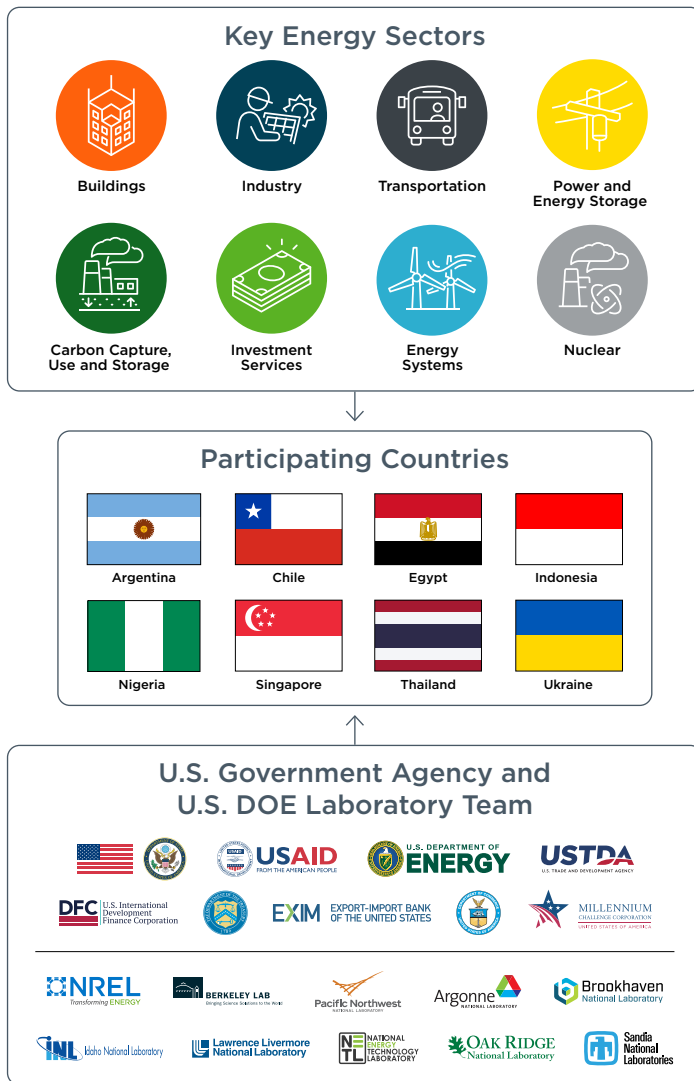


The Net Zero World Initiative

DOE-led multi-lab flagship initiative that provides world-class technical support to countries working towards advanced and resilient energy systems.

Launched at the end of 2021, the Net Zero World Initiative is a U.S. Department of Energy (DOE)-led program that partners with countries to accelerate energy transitions. This initiative brings together world-class experts and resources from 10 DOE national laboratories and 9 U.S. government agencies.

Net Zero World works collaboratively with government leaders and technical representatives from Argentina, Chile, Egypt, Indonesia, Nigeria, Singapore, Thailand, and Ukraine to advance energy initiatives in these economies. By leveraging the expertise of DOE's world-class laboratories, partner countries have the technical solutions, knowledge, and confidence to rapidly transition to clean, secure, and equitable energy systems.



What We Do

Through advanced energy and sectoral modeling, Net Zero World helps these countries strengthen their national energy strategies and policies, providing key insights for achieving their energy goals. The initiative engages in deep technical collaboration with local teams to implement specific decarbonization measures and pilot projects to accelerate country-driven energy transitions. Additionally, Net Zero World works to create enabling conditions for investment and scale by de-risking projects, strengthening financing plans and instruments, and building investment partnerships, ensuring that countries realize their energy ambitions.



How We Work to Maximize Global Impact

Throughout 2024, Net Zero World actively worked to elevate energy ambitions, accelerate technology deployment, mobilize investment, and support community-led energy initiatives. Net Zero World has contributed to strengthening nationally determined contributions (NDCs) and long-term energy strategies with the participating countries; advanced the implementation of more than 20 energy policies and measures across its 8 countries; facilitated energy technology deployment through pilot projects that will inform GW-scale clean energy deployment; and trained near 400 individuals in various clean energy fields. Net Zero World is on track to mobilize over \$10 billion in investment across its eight partner countries.

These examples highlight some of Net Zero World's efforts, while similar actions, detailed in the following sections, are advancing in other partner countries to support progress in the energy sector.



Advanced Energy Modeling and Planning

Net Zero World's modeling and planning capabilities guide partners and governments in developing robust and actionable energy transition strategies via:

- **Detailed energy system modeling strengthening national plans:** Using advanced tools like the Low Emissions Analysis Platform (LEAP), MESSAGE, TIMES, and the Global Change Analysis Model (GCAM), Net Zero World helps countries identify the most cost-effective and impactful pathways.
- **Localized data platforms:** Net Zero World creates accessible, country-specific data platforms that improve decision-making and facilitate cross-ministerial collaboration.
- **In-country modeling capacity:** Net Zero World supports cross-agency energy modeling teams and in-house modeling units at governmental energy agencies and technical institutions through localized modeling tools and data and training and peer exchange on energy system modeling, economic analysis, and pathway modeling.

TRANSFORMATIVE IMPACT EXAMPLES:

- Enhancing **Argentina's** analysis capability through MESSAGE and LEAP modeling training; supporting the Ministry of Energy's integration of large-scale energy expansion into its 2050 Energy Transition Strategy.
- Informing **Chile's** revised national energy strategy with LEAP modeling.
- Strengthening **Ukraine's** capacity to analyze the

energy/water/land nexus with TIMES and GCAM modeling training; helping develop the National Energy and Climate Plan and Low Emission Development Strategy.

- Providing expertise for **international workshops** and specialized modeling collaboration for in-depth technical exchanges.



Accelerated Technology Deployment

Net Zero World works to accelerate the deployment of cutting-edge technologies through feasibility studies, pilot projects, strengthened policies and regulations, and technology roadmaps.

- **Pilot projects and technical support:** Net Zero World is conducting first-of-their-kind pilot projects to demonstrate viability and scale-up potential of cutting-edge energy technologies.
- **Infrastructure and grid modernization:** Net Zero World is supporting the development of technology roadmaps and system upgrades and the integration of advanced technologies.
- **Policy development support:** Net Zero World is helping governments design and implement policies, regulations, and market mechanisms to accelerate energy goals.
- **Workforce and technical skills development:** The initiative is building local expertise to operate, maintain, and expand new technologies.

TRANSFORMATIVE IMPACT EXAMPLES:

- Supporting the development of a 10-MW mini-grid project in Merefya, **Ukraine**, for national replication; laying the groundwork for up to 2 GW of distributed energy deployment.
- Facilitating the deployment of 8 MW of embedded generation projects in **Nigeria** with Abuja Electricity Distribution Company and Ikeja, conducting technical working sessions to optimize feeder models and site designs.



Market Development and Investment Mobilization

Net Zero World works to create enabling conditions for investment and scale by de-risking projects and providing tailored financial solutions through:

- **Investment roadmaps and financial mechanisms:** Net Zero World is developing new finance instruments such as revolving loan funds, public-private investment frameworks, and de-risking strategies for frontier technologies and teaming with countries, multilateral development banks, and other investors on roadmaps and investment plans.

- **Project technical de-risking, bankable pipelines, and investment partnerships, with techno-economic analysis for project aggregation:** Net Zero World is conducting technical project de-risking through feasibility studies and techno-economic analysis, building bankable project pipelines to match investment with high-impact opportunities, and fostering investment partnerships with industry.

TRANSFORMATIVE IMPACT EXAMPLES:

- Developing a 10-GW offshore wind roadmap for **Chile**—with the World Bank—representing a \$42–\$62 billion investment opportunity for industry.
- Establishing a revolving loan fund with inflation rate guarantees in La Pampa, **Argentina**, to mobilize \$40–\$50 million for energy efficiency and distributed energy building retrofits.
- Advancing a Battery2EV Roadmap in **Indonesia** to attract major investments for mineral processing and supply chains; and conducting analysis of buildings, industry, and transportation projects for Indonesia’s Just Energy Transition Partnership investment plan.
- Supporting the creation of a roadmap in **Indonesia** to convert 620 MW of diesel power to resilient-hybrid mini-grids via a U.S. Trade and Development Agency grant, unlocking \$1.5 billion in potential investments.



Community and Workforce Development

Net Zero World fosters sustainable and equitable transitions by prioritizing community engagement, workforce reskilling, and capacity-building.

- **Just transition strategies:** Net Zero World is providing technical support and peer-exchange to help communities transition from fossil fuels to sustainable and resilient energy systems.
- **Workforce development:** Net Zero World is designing programs that promote leadership and technical skill development to ensure inclusive participation in the clean energy transition.
- **Economic diversification and reinvestment programs:** Net Zero World is partnering to develop community investment strategies that support new economic opportunities in energy initiatives.

TRANSFORMATIVE IMPACT EXAMPLES:

- Supporting community energy initiatives in **Tocopilla, Chile**, by supporting new businesses and creating jobs as part of an economic revitalization plan to replace lost economic value following the closure of a 280-MW coal plant.
- Formalizing a sister city relationship between Lawrence, Kansas, and Tocopilla, Chile, and organizing

a U.S. study tour with representatives from Chile’s Ministry of Energy, the private sector, academia, and community leaders to foster long-term collaboration on advanced energy initiatives, economic development, and knowledge exchange.



Capacity-Building and Learning

The Net Zero World Initiative is dedicated to empowering countries with the skills, knowledge, and technical capabilities needed to lead their energy goals. Through extensive capacity-building programs, Net Zero World equips local governments, industry leaders, and communities with the tools to plan, implement, and sustain energy initiatives across various sectors.

- **In-country workshops:** Net Zero World provides tailored workshops and training sessions that cover a broad range of topics, from advanced technologies to effective policy frameworks. These sessions are designed to build local capacity and provide practical skills for implementing sustainable energy solutions.
- **Peer-to-peer learning:** The initiative facilitates peer-learning between Net Zero World partners to foster the sharing of insights, innovative strategies, and practical solutions to shared energy challenges.
- **Technical assistance:** Net Zero World offers specialized technical assistance to government agencies and key institutions to strengthen capabilities in energy modeling and system planning.
- **Study tours at DOE labs:** The initiative gives partners the opportunity to engage in study tours and trainings with Net Zero World experts at DOE national laboratories.

TRANSFORMATIVE IMPACT EXAMPLES:

- Provided our partners with **hands-on technical training** at two DOE national laboratories and leadership development focused on energy storage systems, high-performance buildings, electric mobility, and just energy transitions.
- Supported capacity-building through action plans developed by the program participants to spur energy progress in their home countries.
- Fostered a network of leaders dedicated to advancing resilient energy systems.



Transformative Policies and Roadmaps

By integrating advanced technologies with strategic policy support, Net Zero World helps create robust frameworks for effective energy management through:

- **Roadmap development:** Net Zero World supports the creation of detailed roadmaps to achieve large-scale energy integration and comprehensive energy improvements across all sectors.
- **Policy innovation and support:** Net Zero World collaborates with partners to support the development of robust and innovative policies that promote the rapid deployment of advanced technologies.
- **Long-term strategic planning:** Using advanced analytical tools, Net Zero World provides critical support to strengthen nationally determined contributions and long-term energy strategies.

TRANSFORMATIVE IMPACT EXAMPLES:

- Development of a clean energy roadmap for the battery-to-electric manufacturing transition in **Indonesia**, plus a strategy to replace diesel generation with resilient energy in small island communities.
- Feasibility studies and engineering designs for converting diesel-powered installations into hybrid-resilient energy mini-grids on five islands in **Indonesia**, supporting a broader national strategy to replace 500 MW of diesel generation.
- Providing technical assistance in **Argentina** through policy guidance, technical workshops, and a strategic energy transition roadmap.



Expanding Global Impacts Through Strategic Partnerships

The key to Net Zero World's success lies in expanding impacts through strategic partnerships.

Private sector partnerships are crucial for driving transformative energy transitions by co-developing joint roadmaps, launching innovative pilot projects, and conducting comprehensive feasibility assessments. These collaborations also play a key role in designing tailored financial instruments and mobilizing private equity to de-risk projects and attract larger investments. By aligning expertise and resources, private sector partners help accelerate the deployment of energy solutions, enabling scalable, market-driven energy pathways that foster long-term economic growth.

Philanthropic partnerships help accelerate high-impact energy initiatives, mobilizing investments that drive large-scale improvements and serve as models for replication. These collaborations provide regional leaders with the technical and capacity-building support needed for affordable energy deployment, while expanding impact through global learning and shared actions. Such partnerships also create opportunities for deeper engagement in key countries and align efforts with other philanthropic initiatives for greater collective impact.

Net Zero World works closely with prominent philanthropies such as Breakthrough Energy, the Rockefeller Foundation, the Global Energy Alliance for People and Planet, and others to jointly support country-driven energy priorities.

Multilateral and bilateral organization partnerships are essential for advancing global clean energy transitions. These in-kind collaborations help coordinate efforts, streamline resources, and expand the reach of our initiatives. By working closely with cooperative agencies, we can align strategies, enhance technical expertise, and drive impactful efforts across regions. These partnerships support the development of shared frameworks, leverage collective knowledge, and ensure that programs are tailored to local needs, ultimately accelerating energy deployment and strengthening the resilience of energy systems globally.

Net Zero World collaborates closely with key multilateral and bilateral partners to advance global energy transitions. These partnerships include the Energy Transition Council, the Energy Transition Partnership, the German Corporation for International Cooperation, the World Bank, the African Development Bank, the Asian Development Bank, the Inter-American Development Bank, the European Bank for Reconstruction and Development, the International Atomic Energy Agency, the International Energy Agency, and the International Renewable Energy Agency. Together, these organizations provide crucial support, expertise, and resources to accelerate the deployment of energy solutions.