



USAID
FROM THE AMERICAN PEOPLE

SCALING UP RENEWABLE ENERGY



EXECUTIVE SUMMARY

The U.S. Agency for International Development (USAID) believes in people and countries' desire to shape their own futures. We also believe that renewable energy can transform economies, lift people out of poverty, and support a country's journey to self-reliance. When partner countries prioritize renewable energy to fuel economic and social development, we are proud to support them on their journeys.



Through the Scaling Up Renewable Energy (SURE) project, USAID helps partner countries power economies with clean energy while opening markets to private investment and competition.

SURE helps countries plan, procure, integrate, and incentivize renewable energy. In the past year, SURE worked in 18 countries, advising governments, utilities, private developers, and others on actions that can increase electricity access and power brighter futures for all.

In 2020, SURE supported auctions in Colombia and India that achieved historically low prices through private investment in renewable energy. The Government of Colombia awarded **1,374 megawatts (MW)** of new wind and solar power projects that will attract roughly **\$1.3 billion** in private investment and save up to **\$184 million** in annual electricity costs. The Government of India procured **6.6 gigawatts (GW)** of electricity

through first-of-their-kind tenders that will power the grid 24 hours a day using a combination of renewable technologies and storage. The projects are expected to bring over **\$3 billion** in investment.

SURE developed **30 technical tools** that supported the design and implementation of renewable energy programs, built the capacity of **221 institutions** to address clean energy issues, and trained **1,066 people** in strategic energy planning, renewable energy procurement and integration, and distributed energy business models and incentives. USAID and SURE designed these trainings and tools to help policymakers, power utilities, and regulators be more strategic, effective, and innovative.



© Dieter Steinbach, EVN Macedonia

Jovana, a Mihajlo Pupin vocational school student, completes her practical training on metering devices under the guidance of a mentor electro fitter. EVN Macedonia donated the classroom and all its equipment as part of the project 20-20-20, which aims to increase the competencies of future electro fitters.

SURE worked with national energy ministries and regulators to create environments for renewable energy to thrive. In 2020, partner country governments adopted policies and regulations to support the integration of variable renewable energy (VRE) and catalyze private investment.

SURE also continued to support **Engendering Utilities** as it partners with utilities to counter gender disparity, cultivate talent, and promote leadership opportunities for women so they can thrive in well-paying energy jobs. Over the last year, Engendering Utilities strengthened partnerships with **17 power utilities in 14 countries in Africa, Asia, the Caribbean, and Europe** as well as utilities in other male-dominated sectors. These partnerships unlocked economic opportunities for over **1,300 women**.

Looking ahead, USAID will continue to advance renewable energy through a new five-year, \$29.7 million project that will help partners create modern, reliable, and efficient power networks. SURE's next phase will provide technical support and build capacity around renewable energy planning, grid integration, competitive procurement, and technology end-of-life management to reduce e-waste. SURE will also manage an innovation fund to attract new and nontraditional partners to scale up renewable energy.



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PLANNING A RENEWABLE ENERGY FUTURE

Maximizing VRE requires a new approach to planning, challenging system operators and policymakers to think differently about integrating power into the grid. SURE strengthens institutions and builds capacity to incorporate renewable energy cost-effectively into national portfolios. Getting it right empowers countries to deliver more affordable, reliable electricity to homes and businesses.

INDIA

In India, SURE oversees [USAID's Partnership to Enhance Clean Energy Deployment 2.0 Renewable Energy \(PACE-D 2.0 RE\)](#), a collaboration with the Ministry of New and Renewable Energy (MNRE) to help India meet the energy needs of a growing population. PACE-D 2.0 RE is an integral part of the [Asia EDGE](#) initiative, which builds sustainable and secure energy markets throughout the region.

For electricity distribution companies (DISCOMs) in India, power purchase accounts for 60 to 70 percent of total costs. Better resource planning can significantly reduce these costs. PACE-D 2.0 RE addressed this opportunity in a white paper, "[Rethinking DISCOM Resource Planning in a Renewable Energy-Rich Environment](#)," and provided a more systematic approach. DISCOMs in partner states Assam and Jharkhand are expected to reduce power purchase costs by 5 to 10 percent (\$35 million annually for each DISCOM) and increase the share of electricity from renewable energy by 10 to 15 percent.

The [Renewable Procurement Optimization and Smart Estimation \(REPOSE\) tool](#), resource planning software being developed by PACE-D 2.0 RE, will help DISCOMs more accurately estimate consumers' energy needs, match demand with a power portfolio that integrates renewable energy, and maximize renewable energy procurements cost effectively.

To standardize this innovative approach, PACE-D 2.0 RE worked with the Government of India to develop model regulations for long- and medium-term load forecasting, resource planning, and power procurement optimization, which are anticipated to be adopted by several DISCOMs and regulators.

Getting it right empowers countries to deliver more affordable, reliable electricity to homes and businesses.

SURE laid the foundation for broader replication of these strategies throughout the region. Launched in September 2020, a six-week online certification program for utilities in India and South Asia will prepare women and young professionals to develop resource plans for their utilities using REPOSE.

SURE engaged over 200 policymakers, power utility planners, and regulators at a panel at the [2020 Asia Clean Energy Forum](#) to promote knowledge exchange among Asian countries facing similar challenges.



Countries achieve historically low energy prices using a transparent procurement process that boosts confidence of private power producers.

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INNOVATING TO IMPROVE COMPETITION: RENEWABLE ENERGY AUCTIONS

Through SURE, USAID helps partner countries increase renewable energy development with open and competitive auctions. SURE helps partner countries design renewable energy auctions and develop regulatory frameworks that attract private investors. Auctions invite power project developers to bid against each other for long-term contracts to supply electricity at the lowest price. By lowering prices and incorporating greater shares of renewable energy, governments can increase access to reliable, clean electricity.

BANGLADESH

Bangladesh has a vulnerable energy sector due to overreliance on fossil fuels and risks associated with diminishing domestic gas reserves. This year, SURE supported the Government of Bangladesh's efforts to diversify its energy mix via increased integration of renewable energy. SURE improved the knowledge and institutional capacity of the Government of Bangladesh—as well as private sector, academic, and non-governmental organizations—on issues related to utility-scale renewable energy. In line with Asia EDGE, SURE developed "[System-Friendly Competitive Procurement in Bangladesh](#)," a white paper that outlines VRE system integration measures that can enhance power system flexibility, including grid expansion and upgrades, system operation procedures and market practices, and power system planning that incorporates higher shares of VRE. The paper serves

as a roadmap to increase VRE deployment, advancing energy security, self-reliance, and resilience.

The Government of Bangladesh receives power project proposals through a formal procurement process as well as through unsolicited proposals. However, a lack of specifics on potential site conditions and grid availability make it difficult for developers to submit bids with competitive prices. SURE, in coordination with the U.S. Department of Energy's National Renewable Energy Laboratory (NREL), conducted a series of four webinars, including [Procurement Design and Bidding Simulation](#) and [Renewable Energy Project and Procurement Bankability](#), to improve the government's capacity to conduct open and transparent procurements. The webinars, attended by 137 local participants, will help Bangladesh's power planners increase competition, improve efficiency, and increase transparency.

COLOMBIA

In 2020, SURE worked with the Government of Colombia to conduct the country's first successful renewable energy auction, which awarded contracts for seven projects that will mobilize an estimated \$1.3 billion in private capital. The projects will provide 1,374 MW of clean energy, reduce greenhouse gas (GHG) emissions by more than 11 million tons of carbon dioxide equivalent (tCO₂e) through 2030, and create around 5,000 local construction jobs.

Colombia's Minister of Mines and Energy [expressed gratitude](#) to USAID for its support of the successful renewable energy auction. [Climatelinks](#), a technical resource for development practitioners, highlighted lessons learned from Colombia's renewable energy journey.

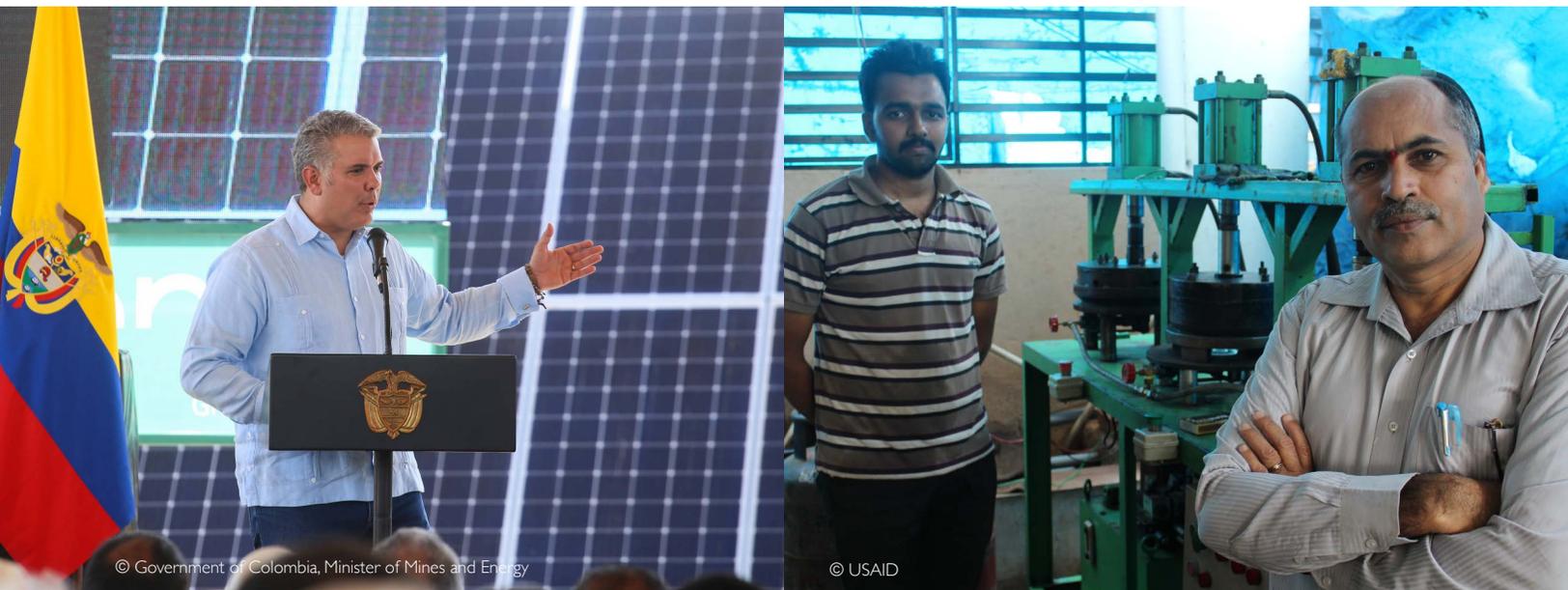
SURE continues to play a key role in deepening collaboration between the public and private sector. Led by the Office of the Vice President and with support from SURE, the Government of Colombia developed a comprehensive multi-sector initiative to address workforce development issues in Guajira province that could cause project delays, cost overruns, and project cancellations. As part of this initiative, USAID is supporting the Ministry of Mines and Energy, Ministry of Labor, and others to [develop a workforce plan](#)

that will construct and operate a first wave of 2,531 MW of renewable energy, consolidate an economic development engine for the region, and catalyze long-lasting benefits for the local population.

INDIA

India is striving to achieve 40 percent of its power generation capacity from renewable energy by 2030. SURE is supporting this goal by helping the government test new approaches to procure renewable energy projects and integrate them into the grid. Through PACE-D 2.0 RE, SURE released a white paper, "[System-Friendly Competitive Procurement for Renewable Energy in India](#)," which highlights global examples of successful large-scale renewable energy procurement designs that can be adapted in India, such as time-based incentives and penalties, virtual and physical hybrids, and locational signals.

Soon after the release of the white paper, the Solar Energy Corporation of India (SECI) announced its first time-block-based tender of 1.2 GW. SECI designed the tender to facilitate grid integration and higher-capacity utilization of renewable energy while lowering costs for consumers. In March 2020, SECI released another tender for 5 GW of round-the-clock power, which would power the grid 24 hours a day using a combination of renewable technologies and



© Government of Colombia, Minister of Mines and Energy

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storage. Coupled with the first tranche of round-the-clock power procured by the Government of India through a 400 MW tender, these three tenders could bring over \$3 billion in investment.

INDO-PACIFIC REGION

Stretching from the western shores of India to the west coast of the United States, the Indo-Pacific region is home to many of the world's fastest growing markets. Two-thirds of projected global energy growth over the next 20 years will occur in developing countries in this region. To support this growth, SURE co-hosted the [Asia EDGE Regional Competitive Procurement Dialogue](#), a three-day event to facilitate

knowledge exchange among 50 delegates from 11 Asian and Southeast Asian countries. The event leveraged experiences from successful procurements in Brazil, India, and Hawaii; enabled relationship-building between countries; and convened stakeholders who plan, implement, and oversee renewable energy procurements. With representatives from national energy ministries, power utilities, system operators, regulators, and others, this dialogue supported the U.S. Government's [Asia EDGE](#) initiative.



Countries represented at the Asia EDGE Regional Competitive Procurement Dialogue:

Bangladesh, Cambodia, Indonesia, Lao PDR, Malaysia, Nepal, Philippines, Thailand, and Vietnam.



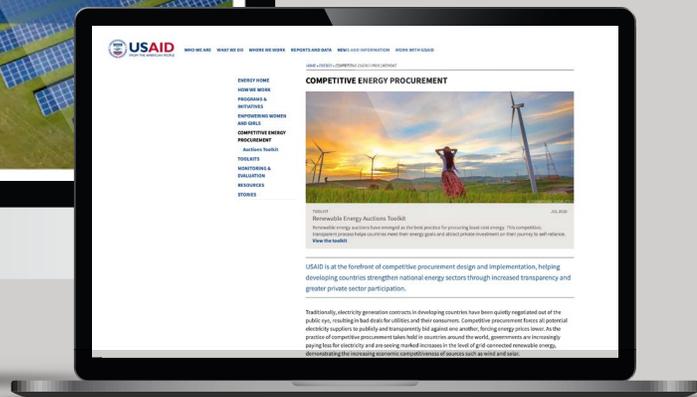
Two-thirds of projected global energy growth over the next 20 years will occur in developing countries within the Indo-Pacific region

USAID Renewable Energy Auctions Toolkit

Open, transparent, and best-value procurements enable countries to affordably generate energy while reaping environmental, financial, and social benefits. SURE developed the [Renewable Energy Auctions Toolkit](#) and [Renewable Energy Auctions Webinar Series](#) to help countries mobilize public and private resources, strengthen local capacities, and accelerate enterprise-driven development.

The toolkit is a gateway to USAID technical resources that policymakers, international development professionals, and energy stakeholders can use to design and implement successful renewable energy auctions. With the latest research, guides, training materials, case studies, and sample documents, the toolkit is truly a one-stop shop. It was one of the most visited energy toolkits on USAID.gov in 2020.

The webinar series aims to increase energy practitioners' skills to plan, fund, and carry out successful auctions. More than 200 people from 49 countries participated in the first webinar, [Fundamentals of Renewable Energy Auctions](#), learning about the design process, measures to control for quality and price, strategies to ensure serious bids and encourage project completion, and ways to efficiently allocate risks between buyers and sellers. In [Kazakhstan: Energy Diversity through Renewables](#), participants learned from Kazakhstan's experience how to diversify a national energy mix, attract international investors, and modernize the energy sector while achieving competitive prices in an open and transparent procurement. The final webinars are planned for 2021.



More than 200 people from 49 countries participated in the first webinar



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INTEGRATING RENEWABLE ENERGY

As the share of VRE in power systems increases, many countries find that grid integration concerns become a real barrier to scaling up renewable energy. SURE helps partner countries prepare their national grid infrastructure for increased renewable energy uptake.

BANGLADESH

Bangladesh set a renewable energy target of 2,470 MW by 2021 and 3,864 MW by 2041. Integrating VRE would allow the country to diversify its power mix and reduce the risks of unpredictable gas and coal prices, as well as the negative environmental impacts of thermal power generation. SURE released “[Challenges in the Development of Variable Renewable Energy in Bangladesh](#),” a white paper that identified the most critical challenges to developing grid-connected VRE and recommended ways to address the challenges.

COLOMBIA

SURE, working with the United States Energy Association and NREL, designed and launched a capacity-building program to enhance participation of women and young professionals in VRE. Sixty-one people (42 female, 19 male) engaged in the first three modules to promote engagement and address challenges in VRE integration and operation. Due to COVID-19, the program moved online, using recorded trainings and live discussions on solar and wind energy, battery storage, and power system planning.

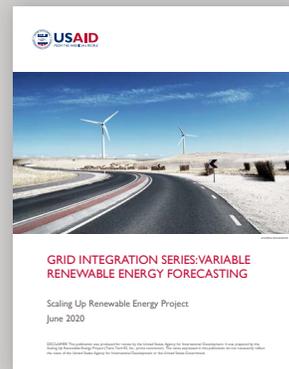
INDONESIA

As Indonesia ramps up renewable energy generation, power system planners must prepare for increasing amounts of intermittent supply from wind, solar,

and other technologies. In South Sulawesi province, interconnection delays and the inability to deliver energy from wind projects curtailed the resource. To mitigate these types of challenges, SURE supported Indonesia’s state-owned electricity company to incorporate forecasts into dispatch decisions and evaluated its readiness to automate VRE generation forecasting as part of its regular planning. SURE is helping Indonesia explore the use of forecasting to address grid integration challenges and improve overall flexibility and reliability.

Grid Integration Resources

SURE developed the Barriers to Grid Integration Series of papers, including “[Grid Integration Series: Variable Renewable Energy Forecasting](#)” and “[Grid Integration Series: Impact of Variable Renewable Energy on System Operations](#),” which are available in the Renewable Energy Auctions Toolkit.





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PROMOTING SMART INCENTIVES

Smart incentives—such as innovative policy and legislative, regulatory, and fiscal reforms—can support least-cost utility-scale development and deployment of clean energy technologies.

COLOMBIA

COVID-19 demonstrated the critical role that solar power plays in rural health centers and its potential to accelerate social and economic recovery. SURE supported several non-energy USAID programs in remote locations. SURE also assessed five distributed solar generation projects, helping USAID promote sustainable productive uses of electricity to spur economic growth and improve remote health facilities.

INDIA

Rooftop solar PV systems are effectively reducing electricity costs across India, but many subsidized consumers still find the cost too high. Without access to the solar PV rooftop market, many of India's low-income citizens cannot benefit from the clean, cost-saving technology that commercial and industrial consumers enjoy. Through PACE-D 2.0 RE, SURE proposed a Super Renewable Energy Service Company (Super RESCO) business model for solar PV systems that provides incentives such as savings for DISCOMs and consumers, higher lifetime generation capacity, easier financing, and faster scale-up.

In this public-private partnership, RESCOs make the capital investment, operate the solar PV systems, install

them on consumers' premises, and sell power generated by these systems to DISCOMs. DISCOMs serve as aggregators and establish power purchase agreements with RESCOs. Consumers are paid for the use of their property or receive a discount on their electricity bill. DISCOMs lower their power delivery costs because consumers use electricity generated on their premises or nearby. They can also eliminate technical and commercial losses, reducing their capacity and energy requirements.

While new business models are critical, sustainable growth also depends on the development of viable and scalable projects. Recognizing that many solar PV rooftop vendors in India are installing poor-quality components to cut costs and win jobs, PACE-D 2.0 RE and NREL hosted a workshop attended by 49 professionals on quality assurance for solar PV systems and vendors. Poor-quality solar systems generate less energy, have shorter life spans, and place the safety of the distribution network at risk. From this workshop, PACE-D 2.0 RE and NREL developed "[Distributed Solar Quality and Safety in India](#)," a report that outlines a new framework for faster deployment and integration of rooftop solar in India. The report was released at the U.S.-India Strategic Energy Partnership ministerial meeting in July 2020.

Behind-the-meter energy storage systems paired with distributed photovoltaic (DPV-plus-storage)—with the ability to act as both generation and load—are a unique and disruptive technology able to provide important services to customers, utilities, and the power system. With NREL, PACE-D 2.0 RE developed “[An Overview of the Behind-the-Meter Solar-Plus-Storage Program Design: With Considerations for India](#),” which considers regulation for DPV-plus-storage programs for retail customers, and presented its findings at the [2020 Asia Clean Energy Forum](#). Today, PACE-D 2.0 RE and NREL are working with the Gujarat State Regulatory Commission to develop a regulation for customers to use DPV-plus-storage.

PACE-D 2.0 RE hosted a webinar, [Green Tariff Design and Deployment for Enhanced RE Integration](#), attended by 87 participants who learned how time-of-day-based green tariffs can shift demand from the demand peak to the supply peak. Leading public and private sector experts shared insights on how green tariff design can provide pricing signals to enhance renewable energy integration.

GLOBAL

Under [Powering Agriculture: An Energy Grand Challenge for Development](#), SURE partnered with the non-profit Collaborative Labeling and Appliance Standards Program (CLASP) to stimulate the solar irrigation pump market. CLASP designed an innovative approach to incentivize distributors in East and West Africa and South Asia to procure solar water pumps in bulk. Distributors bid for subsidies in three SURE co-funded reverse auctions that will help them make bulk purchases from manufacturers. The increased demand helps manufacturers, importers, and distributors achieve economies of scale and demonstrate the viability of the pumps. SURE supported 45 companies in seven countries to procure 13,000 pumps and led virtual environmental monitoring and mitigation trainings on water extraction, fertilizer runoff, and land conversion to mitigate the environmental impacts of increased pump use.

SURE also partnered with Johns Hopkins University to design and implement “train-the-trainers” empowerment trainings for companies in the clean energy–agriculture nexus in East Africa and India. These are designed to increase sales, empower employees

to become self-motivated, challenge traditional gender norms, and improve employee morale. SURE trained 48 people at 14 clean energy–agriculture companies on agency-based entrepreneurship, sales, and ways to remove internal barriers that block ambition. Remote trainings on COVID-19 safety measures in the workplace are underway.



SNAPSHOT:

Powering Health

Reliable electricity can mean life or death for a patient; in a crisis such as COVID-19, more patients rely on critical health services. However, healthcare workers cannot fight COVID-19 without power.

In 2020, SURE launched [Powering Health](#), a gateway to USAID information on electrification for health facilities. Powering Health will help international development professionals and health administrators design, procure, and install reliable, lasting energy systems. The toolkit is on [Climatelinks](#), [Sustainability Energy for All's COVID Resource Center](#), the [Power Africa Toolbox](#), and [GOGLA's COVID-19 Resource Center](#) to help off-grid solar customers and equipment providers optimize their energy systems.



ADVANCING ENERGY AND DEVELOPMENT GOALS THROUGH GENDER EQUALITY

© Tata Power-DDL

Rajni and Shweta, technicians at Tata Power-DDL in India, are helping the company break the stereotype that technical fields are more suited for men.

ENGENDERING UTILITIES

Many women face barriers when trying to enter, thrive, and advance in a traditionally male-dominated industry like energy. Through [Engendering Utilities](#), SURE continued partnering with 17 power utilities in 14 countries that create leadership and technical opportunities for women in the energy sector.

In 2020, SURE added 17 best practices and over 100 tools and resources to the internationally lauded [Delivering Gender Equality: A Best Practices Framework for Male-Dominated Industries](#). It also produced guides to empower utilities to integrate gender into personnel policy review, goal setting, and business case development. Utilities used these tools to incorporate gender equality goals into their strategic business plans—in some cases, making gender equality an explicit corporate objective for the first time.

This year, Engendering Utilities upskilled 1,337 women to support career advancement, trained 293 women and 432 men on gender equality, and reached 592 women through

university and job fair outreach. Partner utilities hired more than 90 women; engaged 141 young women through internships, traineeships, or scholarships; and promoted six to leadership or other higher-ranking roles.

Putting principles into practice, [partner utility BSES Rajdhani Power Limited in India](#) deployed female staff to combat electricity theft and illegal connections. This woman-led initiative increased revenue, strengthened customer relations, changed male perspectives on women's roles and capacity, built female employees' confidence to pursue new roles, and improved the company's business outcomes.

Engendering Utilities also helped partners power through the pandemic by conducting virtual coaching sessions and presenting two webinars, [Practical Gender Equality Actions to Improve Utility Resilience to COVID-19 Impacts](#) and [Gender-Inclusive Disaster Planning in the Age of COVID-19](#).

SURE BY THE NUMBERS (2017-2020)



2,278
persons trained
in clean energy



40 tools
proposed, developed,
adopted, or implemented



491
institutions with improved
capacity to address clean
energy issues



9
clean energy
auctions supported



10
laws, policies, regulations,
or standards addressing
clean energy proposed,
adopted, or implemented



93 MILLION
tCO₂e of GHG emissions
reduced or avoided through
2030 from adopted laws,
policies, regulations, or
technologies related
to clean energy



\$6.5B
\$6.5 billion of investment
mobilized for clean energy



3,143
persons (1,301 women,
1,842 men) trained to advance
outcomes consistent with
gender equality or female
empowerment through their
roles in public or private sector
institutions or organizations



9 GW
of clean energy generation
capacity procured

SURE PARTNER COUNTRIES (2017-2020):

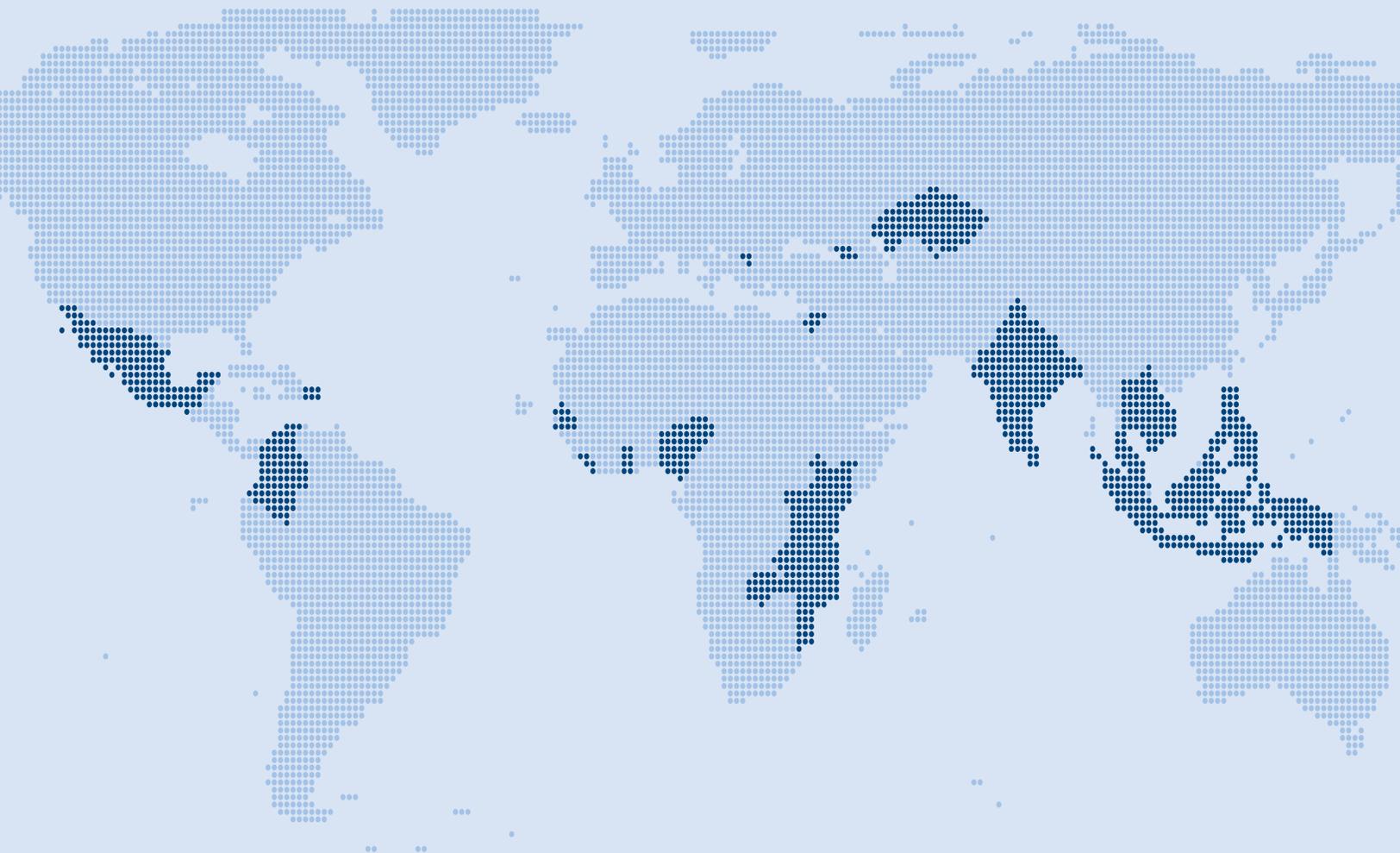
BANGLADESH • CAMBODIA • COLOMBIA • DOMINICAN REPUBLIC

GEORGIA • GHANA • INDIA • INDONESIA • JORDAN • KAZAKHSTAN

KENYA • KOSOVO • LAO PDR • LIBERIA • MALAWI • MALAYSIA • MEXICO

MOZAMBIQUE • NEPAL • NIGERIA • NORTH MACEDONIA • PHILIPPINES

RWANDA • SENEGAL • TANZANIA • THAILAND • VIETNAM • ZAMBIA



MOVING FORWARD

Electricity systems are advancing rapidly as new technologies and business models drive sweeping change. One of the most profound changes is large amounts of new renewable energy at prices that often make it the least-cost option.

In 2020, USAID will launch a five-year, \$29.7 million continuation of SURE that prepares partners to transform their energy sectors and reap the financial, social, and environmental benefits of renewable energy. SURE will continue to provide technical assistance and build capacity for energy planning, grid integration, competitive procurement, and reducing e-waste. It will also manage an innovation fund to attract new and nontraditional partners to scale up renewable energy.



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SCALING UP RENEWABLE ENERGY GOALS



Increase in renewable energy capacity



Improve grid integration of renewable energy



Increase competition for generation capacity



Adoption of green procurement practices



Attract non-traditional partners through the Innovation Fund



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FOR MORE INFORMATION, CONTACT

Kristen Madler (COR)
kmadler@usaid.gov

Sarah Lawson (ACOR)
slawson@usaid.gov



USAID TASK ORDER AID-OAA-I-13-00019AID-OAA-TO-17-00011

This publication was produced for review by the United States Agency for International Development. It was prepared by the Scaling Up Renewable Energy (SURE) project (Tetra Tech ES, Inc., prime contractor).

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