient, and ambitious actions to address the climate crisis, USAID will:

- *Partner with countries to support activities that reduce, avoid, or sequester **six billion metric tons** of carbon dioxide equivalent*

- *Mobilize **$150 billion** in public and private finance for climate by 2030*



CLIMATE STRATEGY TARGETS 2022-2030	
Mitigation: CO2e reduced	**6** Billion metric tons
Natural & Managed Ecosystems: Hectares conserved, restored, or managed	**100** Million hectares
Adaptation: People supported to be climate resilient	**500** Million people
Finance: Public and private funds mobilized	**150** Billion dollars
Country Support: NDCs/NAPs supported	**80** Countries supported
Critical Populations: Increase equitable engagement	**40** Country partnerships strengthened

Securing Southeast Asia's Sustainable Energy Future

Link: https://www.youtube.com/watch?v=v5e5WU4Avw8

USAID Energy Programs

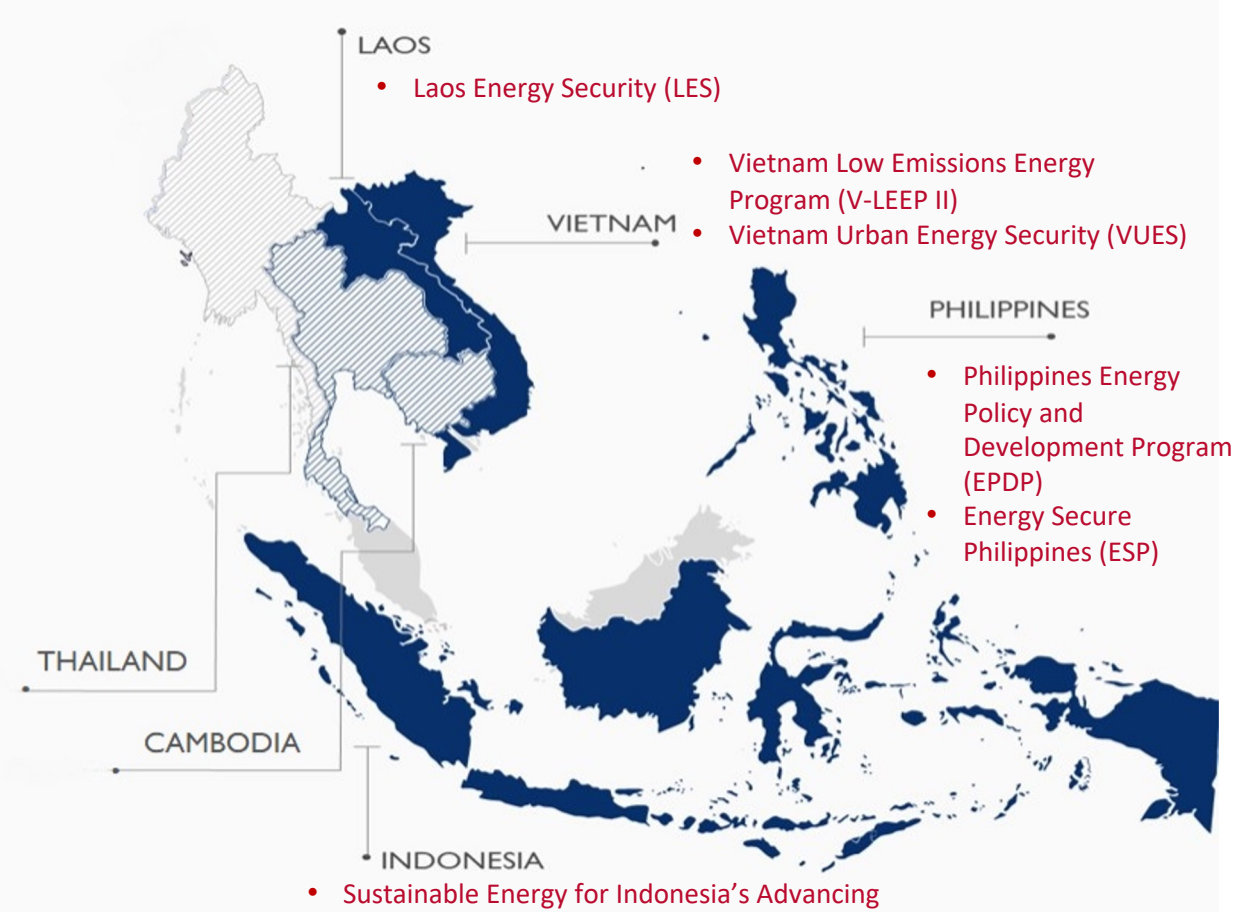
$ 8.89 bn
Investment Mobilized

11 m tons CO_2 equivalent
GHG Reduction

10,000 MW
Generation Capacity

SE ASIA TOTAL ENERGY REQUIREMENTS

BILATERAL PROGRAMS



REGIONAL PROGRAMS

- NREL/Advanced Energy Partnership for Asia - $20 million
- Southeast Asia Enhancing Development and Growth through Energy (EDGE) Hub - $10 million
- Enhancing Equality in Energy for Southeast Asia (E4SEA) - $9.1 million
- Mekong Sustainable Manufacturing Alliance (MSMA) - $5 million
- USAID and Australia Mekong Safeguards - $8.66 million
- Southeast Asia Smart Power Program (SPP) - $40 million
- Corporate Clean Energy Alliance – 15 companies

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Knowledge Brief: Mobilizing Private Sector Capital to Power the Clean Energy Transition in Southeast Asia

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Amount of Investment Mobilized by USAID Clean Energy Projects in Southeast Asia

No.	Location	Investment Mobilized ($)	Project
1	Indonesia	271 million	SINAR
2	Indonesia	1.62 billion	ICED
3	Papua New Guinea	0.115 million	PEP
4	Regional	0.116 million	AEPA
5	Regional	6.69 billion	CPA
6	Thailand	2.62 million	PFAN
7	Vietnam	311 million	V-LEEP
	Grand Total	**8.90 billion**	

Note: As of January 2023

Lessons Learned

- Overcoming misperceptions around renewable energy costs is critical for government buy-in.
- Expanding USAID approaches and tools to unlock the potential of the private sector.
- Technical assistance must be coupled with peer-to-peer learning discussions, relationship-building, and advisory support.
- Working directly with state-owned utilities is key to yielding greater success and results for developers.

Link: Knowledge Brief: Mobilizing Private Sector Capital to Power the Clean Energy Transition in Southeast Asia

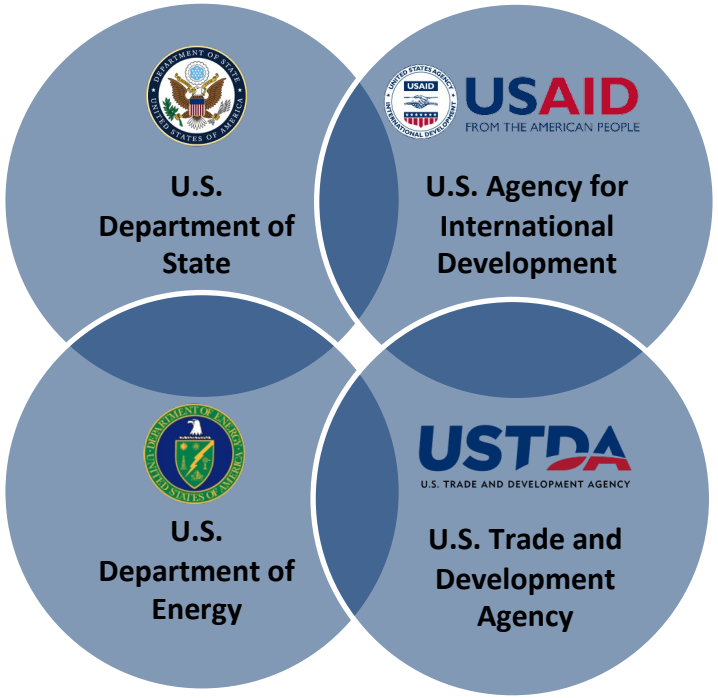
Strategic Business Partners Across Southeast Asia

Note: As of October 2022

CCEA is a part of the whole of government approach to deploying clean energy solutions

- Aligns stakeholders to achieve their ambitious climate and clean energy commitments across Southeast Asia.
- Provides access to a full menu of initiatives to amplify a company's commitment to clean energy, along with knowledge sharing events and activities, and relevant clean energy technical solutions.

- **Clean Energy Demand Initiative (CEDI)**
- Clean Energy Investment Accelerator (CEIA)
- Global Partnership for Climate-Smart Infrastructure
- Japan - U.S. Mekong Power Partnership (JUMPP)
- Japan-United States Clean Energy Partnership (JUCEP)
- Mekong-U.S. Partnership
- Power Sector Program (PSP)
- U.S.-ASEAN Smart Cities Partnership (USASCP)



- **Corporate Clean Energy Alliance (CCEA)**
- USAID-NREL Advanced Energy Partnership for Asia (AEPA)
- USAID Southeast Asia Smart Power Program (SPP)
- USAID Mekong Sustainable Manufacturing Alliance (MSMA)
- Vietnam Low Emissions Energy Program (V-LEEP II)
- Energy Secure Philippines (ESP)
- Sustainable Energy for Indonesia's Advancing Resilience (SINAR)

The U.S. DOE National Lab Complex

Office of Science Laboratories

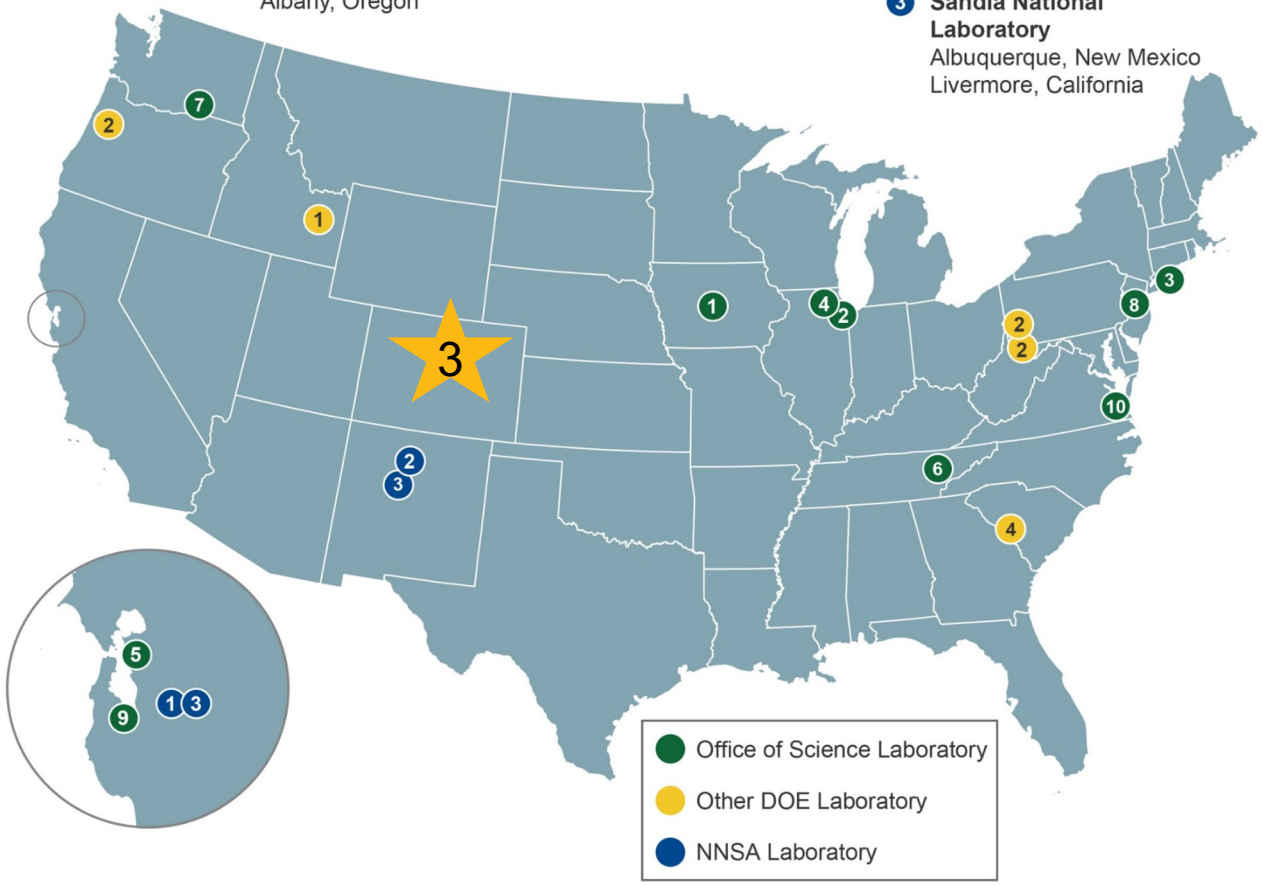
1. **Ames Laboratory**
   Ames, Iowa
2. **Argonne National Laboratory**
   Argonne, Illinois
3. **Brookhaven National Laboratory**
   Upton, New York
4. **Fermi National Accelerator Laboratory**
   Batavia, Illinois
5. **Lawrence Berkeley National Laboratory**
   Berkeley, California
6. **Oak Ridge National Laboratory**
   Oak Ridge, Tennessee
7. **Pacific Northwest National Laboratory**
   Richland, Washington
8. **Princeton Plasma Physics Laboratory**
   Princeton, New Jersey
9. **SLAC National Accelerator Laboratory**
   Menlo Park, California
10. **Thomas Jefferson National Accelerator Facility**
    Newport News, Virginia

Other DOE Laboratories

1. **Idaho National Laboratory**
   Idaho Falls, Idaho
2. **National Energy Technology Laboratory**
   Morgantown, West Virginia
   Pittsburgh, Pennsylvania
   Albany, Oregon
3. **National Renewable Energy Laboratory**
   Golden, Colorado
4. **Savannah River National Laboratory**
   Aiken, South Carolina

NNSA Laboratories

1. **Lawrence Livermore National Laboratory**
   Livermore, California
2. **Los Alamos National Laboratory**
   Los Alamos, New Mexico
3. **Sandia National Laboratory**
   Albuquerque, New Mexico
   Livermore, California



Why does USAID work with the National Labs?

Leveraging **significant DOE investment** in the National Labs to support USAID mission

Insight and participation of **senior lab experts** with **global reputations**

Neutrality and **government to government** interactions

Figure. Tesla battery inverter set up: Home energy saving devices from the 2017 Solar Decathlon in Denver, CO. Dennis Schroeder/NREL. 2017.

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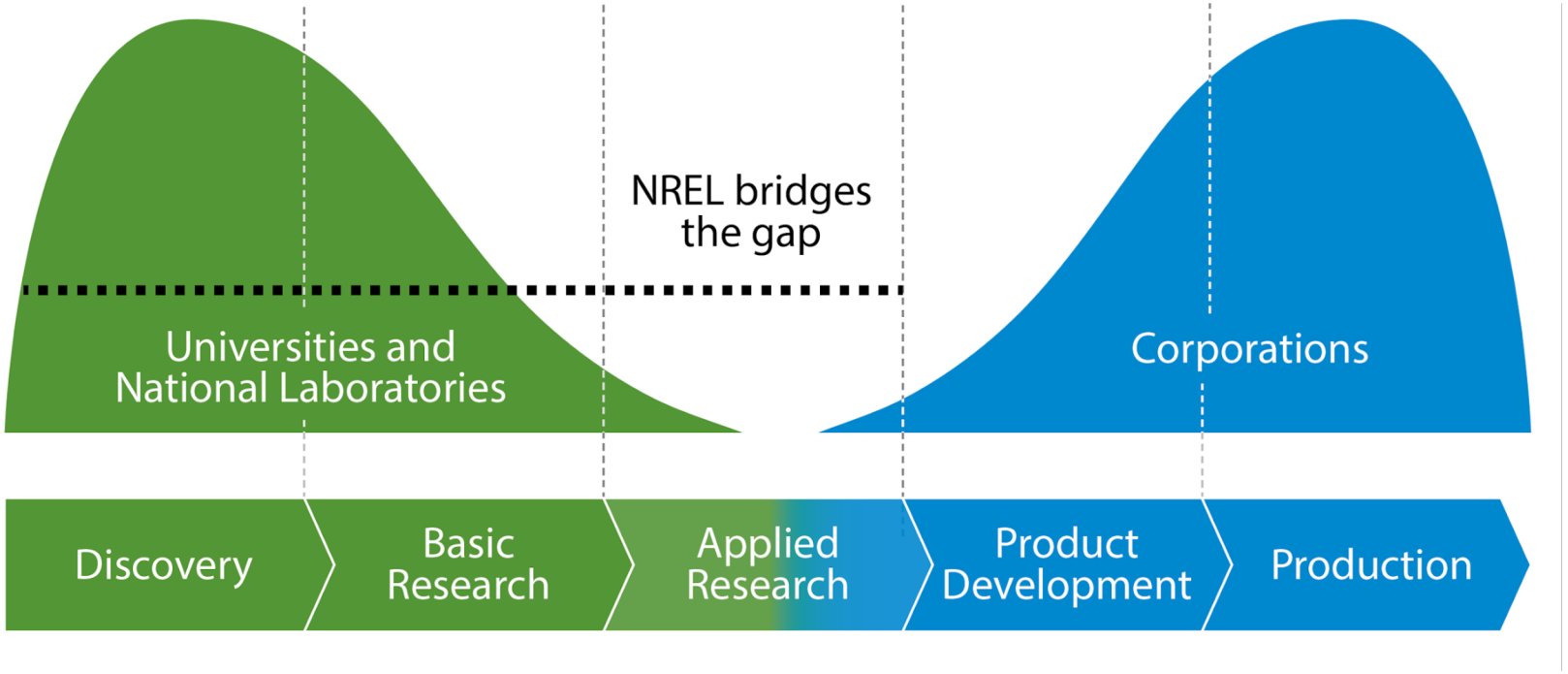
NREL Transforming ENERGY

We Reduce Risk in Bringing Innovations to Market

- NREL helps bridge the gap from basic science to commercial application
- Forward-thinking innovation yields disruptive and impactful results to benefit the entire U.S. economy
- Accelerated time to market delivers advantages to businesses and consumers



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NREL Transforming ENERGY

Why Can't Industry Do What We're Doing?

Industry invests in short-term R&D when they are confident about a return on investment.

US DOE labs:

- Assumes a longer, broader view.
- Takes on early-stage, high-risk R&D.
- Conducts research that makes it possible for industry to bring important new solutions to the market.

"It is often too risky for the private sector to be on that bleeding edge of research where profits are years and years away."

Venkatesh Narayanamurti,
Professor of Science and Technology Policy,
Harvard Kennedy School, told *The Washington Post*

EV and EVSE Deployment Support

EV & EVSE Support in Vietnam

- Support to VinFast on standards and protocols, battery circularity
- Support for electric bus deployment
- Support to Danang on grid impacts of passenger vehicle deployment
- EV grid impacts training for EVN, Vingroup/Vinfast, MOIT Danang, and HCMC

Assessing Job and Economic Impacts of EVs in Thailand

- Support to Department of Alternative Energy Development and Efficiency
- Assessing job and economic impacts from EV impact (i.e., biofuels industry)
- Capacity development on sustainable aviation fuel opportunities

EV & EVSE Support in Laos

- Providing EV & EVSE readiness support to the Ministry of Energy and Mines, including regulatory review, fleet analysis, EVSE testing, and modeling support

Images: Wiki Commons, NREL

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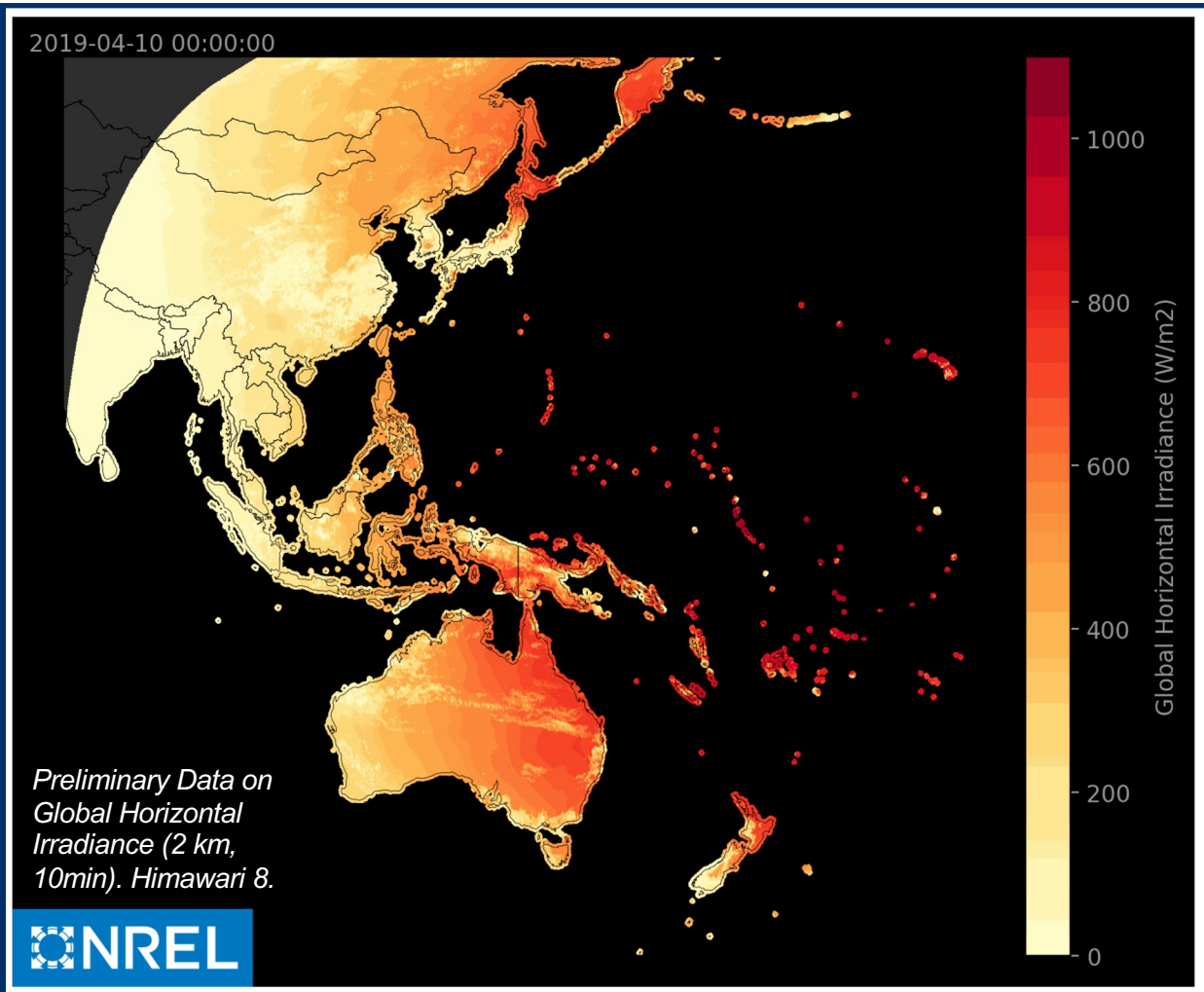
NREL Transforming ENERGY

Southeast Asia Renewable Energy (RE) Data Explorer



- **Challenge**: Lack of access to high-quality, publicly-available RE data to inform the decisions needed to transform energy sectors.
  - Level the playing field for clean energy options
  - Inform private sector investment and policy making
- **Solution:** Produce freely available, high fidelity data covering SE Asia and much of the Indo-Pacific region
  - Solar data released in 2021
  - Floating solar data released in 2023
  - Wind data released in 2023

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Industrial Decarbonization

USAID and NREL can offer a suite of support services to advance industrial decarbonization

- **Modeling and analysis** on alternative heating technologies, both at the macro-level (e.g., assessing technical and market opportunities across countries) and micro-level (e.g., modeling specific technology performance in targeted industrial applications)
- **Technology testing and validation** at NREL's facilities
- **Computing capabilities and technical expertise** that can support performance characterization and scale-up analysis of demonstration and pilot projects
- **Systems integration emulation** modeling the effects of high industrial electrification scenarios on electricity systems and integration with other sectors

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Circular Economy Approaches

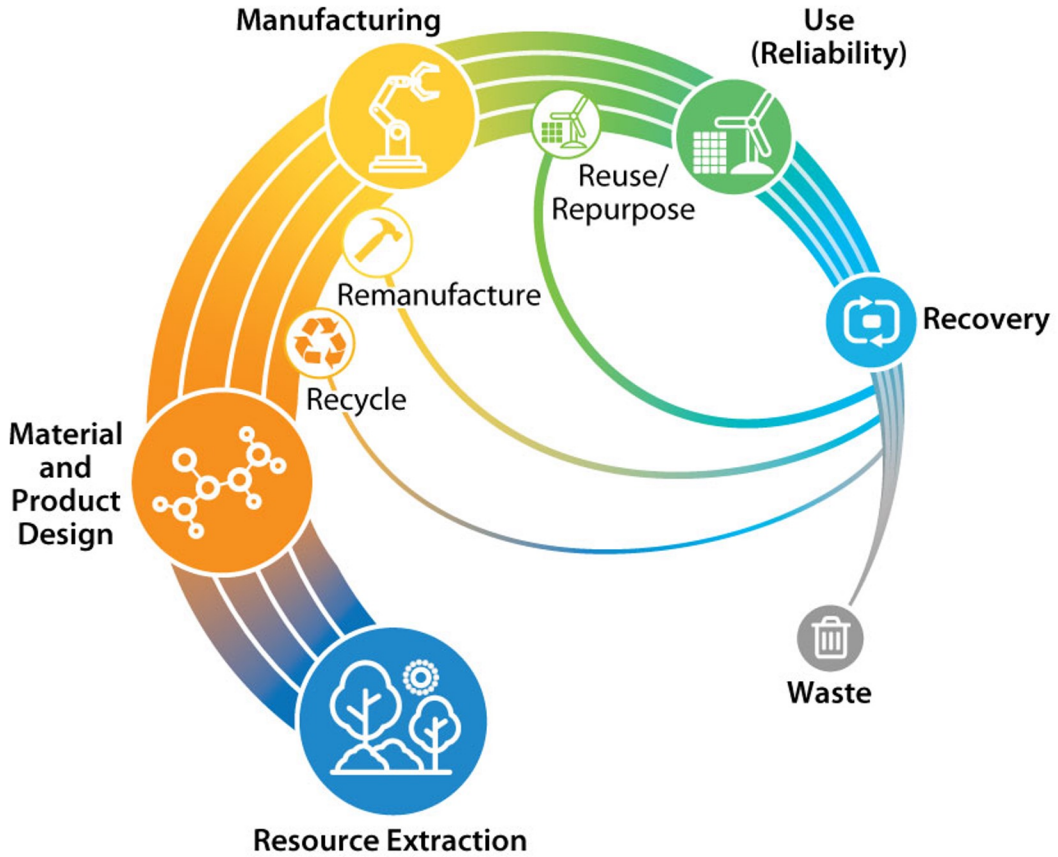
New concepts, approaches, and understanding for recovery and recycle, materials substitution, device/system design, and advanced manufacturing processes

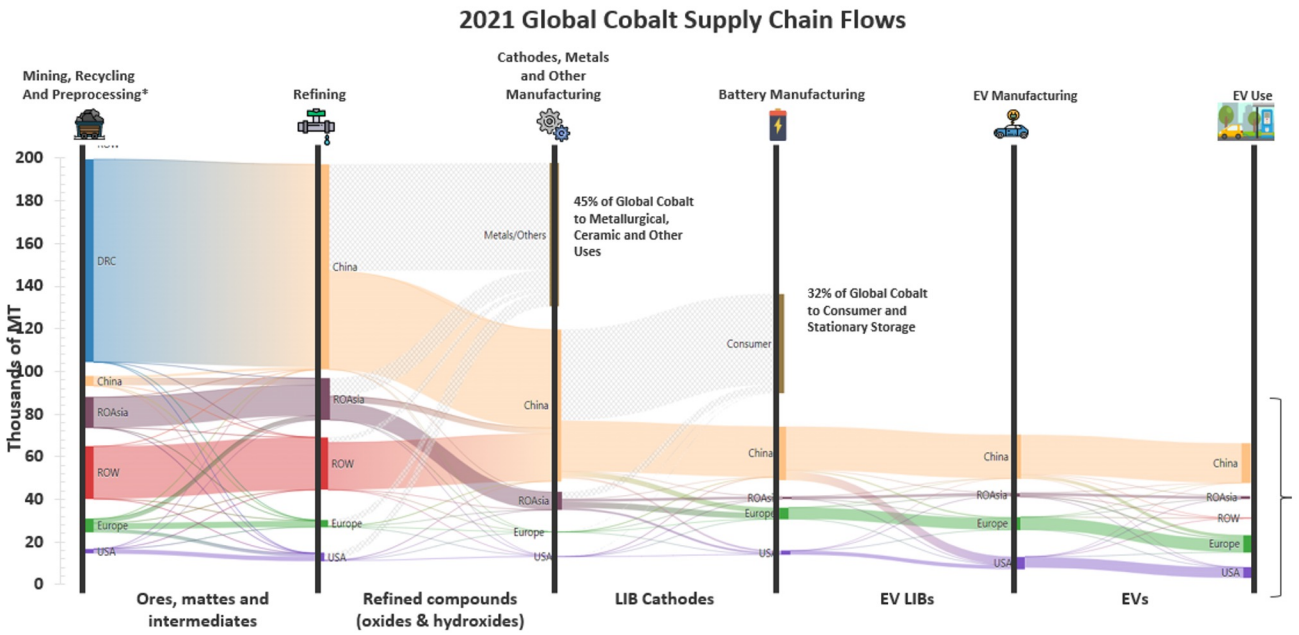
Benefit

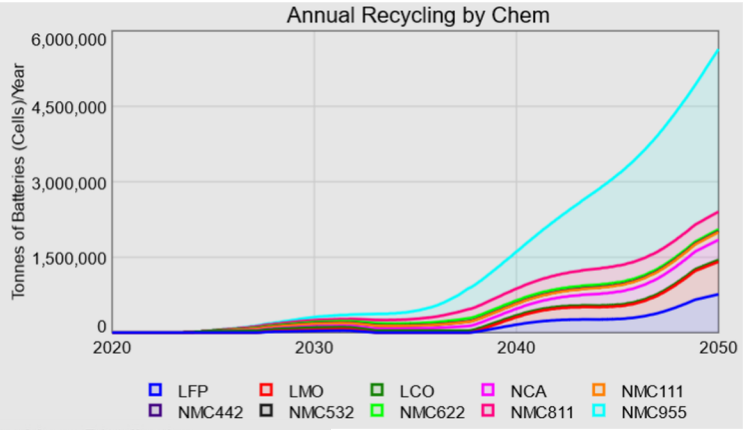
- Mitigates limited supply issues
- Reduces waste, promotes upcycling, increases efficiency and sustainability
- Adds value to end-of-life products

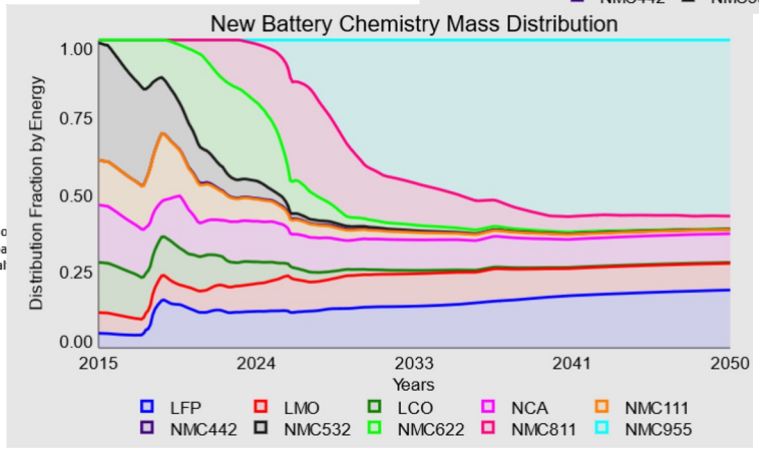
Challenges

- Providing substitutes for critical materials
- Enabling separation, processing of heterogeneous wastes
- Increasing life-cycle efficiency of embedded energy









LIBRA

Lithium-Ion Battery Resource Assessment Model

LIBRA is a system-dynamics model that evaluates the macro-economic viability of the battery manufacturing, use, and recycling industries across the global supply chain under differing dynamic conditions

Conclusions

- **Private sector leadership, innovation, and investment is critical** to achieving our shared climate and clean energy goals.
- The United States is exploring innovative ways to work with business leaders to understand and overcome information and policy barriers.
- USAID/RDMA welcomes cooperation with likeminded partners around the world.
  - Corporate Clean Energy Alliance
  - Center for Competitive Procurement
    - Corporate PPA Playbook / Seminars
- Recognize leaders and celebrate successes.

Thank you!

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USAID/Regional Development Mission for Asia

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Stay up to date with the latest energy sector news and events from USAID and partners

www.usaidseaedgehub.org/

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Corporate Clean Energy Alliance

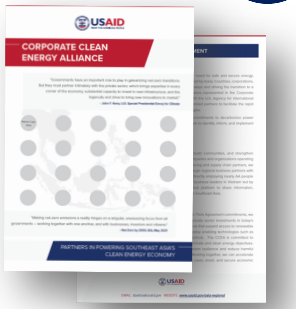
History & Milestones

September 2017
Renewable Energy Buyers Alliance Roundtable, Santa Clara, CA, USA

2017
USAID Vietnam V-LEEP program begins working with MOIT

2018
Vietnam RE Buyers Working Group
- V-LEEP (grid RE) and CEIA (captive RE)

2021
USAID/RDMA Private Sector Landscape Assessment (PSLA) and Regional Development Cooperation Strategy (RDCS)



May 2021
1st CCEA Roundtable

September 2021
2nd CCEA Roundtable

COP26 Announcement Nov 2021

February 24, 2022
CCEA Roundtable - Direction and Priorities

ACEF 2022 Launch

January 2023
Launch Policy WG
Direction and Priorities

June 2023
ACEF

Pathways to Decarbonize

Well crafted strategies , balancing the goals of both the brands and the supply chain

ELECTRICITY

- Corporate Power Purchase Agreements(PPA)
- Renewable Energy Certificates
- Green Tariffs

OTHERS

- Thermal Decarbonization
- Energy Efficiency Measures
- Carbon Offsets

VLEEP provided policy support to ERAV for Rooftop Solar for C&I Sector

Success Story

Promoting Rooftop Solar Development

"We greatly appreciate V-LEEP's support to Vietnam's solar market development, especially working with MOIT to develop the national RTS program. Thanks to V-LEEP's effort, Indefol-solar has expanded its RTS from a few MW in 2019 to approximately 80 MW installed by the end of 2020, even despite the severe impacts of COVID-19."

- Mr. Hieu, Chief Executive Officer, Indefol-solar, a solar developer that owns 80 MW of utility-scale solar and wind and 80 MW of rooftop solar, including the largest rooftop solar system in the world (38 MW) powering a manufacturing facility in Nike's supply chain.

MSMA conducted biomass supply chain evaluations and mapping