

ENERGY SECTOR MANAGEMENT
ASSISTANCE PROGRAM

ANNUAL REPORT 2019



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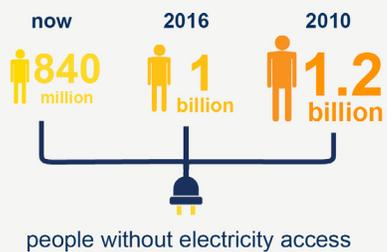
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SECTION 1

LEADING THE ENERGY TRANSITION

The world is making progress towards achieving universal access to electricity



The global electrification rate reached

89%



with **153** million people gaining access to electricity each year

REACHING THE SUSTAINABLE DEVELOPMENT GOAL (SDG) 7

Over the past few years, the world has seen progress on many Sustainable Development Goal 7 (SDG7) indicators as new and promising solutions are leading to real gains — particularly on access to electricity.

Data from the latest [Tracking Sustainable Development Goal 7 \(SDG7\): The Energy Progress Report](#) released in 2019 shows that the global electrification rate reached 89 percent with the number of people without electricity access dropping to approximately 840 million, from 1 billion in 2016 and 1.2 billion in 2010.

Despite these encouraging developments, progress is still far from where it needs to be for the world to reach SDG7. Under current policies, an estimated 8 percent of global population will not have access to electricity in 2030, 90 percent of them in sub-Saharan Africa. The Energy Progress Report also finds that of all four energy targets in SDG7, access to clean cooking continues to lag the furthest behind and remains one of the most overlooked and underfunded development priorities. If the current trajectory continues, 2.3 billion people will still use traditional cooking methods in 2030 — leading to significant health, economic, and environmental impacts.

Charting Global Progress towards SDG7 Targets

Through its global knowledge work, the [Energy Sector Management Assistance Program \(ESMAP\)](#) continues to play a central role in benchmarking progress toward SDG7:

- The core report, *[Tracking SDG7: The Energy Progress Report](#)* launched in May 2019, is the most comprehensive look available at the world's progress towards the global energy targets. It is a joint effort among the International Energy Agency (IEA), the International Renewable Energy Agency (IRENA), United Nations Statistics Division (UNSD), the World Bank, and the World Health Organization (WHO). (<https://trackingsdg7.esmap.org>)
- Taking a deeper dive, ESMAP's *[Multi-Tier Framework](#)* (MTF), assesses and measures the quality of household access to energy through in-depth country studies. In FY2019, three new reports were released that explore the energy access levels of [Myanmar](#), [Sao Tome and Principe](#), and Zambia in greater detail.
- The complementary *[Regulatory Indicators for Sustainable Energy](#)* (RISE) report tracks where countries stand on the adoption of sustainable energy policies. It rates 133 countries from 2010-17 on policies for electricity access, renewable energy, energy efficiency and access to clean cooking to help policymakers and the private sector to make informed decisions about investing in energy projects. (<https://rise.esmap.org/>)

GLOBAL ENERGY TRANSITION: OPPORTUNITIES AND CHALLENGES

Recent changes in the global energy sector are now offering possibilities for many developing countries to reach their energy access and service delivery goals in a lower cost, more sustainable manner, while combating climate change. New technologies, and new ways of using existing technologies such as geospatial data systems, smart grids, and smart meters are helping to develop resilient energy infrastructure and operate it more efficiently. These developments, combined with major cost reductions in renewable energy and storage solutions are presenting a strong prospect of a complete re-orientation of the energy sector towards a more decentralized, decarbonized and digitalized path.

Renewable energy continues its upward trend in the energy mix. Solar and wind power uptake is accelerating in Africa while technologies such as battery storage are being deployed to maximize the potential of intermittent renewable resources. In addition, offshore wind is picking up momentum globally. According to [a report released by ESMAP](#), the offshore wind industry has grown nearly five-fold since 2011 with 23 gigawatts installed at the end of 2018, representing about US\$26 billion in annual investments — or 8 percent of new global investments in clean energy. This proportion is set to increase dramatically, with about US\$500 billion expected to be invested in offshore wind projects by 2030. Other innovative solutions such as floating solar photovoltaic (PV) systems are helping to scale up the use of solar

energy around the world, especially in countries with available water bodies, high population density and constraints on land. As stated in [the new *Floating Solar: When Sun Meets Water* market analysis report released by ESMAP](#), the global potential of floating solar is around 400 gigawatts (GW).

In terms of accelerating the rate of electrification for universal energy access, successful countries are adopting comprehensive and long-term energy planning that combines grid, mini grid and off-grid solutions, and innovations in policy, financing and technology. [Mini grids now have the potential to provide electricity to as many as 500 million people by 2030](#), according to a new report released by ESMAP.

On the policy front, the world has seen an uptake in sustainable energy policies over the past decade according to the latest edition of ESMAP's *Regulatory Indicators for Sustainable Energy* (RISE). The report finds that the number of countries with strong policy frameworks for sustainable energy has more than tripled since 2010, with a dramatic increase in the uptake of renewable energy and energy efficiency policies. To reach global energy goals, however, stronger political commitment, long-term energy planning, increased public and private financing and adequate policy and fiscal incentives will be crucial.

ESMAP AND THE WORLD BANK GROUP: DRIVING CHANGE, DELIVERING RESULTS

The World Bank Group (WBG) and ESMAP are at the frontier of this transformation, helping developing countries to take advantage of technological, financial and policy innovations and implement approaches that best suit their needs to address energy poverty in an equitable way. Through World Bank (WB) country programs, ESMAP is supporting energy sector reforms that maximize finance for development.

World Bank Energy Financing Trends

As the world moves towards a more resilient, sustainable energy trajectory the WB is responding to challenges and opportunities as defined by its client countries. It supports countries in their energy transition and their efforts to expand energy access, underpinned by energy sector reform, with a focus on improving the efficiency of the sector (for example, by reducing fossil fuel subsidies), enhancing the financial viability of utilities, and mobilizing commercial finance. Based on country demand, the WB's support for energy transition includes utility-scale and distributed solar power, investments in shared infrastructure and grid enhancements, innovations such as floating and hydro-connected solar, and industrial and urban energy efficiency. The WB also supports the continued roll-out of competitive bidding and deploys innovative financing instruments, such as guarantees.

- The WB's commitment to the energy transition is reflected in its financing. Of a total US\$30.2 billion IBRD + IDA lending to the energy sector over FY15-19, US\$9.4 billion was in clean energy (hydropower, renewable energy and energy efficiency). Out of this total, US\$5.5 billion went to non-hydro renewable energy. Over half of the portfolio is in Africa and South Asia regions. The total financing on energy efficiency for FY2010-19 is US\$16 billion, mostly in East and Central Asia, Africa and East Asia and the Pacific.

On the **energy access front**, the WB has been focusing on scaling up new, climate-friendly distributed technologies, such as solar PV, mini-grids and battery storage to close the access gap.

- The WB has been increasing its financing for energy access, establishing itself as the leading development financing institution in this area. The WB's annual financial commitments for energy access averaged US\$1.5 billion in FY2018-2019. About a third of these commitments is targeting distributed renewable energy investments in mini

grid and off-grid solutions, with the record value of US\$650 million in FY2018, up from about US\$200 million/year in FY14-17 period. Most of these commitments are in Sub-Saharan Africa. The clean cooking portfolio remains comparatively smaller at more than US\$350 million in 21 countries, but it is still the largest among the development financing institutions.

The WB's catalytic work on renewable energy and energy access benefit greatly from **ESMAP and concessional climate finance** such as from the [Climate Investment Fund \(CIF\)](#) and the [Green Climate Fund \(GCF\)](#) to turn knowledge and technical assistance into policies and investments.

- Currently, WB Energy has a portfolio of US\$2.8 billion in concessional climate finance which is co-financing US\$9.1 billion IBRD/IDA operations, enabling significant climate co-benefits in WB lending. In addition, ESMAP's disbursements of about US\$40 million per year is essential for innovation, technical assistance, business development and implementation support.

Enabling the energy transition also requires **phasing out subsidies to fossil fuels**. These subsidies lead to the overuse of fossil fuels, deter investment in renewables and energy efficiency, and divert public money that could otherwise be directed to health, education or other priorities. Recognizing that reforming and reducing energy subsidies is both technically and politically complex, the WB, through ESMAP, supports countries in the process.

- In FY2019, ESMAP provided US\$5.21 million in country grants towards energy subsidy reform and supported 13 countries in reducing or removing subsidies. The technical assistance and analytical work funded by ESMAP helped define country policies and actions for subsidy reduction or reform whose implementation was supported by US\$4.1 billion of WB lending.

New ESMAP Initiatives in FY2019:



Energy Storage Initiative

ESMAP has designed and is implementing a [US\\$5 billion World Bank Group initiative launched at the One Planet Summit in September 2018](#) to accelerate investments in battery storage. The groundbreaking initiative aims to finance 17.5 gigawatt hours (GWh) of battery storage by 2025—more than triple the 4-5 GWh currently installed in all developing countries.



Modern Energy Cooking Services Program

ESMAP and Loughborough University joined forces in leading a research project to find innovative, clean and modern alternatives to biomass fuels, such as charcoal and wood. [The £39.8 million program was made possible by funding from UK Aid.](#)



Energy Transition

Thanks to a £20 million contribution by UK's Department for Business, Energy and Industrial Strategy (BEIS), [ESMAP launched an initiative that will scale up its support](#) for renewable energy, energy efficiency, and development and implementation of appropriate strategies for the energy transition and for helping countries address some of the barriers to phasing out coal.



Offshore Wind

Thanks to funding from the UK, ESMAP, in partnership with the International Finance Corporation (IFC) [initiated a new US\\$5 million program](#) to fast-track the adoption of offshore wind energy in developing countries. The program will help developing countries advance bankable offshore wind projects and raise the concessional funding needed to carry out feasibility studies.



Efficient and Clean Cooling

In collaboration with the World Bank's Montreal Protocol unit, ESMAP [launched a US\\$3 million program](#) with support from the Kigali Cooling Efficiency Program (K-CEP) to accelerate the uptake of sustainable cooling solutions, including air conditioning, refrigeration and cold chain in developing countries.



Electrification of Transport

ESMAP is supporting countries to reduce the local and global environmental impact of the transport sector through electrification of transport based on clean power. The new report [Electric Mobility and Development](#) was [launched at the 24th Conference of the Parties to the United Nations Framework Convention on Climate Change \(COP24\) in Katowice, Poland](#) and reveals that developing countries also stand to benefit significantly from the technology.



Floating and Rooftop Solar

ESMAP will continue to support an increase in investments in floating and rooftop solar to help countries expand solar deployment. According to the [new report Where Sun Meets Water](#) released in FY2019, floating solar photovoltaic (PV) systems could double the current global installed capacity of solar PV.



Sustainable Hydropower

With support from Austria, Iceland and Switzerland, ESMAP launched the Hydropower Development Facility (HDF) to support the development of bankable hydropower projects through managing risks and careful preparation.

Upcoming Initiatives in 2020



Clean Cooking Fund

ESMAP aims to establish a US\$500 million Clean Cooking Fund (CCF) to scale up public and private investment and accelerate progress toward universal access to clean cooking by 2030. The CCF will provide financial and technical support, primarily through results-based grants, to help countries incentivize the private sector to deliver modern energy cooking services. The CCF will also complement and support work by several international partners.



Industrial Decarbonization

Global CO₂ emissions from industry are expected to decrease in absolute terms, but their relative share in total emissions is expected to increase. Decarbonizing the industrial sector is especially challenging compared to the buildings, transport and power sectors. First, the high-temperature heat used in many industrial processes is often generated by burning fossil fuel and there are only a few clean options capable of producing this heat. Second, industrial processes produce 'feedstock' emissions that cannot be decreased by switching to cleaner fuels but only by changing industrial processes. Changing these complex and interlinked processes is challenging because it might negatively impact industrial competitiveness. ESMAP plans to tackle these challenges by promoting the use of innovative technologies to reduce the demand for carbon-intensive feedstocks and products through circular economy, by improving energy efficiency at scale, and by deploying new decarbonization technologies.



Solar Risk Mitigation

Jointly with the International Solar Alliance (ISA), Agence Française De Développement (AFD), and other partners, ESMAP will implement the Solar Risk Mitigation Initiative (SRMI) to help scale up solar energy use by de-risking and reducing the cost of financing for solar projects. This is expected to lead to the successful mobilization of the private sector to deploy solar solutions at scale.

Responding to Regional Priorities

ESMAP responds to country priorities and regional challenges. During FY2019, ESMAP continued to support energy market design, policy and regulatory reform, power system planning, and integration of regional infrastructure that are pre-conditions for the achieving universal energy access and decarbonization of the energy sector.

In **Africa (AFR)**, ESMAP focuses on priorities such as reforming the power sector, boosting regional energy trade, and expanding energy access while scaling up the use of renewable energy. While electrification efforts are now for the first time in history outpacing population growth in Africa, progress is uneven across countries. For example, in **Malawi**, ESMAP funded a review to identify and address policy gaps and improve the performance of the national power utility to attract private sector financing. This resulted in the approval of the National Energy Policy 2018, the Independent Power Producer Framework and the Renewable Energy Strategy. It also laid the groundwork for the design of the [WB US\\$150 million Malawi Electricity Access Project](#). The [WB US\\$5.8 million Somali Electricity Access Project](#) also benefited by an ESMAP-funded Power Sector Master Plan and an Off-Grid Market Assessment.

In **East Asia and the Pacific (EAP)**, ESMAP focused on strengthening utilities, regulations and power system planning. This is reflected through activities supporting sector planning for least-cost, low-carbon supply of electricity and heating in countries such as **China, Myanmar, Mongolia, and Vietnam**, and activities supporting sustainable hydropower development and rural electrification in **Indonesia, PNG, the Philippines, Myanmar, and Solomon Islands**. Power sector reform is another priority for the region. As such, ESMAP grants supported **China, Myanmar, Vietnam, Indonesia, and Lao PDR** on overall reforms, including to integrate renewable energy and ensure overall financial viability of the sector. Regional integration of energy

infrastructure continues to be a priority as shown by the support provided to countries in the **Greater Mekong Sub-Region Power Market Development Programmatic Technical Assistance project**.

In **Europe and Central Asia (ECA)**, ESMAP activities are aligned with regional priorities such as sector reform and regional market integration, utility financial recovery and subsidy reforms, and decarbonization of the energy sector. The majority of ESMAP grants supported activities focusing on the decarbonization of the sector through the provision of policy, regulatory, technical or financial advice on renewable energy and energy efficiency. Support for policy and regulatory frameworks, and capacity building is helping to strengthen linkages between renewable energy and energy efficiency with the overall sector strategy. Specific examples include the support to **Armenia's** renewable energy development (e.g. distribution grid code, model PPA for small-scale renewables and grid integration analysis) and **Uzbekistan's** sector reform strategy, which are leading to further investments in renewable energy and energy efficiency.

In **Latin America and the Caribbean (LAC)**, ESMAP continues to support regional priorities such as comprehensive sector reforms and regional market integration, utility financial recovery and subsidy reforms and decarbonization of the energy sector by scaling up energy efficiency and the use of renewable energy. The analytical work done as part of the Assessment of Geothermal Potential in LAC that has looked at best practices, resource risk mitigation, attracting qualified developers, and environmental and social safeguards considerations has helped to shape the design of several geothermal investment operations under preparation and implementation in **St. Lucia, Nicaragua, Dominica, El Salvador, and Chile**. Another example is **Brazil**, where ESMAP supported power sector reform by recommending steps for sector modernization and reforms in the gas sector.

In **South Asia (SAR)**, ESMAP activities supported countries in creating sustainable energy sectors, improving governance, and strengthening key institutions. Aligned with the evolving and cross-cutting priorities of SAR countries, the ESMAP grants allowed country energy teams to respond to client demand through designing and implementing comprehensive activities intended to deal with multiple challenges facing specific client counterparts. For example, ESMAP funded an activity to support the modernization of electricity distribution systems in Andhra Pradesh focusing on electricity distribution companies in the state. In **Sri Lanka**, ESMAP funded consultations on the Energy Infrastructure Sector Assessment Program (InfrasAP) that enabled stakeholders to endorse its recommendations. The InfraSAP resulted in the development of a roadmap for mobilizing private sector financing and the government pursuing competitive procurement of renewable energy with the aim to develop a renewable energy project/park site of solar photovoltaic (PV) and wind generation capacity.

In **Middle East and North Africa (MENA)**, ESMAP activities aligned with regional priorities such as sector reform and regional market integration, utility financial recovery and subsidy reforms, maximizing finance for development, supporting the energy transition through scaling up renewable energy and energy efficiency, and expanding energy access in fragile, conflict and violence (FCV) environments. For example, ESMAP supported the government of Lebanon on electricity tariff and other reforms which influenced the WB's dialogue. The work supports the adoption of fuel indexation for the national utility's (EDL) tariffs, which would be a first in **Lebanon's** history and help limit subsidy transfers to the utility.



FY2019 BY THE NUMBERS

Fiscal year (FY) 2019 was the third year of implementation of ESMAP's four-year business plan for FY2017-20, which focuses support on the three main thematic areas, corresponding to the SDG7 targets on **Energy Access**, **Renewable Energy**, and **Energy Efficiency**, as well as the cross-cutting areas of **Energy Governance, Markets and Planning, Energy Subsidy Reform, Small Island Developing States (SIDS DOCK), Gender and Global Energy Knowledge**.

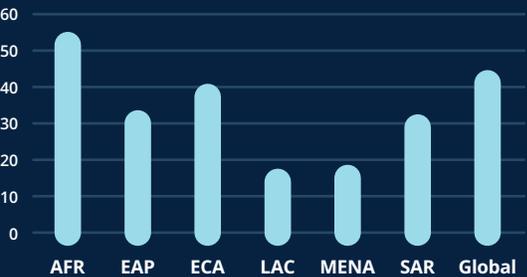
With an active portfolio of US\$49.2 million, as of the end of June 2019, encompassing more than 225 activities across 70+ countries, ESMAP is helping to shape global energy policies while underpinning significant WB development financing. Concrete program results are illustrated throughout the report.

⊕ A total of **227 activities** supported by ESMAP's active **US\$49.2 million portfolio**, as of June 30, 2019

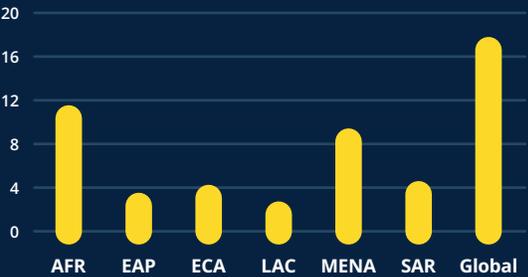
⊕ **US \$31 million** was allocated for **new activities**:

- 46 activities in 33 countries (excluding regional activities)
- 13 activities with a global focus

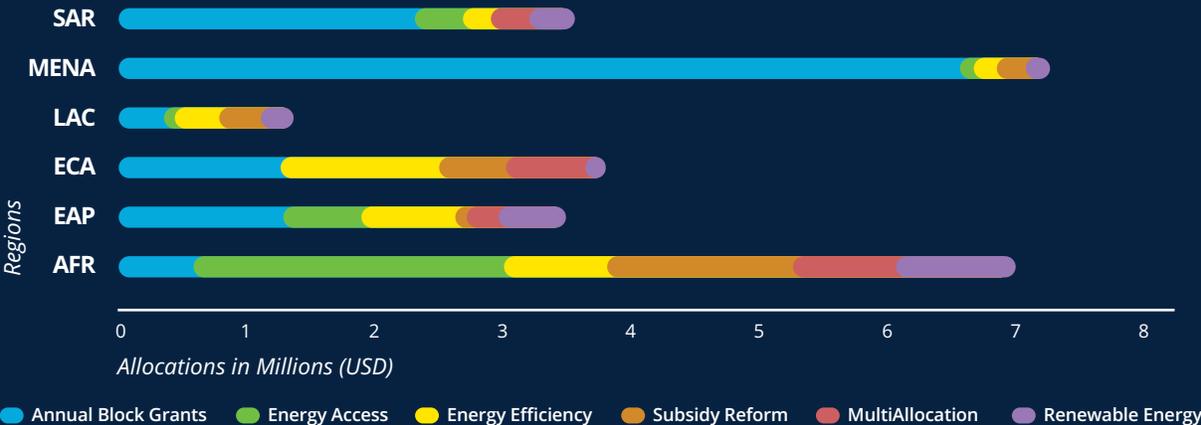
Number of Activities by Region (US\$ Millions)



Grant Amount (US\$ Millions)



FY2019 Grant Amount by Thematic/Cross-Cutting Area



CONVENING THE GLOBAL COMMUNITY FOR IMPACT

Partnerships lie at the heart of ESMAP's work. In FY2019, ESMAP brought together global stakeholders from client countries, private companies, donors, non-governmental organizations, academia and others to share knowledge and build a common vision around the most promising areas in the energy sector.

Energy Storage Partnership (ESP)

ESMAP and the WBG convened the Energy Storage Partnership (ESP) that was [launched in Vancouver](#) during the 10th Clean Energy Ministerial and 4th Mission Innovation Ministerial. This [global partnership](#) comprises the WBG and more than 30 international organizations with the aim to expand deployment of energy storage in developing countries. The requirements of developing countries' grids are not yet fully considered in the current energy storage market – even though these countries may have the largest potential for battery deployment. The current battery market is driven by the electric vehicle industry and most mainstream technologies cannot provide long duration storage or withstand harsh climatic conditions and low operation and maintenance capacity. [There is a clear need to catalyze a new market for batteries and other energy storage solutions that are suitable for electricity grids for a variety of grid and off-grid applications and deployable on a large scale.](#) To enable the rapid uptake of variable renewable energy in developing countries, the WBG is convening an **Energy Storage Partnership (ESP)** that will foster international cooperation. By connecting stakeholders and sharing experiences, the ESP will help bring new technological and regulatory solutions to developing countries. The ESP will take a holistic, technology-neutral approach by looking at all forms of energy storage, including but not limited to batteries. Activities coordinated by the ESP will identify technical and research gaps, pilot innovative storage concepts, and strengthen knowledge sharing and capacity building, among others. The first meeting of the ESP took place in Brussels in June 2019 to determine the Working Groups of the Partnership. A second meeting will be held in South Africa in January 2020.

Knowledge Exchange Forum on Energy Subsidy Reform

In October 2018, the Swiss State Secretariat for Economic Affairs (SECO) and ESMAP hosted a two-day conference in Geneva on energy subsidy reform and its implications for developing countries. The forum brought together more than 70 decision-makers from country governments, World Bank staff, non-governmental organizations, donors and others to share experiences on subsidy reform programs. Building on the momentum, ESMAP organized an event during the WB Spring Meetings in April 2019 to help increase awareness about the importance of reforming wasteful fossil fuel subsidies in the context of climate change, and to call for urgent action. Discussion at the KEF led to follow-up requests from client countries for WB technical assistance and knowledge sharing. The niche group of participants had the opportunity to exchange notes and dig deeper into subsidy reform challenges. For example, delegations from Algeria, Morocco and Tunisia shared experiences in fuel price subsidies.

WEPOWER Conference on Gender and Energy in South Asia

With support from ESMAP, the Asian Development Bank (ADB), and the Australian Department of Foreign Affairs and Trade (DFAT), the event held in Katmandu, Nepal brought together more than 250 representatives from 60 institutions, including local and international power utilities and multi-lateral agencies. The conference focused on increasing women's participation in the energy sector and STEM education, with partners agreeing to endorse

the objectives of the network along **WePOWER's** five pillars: (i) Science, Technology, Engineering, and Mathematics (STEM) education; (ii) Recruitment; (iii) Development; (iv) Retention; and (v) Policy and Analysis. Partners from 11 organizations have started to implement activities that have successfully increased women's employment in the energy sector and trained almost 3,500 women through workshops, study tours, internships and mentorship programs. A second WePower Forum is scheduled to take place in Manila in late 2019.

Offshore Wind Workshop

In support of the newly launched offshore wind program, ESMAP brought together global stakeholders for a seminar in London to share knowledge in offshore wind development, followed by a study tour of the North-East of England to witness potential economic opportunities such as job creation and the creation of new industries. Representatives from 11 client countries (including Argentina, Algeria, Brazil, Costa Rica, India, Indonesia, Morocco, Sri Lanka, South Africa, Turkey and Vietnam) had the opportunity to participate and [share their reflections](#). The visit to the UK led directly to follow-up requests for scoping visits and stakeholder events in countries such as Brazil, India, South Africa, Sri Lanka, Turkey, and Vietnam. The ESMAP-IFC team is working with WBG country teams to carry out these visits, prepare funding applications, and initiate roadmap studies and geospatial planning in consultation with the relevant client agencies.

Solar Workshop

In Morocco, over the course of three days, ESMAP convened country representatives from 45 countries and practitioners from several regional organizations to share experiences about solar deployment in their countries. The learning event covered utility-scale solar (PV and CSP), rooftop solar, floating solar, storage, grid integration, competitive bidding (solar auctions), project financing, and a range of other issues related to solar deployment. It provided country delegations the opportunity to learn from Morocco's experience in developing the Noor Solar complex at Ouarzazate and see firsthand what it takes to advance large scale solar projects. For example, the delegation from Afghanistan saw MASEN's model, as Afghanistan is progressing with solar development under the World Bank Group's Scaling Solar, while delegations from Burkina Faso, the Gambia, Guinea Bissau, Mali, Niger and Central African Republic learned about solar with storage in order to apply them in their first PV and batteries projects. The event also helped to jump start the WB's dialogue on solar with Algeria, and Botswana and Namibia, among others, and the WB team plans to build on this opportunity.

Global Action and Learning Event on Mini Grids

In June 2019, ESMAP brought together global stakeholders in Accra for its 6th Mini Grids Action Learning Event. The event gathered around 300 practitioners representing governments, multilateral financing institutions, private sector representatives, NGOs and academia who came together to exchange global knowledge around mini grids and discuss prospective opportunities for new investments. Discussions also focused on a follow up WB investment in mini grids to help Ghana achieve universal access by 2025. The event received a strong positive response from participants and enjoyed significant coverage in the local media. During the event, ESMAP also launched the anticipated [Mini Grids for Half a Billion People: Market Outlook and Handbook for Decision Makers](#), a first-of-a-kind report that outlines the state of the market for mini grids.

BENCHMARKING AND GUIDING EFFORTS THROUGH KNOWLEDGE

ESMAP has led the way in energy data, benchmarking and keeping the global community aware of what needs to happen to reach SDG7. Key global reports and knowledge products launched in FY2019 include:

- **Tracking SDG7: The Energy Progress Report 2019**

The fifth edition of the report, launched in May 2019, found that at current rates, the world is making progress towards achieving some elements of SDG7, but will fall short of meeting the targets by 2030.

- **Regulatory Indicators for Sustainable Energy (RISE) 2018**

Launched in December of 2018 during the 24th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 24), RISE is a tool for policymakers to compare national policy frameworks for sustainable energy and identify opportunities to attract investment.

- **Beyond Connections: three new country diagnostics reports under the Multi-Tier Framework (MTF)**

Myanmar: About 70 percent of households in Myanmar have access to Tier 1+ services. Particularly, off-grid energy solutions substantially supplement national grid in Myanmar. Almost half (48 percent) of rely on off-grid energy solutions such as standalone solar system or mini-grid.

Sao Tome and Principe (STP): Around 70 percent of households in STP are connected to the national grid and among them, more than a quarter (27.5 percent) are in Tier 5. Improvements in electricity reliability, availability and quality could shift nearly two-thirds (63.9 percent) of the grid-connected households to higher Tiers (4-5)

Zambia: About 40 percent of households in Zambia are in Tier 1 or above for electricity access. Less than 5 percent of households use off-grid energy solutions as a

primary source of electricity. In terms of access to clean cooking solutions, most households are in Tiers 0 and 1 as they still use open fire or traditional biomass stove.

- **Mini Grids for Half a Billion People: Market Outlook and Handbook for Decision Makers**

A first-of-a-kind report launched in June 2019 that gives the global energy community a rundown of the state of the market for mini grids. It shows that mini grids can provide electricity to approximately half a billion people in a cost-effective way while promoting productive uses of electricity. It also outlines the five market drivers to take mini grids to scale such as i) adopting a portfolio approach to develop around 1,500 mini grid projects in each access-deficit country per year by 2030; ii) providing superior-quality service of 97 percent uptime by 2020, as well as increasing the average load factor of 3rd-generation mini grids to 45 percent; iii) creating enabling business environments with the aim of raising the average RISE (Regulatory Indicators for Sustainable Energy) score in the top-20 electricity access-deficit countries to 80 out of 100; iv) leveraging development partner funding to crowd in private-sector finance, attracting almost US\$220 billion of investment by 2030; and v) reducing the cost of solar-hybrid mini grids to US\$0.20/ kWh by 2030.

- **Where Sun Meets Water: Benefits and Challenges of Floating Solar**

This new ESMAP report presents an overview of floating solar technologies, market opportunities, deployment challenges, policy and regulatory considerations, costs, and project structuring. The greatest advantage of floating solar is that it

avoids land acquisition and site preparation issues associated with traditional solar installations. In some cases, floating solar allows for power generation to be sited much closer to areas where demand for electricity is high. While up-front costs are slightly higher for floating solar, the costs over time are at par with traditional solar PV, because of higher energy yield due to the cooling effect of water. Floating solar is an attractive option for countries with high population density and competing uses for available land. Large plants are currently being installed or in China, India and Southeast Asia but over 35 countries globally have plants under development or construction. ESMAP

sees potential for this technology also beyond Asia to boost performance of underperforming hydropower plants or in joint hybrid operations of hydropower and solar plants where solar helps with water management and hydro serves as storage for solar power.

● **Electric Mobility & Development**

This report aims to help governments design and implement electric mobility programs that are effective at achieving their intended development aims across climate, economic, fiscal, technical, institutional, and policy dimensions.

CONTINUING TO BUILD SECTOR FUNDAMENTALS AND REFORM FOSSIL FUEL SUBSIDIES

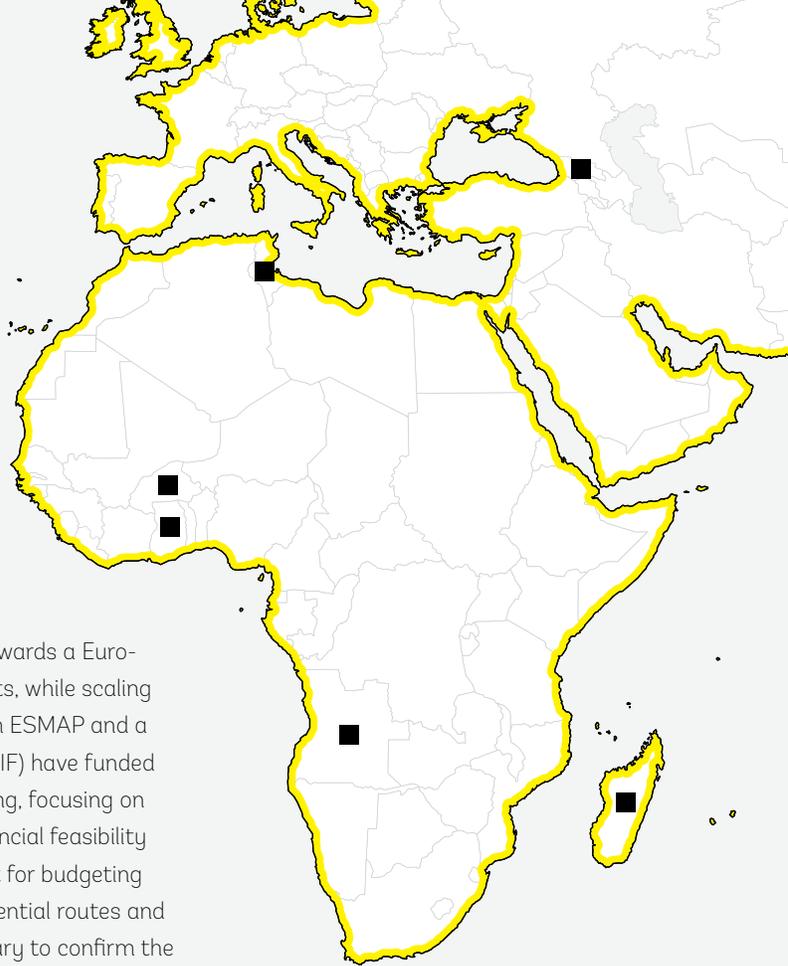
ESMAP's commitment to improving energy sector fundamentals – such as financially stable institutions, regional energy trade, and policies that set the conditions for public and private investment — is illustrated through several examples in FY2019

Georgia

In **Georgia**, the ESMAP-funded analysis on *Maximizing Finance for Development in the Power Sector* has fed into design of the FY2019 Georgia Energy Supply, Reliability and Financial Recovery Project to help the state-owned transmission company (GSE) raise long-term commercial financing from capital markets. The assessment focused on specific constraints and recommended key steps to remove the bankruptcy protection status of the company so it can access markets. The study also offered intelligence on the availability of and appetite for commercial lending to GSE and outlined actions that GSE would need take to carry out transactions. These recommendations directly helped design the IBRD guarantee included under the project.

Ghana

In **Ghana**, an ESMAP grant helped to identify Independent Power Producers (IPP) Procurement Options and triggered reforms that were linked to the first of a series DPF - Enhancing Growth and Reducing Vulnerability. These reforms are evident by the government's decision in May 2019 to adopt a policy on Competitive Procurement for Energy Supply and Service Contracts, based on the report's recommendations on electricity demand forecasting, supply planning, and competitive tendering processes. In addition, the Ghanaian Cabinet has approved the Energy Sector Recovery Program (ESRP) which identifies revenue shortfalls and includes policy actions to achieve financial balance by 2023.



Tunisia

ESMAP has been supporting **Tunisia** in its effort to improve the performance and financial viability of the energy sector. In FY2019, the World Bank approved the [Tunisia-Italy \(Elmed\) Power Interconnector Project](#) to explore the feasibility of a 600 MW undersea link between Tunisia and Italy's power grids, a significant step towards a Euro-Mediterranean electricity grid to reduce Tunisia's energy costs, while scaling up the use of renewable energy. A US\$ 5.5 million grant from ESMAP and a US\$ 7 million grant from the Global Infrastructure Facility (GIF) have funded feasibility studies and advisory services for project structuring, focusing on critically important technical, environmental, social, and financial feasibility studies. The terrestrial feasibility study, a critical component for budgeting and building the proposed interconnector, will determine potential routes and landing points for Elmed. Together, these studies are necessary to confirm the feasibility of the interconnector, optimize its design, and apply for funding from the European Union. ESMAP is also supporting the Tunisian Government in its effort to reform energy subsidies and create an energy regulatory authority.

Madagascar

Earlier support from ESMAP has helped **Madagascar** to eliminate all direct fossil fuel subsidies, which in 2013-2014 absorbed an average of 1.2 percent of Gross Domestic Product (GDP). The initial step to an automatic price adjustment of pump prices in 2016 was guided by the ESMAP-funded analysis *Pump Price Structure*. However, this price adjustment only partially reflected the market, resulting in accumulation of liabilities to private oil distributors. To address this challenge, in FY19, ESMAP helped the new government to begin negotiations with private distributors to clear the arrears. By the end of June, an agreement was reached, resulting in a revision of the pump price structure, a plan for clearing the liabilities, and renewed commitment to maintain the automatic adjustment of pump prices.

Afghanistan

The ESMAP-supported [Afghanistan Energy Study](#) laid part of the groundwork for the FY2019 [Afghanistan Incentive Program Development Policy Operation](#) (DPO). Recommendations from the study were used by the Ministry of Finance and DABS — the country's main power utility — to establish a Partnership Agreement to support DABS' financial recovery and strengthen its operational performance. This step was a necessary policy action for the DPO to start disbursing funds to the government. The comprehensive study is also expected to help other WBG projects get off the ground and serve as the basis for multi-year programmatic support to Afghanistan to promote long-term planning, institutional reform, and energy service quality in off-grid areas.

SECTION 2

OUR IMPACT:*

PEOPLE, CLIMATE, FINANCING



OVERALL IMPACT

\$11.6 BILLION
World Bank development
financing informed

\$3.7 BILLION
external financing mobilized,
including private sector

13.5 MILLION
people expected to be provided
with access to electricity

24.2 MILLION
beneficiaries expected
to be reached

56 MILLION
metric tons of CO2 emissions
expected to be reduced

12.9 GIGAWATTS
renewable energy expected
to be installed

1.62E ...
projected lifetime energy
and fuel savings

** The Impact Indicators are expected results of: (a) WB lending operations approved in FY2019 informed by active/existing ESMAP activities; and (b) active/existing WB lending operations informed by ESMAP activities which were approved in FY2019. The expected results are based on these lending operations which are to be implemented primarily by WBG client country governments and other public sector entities. For IFC and MIGA, private sector entities are the implementing partners.*

OUR IMPACT:

13.5 MILLION

people expected to be provided with access to electricity

In recent years the World Bank (WB) has financed an average of US\$1 billion per year for energy access projects. That jumped to US\$1.7 billion in FY2019. The WB's off-grid portfolio continues to grow. Out of the US\$6.2 billion of overall access commitments in FY2015-19, US\$1.6 billion was for projects supporting mini-grids and solar home systems. ESMAP's technical assistance, policy advice, and project development support have driven the marked increase in financing for these off-grid and mini grid solutions and mini grids.



ACCELERATING ELECTRIFICATION WITH A FOCUS ON THE POOREST

Innovative Off-Grid Solutions Improve Half a Million Lives in Rural Peru

A decade of WBG support has helped rural communities in Peru to access affordable and sustainable energy. Innovative efforts, such as scalable models for solar home systems and the promotion of productive uses of electricity, funded by ESMAP, were instrumental in reaching the poorest and most remote communities while contributing to Peru's efforts to diversify the energy mix with renewables.

In 2006, the Rural Electrification Project (RE1) set out to increase rural access with a unique approach — introduce incentives to encourage the existing network of electricity distribution companies, already serving urban areas, to expand coverage to rural communities. The project was highly successful—installing 105,000 connections in rural and poor households, benefitting 450,000 people. The project also brought electricity connections to almost 3,000 schools, clinics, and community centers. This increased rural electricity coverage by almost 6 percent. ESMAP was instrumental in the development of an innovative model for bringing power to remote populations. An ESMAP-funded pilot program provided regulated services through two distribution companies using solar home systems. While the pilot successfully delivered power to 2,000 customers and the distribution companies strongly supported the model, an ESMAP-funded analysis found that incomplete regulatory frameworks limited growth in the off-grid renewable energy market. Based on this assessment, the government passed a law and established regulations that created standards, tariffs, and subsidies for rural electricity systems and incentives for distribution companies to provide service through solar home systems. This resulted in the installation of more than 7,000 solar

home systems, delivering power to more than 31,000 people in remote rural areas.

Based on the success of RE1, the Second Rural Electrification Project (RE2) aimed to provide electricity service in localities that were even more distant from the grid. Expanding on the off-grid model introduced in RE1, ESMAP helped Peru to establish well-regulated and efficient services. With ESMAP support, training was provided for staff of the distribution companies, and online tools were developed to help utilities manage solar home systems, optimizing service and reducing costs. In addition, effective commercial arrangements were established for billing and collection among the dispersed households. RE2 successfully connected almost 143,000 households to the grid and installed an additional 12,000 solar home systems, exceeding targets by 10 percent. Approximately 34 percent of the beneficiaries were women, and 15 percent—21,000 people—were part of Peru's indigenous population.

ESMAP also helped design and implement a pilot program in villages near Cusco to increase productive uses of electricity by partnering with local nongovernmental organizations (NGOs). The NGOs carried out promotional activities to encourage people to adopt tools and equipment that would further their productivity. The results of the pilot were promising—almost 1,500 families adopted electric equipment to process cereals, coffee, cocoa, baked goods, meat products, milk, wood, and metal products, as well as to pump water for expanded agricultural production and processing.

[Read Full IMPACT STORY Here](#)



OUR IMPACT:

24.2 MILLION

beneficiaries expected to be reached

Achieving universal energy access by 2030, will require a significant acceleration in the rate of new connections and a scale-up in investment. ESMAP promotes large-scale approaches that combine grid, off-grid and mini grid electrification to close the energy access gap while ensuring that the poorest are not left behind.

Off-Grid Solutions to Expand Electricity Access across West Africa and the Sahel

ESMAP was instrumental in the design of the IDA Regional Off-Grid Electrification Project (ROGEP). The project will help expand off-grid access to electricity across 19 countries in the ECOWAS region of West Africa, as well as in Cameroon, Central African Republic, Chad, and Mauritania. It is expected to benefit about 1.7 million people by increasing electricity access for households, businesses, and public institutions.

The project draws heavily on the experience and expertise of the ESMAP-supported WBG programs Lighting Africa and Lighting Global to help facilitate the development of a sustainable off-grid solar energy market in response to the vast electrification needs in the region. Based on market intelligence, Lighting Africa recognized that private companies offering stand-alone solar systems were only operating in four of the 19 countries in the region. Surveys conducted in cooperation with Global Off-Grid Lighting Association (GOGLA), found that the private sector viewed the West African markets as fragmented, with a high cost for entry and low market potential. There was low access to finance and landlocked countries meant increased costs to navigate borders, which increases the cost of the product for the consumer. In order to increase access to these transformative products, ESMAP tapped into Lighting Global's successful approach for unlocking market potential. As a result, ROGEP

was designed to harmonize policies and introduce regional quality standards that will make the region more attractive and easier to navigate for private sector companies. The project will also provide support to local entrepreneurs through training, and by breaking down barriers in accessing finance. Business models to electrify schools and health clinics will also be piloted.

ESMAP also helped to secure US\$75 million from the Clean Technology Fund (CTF) to mitigate risks for commercial banks to facilitate access to financing for the solar systems market, technical support for entrepreneurs, as well as for providing market entry grants. As part of ROGEP, ESMAP's Africa Gender Program is targeting gender gaps in terms of economic opportunities and access to credit – improving access to credit for women-led companies in the solar and non-solar energy sectors and strengthening the capacity these companies through training to enable them to enter the stand-alone solar systems market.

OUR IMPACT:

56 MILLION

metric tons of CO2 emissions expected to be reduced

The World Bank is one of the largest providers of finance for renewable energy and energy efficiency projects in low- and middle-income countries: nearly US\$9.4 billion between FY2015-19, representing 31 percent of the total World Bank energy portfolio in this period. ESMAP has played a critical role in the evolution of this portfolio by helping to develop investment projects focusing on scaling up renewable energy and promoting energy efficiency.



HELPING TO ACHIEVE CLIMATE CHANGE TARGETS

Helping India's Water Sector to Reduce Emissions and Save Energy

The Water Utility of Shimla, the capital of Himachal Pradesh in **India**, has faced many challenges, including limited availability of local water sources, water quality issues, intermittent water supply, and increasing demand due to population growth and urbanization. The high altitude of the city creates additional challenges, requiring most of the water supply to be pumped from sources at a much lower altitude and increasing operating costs. Investing in energy efficiency has the potential to create substantial savings for the water utility.

To avoid an imminent water crisis, the government of India has requested support from the WBG for a Programmatic Development Policy Loan (DPL). The \$40 million DPL — the first in a series of three — will support the government to increase the energy efficiency of the water supply and sewerage operations, among other objectives.

ESMAP's technical assistance was key to passing one of the main policies outlined in the DPL. It focused on conducting an extensive energy and water audit, developing bidding documents and outlining specific recommendations. The audit also explored the feasibility for demand side management, where large pumping stations are turned off during peak loads of electrical power. The recommendations were discussed among key stakeholders from both the power company and the water utility, and consensus was built to explore these synergies. As a result, Himachal Pradesh has approved a policy to improve energy efficiency in water supply and sewerage operations. The DPL will contribute to projected lifetime energy savings (electricity and fuel) of 388,000 MWh and a projected reduction of GHG emissions of 290,000 tons of CO₂e.

Facilitating China's Energy Transition to Renewable Energy through Battery Storage

ESMAP has provided technical assistance for the design of a [US\\$300 million loan for the China Renewable Energy and Battery Storage Promotion Project](#) to increase the integration and use of renewable energy by deploying battery storage systems at scale. The project will help accelerate the on-going clean energy transition in China and contribute to the country's emission reduction targets by addressing technical constraints in the transmission networks and gaps in regulations for electricity trade, among other things.

A national-level study concluded that installing 8 GW/32 GWh battery storage systems in China could reduce CO₂ emissions by 3.8 million tons and reduce coal consumption by 1.42 mtce annually. The project will be implemented by Hua Xia Bank, a publicly listed commercial bank in China. Hua Xia Bank will provide co-financing of at least US\$450 million to achieve the development goals of the project. ESMAP and the Global Environmental Facility (GEF) are providing technical assistance for policy and regulatory reforms, shaping

technology and safety standards, and developing institutional capabilities. ESMAP's [Energy Storage Partnership](#) (ESP) will also act as a platform to share lessons and experiences from China's deployment of batteries in power systems with other developed and developing country stakeholders. The [World Bank](#)

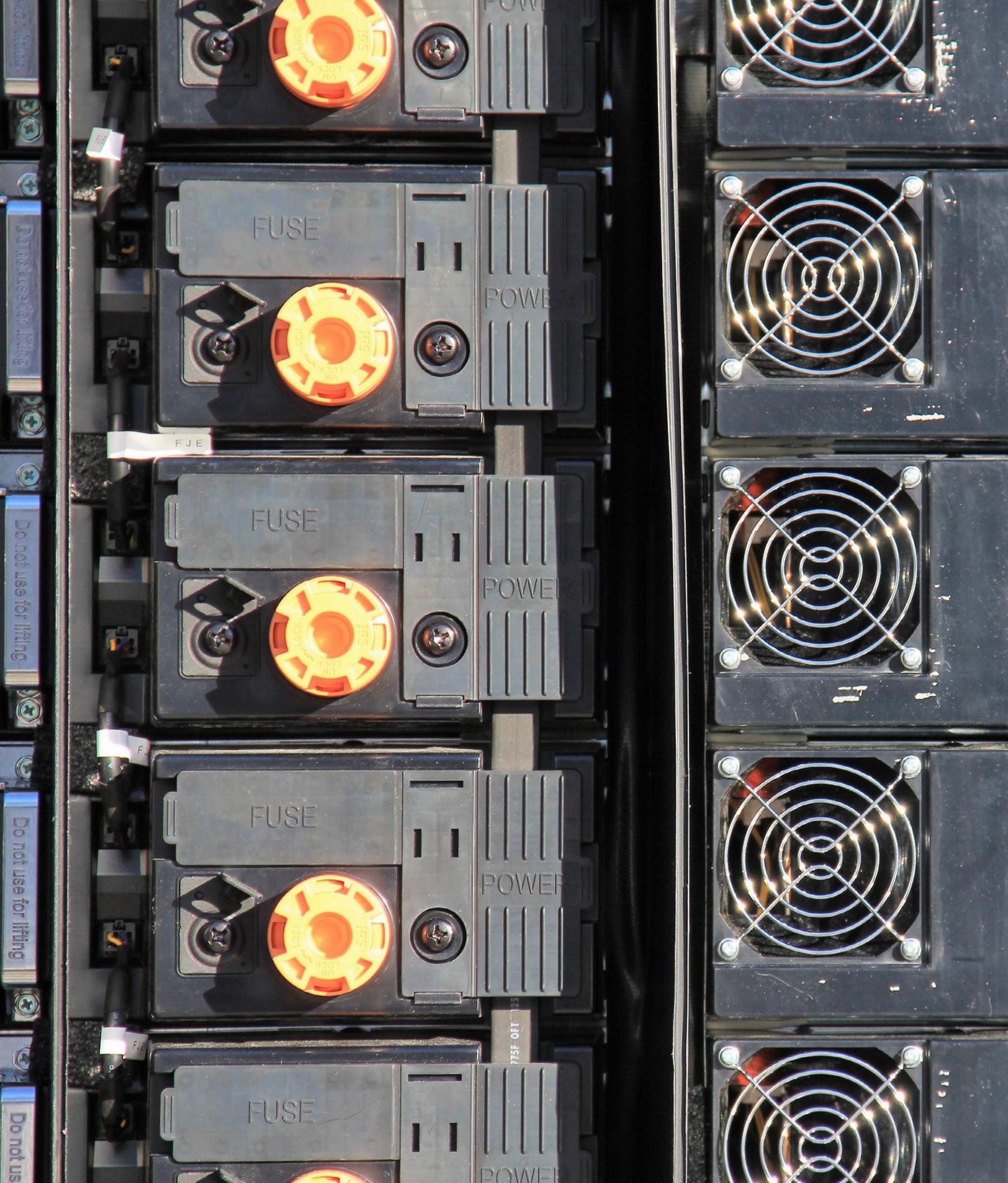
[and ESMAP have been supporting China's energy transition for over two decades as trusted partners](#) to help the country tackle multi-dimensional challenges associated with scaling up cleaner and more efficient sources of energy, and lowering the carbon footprint of its cities.

Reducing Emissions through Clean Cooking Solutions in China and Bangladesh

In addition to renewable energy and energy efficiency, ESMAP helps countries reduce emissions and create healthier environments of their populations by transitioning to modern, cleaner cooking solutions. For example, the **China** Hebei Air Pollution Prevention Program-for-Results Project that is now completing the implementation of an US\$80 million clean stove component designed with ESMAP support, has helped 1.22 million households to switch from traditional solid fuel stoves to gas and electric appliances, exceeding the original target of 0.8 million households. The transition to cleaner cooking methods has reduced fine particulate matter (PM2.5) emissions by a total of 5,000 tons, contributing significantly to air pollution prevention.

Bangladesh's Additional Financing II for Rural Electrification and Renewable Energy Development project continued to show great success in FY2019, with nearly 1.7 million improved cookstoves

distributed, putting it on course for achieving the target of 4 million households by December 2021. The program has also reduced GHG emissions by 3 million metric tons of CO2 equivalent and is expected to help curb a total of 10.5 million metric tons of CO2 equivalent when it is completed. ESMAP finance supported preparation of the GCF proposal and the application process to mobilize US\$20 million GCF grant to co-finance with US\$20 million IDA to make it one of the largest clean cooking programs currently under implementation. The project has also achieved significant gender impacts. Seven of the NGOs selected to carry out the program in rural communities are being led by women, and specific NGOs that participate in the cookstove dissemination have more than 58 percent staff as women in various capacities, from senior managers to masons. As a result, the project has created more than 3000 jobs for women.





OUR IMPACT:

12.9 GIGAWATTS

renewable energy expected to be installed

ESMAP helps to shape WBG strategies and programs to achieve the targets set as part of the WBG's Climate Change Action Plan that includes a significant scale up of renewable energy generation and the integration of variable renewable energy sources into grids.

Dominica: the Caribbean's First Investment in Geothermal Energy

Like many other small island developing states in the Caribbean, **Dominica's** energy sector is dependent on expensive imported fossil fuels and affected by extreme weather. The WB US\$27 million [Dominica Geothermal Risk Mitigation Project](#) aims to help the country diversify its energy mix while providing affordable and sustainable energy for its population.

The project will support the construction of a 7MW small geothermal power plant in the country—the WB's first investment in geothermal energy in the Caribbean. ESMAP's [SIDS DOCK](#) Support Program was instrumental in establishing the building blocks for the geothermal sector in Dominica. Capacity building efforts led to the approval of a Geothermal Law and a robust Power Purchase Agreement.

ESMAP support also helped establish benchmarks for the development of the Wotten Waven-Laudat field and identify key steps to meet industry best practices and international standards. The successful completion of the exploration and drilling, along with an ESMAP grant to assist with project preparation, led to the development of the project.

A portion of the project's funds—US\$10 million from the Clean Technology Fund (CTF)—will allow the government to undertake further drilling to support production and conduct a feasibility study to expand the plant's capacity to 40–100 MW for future electricity exports to neighboring islands.

A Comprehensive Approach to Scaling Up Solar Energy in Vietnam

With help from ESMAP and the WB, Vietnam has made tremendous progress in developing its solar PV market, expanding its installed solar PV capacity from virtually zero in 2017 to over 4 GWp in 2019. In FY2019, Vietnam released a Solar PV Action plan based on a solar resource measurement campaign, a geospatial analysis and a VRE integration analysis as well as a PV supply-chain assessment funded by ESMAP. During the development of the Action Plan in FY2018, the government of Vietnam, with World Bank assistance, piloted a solar competitive bidding of 500 MW of solar capacity. ESMAP and the Global Infrastructure Facility (GIF) funded the preparation of a bidding strategy

and framework to prepare the ground for recruiting a transaction advisor to launch the bidding in FY2020.

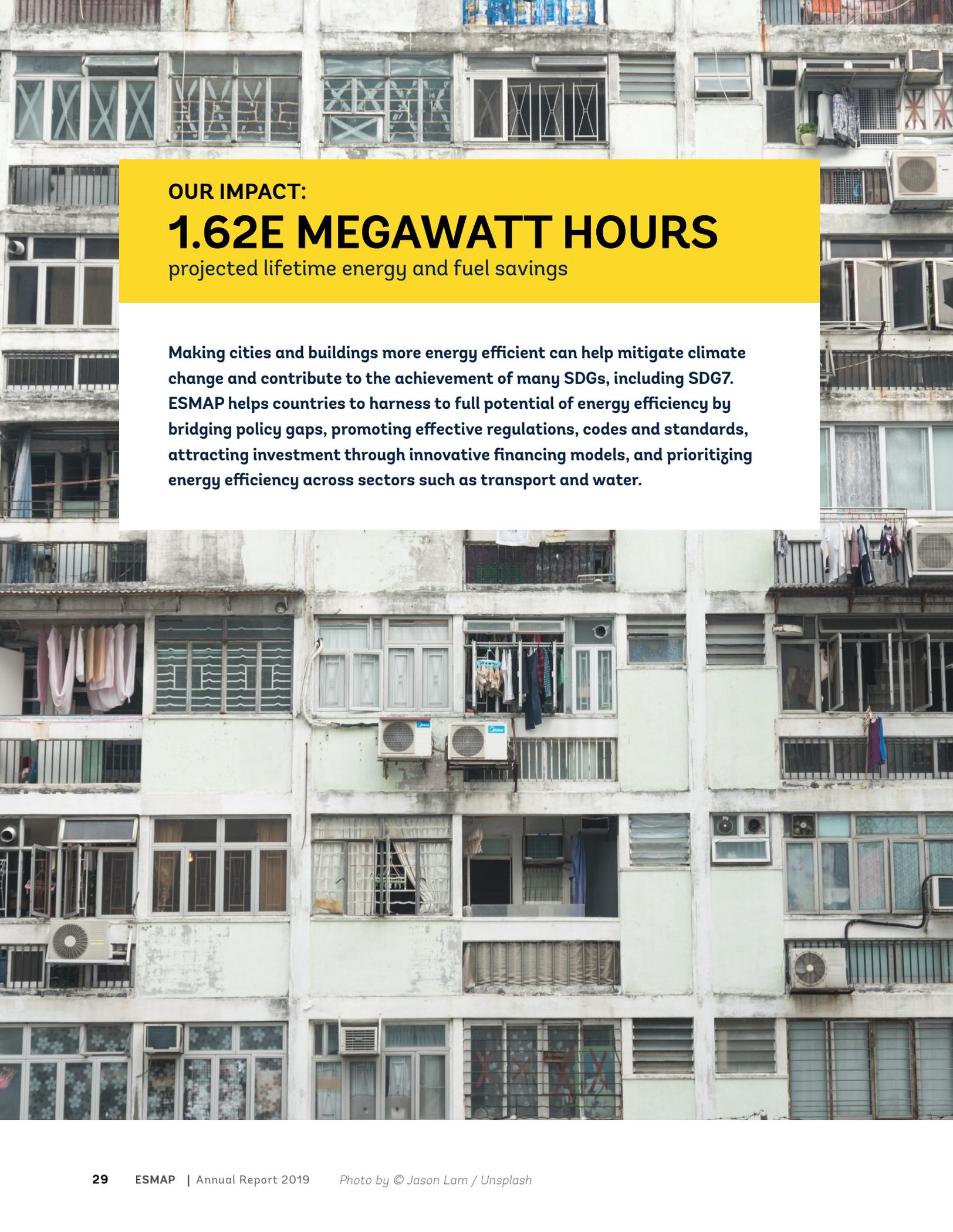
The mapping of rooftop solar potential prepared in FY2018 with support from the Korean Green Growth Trust Fund (KGGTF) and ESMAP culminated in the development of sustainable rooftop solar PV business models and overall deployment strategy in Ho Chi Minh City and Da Nang, two of the largest cities in Vietnam. These activities opened the dialogue for potential WB investment in the country to support the integration of the newly built 4 GWp of PV under the FIT, the development of solar parks, and the deployment of rooftop PV in the main cities.

Laying the Groundwork for Renewable Energy Investment in Uzbekistan

ESMAP has helped the government of **Uzbekistan** design a strategy to transition to a market-oriented energy sector and identify the investments necessary to improve dispatch efficiency. Based on the recommendation of the Uzbekistan Power Sector Reform Options Study, the government formed a Ministry of Energy to consolidate policy and operations for gas, coal, nuclear power and electricity. Activities supported by ESMAP also helped the government to finalize and adopt renewable regulations for developing renewable energy projects with stronger private sector participation.

At the request of the government, an updated least-cost planning analysis was also developed, and the

underlying model is now helping the newly created Ministry of Energy to assess generation expansion plans. The government also requested support from the WBG's Scaling Solar Program for the development of the first 100 MW pilot solar project in the country. It is expected that a total 1,000 MW of solar plants could be procured in the future. An ESMAP analysis of opportunities for improving dispatch efficiency estimated potential savings of US\$34 million per year and based on its findings, the National Dispatch Center is now operationalizing enhanced dispatching tools. The Least-Cost Plan and dispatch studies have informed the government's decision to develop and adopt a new Electricity Sector Investment Program by December 2019, building on the outputs of these analyses.



OUR IMPACT:

1.62E MEGAWATT HOURS

projected lifetime energy and fuel savings

Making cities and buildings more energy efficient can help mitigate climate change and contribute to the achievement of many SDGs, including SDG7. ESMAP helps countries to harness to full potential of energy efficiency by bridging policy gaps, promoting effective regulations, codes and standards, attracting investment through innovative financing models, and prioritizing energy efficiency across sectors such as transport and water.

SCALING UP ENERGY EFFICIENCY

Better Energy Efficiency Regulations and Standards for Panama

Panama is expected to face rapid growth in electricity consumption posing significant challenges to its stretched energy sector. ESMAP's technical assistance aimed to strengthen capacity within the public sector to implement targeted energy efficiency initiatives. These initiatives are helping to curb electricity demand, especially during peak times including space cooling and refrigeration in the residential, commercial and public sectors. Specifically, the technical assistance helped to develop national energy efficiency regulations including standards, labelling of appliances, and green building codes — currently, 12 energy efficiency standards and labeling for appliances have passed through a public consultation process and been approved. The Sustainable Buildings Code has been approved which is accompanied

by an implementation guide and other capacity building activities for government officials.

ESMAP also helped design a communications strategy to increase awareness among key groups and supported regional dialogue to scale-up the Panama experience. Finally, to mobilize more investment in energy efficiency, ESMAP helped design the legal and financial structure of an energy efficiency fund.

It is expected that the energy efficiency appliance regulations will contribute to reductions of around 300 MW of peak demand by 2030 and aggregated savings of 6,564 GWh in electricity consumption, as well as to about US\$530 million savings in consumer electricity bills.

Mobilizing Financing to Make Vietnam's Industry Energy Efficient

Vietnam continues to rely on imported energy resources to meet its energy demand, raising issues of energy supply security and vulnerability to price fluctuations. Meeting future energy demand by improving energy efficiency is the lowest cost option to improve energy security, help consumers save and cope with potential rate hikes, reduce pollution, and mitigate climate change. Estimates show that Vietnam could save up to 11 GW of new generation capacity by 2030 if comprehensive demand-side energy efficiency investments are implemented.

Despite numerous efforts to increase investments in this sector, significant barriers remain, such as limited public financing and unattractive financing terms, lack of institutional capacity, and limited incentives to implement energy efficiency measures. The WB [Vietnam Scaling Up Energy Efficiency Project](#)

aims to improve energy efficiency in Vietnam's industrial sector, contributing to energy savings and greenhouse gas emission reductions.

ESMAP played a significant role in mobilizing financing for energy efficiency investments while removing barriers to sustainable private sector solutions. Specifically, ESMAP helped to develop a US\$78 million risk sharing facility (including a US\$75 million GCF Guarantee and a US\$3 million GCF Grant) to provide partial credit guarantees (RSF Guarantees) to participating financial institutions to cover potential defaults on loans. The RSF Guarantee is expected to mobilize private sector lending and equity and help open a market for commercially financed energy efficiency investments. This effort is expected to mobilize US\$250 million of commercial financing.

An aerial night photograph of a village. The central focus is a two-story stone building with a tiled roof and a covered porch area. The porch has several tables and chairs, and is illuminated by warm lights. The surrounding area consists of other stone buildings and a paved courtyard. The overall scene is dark, with the primary light source being the artificial lights within the village.

OUR IMPACT:

\$3.7 BILLION

external financing mobilized, including private sector

ESMAP aims to mobilize significant private investments by strengthening the policy environment, mitigating risks, and building capacity, following the principles under the WBG's approach for Maximizing Finance for Development (MFD).

MAXIMIZING FINANCE FOR DEVELOPMENT

Closing Funding Gaps to Help Ethiopia Reach Universal Electrification

Over the past decade, the government of **Ethiopia** has launched one of the most successful electrification programs in Sub-Saharan Africa, expanding grid coverage to nearly 60 percent of its population. Despite these major strides, the country still has the second largest energy access deficit in Sub-Saharan Africa with 70 percent of the population still living in the dark.

ESMAP has been central to Ethiopia's continuing efforts by facilitating new investments, strategies and approaches. The initial ESMAP-funded *Ethiopia Energy Sector Review and Strategy* (ESRS) has guided the design and launch of Ethiopia's National Electrification Program (NEP) in 2017, which is now supported by the World Bank Ethiopia Electrification program (ELEAP) and other WB projects. The NEP2.0, launched in March 2019 outlines a nationwide off-grid program which uses diagnostics from ESMAP's multi-tier framework (MTF) and geospatial analysis.

To close the US\$1.5 billion gap to provide one million last-mile household connections over five years, Ethiopia's Electrification Program has mobilized over US\$214 million so far from development partners and the private sector for grid reinforcement and off-grid electrification. It has also leveraged policy, strategy, and planning expertise from different development partners including the African Development Bank, EU Delegation to Ethiopia, DFID, and GIZ.

Another important millstone in crowding in financing to the sector is the US\$1.2 billion WB Growth and Competitiveness Development Policy Operation (DPO) approved in FY2019, with a focus on maximizing finance for development by improving efficiency and restoring financial sustainability in the power sector. ESMAP's Energy Subsidy Reform Facility helped to define key policy reforms in this DPO. For instance, ESMAP analysis under the cost of service and tariff study component was a critical input to the comprehensive tariff reforms approved by the government.

ESMAP's work in resource mapping also benefited the WB US\$200 million Renewable Energy Guarantees Program (REGREP) to leverage private sector financing for solar and wind energy generation to develop over 1,000 MW. The government utilized ESMAP's Global Wind Atlas to identify areas with high potential. In collaboration with the government of Denmark, ESMAP is also financing wind measurements in 17 sites for validation, including 6 priority sites for a future wind Independent Power Project.

With the help of ESMAP's Africa Gender and Energy Program, Ethiopia continues to pioneer a first-of-a-kind model to achieve gender equality across the energy sector, shifting from ad-hoc interventions to a transformational, programmatic approach. The second phase of the NEP builds on early success and defines new engagement areas, together with partners.

Boosting Financing for Electricity Access in Cote d'Ivoire

In **Cote d'Ivoire**, increased access to electricity is a key element needed to generate income and jobs, promoting productive uses of electricity, thereby spurring growth and development. To help the government of Cote d'Ivoire to increase electricity access, ESMAP funded the development of an investment prospectus for a medium-term national electricity access scale up program. The investment prospectus for electricity access scale up focuses on 15 cities, through the *Electricity Access Scale UP program* set up in 2014 and has mobilized about US\$ 60 million in external financing to increase electricity in 15 selected administrative capitals. This additional financing complements the ongoing

World Bank Electricity and Transmission Project.

The investment prospectus was presented to development partners including the African Development Bank (AfDB), the European Union (EU) and West African Development Bank (BOAD) which expressed interest in financing the implementation of the program. Specifically, AfDB indicated financing commitment of about US\$30 million, BOAD of US\$20 million while the EU initially committed to US\$10 million with possibility to further increase the financing. In addition, Arab donors including OFID, BADEA and Saudi Fund for Development also expressed interest in financing the implementation of the program.



SECTION 3

FINANCIAL REVIEW

This chapter outlines the FY2019 financial information for the two multi-donor trust funds (MTFs) that are under ESMAP's management and administration, namely, ESMAP and SIDS DOCK. ¹



Contributions

In FY2019, ESMAP received a total of about US\$78 million from 13 donors, including from new donors ClimateWorks and the United Kingdom's Department for Business, Energy & Industrial Strategy (BEIS), a 92 percent increase from FY2018 receipts.² SIDS DOCK did not receive any contributions in FY2019. Table 1 presents actual receipts in FY2019 from individual donors for the two MDTFs, as well as cumulative receipts for the FY2017-2020 ESMAP Business Plan. At the end of FY2019, ESMAP has mobilized over US\$212 million for its FY2017-2020 Business Plan, compared to the target of US\$215 million.

TABLE 1: Donor Contributions to ESMAP and SIDS DOCK MDTFs, FY2017-19 (US\$ thousand)

Country	FY2019 Paid-in Contribution/Receipts		ESMAP FY2017-19			FY2012-18 SIDS DOCK
	ESMAP	SIDS DOCK	Cumulative Pledges	Cumulative Receipts	Cum. Receipts over Cum. Pledges	
Australia			1,154	1,154	100.0%	
Austria	1,709		1,709	1,709	100.0%	
Canada	2,298		2,298	2,298	100.0%	
ClimateWorks	750		3,000	750	25.0%	
Denmark	7,118		22,459	21,364	95.1%	7,093
EU	7,298		14,343	7,298	50.9%	
Finland			144	144	100.0%	
France						
Germany						
· BMUB			7,344	7,344	100.0%	
· BMZ	866		2,240	2,240	100.0%	
Iceland	700		2,733	2,433	89.0%	
Italy			6,054	6,054	100.0%	
Japan						15,000
Lithuania						
Luxembourg			1,124	1,124	100.0%	
Netherlands	8,152		35,378	27,226	77.0%	
Norway						
· MFA			4,773	4,773	100.0%	
· Norad	3,551		6,532	6,532	100.0%	
Rockefeller Foundation			250	250	100.0%	
Sweden	7,425		24,367	18,617	76.4%	
Switzerland	4,000		12,050	12,050	100.0%	
United Kingdom			64,613	45,817	70.9%	
· BEIS ³	11,532		24,135	11,532	58.1%	
· DFID	22,258		40,478	34,309	84.8%	
World Bank						
Grand Total	77,657		277,179	215,018		22,093

¹ As set out in the Administration Agreement with ESMAP donors, the current financial information relating to the three multi-donor trust funds under ESMAP management can be accessed via the Bank's [Trust Funds Donor Center secure website](#). The Bank's Financial Statements, as well as the Single Audit Report on Trust Funds can be accessed via the [Bank's public website for Financial Reports](#). The ESMAP MDTF consists of TF071398 and its Parallel/Successor TF072490.

² About \$27.1 million of these contributions is preferenced as co-financing grants for specific World Bank projects.

³ U.K. Department for Business, Energy & Industrial Strategy (BEIS) provides contribution in Promissory Notes. Paid-in amount denotes encashed amount

Disbursements

ESMAP disbursed over US\$42 million in FY2019, an increase of about 10 percent from FY2018. Disbursement for SIDS DOCK totaled about US\$2.1 million, an increase of about 31% from the prior fiscal year. Table 2 presents disbursements for the two MDTFs for FY2017–19. Costs are separated into: (i) project disbursements by region and for global programs and (ii) disbursements for program management and administration, portfolio management, communications, and knowledge management.

Regional activities accounted for about 94 percent of disbursements, with country engagements in Africa constituting about 28 percent of regional disbursements. It should also be noted that the Global Programs include technical support by the central ESMAP unit to country/regional activities.

TABLE 2: ESMAP, ASTAE, and SIDS DOCK Disbursements, FY2017-19 (US\$ thousand)

	FY17			FY18			FY19	
	ESMAP	SIDS		ESMAP	SIDS		ESMAP	SIDS
Project Cost	\$34,511	\$1,559	96%	\$38,110	\$1,649	93%	\$40,062	94%
Africa	10,971	264		12,387	161		11,249	
East Asia	3,787	482		3,733	576		4,373	
Europe & Central Asia	3,025			2,926			3,662	
Latin America & Caribbean	2,676	813		2,281	912		1,718	
Middle East & North Africa	3,128			1,435			3,423	
South Asia	2,349			2,373			3,813	
Global Program	8,575			12,975			11,823	
Program Management, Comm & KM	\$1,281	\$40	4%	\$2,815	\$13	7%	\$2,550	6%
Program Management & Administration	781	40		1,453	13		1,531	
Portfolio Management (Monitoring and Evaluation)	27			453			373	
Knowledge Management	7			258			149	
Communication and Outreach (publications, website, and other dissemination)	466			651			496	
Total	\$35,792	\$1,599	100%	\$40,925	\$1,661	100%	\$42,611	100%

Breakdown, by Region and Thematic/Cross-Cutting Areas

Table 3. presents disbursements by region and ESMAP's Thematic and Cross-Cutting areas. Annual Block Grants (ABGs) comprised the largest portion of ESMAP's portfolio at nearly 20 percent, followed by Energy Subsidy Reform at 14 percent of total disbursements for ESMAP in FY2019. Within the ABG portfolio, disbursements in the Africa Region was 26 percent of the total ABG disbursements and 5 percent of the total ESMAP project disbursements in FY2019.

TABLES 3: ESMAP, ASTAE, and SIDS DOCK Disbursements, by Program Area, FY2019 (US\$ thousand)

	CROSS-CUTTING SOLUTIONS			ENERGY ACCESS					RENEWABLE ENERGY			ENERGY EFFICIENCY		Other Programs	
	Annual Block Grants	Energy Subsidy Reform	SEforALL Knowledge Hub	SEforALL ECCH	Mini Grids TA	Host Comm.	Lighting Global	GGDP	RE Mapping	VRE	Solar TA	EE Buildings	EE City Services		
Africa	2,119	2,513		664	2,196	248	68	1,095	6	1,191	182	565	353	161	
East Asia	1,133	201		275	24	59		71	68	420	689	252	314	672	
Europe & Central Asia	1,113	695		221	69				18		86	38	1,052	376	
Latin America & Caribbean	341	472			156		21	22	93		34	117	219	258	
Middle East & North Africa	1,659	450					135		953		36	21	107	67	
South Asia	863	452		323	268	125		49		1,192	325	13	63	144	
Global Program	821	1,053	2,516	432	583	1,958	178	387	526	715	70	821	653	553	614
Program Management, KM & Communications															2,550
Total	\$8,060	\$5,835	\$2,516	\$1,916	\$3,296	\$2,389	\$401	\$1,624	\$1,684	\$3,518	\$1,423	\$1,825	\$2,760	\$2,231	\$3,164

Total Disbursement

	ESMAP	SIDS	Total
Africa	11,361	468	11,829
East Asia	4,177	318	4,494
Europe & Central Asia	3,667		3,667
Latin America & Caribbean	1,733	1,314	3,046
Middle East & North Africa	3,427		3,427
South Asia	3,817		3,817
Global Program	11,879		11,879
Program Management, Knowledge Management & Communications	2,550	20	2,570
Total	\$42,611	\$2,120	\$44,730

ABOUT ESMAP

ESMAP is a multi-donor trust fund administered by the World Bank, anchored in the Energy & Extractives Global Practice in Washington, DC. As a long-standing partnership between the World Bank and bilateral partners, ESMAP helps low- and middle-income countries reduce poverty and boost growth through environmentally sustainable energy solutions. ESMAP's analytical and advisory services are fully integrated within the World Bank Group's country policy dialogue and lending programs in the energy sector. Through the WBG, ESMAP works to accelerate the energy transition required to achieve Sustainable Development Goal 7 (SDG7) to ensure access to affordable, reliable, sustainable and modern energy for all. It helps to shape WBG strategies and programs to achieve International Development Association (IDA) policy commitments and the WBG's Climate Change Action Plan targets.

ESMAP's program includes both regional and country-focused activities implemented primarily by World Bank regional energy teams and global initiatives managed by the ESMAP program unit. The ESMAP core unit of about 40 staff is responsible for the day-to-day management of the program and implementation of ESMAP's business plan. The unit comprises teams working on several areas such as energy access, renewable energy, energy efficiency, energy subsidy reform, gender, communications, and monitoring and evaluation. The unit is also responsible for the management and administration of the Small Island Developing States (SIDS) DOCK Multi-Donor Trust Fund.

ESMAP is governed by a Consultative Group (CG), comprising representatives from contributing donors and chaired by the Senior Director of the World Bank's Energy & Extractives Global Practice. The CG meets annually to review the strategic direction of ESMAP, its achievements, use of resources, and funding requirements.

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The Rockefeller Foundation

Sweden | Swedish International Development Cooperation Agency (SIDA)

Switzerland | Swiss State Secretariat for Economic Affairs (SECO)

United Kingdom | Department for International Development (DfID)

The World Bank

ABBREVIATIONS

ABG - Annual Block Grant
ADB - Asian Development Bank
AFD - Agence Française De Développement
BEIS - Department for Business, Energy and Industrial Strategy
BOAD - West African Development Bank
CCF - Clean Cooking Fund
CG - Consultative Group
CIF - Climate Investment Fund
CTF - Clean Technology Fund
CY - calendar year
DPF - development policy financing
DPL - development policy loan
DPO - development policy operation
ECCH - Efficient, Clean Cooking and Heating
ESP - Energy Storage Partnership
EU - European Union
FCV - Fragility, Conflict and Violence
FY - fiscal year
GCF - Green Climate Fund
GEF - Global Environment Facility
GGDP - Global Geothermal Development Plan
GHG - greenhouse gas
GIF - Global Infrastructure Facility
GOGLA - Global Off-Grid Lighting Association
IBRD - International Bank for Reconstruction and Development
IDA - International Development Association
IFC - International Finance Corporation
IPP - Independent Power Producer
ISA - International Solar Alliance
K-CEP - Kigali Cooling Efficiency Program

KEF - Knowledge Exchange Forum
KGGTF - Korean Green Growth Trust Fund
MDTF - multi-donor trust fund
MFD - maximizing finance for development
MTF - Multi-Tier Framework
NGO - non-governmental organization
PPA - Power Purchase Agreement
PV - photovoltaic
RE - renewable energy
RISE - Regulatory Indicators for Sustainable Energy
SDG - Sustainable Development Goal
SIDS - Small Island Developing States
SRMI - Solar Risk Mitigation Initiative
TA - technical assistance
VRE - variable renewable energy
WB - World Bank
WBG - World Bank Group

WORLD BANK REGIONS

AFR - Sub-Saharan Africa
EAP - East Asia and Pacific
ECA - Europe and Central Asia
LCR - Latin American and the Caribbean
MNA - Middle East and North Africa
SAR - South Asia

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