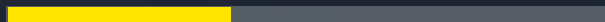


ENERGY SECTOR MANAGEMENT ASSISTANCE PROGRAM **ANNUAL REPORT 2017**



Public Disclosure Authorized

Public Disclosure Authorized

Public Disclosure Authorized

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CHAPTER 1

ENERGY TRANSFORMATION IS HAPPENING



Photo by Dominic Chavez/©World Bank

The global energy sector is at a turning point.

Dramatic reductions in the cost of renewables are enabling countries to think differently about meeting energy demand, and are creating new opportunities and challenges. Progress on energy efficiency is gaining momentum. Technological advancements in grid and off-grid solutions are enabling countries to roll out more innovative plans to increase access to electricity. While significant progress has been made, the 2017 Global Tracking Framework indicates that the pace of this progress

fell short of what is needed to meet the Sustainable Development Goal on energy (SDG7) that calls for access to affordable, reliable, sustainable and modern energy for all by 2030. Almost 10% of the world will still not have electricity access in 2030, while 28% will remain without access to clean cooking. Much more encouraging than the global trends, however, are the experiences of individual countries demonstrating the feasibility of moving faster toward sustainable energy objectives.



Photo by E Fesenko

To accelerate the needed energy transition, the Energy Sector Management Assistance Program (ESMAP) focuses on:

- **Fixing sector fundamentals, including energy pricing:** Helping energy suppliers become operationally effective and financially creditworthy, tackling weak governance, strengthening policy and regulatory frameworks, and reforming energy subsidies for improved sector performance.
- **Pursuing all energy supply options for sustainability:** Supporting countries to transition to lower carbon and more resilient energy systems, with a focus on de-risking investments and integrating variable renewable energy into power grids.
- **Getting incentives and policy frameworks right for universal access:** Assisting governments to develop and finance sound, comprehensive grid and off-grid electricity and household energy access programs that can leverage public and private financing.
- **Prioritizing energy efficiency improvements:** Working at the nexus of power, water, transport, buildings, industry, and urban development to help countries take policy action on regulatory standards and implement delivery and financing modalities for energy efficiency investments, particularly in cities.
- **Crowding in commercial capital and private sector solutions for delivery:** Assisting countries to develop and implement appropriate legal, fiscal, and contractual frameworks, strengthen regulatory institutions, and adopt market-driven principles to attract adequate commercial capital to meet their energy sector investment needs.

Fiscal Year (FY) 2017 was the first year of implementation of ESMAP's four-year business plan for FY2017-2020. Progress was made across 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 markets**, **governance and planning**, **energy subsidy reform**, and **knowledge tools** that aim to tackle broader sectoral issues.

FY2017 BY THE NUMBERS

- + The World Bank approved 41 new energy lending projects totaling **6.1 BILLION** US\$
- + **20** of these new projects, benefited from ESMAP support. Another **7** projects in other sectors were also influence by ESMAP
- + ESMAP's portfolio of advisory services and analytics informed **6.5 BILLION** US\$ in World Bank lending
- + ESMAP also leveraged approximately **560 MILLION** US\$ from other sources such as governments, other multilateral organizations, and the private sector
- + ESMAP initiated **95 NEW ACTIVITIES** in 53 countries (excluding regional activities) and **10 GLOBAL ACTIVITIES**, for a total of **25.7 MILLION** US\$ (excluding SIDS-DOCK — Small Island Developing States)

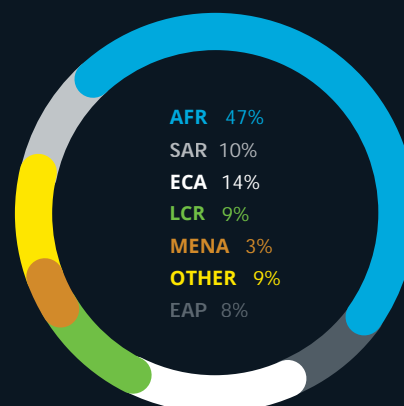
NEW ACTIVITIES*

- **15 in Energy Access** for \$3 million
- **26 in Renewable Energy** for \$7 million
- **21 in Energy Efficiency** for \$3 million
- **44 in Governance, Markets & Planning** for \$9 million
- **8 in Energy Subsidy Reform** for \$3 million
- **3 in SEforALL Knowledge Hub** for \$0.8 million

* Activities may include multi-thematic grants.

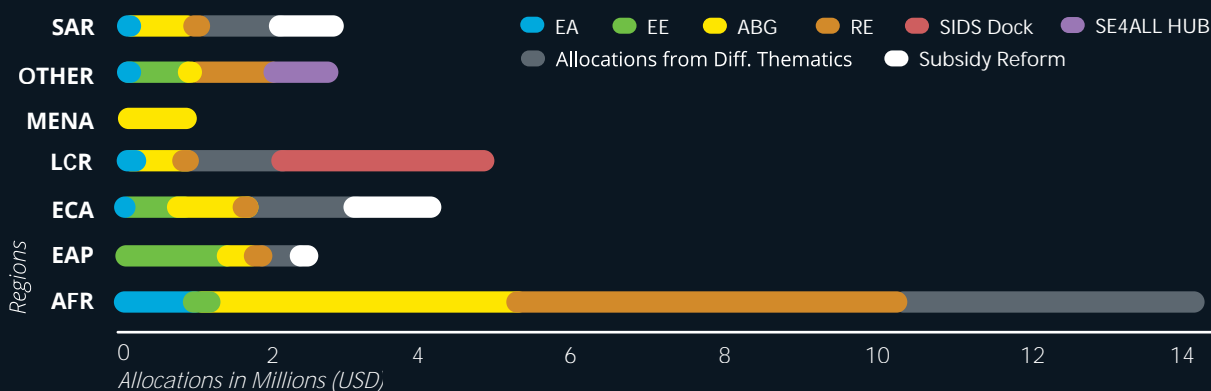
FY2017 Approvals, Grant Amount by Region

(US\$ Million)



FY2017 ESMAP & SIDS Approvals, Grant Amount by Thematic / Cross-Cutting Areas

(US\$ Million)



Key Trends in ESMAP's Portfolio



SECTOR-WIDE ENGAGEMENTS

Long-term, sector-wide engagements can be transformational

In **Kenya**, ESMAP addressed energy challenges through policy assistance and planning tools across the full value chain of the sector over several years. The support is focusing on (i) *environmental sustainability*, where ESMAP's national geothermal strategy aims to increase generation capacity with renewable energy; (ii) *social sustainability*, where ESMAP's geospatial planning, multi-tier framework survey, and power demand studies are instrumental in helping increase electrification in poor urban areas and remote areas; and (iii) *financial sustainability*, where ESMAP's implementation roadmap is focusing on cost-recovery tariffs, guarantee programs, and better borrowing terms for the private sector. As a result, Kenya scaled up geothermal energy development, increased electricity access for the urban poor, and embarked on an intensive effort to electrify remote communities to reach universal energy access by 2030.



SECTOR FUNDAMENTALS

Getting sector fundamentals right can maximize finance for development

In **Armenia**, ESMAP supported the Power Sector Financial Recovery Plan, which helped identify the shortcomings of the sector's regulatory framework. The government acted upon the recommendations of the plan to: (a) improve the tariff-setting methodology for state-owned power sector companies; (b) eliminate shortcomings in the methodology for adjustment of distribution tariff for private power distribution company (Electric Networks of Armenia, ENA); and (c) legally prohibit non-core business activities of state-owned power companies. This was and remains an essential element for attracting commercial financing into power generation given that ENA is the buyer of electricity, and needs to have financial stability. ESMAP is also supporting the development of a distribution grid code, including connection requirements for the 50 MW Masrik-1 solar PV plant, the country's first utility-scale solar power project, which is the first competitively tendered project in the Armenian power sector. The project will be fully financed on a private basis, with potential support from the World Bank and Scaling Up Renewable Energy Program (SREP) guarantees.



ENERGY ACCESS

Comprehensive electrification approaches can help increase energy access

Experience from several countries such as Afghanistan, Cambodia, and Rwanda shows that making more determined use of off-grid and mini-grids solutions in combination with sustained grid electrification may make it possible to accelerate access rates. Geospatial least-cost electrification plans in Kenya and Myanmar have provided the blueprint for national electrification programs and are being used to target investments, including in mini-grid and off-grid systems. The package of support to countries includes integration of mini-grids and off-grid solutions into national electrification strategies, addressing policy and regulatory barriers for the private sector, and setting up financing facilities to support off-grid energy companies.



RENEWABLE ENERGY

De-risking and improving public sector planning can incentivize private investors to enter the renewable energy sector

ESMAP's work in renewable energy aims to help countries attract the financing needed to achieve their Nationally Determined Contributions (NDCs). ESMAP's Global Geothermal Development Plan helped leverage a \$350 million project in Turkey to scale up private sector investment for geothermal development by reducing investors' risks during drilling. ESMAP also launched the **Global Solar Atlas** — a free, web-based tool that allows policymakers to identify the best areas for solar power generation, and provides a quick tool to support commercial developers.



ENERGY EFFICIENCY

A cross-sectoral approach to urban energy efficiency can improve city services and competitiveness

Integrating energy efficiency in the urban, transport, and water sectors helps build sustainable cities. In **Argentina**, ESMAP is supporting the \$200 million World Bank Metropolitan Buenos Aires Urban Transformation Project aimed at improving housing and electricity access to Buenos Aires' urban poor. Special focus was placed on building design, based on IFC's **Excellence in Design for Greater Efficiencies (EDGE)** Green Building program with a view to improving the resource efficiency of low-income housing.



ENERGY SUBSIDIES

Reforming energy subsidies is a political economy challenge

Success in energy subsidy reform requires governments to communicate why reforms are needed and that there is a real offer in terms of social policy. For example, **Ukraine** was able to complete rapid increases in residential heat tariffs, virtually removing price subsidies, by shifting to a social protection scheme that provides heating subsidies to households according to set norms. This shift was accompanied by a major communications campaign. Because energy subsidy reforms are not just about prices, ESMAP's support to countries has been comprehensive, based on analysis of energy sector, fiscal issues, political economy, incidence analysis, and social protection systems.



DATA

Strong data can shape policies and mobilize investment

Under the [SEforALL Knowledge Hub](#), ESMAP launched three comprehensive data and analytical tools to help governments craft policies that attract investment and track progress toward SDG7. These include the [Regulatory Indicators for Sustainable Energy \(RISE\)](#), the [Global Tracking Framework \(GTF\)](#), and the [State of Electricity Access Report \(SEAR\)](#). New surveys under the [Multi-Tier Framework for Energy Access \(MTF\)](#) for measuring energy access are underway. The final MTF report will be launched in 2018. These tools have helped inform the World Bank's policy engagements in client countries.

ESMAP AND CLIMATE CHANGE *How ESMAP Supports Implementation of Nationally Determined Contributions*

RENEWABLE ENERGY

48 out of 53 countries

ESMAP supports, have included RE as part of their NDCs:

- 34 specify solar energy as a priority in their NDCs
- 25 specify wind energy as a priority in their NDCs
- 12 specify geothermal energy as a priority in their NDCs

URBAN ENERGY EFFICIENCY

18 out of 20 countries

ESMAP supports have included EE as part of their NDCs:

- 10 specify EE cities as a priority
- 9 specify EE buildings as a priority

ENERGY SUBSIDIES

5 out of 14 countries

ESMAP supports mention fossil fuel subsidy reform: China, Egypt, India, Nigeria, and Vietnam

A close-up photograph of a woman with a bindi on her forehead, smiling warmly. She is carrying a baby on her back in a colorful, patterned sling. The background is a textured, light-colored wall.

EMPOWERING WOMEN AND VULNERABLE GROUPS

Photo by Xi Zang

FY2017 marked the shift of ESMAP's gender work from a stand-alone activity supporting program activities to an initiative fully integrated across ESMAP's portfolio. A series of activities are now assessing gender dimensions in areas such as electricity infrastructure, geothermal, mini grids, energy efficiency, behavior change, and clean cooking. In addition, three new regional Gender and Energy programs were established in Europe & Central Asia, Latin American & Caribbean, and Middle East & North Africa regions following the models and approaches of the Africa and East Asia & Pacific Gender and Energy programs. The Africa Gender and Energy program currently supports 35 energy projects in 13 countries (Benin, Comoros, Côte d'Ivoire, Democratic Republic of Congo, Ethiopia, Kenya, Liberia, Niger, Nigeria, São Tomé and Príncipe, Senegal, Tanzania, and Uganda). In FY2017, the World Bank's Board approved 10 projects that received gender technical assistance from ESMAP.

RENEWABLE ENERGY

ESMAP collaborated with the Government of Iceland, the United Nations University Geothermal Training Programme (UNU-GTP) and the Gender Equality and Studies Training Programme (UNU-GEST) to initiate a study on incorporating gender in geothermal energy. In addition, ESMAP's support to **Vietnam's Trung Son Hydropower Project** demonstrated how gender-informed resettlement can contribute to the project's success.

ESMAP is engaged with SEforALL's new People-Centered Accelerator to support gender equality, social inclusion, and women's empowerment.

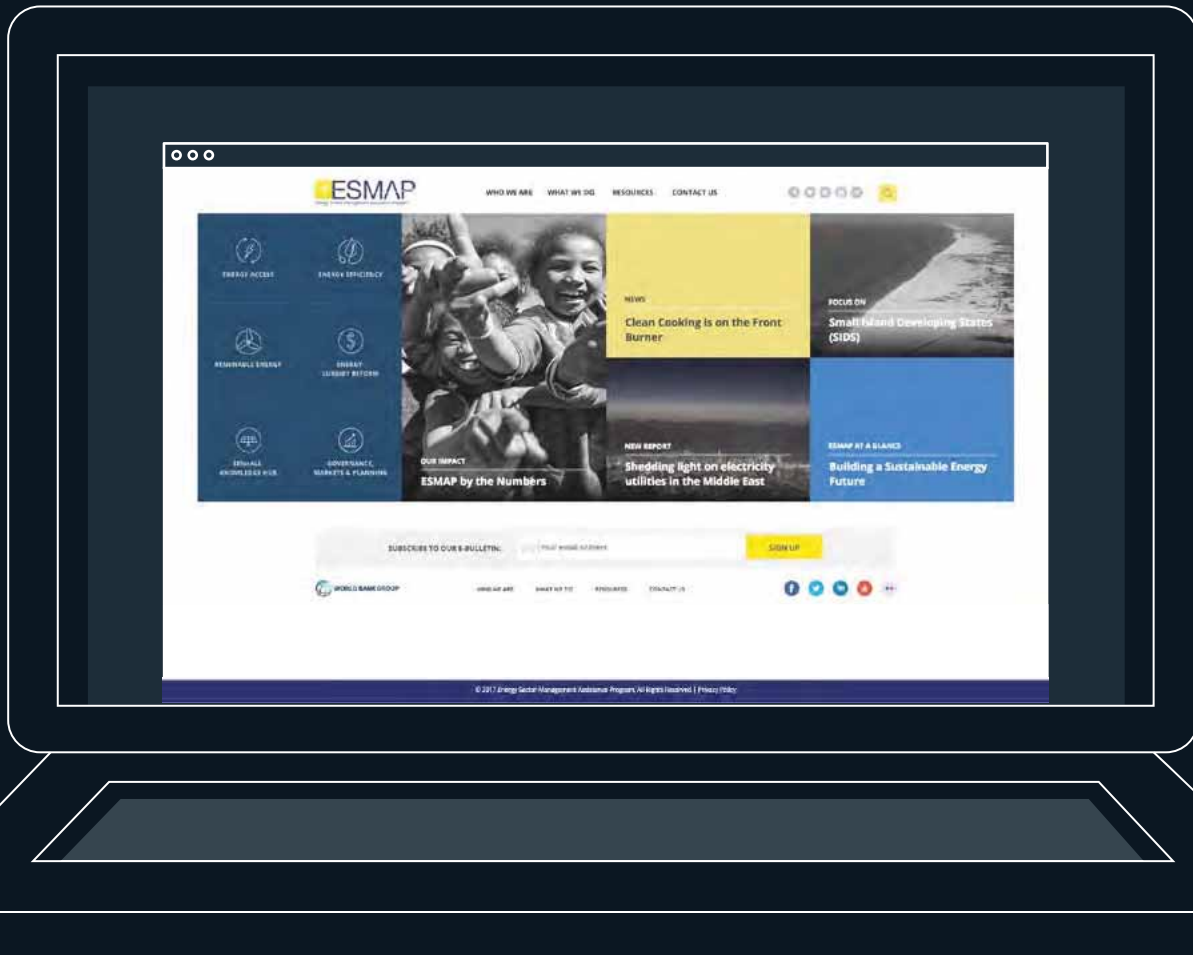
ENERGY EFFICIENCY

A guidance note on Energy Efficiency, Behavior Change, and Gender is being prepared to help enhance the effectiveness of demand-side, energy efficiency programs by integrating the gender dimension throughout the project cycle and developing gender-informed communication strategies. In **Bangladesh**, analysis of accessibility planning for public transport in Dhaka is opening doors for women and vulnerable groups.

ENERGY ACCESS

In **Liberia**, ESMAP is supporting the Rural and Renewable Energy Agency (RREA) to identify opportunities for men and women in the development of the mini grid in Lofa County, under the Liberia Renewable Energy Access Project. Staff training increased awareness and capacity on topics such as gender norms and productive uses of energy. In addition, RREA adopted a gender policy and sexual harassment plan. At the policy level, the Liberia Rural Energy Strategy and Master Plan for Liberia (RESMP) includes a cross-cutting focus on gender to highlight how energy poverty impacts women and girls lives and other aspects. A Gender and Mini Grids guidance note was presented at the ESMAP Learning Event on Upscaling Mini Grids for Least-Cost and Timely Access to Electricity Services in Myanmar. Gender is also being integrated into MTF modules in several countries.

NEW ESMAP WEBSITE LAUNCHED



To support the continuous sharing of knowledge and communicate progress and results, ESMAP launched a new, dynamic, and comprehensive website. The site is structured in a way to better serve the information needs of diverse audiences globally. It provides a rich source of information delivered through news, stories, multimedia, blogs, videos, knowledge products, online courses, and a variety of publications. It contains information about ESMAP's role in catalyzing change within the World Bank Group by leveraging billions of dollars of World Bank investments in energy and generating @ESMAPKnowledge that shapes global energy policy.



FOLLOW ESMAP-RELATED NEWS ON TWITTER

[@WBG_Energy](https://twitter.com/WBG_Energy)

[#ESMAPKnowledge](https://twitter.com/ESMAPKnowledge)

CHAPTER 2

GOVERNANCE, MARKETS & PLANNING

Getting sector fundamentals right can help mobilize private financing. Good governance and fiscal management, sound planning, and well-designed market mechanisms can help countries improve the financial health of their utilities and attract the investment capital needed to sustainably develop their energy sectors. ESMAP leverages the World Bank's sector-wide engagement with countries to provide strategic support in market and regulatory reform, power system planning, and integration of regional infrastructure.

In FY2017, ESMAP allocated over \$9 million to help countries improve governance, planning, and market structures in the energy sector. Activities have resulted in significant policy shifts and informed billions in World Bank investments.

In FY2017, the portfolio for **Governance, Markets & Planning** informed almost

 **2.9**
BILLION

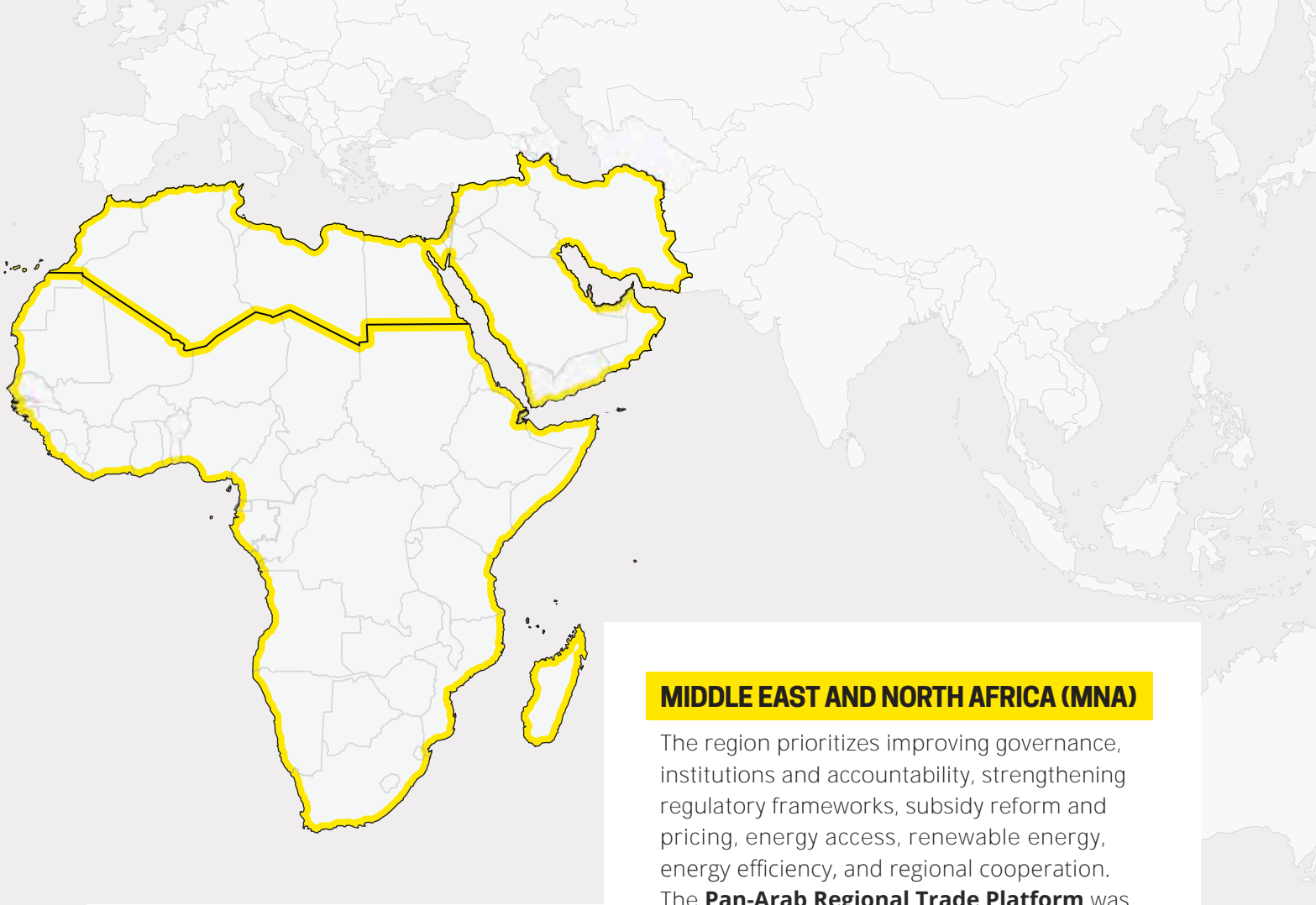
of World Bank lending

Responding to Regional Priorities



LATIN AMERICA AND CARIBBEAN (LCR)

The region prioritizes strengthening energy policies, addressing energy equity and quality of access, enhancing the climate resilience of energy systems, scaling up financing and promoting a new public-private economy. The LCR regional study on Energy Markets helped generate new knowledge by presenting an integrated view of energy sector trends in LCR, energy markets performance, trends in emerging technological disruptions, and status of financial markets.



AFRICA (AFR)

The region's priorities include strengthening utilities, regulation and power system planning, regional integration of infrastructure, renewable energy scale up (particularly hydro-power and solar), grid and off-grid electricity, and facilitating private sector investment. In **Kenya**, ESMAP has helped to strengthen country capacity to transition to a competitive wholesale market and enhanced the Energy Regulatory Commission's capacity to undertake a regulatory impact assessment. In **Madagascar**, technical assistance helped prepare standard power purchase and concession agreements, as well as safeguard frameworks for small hydropower independent power producers (IPPs). This has informed the government on competitive processes for the development of small hydropower with private sector investment.

MIDDLE EAST AND NORTH AFRICA (MNA)

The region prioritizes improving governance, institutions and accountability, strengthening regulatory frameworks, subsidy reform and pricing, energy access, renewable energy, energy efficiency, and regional cooperation. The **Pan-Arab Regional Trade Platform** was established with the help of ESMAP and other partners to address the regulatory, governance, pricing, and financing challenges affecting regional energy trade and infrastructure integration. Since its launch, significant research and analysis was undertaken to assess gas trade in the region and provide inputs on the political economy of regional cooperation. ESMAP's study on *Securing Energy for Development in the West Bank and Gaza* broke new ground by identifying options for diversifying energy supply to help **West Bank and Gaza** meet their growing energy demand by 2030 amidst high political and economic uncertainty. Scaling up renewable energy to diversify supply was one of the study's key recommendations. It also proposed innovative methods to help utilities minimize losses and create a conducive environment for private sector investment in power generation. An upcoming World Bank investment project is being prepared based on these findings.



EASTERN EUROPE AND CENTRAL ASIA (ECA)

The region's priorities include improving access to reliable and efficient energy supply, designing sustainable tariff and subsidy reforms, scaling up energy efficiency and renewable energy, and strengthening legislation for the electricity and gas sectors. In **Moldova**, technical studies on power interconnection with Romania informed the preparation of a new World Bank investment project. This work has enabled the Moldovan government, the World Bank and other donors, such as the European Bank for Reconstruction and Development (EBRD), the European Investment Bank (EIB), and the European Union Neighbourhood Investment Fund, to agree on a \$270 million financing package arrangement, including \$70 million IDA financing. In **Albania**, ESMAP support for power market design helped establish a competitive, transparent, and price-efficient electricity market. This has helped attract investors for an upcoming private 280-MW merchant hydropower project.

SOUTH ASIA (SAR)

Regional priorities include renewable energy, energy efficiency, access to energy, as well as regional integration. ESMAP informed **India's** \$240 million Andhra Pradesh 24x4 Power4All project in terms of upgrading information technology systems in utility companies and has also facilitated discussions on the overarching architecture for smart grid deployment. In **Bangladesh**, ESMAP analysis on options for scaling up power trade between Bangladesh and India, including the establishment of a Bangladesh Power Exchange, informed the government, the regulator, and system operator on the requirements for participating in a power market, with India initially, and later with other countries.

EAST ASIA AND PACIFIC (EAP)

Priority areas range from strengthening power sector governance, and creating competitive markets, to power and gas regulatory reforms, energy efficiency and variable renewable energy integration, and energy infrastructure. ESMAP helped **Electricity of Vietnam** (EVN), the major power utility in the country, to develop a comprehensive strategy and roadmap for unbundling and divesting its generation assets, with a view to creating a more favorable environment for private sector investment, including a timeline for the launch of initial public offering (IPO)/strategic investor transactions. In **Indonesia**, ESMAP supported the development of the Matenggeng Pumped Storage Hydroelectric Power Project through an analysis of catchment issues, as well as local benefit sharing mechanisms in the Poko Hydropower Project.

CHAPTER 3

ENERGY ACCESS

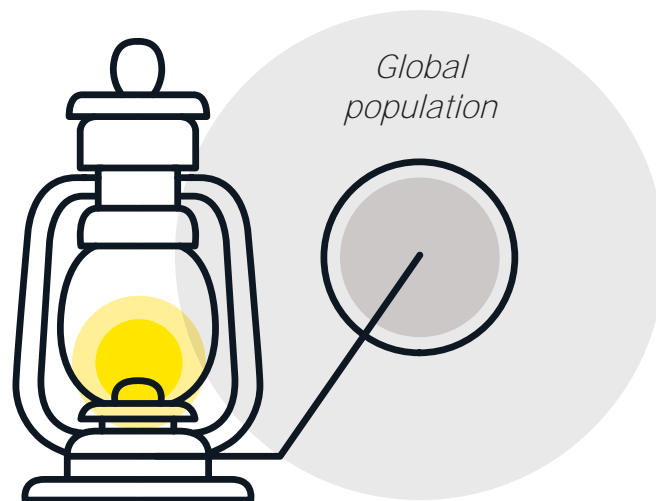


Photo by ©ILO/Alan Dow/BMET

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Pace of progress on the sustainable energy goal on energy access fell short of what is needed to meet global objectives by 2030. Almost 10% of the world will still not have electricity access in 2030, while more than 28% will remain without access to clean cooking. Substantial acceleration of efforts and investments are needed.

— *Global Tracking Framework (GTF), 2017*



1.06 BILLION
WITHOUT ELECTRICITY

In addition, the **State of Energy Access Report** (SEAR), found that in countries with low levels of electricity access, both grid and off-grid solutions are vital for achieving universal access but they must be supported by the right policies, regulations, and incentives.

ESMAP's comprehensive approach encompasses strategies, which integrate grid extension, off-grid solutions such as mini grids, and systems to power individual homes and businesses in both rural and urban areas, including urban slums. It also helps countries to scale up access to modern and clean cooking solutions, including clean fuels.

Bridging the Access Gap with Mini Grids

Technological innovations and new business models are making mini grids a scalable option for expanding energy services in low access areas like Sub-Saharan Africa, parts of South Asia, and Small Island Developing States. ESMAP's Global Facility on Mini Grids incorporates mini grids into World Bank investment projects, shares global knowledge, builds local capacities, and leverages partnerships.

CURRENTLY



27

WORLD BANK ELECTRIFICATION PROJECTS under preparation or implementation in 23 countries include mini grids

534
MILLION US\$

OF WORLD BANK FUNDS TO SUPPORT THE MINI GRID COMPONENTS, leveraging an additional \$830 million in co-financing for mini grids from governments and the private sector

Expected to operationalize close to

1,000

NEW OR HYBRIDIZED MINI GRIDS BY 2024, that will improve access to electricity for over 2.5 million people

KENYA

ESMAP's [five-day learning event on Upscaling Mini Grids for Least-Cost and Timely Access to Electricity](#) in Nairobi informed the emerging policy consensus on mini grids as a low cost, off-grid electricity option. In addition, the ESMAP report, [Current Activities and Challenges to Scaling up Mini Grids in Kenya](#), informed the off-grid electrification component of the World Bank's [Electricity Modernization Project in Kenya](#) and will benefit a forthcoming off-grid solar access project by identifying the challenges facing private mini grid developers in the country.



Before the mini grid, we could not work throughout the day, which was inconveniencing many of our customers. Now we can work longer hours and satisfy all our customers, and improve our incomes.

JOHN AKWA IS A METAL FABRICATOR IN THE REMOTE TOWN OF ENTASOPIA IN KENYA.

Iron welding, a precision task often requiring high amounts of electricity, is the primary source of Akwa's income. Akwa's life changed after a solar-powered minigrid system was installed in the area. The system supplies low-cost, reliable electricity, bringing life to the entire town, even after the sun sets.



Photo by Peter Ndungu /©World Bank



Photo by Markus Kostner / ©World Bank

MYANMAR

ESMAP's analytical work on the role of mini grids to increase electrification rates, an assessment of informal mini grid operations, and a roadmap for scale-up, informed the implementation of the mini grid component of the World Bank \$400 million National Electrification Project (NEP). The project is set to leverage \$7 million in IDA funding and an additional \$7 million from the Myanmar government to support the development of over 150 private sector mini grids. Already, the NEP is lighting up the lives of about 700,000 people in rural Myanmar. ESMAP has been a partner with Myanmar since the beginning of the government's effort to provide electricity to its entire population. ESMAP also hosted a learning event on Upscaling Mini Grids for Least-Cost and Timely Access to Electricity Services in Nay Pyi Taw.

NIGER

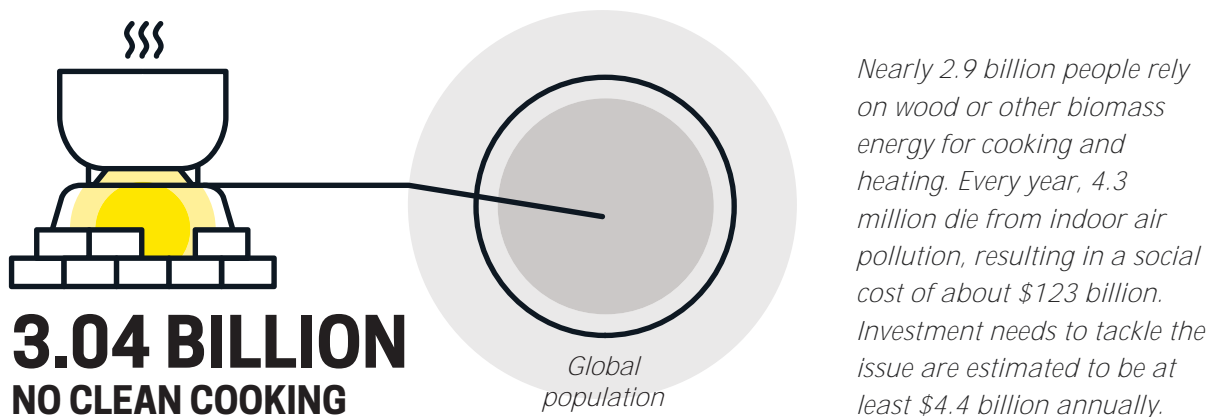
ESMAP's feasibility studies helped identify energy supply options to define investment for mini grids in a \$49 million World Bank investment project to bring electricity to remote, rural populations.

Lifting Barriers to Slum Electrification

Bringing safe and sustainable energy to the poor living in urban slums is not only critical for reducing poverty in these communities, but also for achieving universal access by 2030 given growing urbanization rates. These communities often lack access to legal, safe, and affordable electricity. Weak policy and regulatory frameworks often hinder the delivery of energy services in these areas.

In FY2017, ESMAP provided assistance to five World Bank lending operations in Argentina, Bangladesh, Dominican Republic, Ethiopia, and Jamaica to support improved electricity access for the urban poor. In addition, ESMAP consolidated knowledge and expertise of slum electrification initiatives around the world through a series of case studies on the cities of Nairobi, New Delhi, Rio de Janeiro, and São Paulo.

Efficient Clean Cooking and Heating



Safe, affordable, and accessible clean cooking and heating solutions exist, but a robust global push is needed to accelerate their adoption.

In FY2017, the World Bank's efficient, clean cooking and heating portfolio consisted of more than \$130 million in IDA and IBRD lending and technical assistance. These programs are expected to reach 2.8 million households in 9 countries, including **Bangladesh, China, Djibouti, Ethiopia, Kenya, Kyrgyzstan, Mongolia, Senegal,** and **Uganda**. To date, they have benefited about 11 million people with access to cleaner, more efficient cooking solutions.

Much of this lending has been leveraged by ESMAP's work in Efficient, Clean Cooking and Heating (ECCH) initiative, which focuses on policy advice, strengthening the enabling environment for investment, and piloting innovative approaches to attract private sector funding to the sector.

Currently, ESMAP is supporting two World Bank regional programs in Africa and Central America, and nine individual countries: **China, India, Indonesia, Kenya, Lao PDR, Nepal, Kyrgyz Republic, Tajikistan,** and **Uganda**.

SINCE ITS LAUNCH IN 2015, THE **EFFICIENT, CLEAN COOKING AND HEATING INITIATIVE:**

Informed

94
MILLION US\$

worth of investments in clean cooking in 5 World Bank projects which are **EXPECTED TO REACH 1,074,000 HOUSEHOLDS**

Mobilized

13
MILLION US\$

from the Inter-American Development Bank for projects in **GUATEMALA, HONDURAS, AND NICARAGUA** through the Central America Clean Cooking Initiative

Piloting Innovative Solutions, Influencing Policies

- A results-based financing (RBF) pilot in **Indonesia** provided incentives to 10 private suppliers to distribute almost 10,000 clean cookstoves. Among these suppliers, eight are new to the sector and five are women-led businesses.
- In **Uganda**, the Distribution Challenge Fund, set up with help from a \$2.2 million ESMAP grant, is under implementation.
- New recommendations on **China's** stove emission standards, testing protocols, and incentive mechanisms have been adopted by the Hebei province under the \$80 million clean stove component of the World Bank Hebei Air Pollution Prevention Program for Results Financing project.
- In **Lao PDR**, an RBF pilot aims to introduce 50,000 "super clean stoves," the most advanced gasifier stoves available that meet World Health Organization standards for indoor air quality. This is expected to incentivize donors and social investors to purchase the verified outcomes in climate, health, and gender benefits, which will attract upfront private financing.
- In **Kyrgyzstan**, capacity building efforts enabled local businesses to produce high-performance stoves, which saved about 50% in fuel and reduced emissions by more than 90%. This led to the \$46 million Heat Supply Improvement Project.

FROM LIGHTING AFRICA TO LIGHTING GLOBAL

Building on the success of Lighting Africa, ESMAP expanded its support to Lighting Global — a platform through which the International Finance Corporation (IFC) and the World Bank coordinate with Global Off-Grid Lighting Association (GOGLA), manufacturers, distributors, governments and other partners to develop the modern off-grid energy market.

RESULTS

LIGHTING AFRICA



LIGHTING GLOBAL

Catalyzes markets to deliver affordable, high-quality off-grid lighting and energy products

- **23.3 MILLION** people in Africa are now meeting their basic electricity needs
- **OVER 100** products have been verified
- Leveraged over **\$120 MILLION** in IDA and over **\$85 MILLION** from other financiers, with another **\$470 MILLION** in the pipeline for FY18 and FY19

The World Bank Group's platform to promote the sustainable growth of the off-grid solar market.

- More than **116 MILLION** people have benefited from using quality verified solar lighting products
- More than **34.5 MILLION** people have had their basic lighting needs met.
- More than **23 MILLION** quality verified products have been sold since 2008
- In 2016 alone, more than **1.7 MILLION** tons of GHG has been avoided due to the use of quality verified products instead of kerosene

Lighting Global aims to lower investment risk for the private sector and help governments strengthen the enabling environment for accelerating off-grid electrification. ESMAP supports Lighting Global by engaging with governments through World Bank projects and policy dialogue.

In FY2017, ESMAP informed three World Bank approved projects with large off-grid components. Support focused on (i) policy — integrating off-grid solutions to electrification strategies; (ii) financing — setting up facilities for off-grid energy companies; (iii) product quality assurance; and (iv) capacity building and consumer education.

NIGER

ESMAP support to the Solar Electricity Access Project helped to develop a line of Credit for stand-alone solar systems.

ZAMBIA

ESMAP support to the Electricity Service Access Project helped to develop a line of credit for stand-alone solar systems. Lighting Africa supported the integration of off-grid solutions into the National Electrification Strategy.

RWANDA

ESMAP support to the Renewable Energy Fund Project focused on Mini Grid and Off Grid businesses.



Photo by ©Corrie Wingate Photography/SolarAid

ESMAP also helped **Botswana, Burundi, and Somalia** to strengthen off-grid electrification approaches and helped **Ethiopia** implement a working capital facility. Just-in-time support was provided to World Bank teams in **Haiti, Myanmar, Pakistan, Philippines, and Vanuatu**. ESMAP also collaborated with GOGLA on two knowledge exchanges on unlocking solar capital in Nairobi and Singapore.

Increasingly, ESMAP has been promoting **a pro-poor approach**. It helps governments to set up financing facilities for off-grid energy companies and develop public-private partnerships to expand off-grid electrification to poorer, more remote areas where the commercial market alone cannot reach. Upcoming World Bank projects in Kenya and Pakistan will target the poorest, most marginalized communities.

Sustainable Energy for All (SEforALL) Technical Assistance

ESMAP'S Sustainable Energy for All (SEforALL) Technical Assistance focuses mostly on improved planning for electrification. This includes the development of least-cost electrification plans and investment prospectuses that can enable sector-wide approaches and the integration of grid expansion, mini grids, and individual off-grid solutions.

Phase I was finalized in FY2017, extending support to 11 countries. In **Myanmar**, the National Electrification Plan and the associated investment prospectus were adopted by the government and mobilized \$600 million in financing for grid and off-grid electrification. ESMAP helped **Guinea** develop a strategy for developing its electricity sector while in **Mozambique**, ESMAP support resulted in an adoption of the National Electrification Strategy. ESMAP also completed an investment plan for **Nepal**, marking the development of a new roadmap for expanding clean cooking solutions, following similar roadmaps completed for **Guatemala** and **Honduras**.

Phase II is supporting the development of a global geospatial electrification planning platform in addition to specific country support across **10 countries in Africa** and in

Colombia. In **Kenya**, the first comprehensive geospatial plan has informed the new National Electrification Strategy and is now being used to target rural investments, including in mini grids and off-grid systems in an upcoming World Bank project on off-grid solar access. In the **Democratic Republic of Congo**, ESMAP helped to identify viable electricity access projects and evaluated barriers to help private companies plan their engagement in the sector. This support helped move forward a \$145-million project to expand access to electricity for 2 million people.

ESMAP also funded, in partnership with Sweden's KTH Royal Institute of Technology, the development of an open source tool for geospatial electrification planning for energy sector stakeholders. The first of its kind, the **Electrification Pathways** application builds on a state-of-the-art geospatial modeling algorithm to provide countries with a 'first pass' rapid planning tool informing universal electricity access strategies.



Photo by ©Asian Development Bank

CHAPTER 4

RENEWABLE ENERGY

The investment needed to help countries transition to a low carbon, climate resilient development is in the order of trillions, rather than billions of dollars. Mobilizing public and private sector resources is crucial. ESMAP's work in renewable energy focuses on de-risking exploration of geothermal resources to unlock financing for projects, assessing and mapping of resource potential to help governments and commercial developers make informed decisions and carry out initial prospecting, integrating variable renewable energy into grid systems, and scaling up solar power.

Unlocking Financing for Geothermal Energy

In FY2017 ESMAP's Global Geothermal Development Plan (GGDP) leveraged three new World Bank geothermal projects in **Chile, Indonesia**, and **Turkey** for a total of almost \$460 million.

- **Chile** mobilized a \$50 million Clean Technology Fund (CTF) grant through the Inter-American Development Bank to stimulate additional investment. An additional CTF grant of \$3 million will provide technical assistance on legal, social, and market barriers and contribute to the development of tradeable geothermal resources.
- **Indonesia** obtained a \$50 million CTF grant to mitigate risks in exploration drilling, as well as a \$6.25 million Global Environment Facility (GEF) grant for technical assistance and capacity building.
- **Turkey** secured approval for a \$350 million project to scale up private sector investment for geothermal development by reducing investors' risks during drilling.

CHANGING THE COURSE OF GEOTHERMAL DEVELOPMENT

FROM 1975 - 2011

the share of financing for geothermal energy exploration was only about 6% out of the total multilateral financing.

FROM 2012 - 2017

the share of financing for geothermal energy exploration jumped to 29% — almost a third of the total multilateral investment in the sector.

SINCE ITS LAUNCH IN 2013

GGDP mobilized \$250 million of concessional financing for geothermal exploration activities. This is expected to leverage at least \$1.5 billion in public and private capital.



Photo by Anton Ivanov

In **Djibouti**, where a \$1.1 million ESMAP grant is already supporting the upstream development of geothermal resources, [ESMAP brokered an \\$18 million agreement](#) between Électricité de Djibouti (EdD), the national electricity corporation, and Iceland Drilling Company for the drilling of two geothermal wells, two optional wells, and to confirm resource viability in Fiale Caldera.

Two major knowledge exchange events were hosted by ESMAP to share best practices in geothermal development. The [GeoLAC 2017 Congress](#) in Mexico City and the [IGC Turkey 2017 in Ismir](#). ESMAP also organized a south-south knowledge tour in Indonesia to expose Tanzanian officials to the Indonesian experience in geothermal development.

Investing Where the Sun Shines and the Wind Blows

ESMAP's [Renewable Energy Resource Assessment and Mapping](#) initiative helps countries understand their renewable energy resource potential to facilitate national planning, decreasing risks for developers, and reducing costs. In FY2017, ESMAP continued its support to 16 World Bank projects. **Indonesia** and **Madagascar** completed small hydropower mapping and **Pakistan** completed both biomass and solar mapping. All outputs were disseminated to decision-makers through workshops and outreach. Solar measurement campaigns were initiated in the [Maldives](#), [Pakistan](#), and [Zambia](#). All measurement data from these projects is now available on the new [ENERGYDATA.INFO](#) platform, the World Bank Group's repository for energy sector data and applications.

Interim renewable resource mapping results include:

- **Tanzania** small hydropower mapping has identified 70+ unknown sites
- **Ethiopia** wind mapping results were used for wind power expansion
- **Pakistan** [wind and solar maps released](#) have highlighted huge resources in Balochistan with potential for development
- **Vietnam** wind mapping identified resources in the center and north of the country, which were not previously visible

Mapping Renewables Potential Can Strengthen Private Sector Confidence

- [Global Solar Atlas launched in January 2017](#) — a free, web-based tool that supports strategic planning and site identification
- High resolution solar maps for all 146 developing countries
- Over 60,000 site visits from around the world (as of June, 2017), with non-OECD countries representing 16 of the top 25
- Measurement data has been shared with International Renewable Energy Agency (IRENA)
- Sets the stage for the launch of a new Global Wind Atlas in FY2018



The World Bank is seeing a surge of interest from our clients in solar power as a result of the dramatic cost decreases over the past few years. We hope that the Global Solar Atlas will help inform the crucial planning and investment decisions that will need to be taken over the next decade to shift to more sustainable forms of energy.

— **Riccardo Puliti** | Senior Director, World Bank
Energy & Extractives Global Practice

Integrating Renewable Energy into the Grid

ESMAP helps countries to increase the share of variable renewable energy (VRE) in their energy systems by ensuring that the grid can reliably evacuate and transmit power from renewable energy plants. Activities focus on grid modernization, adoption of new control and forecasting technologies, revamped business models for utilities, and updated policy and regulatory frameworks. In FY2017, ESMAP informed 7 World Bank lending projects for \$670 million and 5 country planning strategies, including support for grid code development in Cabo Verde, Morocco, Armenia, Ukraine, Myanmar and Bangladesh.

In **India**, [a study funded by ESMAP, in collaboration with the U.S. National Renewable Energy Laboratory \(NREL\)](#) informed regulatory and policy decisions to help reach the country's ambitious 175GW renewable energy target by 2022. The first of its kind, the study brought

together views from over 150 technical experts from the public and private sectors and was [recognized by the Minister of Energy as a significant step for India](#). It also helped build capacity through the development of a comprehensive modeling tool used by the National Load Dispatch Center and has informed a World Bank lending project on shared infrastructure for solar in Madhya Pradesh. In **Sri Lanka**, support for renewable energy planning and capacity building has helped the national utility, Ceylon Electricity Board (CEB), prepare Sri Lanka's long-term generation expansion plan that includes renewable energy. As a result, CEB is now working with international financial institutions on several solar and wind projects. In addition, the World Bank's recommendations for improving sector planning have been integrated into Sri Lanka's domestic dialogue led by the regulator.

Partnerships and Knowledge

To further leverage resources, ESMAP maintains partnerships with the Global Sustainable Electricity Partnership (GSEP), Public-Private Infrastructure Advisory Facility (PPIAF), NREL, Clean Energy Ministerial, and the Children Investment Fund Foundation (CIFF).

An ESMAP-PPIAF Partnership on Climate Change was established to help countries transition to climate-resilient energy infrastructure. The joint support will leverage \$2.5 million of co-funding from PPIAF over 5 years to build enabling environments that facilitate deployment of variable renewable energy. In coordination with IFC, ESMAP also produced and launched the Energy Storage Market Report which shows that energy storage technology will become more accessible in emerging markets in the coming decade, enabling a significant scale-up of renewable energy.

ESMAP's collaboration with the Korea Green Growth Trust Fund (KGGTF) has leveraged an additional \$2.5 million for five activities:

- **West Africa:** assessment of the potential role of energy storage to enhance system operation, and to support VRE deployment and regional integration in the West Africa Power Pool
- **Central America:** development of a regional initiative to support dispatch centers in building VRE forecasting capacity and other technical methodologies, building on lessons learned from national integration studies for Guatemala and Honduras
- **Vietnam:** preparation of large-scale and rooftop solar PV development
- **Peru:** a VRE integration study with an integrated approach of hydropower and gas for a more clean, efficient, and resilient power system
- **Sri Lanka:** renewable energy sector planning enhancement and capacity building

IN 2016, 74GW OF SOLAR CAPACITY was added globally.

Deploying Solar Energy at Scale

Demand from clients for support on deploying solar power grew rapidly in FY2017, and is now a major growth area in the World Bank's energy lending portfolio. The World Bank Group's Scaling Solar initiative already has active engagements in Ethiopia, Madagascar, Senegal, and Zambia. The World Bank has also initiated support for energy transitions in Asia.

In FY2017, ESMAP initiated nine new activities to support the World Bank's efforts and is starting to develop core expertise and knowledge on key issues, such as the transition to solar auctions, and deployment of rooftop solar. In **Vietnam**, ESMAP is developing a strategy to help the country achieve its target of 12GW of solar PV capacity installed by 2030, including a pilot solar auction. In **Indonesia**, ESMAP organized a workshop on solar auctions that laid the groundwork for discussion on competitive utility-scale solar PV auctions and the deployment of solar PV in the Eastern islands based on hybrid solutions with storage, and floating PV. Similarly, in **Myanmar**, ESMAP supported a workshop on floating solar to inform the use of this technology combined with hydropower plants in the country.

CHAPTER 5

ENERGY EFFICIENCY

Cities consume more than two-thirds of global energy and produce about 70% of greenhouse gas (GHG) emissions. Buildings are also major consumers of energy and resources and account for about one-third of global GHG emissions. Making cities and buildings more energy efficient can help mitigate climate change and contribute to the achievement of the Sustainable Development Goals (SDGs), especially SDG7.

Through its work on Energy Efficient City Services and Energy Efficient and Sustainable Buildings, ESMAP collaborates with the urban, transport, and water sectors, as well as the International Finance Corporation (IFC) to help cities incorporate energy efficiency into their planning. ESMAP's cross-sectoral approach has enabled the integration of energy efficiency in upgrading building resilience, and in public transport and water supply systems.

In FY2017, ESMAP supported technical assistance for projects in **12 countries**, covering **19 cities**. Some of these include **Argentina** (Buenos Aires), **Brazil**, **China** (Anshan, Fushun, Fuxin, Gaizhou, Metropolitan Shanghai, Shenyang), **Kazakhstan** (Almaty, Astana), **Mongolia** (Ulaanbaatar), **Panama** (Panama City), **Ukraine** (Chernihiv, Dnipro, Kamianets-Podilsky, Kherson, Kharkiv, Mykolaiv, Odessa, Ternopil), and **Vietnam**.

TRACE Continues to Leverage Investment

Building on the lessons learned from the [successful engagement with Mexico](#), Tool for Rapid Assessment of City Energy (TRACE) diagnostics for **Uzbekistan**'s Kagan and Yangiyul cities laid the ground for an upcoming World Bank urban development project to scale up support to all 28 regional cities in the country. Similarly, TRACE diagnostics, complemented with action plans and pre-feasibility studies informed a \$71 million Integrated Urban and Tourism Development Project in **Albania**, which includes a \$750,000 investment for energy efficient street lighting retrofits in three cities. An updated version of the software was also completed in FY2017.

Knowledge in Energy Efficiency

- Six case studies and a synthesis report, [Proven Delivery Models for LED Public Lighting](#), share real-life experiences across cities.
- [Assessing and Measuring the Performance of Energy Efficiency Projects](#) is now offering practical guidance on how to implement monitoring and verification systems.
- An [e-learning course on Energy Efficiency in Cities](#) developed in collaboration with the World Bank Climate Group and the Online Learning Campus aims to help practitioners and policy-makers to design and implement city programs.

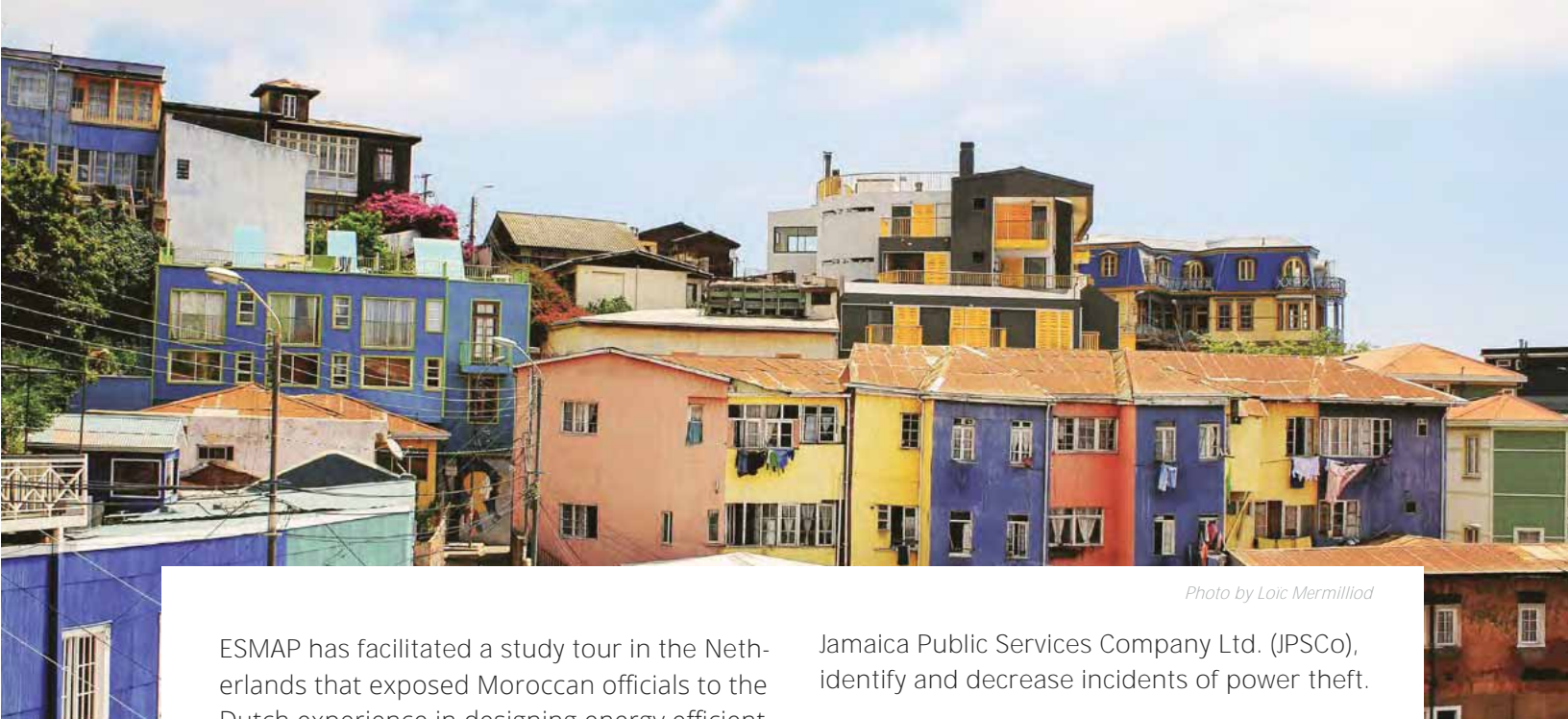


Photo by Loic Mermillod

ESMAP has facilitated a study tour in the Netherlands that exposed Moroccan officials to the Dutch experience in designing energy efficient cities. Eight workshops in urban transport planning in Ahmedabad, Dubai, Johannesburg, Mexico City, Nairobi, Seoul, Singapore, and Washington D.C., reached nearly 400 participants. Funding is a major issue for many cities trying to scale up energy efficiency projects. As a response, ESMAP supported the design of financial mechanisms in several cities aiming to leverage significant private resources and climate funding. In **Almaty** and **Astana**, energy efficiency diagnostics and plans have led to a request to the World Bank to support the development of a public-private-partnership to implement the identified investments. ESMAP is also supporting the development of a financing mechanism to integrate energy efficiency in public buildings. In **Panama**, ESMAP supported an energy efficiency fund to finance investments and the development of appliance labelling standards and green building codes for improved energy efficiency performance codes at the national level.

In **Ukraine**, ESMAP's support to the \$272 million district heating energy efficiency project, covering the seven largest cities outside of Kiev, has expedited the speed of provision of efficient heating to residents.

In **Jamaica**, ESMAP helped to implement a machine learning model to help Jamaican utility,

Jamaica Public Services Company Ltd. (JPSCO), identify and decrease incidents of power theft.

Finally, ESMAP has partnered with the Global Alliance on Buildings and Construction launched at COP22 aiming to mobilize climate action. ESMAP's role focuses on helping developing countries realize the potential for their individual buildings and construction sectors while reducing global emissions, by sharing experiences and lessons on energy efficiency integration with other buildings-related sustainability aspects.

ARGENTINA

ESMAP is supporting the integration of energy efficiency in the \$200 million World Bank Metropolitan Buenos Aires Urban Transformation Project aimed at improving housing and electricity access for the city's urban poor.

FROM SLUMS TO NEIGHBORHOODS

Buenos Aires has made it a priority to transform this settlement, embarking on an ambitious plan not only to improve its living standards but to ensure a long-lasting social and urban integration with the rest of the city. The World Bank is providing technical assistance to achieve this goal, with support from the ESMAP.

CHAPTER 6

ENERGY SUBSIDY REFORM

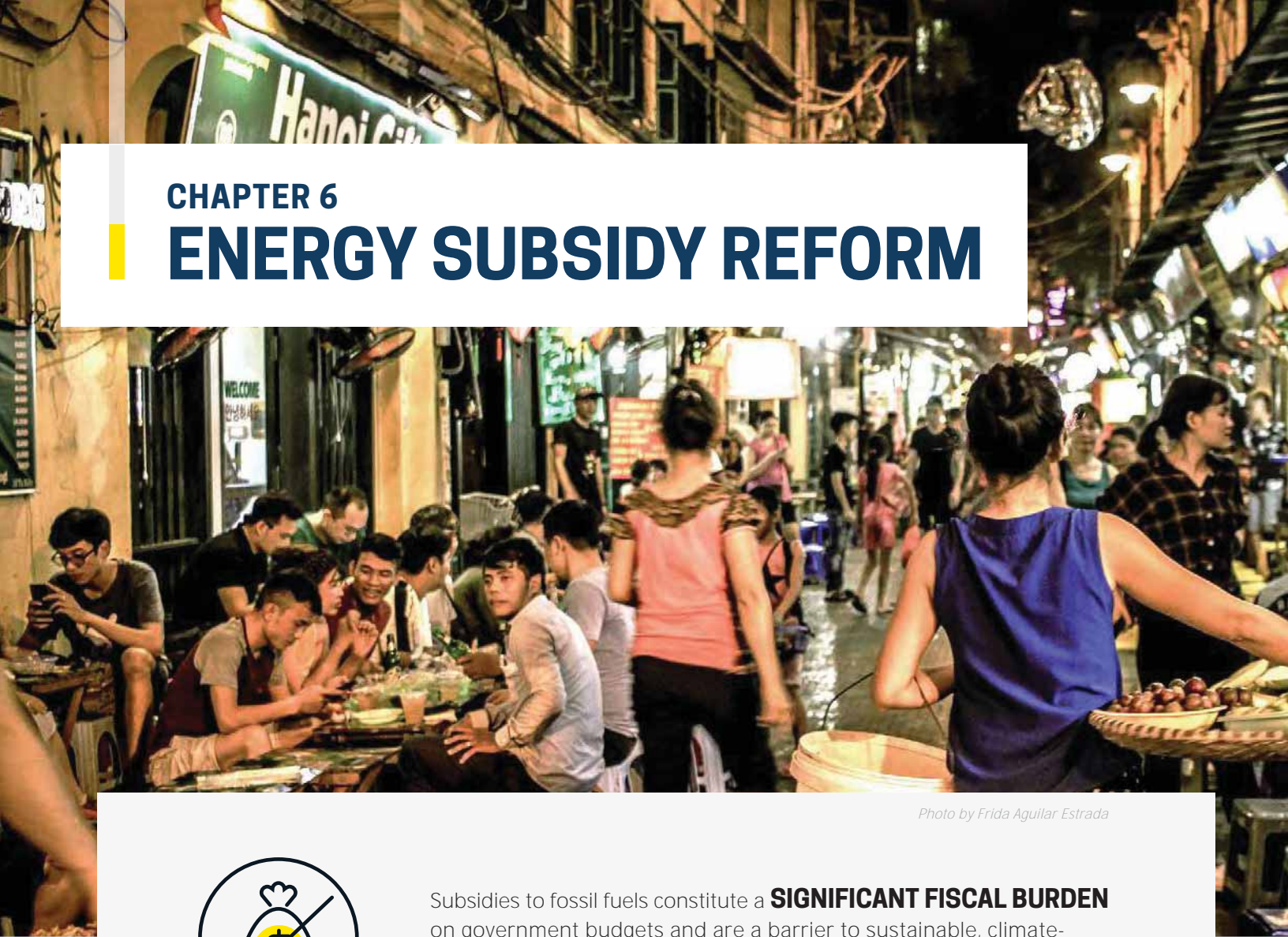


Photo by Frida Aguilar Estrada



Subsidies to fossil fuels constitute a **SIGNIFICANT FISCAL BURDEN** on government budgets and are a barrier to sustainable, climate-smart development. They encourage overuse of fossil fuels, and deter private investment in renewables and energy efficiency.



In 2016, global subsidies for fossil fuels amounted to **\$260 BILLION** — compared to \$140 billion for renewables.



FOSSIL FUEL SUBSIDIES ARE KEY DRIVERS OF GREENHOUSE GAS EMISSIONS. In 2014, approximately 13% of global CO₂ emissions were linked to the use of subsidized fossil fuels.

Energy Subsidy Reform Technical Assistance Facility:

ESMAP's Energy Subsidy Reform Technical Assistance Facility is a \$20 million initiative that supports governments in their reform process. In FY2017, the facility allocated more than **\$3 million** for country-specific technical assistance activities in **7 countries**: Belarus, Brazil, India, Kyrgyz Republic, Myanmar, Nepal, and Ukraine. It also completed **regional activities** in Central America (Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama) and the Southeast Europe and Western Balkans (Albania, Bosnia and Herzegovina, Kosovo, FYR Macedonia, Montenegro, and Serbia). Work on **China, Egypt, Iraq** (incl. Kurdistan Regional Government), and **Uzbekistan** is currently focusing on assessing poverty, economic and social impact of reform, and public awareness campaigns, among others.

Since 2013, the facility has allocated **\$13 MILLION** for technical assistance to **24 COUNTRIES**, through **41 ACTIVITIES**. This work has informed **\$4.5 BILLION** in World Bank lending projects with subsidy reform components.

Long-term, Comprehensive Support Ensures Sustainable Reforms

EGYPT

ESMAP technical assistance had previously helped Egypt slash energy subsidies. Building on this success, an analysis of the economic impacts of reform and support for citizen engagement and communications enhanced the sustainability of subsequent tariff increases. The reduction in subsidies allowed for increased budgetary spending on health, education, and social protection. It also improved the business environment, which has helped to attract private capital to the sector, as illustrated by a large private financing package prepared by the IFC for 13 solar plants.

UKRAINE

ESMAP's support in FY2017 built on the successes of previous engagements that helped the government increase tariffs, improve the financial viability of the gas sector, and increase the number of households covered by the social protection system. To sustain these reforms, ESMAP drew on the World Bank's expertise across several sectors to develop a communication strategy, analyze the impacts of reform, and share knowledge on the design and management of social assistance programs. This work directly supported a \$500 million World Bank development policy loan (DPL) to boost Ukraine's reforms in governance, business environment, energy, and social assistance.

IRAQ

Building on previous work, ESMAP analyses of the cost of power services and the economic impact of subsidy removal (oil, gas, and electricity) informed the design of electricity subsidy reduction components in two consecutive World Bank DPLs totaling \$2.6 billion. Subsequently, in 2016, the government announced an increase in electricity tariffs from an average of \$0.017 per kWh to \$0.0811 per kWh. The current support is expected to result in a road map for full cost recovery and improved service delivery.

WESTERN BALKANS

ESMAP analysis is guiding the World Bank's policy dialogue, technical assistance, and financing in the energy sectors of Albania, Bosnia and Herzegovina, Kosovo, FYR Macedonia, Montenegro, and Serbia. A key output was a financial analysis of the power sector in each country, which found that below-cost recovery tariffs account for approximately 70% of identified financial gaps. As a result, designing new tariff systems is now a core aspect of the dialogue. In **Serbia**, an analysis of energy price affordability and ways to protect vulnerable populations from tariff increases has informed the design of two DPLs on public expenditures and utilities. A subsequent program will include further actions to improve the financial sustainability of the state-owned utilities by raising cost recovery levels and widening the coverage of the social protection measures.

Knowledge and Partnerships

Several knowledge exchange activities took place in FY2017 to encourage global learning and deepen dialogue among practitioners. The Energy Subsidy Reform Online Community (ESROC), whose membership reached 255 policy makers and practitioners as of June 2017, hosted two webinars: one on mitigating the impact of subsidy reform and one on fuel and electricity price indexation in Morocco. An online **Community of Practice** was also launched to provide a space for dialogue and knowledge sharing among World Bank teams working on subsidy reform.

ESMAP continued to nurture its partnership with key players in energy subsidy reform to ensure that the issue remains at the top of policy agendas. Together with the World Bank's Nordic Executive Directors' Office and the Friends of Fossil Fuel Subsidy Reform, ESMAP organized a panel discussion during the World Bank Spring Meetings in April 2017 on **"Energy Subsidy Reform: Country Experiences and Progress Made."** This ministerial-level event discussed the experience of Armenia, Mexico, the Philippines, and New Zealand in implementing reforms.



Photo by Heather Emond

CHAPTER 7

SUSTAINABLE ENERGY FOR ALL

(SEFORALL) KNOWLEDGE HUB

Tools to Influence Policies, Mobilize Investments

According to the *Regulatory Indicators for Sustainable Energy 2017*, reaching the SEforALL goals will require almost tripling the historical annual investment flows to about \$1 trillion. Countries will need to embrace an enabling environment that attracts all forms of investment — public and private. ESMAP launched three comprehensive data and analytical tools to help governments craft policies that attract investments and track progress toward SDG7.

Regulatory Indicators for Sustainable Energy

An increasing number of developing countries are emerging as leaders in support to sustainable energy, with robust policies to support energy access, renewables, and energy efficiency. While important policy gaps remain across all regions, there is significant opportunity for rapid progress — RISE Report, launched at the World Bank's Headquarters in Washington DC, February 15, 2017.

RISE: ESTIMATED AUDIENCE REACHED GLOBALLY

68 MILLION PEOPLE

- **3 million Twitter accounts reached** through the World Bank's **#endpoverty** campaign, making RISE trending on Twitter
- **100,000 Facebook users accessed** the video broadcast of the launch event
- **Strong media coverage** from Reuters, Agence France-Presse, The Guardian, and others

WHAT IS IT: Regulatory Indicators for Sustainable Energy (RISE) is the first global policy scorecard of its kind, assessing the regulatory indicators of 111 countries in three areas: energy access, energy efficiency and renewable energy. The report aims to help governments assess if they have a policy and regulatory framework in place to drive progress on sustainable energy, and pinpoints the areas where more can be done to attract private investments. RISE also enables countries to measure their performance against others, and will allow them to track progress over time.

WHO CAN ACCESS RISE: RISE has launched a free, online data platform in FY2017 to enable global audiences to customize the indicators by country or theme, based on their needs. RISE has formed the basis for World Bank policy engagements in some client countries. Other multilateral development banks, country governments, experts, and practitioners also use the data in their decision making and planning.



Photo by Don Mammoser

A Global Tracking Framework to Measure Progress on SDG7

The current pace of progress on SDG7 is not moving fast enough to meet targets by 2030
— GTF 2017 launched at the Sustainable Energy Forum in New York on April 4, 2017

WHAT IS IT: The GTF is a global dashboard to track country progress on energy access, energy efficiency, and renewable energy against the SDG7 targets. This third edition of the GTF builds on the solid foundation of years of data collection on electrification and clean cooking.

WHO CAN ACCESS THE DATA:

GTF's [interactive website](#), launched in FY2017, allows users globally to download free data and country reports, as well as to create customized graphics, including maps, time lines, and cross-country comparisons.

“

This year's Global Tracking Framework is a wake-up call for greater effort on a number of fronts. There needs to be increased financing, bolder policy commitments, and a willingness to embrace new technologies on a wider scale. The World Bank is committed, along side our international development partners, to support countries to reach these goals.

— **Riccardo Puliti** | Senior Director, World Bank
Energy and Extractives Global Practice



From April to June 2017, GTF online platform had more than 4,000 users and more than 16,000 page views.

State of Electricity Access Report



The world is not moving fast enough to reach its universal electricity access goal by 2030. A substantial acceleration of efforts and investments are needed to achieve this objective.

— The State of Electricity Access Report (SEAR) 2017, launched at the Vienna Energy Forum

WHAT IS IT: State of Electricity Access Report (SEAR) is a comprehensive report that examines the critical role of energy in achieving the SDGs, providing a snapshot of the status of electricity access, based on the Global Tracking Framework. The report found that significant acceleration of efforts is needed to reach universal access to energy and that both grid and off-grid approaches are critical given that they are supported by a conducive environment.

Beyond Connections: Energy Access Redefined through a Multi-Tier Framework

WHAT IS IT: The Multi-Tier Framework (MTF) goes beyond the traditional approach to measuring access to energy — either having access or not — to capture multiple dimensions of access such as capacity, duration, quality and reliability, affordability, and safety, as well as the impact on socioeconomic development. This approach provides more insightful information to enable policy-makers to choose the most appropriate interventions.

WHERE IT IS IMPLEMENTED: The MTF global surveys are currently under implementation in 17 countries to establish a baseline for universal access to electricity and clean cooking. MTF energy data collection has been completed in 7 countries (Cambodia, Ethiopia, Honduras, Kenya, Liberia, Myanmar, and Rwanda,) and is under implementation in 10 countries (Bangladesh, Democratic Republic of Congo, Haiti, India, Nepal, Niger, Nigeria, São Tomé and Príncipe, Uganda, and Zambia). During the Vienna Energy Forum, emerging findings from Kenya and Rwanda, were shared with key stakeholders.

Outreach in every corner of the world



NEW YORK *United States of America*

GTF was launched during the keynote at the Sustainable Energy Forum on April 4, 2017, reaching a wide audience.

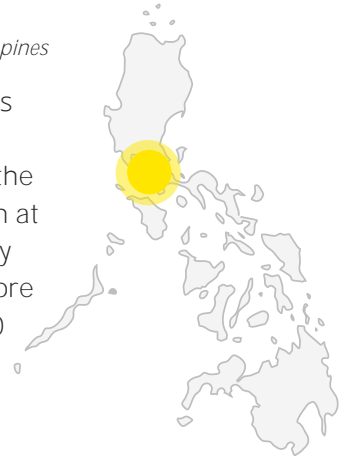


ASTANA *Kazakhstan*

RISE and GTF were featured at the Sustainable Energy Ministerial on June 12-13, 2017, where the GTF Regional Companion Reports authored by each of the five UN Regional Economic Commissions were launched.

MANILA *The Philippines*

RISE and GTF findings pertaining to Asia formed the basis of the keynote presentation at the Asia Clean Energy Forum in Manila before an audience of 1,500 practitioners.

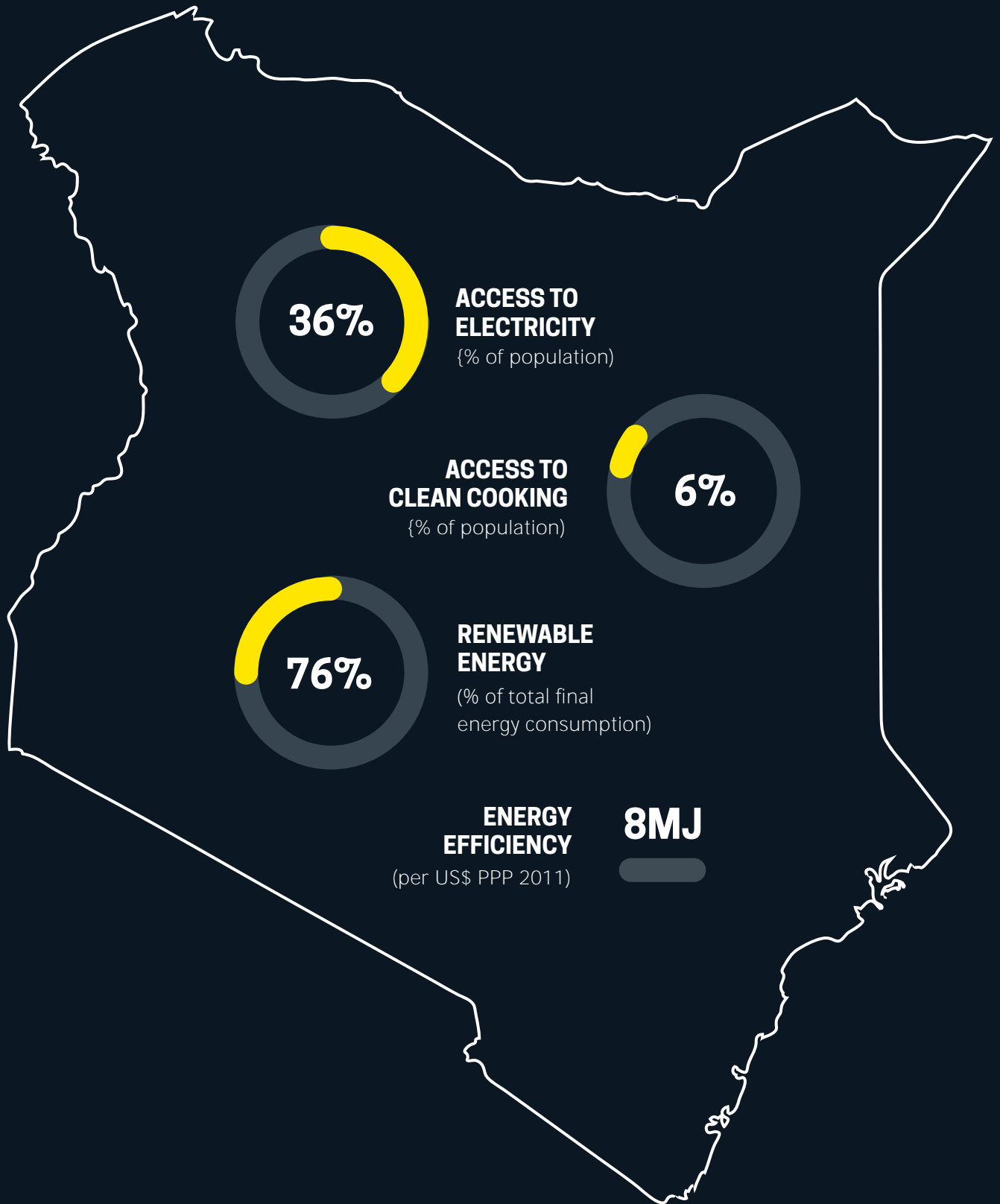


VIENNA *Austria*

All four products came together during the Vienna Energy Forum. SEAR was formally launched during one of the Vienna Energy Forum's main events on energy access. Insights from RISE and GTF were also highlighted during sessions and the MTF presented preliminary findings from Rwanda and Kenya.

Connecting the Expertise of More than 20 Partners

Partnerships lie at the heart of ESMAP's support to the SEforALL Knowledge Hub. The work of the Knowledge Hub would not have been possible without the collaboration of several international organizations, nongovernmental organizations, and bilateral and multilateral agencies.



SEFORALL KNOWLEDGE HUB COMES INTO FULL PLAY IN KENYA

SEAR INCREASING ACCESS TO CLEAN COOKSTOVES

An impact evaluation study found that only 52% of the population in the target areas had access to an improved stove. It also found that a direct subsidy or payment installment plan would help reduce households' financial burden and boost stove adoption.

GTF MONITORING PROGRESS AGAINST SDG7

2012-14 data showed that Kenya still had a long way to go to electrify its population even though it is one of the leaders in renewable energy. The data has strengthened the dialogue on access to electricity and clean cooking.

RISE UNDERSTANDING THE ENABLING ENVIRONMENT FOR ENERGY INVESTMENT

RISE found that Kenya made great strides in grid densification and extension, and concluded that the country built a strong enabling environment for increasing energy access. To help Kenya scale up grid extension and mini grids, the World Bank has supported the development of mini grid regulations, and plans to implement an innovative public-private-partnership mini grid framework, as a part of an upcoming World Bank project.

MTF TARGETING INTERVENTIONS TO REACH THE REMOTE COMMUNITIES

MTF data from 14 underserved counties in the northern part of the country provided critical information on energy access, socioeconomic characteristics, affordability, and consumption. These counties will be covered by an upcoming World Bank investment project.

CHAPTER 8

SMALL ISLAND DEVELOPING STATES

ESMAP has been focusing on Small Island Developing States (SIDS) because of their unique sustainability challenges. SIDS often rely heavily on imported fossil fuels for most their energy needs, especially for transport and electricity generation. Transitioning from fossil fuels to renewable energy will help SIDS secure their energy supply and create economic opportunity.

Many SIDS have taken steps towards energy independence through new partnerships, new investment, and innovative technologies, and have enacted energy plans with bold targets. In FY2017, ESMAP drove the continued development of renewable energy sources in SIDS with an active portfolio of \$12.5 million. The most impressive results stemmed from geothermal development activities.

SIDS BY THE NUMBERS (FY2017)

SIDS DOCK is a

22 **MILLION** US\$ initiative funded by Denmark and Japan

6 **COUNTRY-SPECIFIC ACTIVITIES** in Cabo Verde, Dominica, Saint Lucia, São Tomé and Príncipe, Tuvalu, and Vanuatu

3 **REGIONAL ACTIVITIES** in the Pacific (Pacific Power Association), Caribbean (C-SERMS), and Eastern Caribbean (OECS)

99 **MILLION** US\$ leveraged in 3 World Bank projects, of which \$67 million directly supports geothermal development

Still in the earliest stages of geothermal development, **Saint Lucia** benefited from ESMAP support that helped to identify an operable geothermal reservoir on the island. Technical assistance focused on surface studies, and provided an environmental and social impact assessment, among other related activities. The findings of this surface exploration effectively laid the groundwork for the next phase,

and arguably the riskiest and most expensive phase, of geothermal resource development to be financed by the World Bank. The \$22 million Saint Lucia Renewable Energy Sector Development Project will test the viability of the resource through exploratory drilling. This geothermal field could have the potential to sustain a 30MW geothermal power plant to set Saint Lucia on a low carbon path to economic prosperity.

STAGES OF GEOTHERMAL PROJECT DEVELOPMENT

EARLY STAGE

- Preliminary Survey
- Surface Exploration
- Exploration Drilling

MIDDLE STAGE

- Project Review & Planning
- Field Development

LATE STAGE

- Construction
- Commissioning
- Operation & Maintenance

In **Dominica** ESMAP's ongoing technical assistance helped the country through the middle stages of geothermal development by providing guidance on geothermal drilling, good industry practice, and procurement. The resultant \$45 million Geothermal Risk Mitigation Project will advance the country through drilling and construction of a geothermal power plant, which will help diversify its power generation mix. The project will also explore the possibility of exporting geothermal-based electricity to other island nations. Success in Dominica offers an opportunity to widen access to sustainable energy and reduce the crippling costs of power in the region.

In **São Tomé and Príncipe**, ESMAP worked with the country's state-owned utility, Empresa de Agua e Electricidade (EMAE) to improve its capacity to distribute power and strengthen the quality of service to expand reliable access

to the population. In close collaboration with EMAE, ESMAP identified the deficiencies of the technical design, construction, maintenance, and operation of the island's power plants. This support informed a \$16 million World Bank infrastructure project to finance implementation of ESMAP's recommendations. The STP Power Sector Recovery Project aims to increase renewable energy generation and improve the reliability of the electricity supply across the island. It focuses on scaling up hydropower generation through the rehabilitation of El Contador power plant and reducing distribution losses through an operation and maintenance support program.

In the wake of the devastating effects of Cyclone Pam in 2015, ESMAP helped **Vanuatu** to improve its energy sector planning and policy, legal, and regulatory frameworks. By working with the Department of Energy and the Utilities Regulatory Authority to review and draft priority legislation and regulations and update the National Energy Road Map with energy efficiency reforms; as well as conduct a small hydropower resource mapping exercise and provide a prefeasibility study on renewable energy mini grids, ESMAP is helping to meet the country's ambitious renewable energy targets.

On the regional level, the program launched the **Caribbean Sustainable Energy Strategy and Roadmap (C-SERMS) Platform** — a regional energy coordination initiative, managed by Caribbean Community (CARICOM), to better align national and regional priorities with renewable energy and energy efficient investment opportunities to achieve sustainable energy goals.



Photo by Zoltan Tasi

CHAPTER 9

FINANCIAL REVIEW

This chapter outlines the FY2017 financial information for the three multi-donor trust funds (MDTFs) that are under ESMAP's management and administration, namely, ESMAP, ASTAE, and SIDS DOCK.

Contributions

In FY2017, ESMAP received a total of \$40.4 million from 11 donors, including the World Bank, a 30% increase from FY2016. ASTAE and SIDS DOCK did not receive any contributions in FY2017. Table 9.1 shows actual receipts in FY2017 from individual donors for the three MDTFs, as well as cumulative receipts since FY2010 when the ESMAP Multi-Donor Trust Fund was established. In FY2017, Luxembourg and The Rockefeller Foundation joined as new ESMAP donors. ESMAP has mobilized \$140 million for its FY2017-20 Business Plan, compared to the target of \$215 million.

TABLE 9.1: Overview of Donor Contributions to ESMAP, ASTAE, and SIDS DOCK MDTFs, FY2010-17 (\$, thousands)

Country	FY2017 Paid-in Contribution			Cumulative Paid-in FY2010-17			FY2010-17	
	ESMAP	ASTAE	SIDS	ESMAP	ASTAE	SIDS	TOTAL	
Australia				8,729.14			8,729.14	3.5%
Austria				6,144.96			6,144.96	2.4%
Denmark*	9,910.26			41,872.03		7,093.12	48,965.15	19.4%
Finland	145.10			1,672.64			1,672.64	0.7%
France				1,967.14			1,967.14	0.8%
Germany	7,745.75			15,616.95			15,616.95	6.2%
Iceland	1,433.43			3,539.56			3,539.56	1.4%
Italy								
Japan						9,000.00	9,000.00	3.6%
Lithuania				97.79			97.79	
Luxembourg	1,121.60			1,121.60				
Netherlands	10,869.57			48,768.79	12,000.00		60,768.79	24.1%
Norway	3,510.76			19,394.95			19,394.95	7.7%
Rockefeller Foundation	250.00			250.00				
Sweden	3,454.71			12,081.91	5,913.75		17,995.66	7.1%
Switzerland				4,000.00			4,000.00	1.6%
United Kingdom	1,539.75			44,718.78	6,324.75		51,043.53	20.3%
World Bank	400.00			3,076.84			3,076.84	1.2%
Grand Total	40,380.93			213,053.08	24,238.50	16,093.12	252,013.10	

* Denmark's contribution in FY2016 included US\$3.26 million provided by the European Commission.

Disbursements

ESMAP disbursed almost \$36 million in FY2017, about the same as the previous year, or about 103% of the FY2017 budget plan of \$35 million. Disbursement for SIDS DOCK totaled \$1.6 million, a decrease of about 21% from the prior fiscal year. ASTAE disbursement was approximately \$5.5 million for FY2017, maintaining the same level as prior year disbursements. Table 9.2 presents disbursements for the three MDTFs for FY2015–17. Costs are separated into: (i) project disbursements by region and for global programs and (ii) disbursements for program management, administration, communications, and knowledge management.

Regional activities accounted for more than 75% of disbursements, with country engagements in Africa constituting about one-third of total disbursements and more than 40% of regional project costs. It should also be noted that Global Program includes technical support by the central ESMAP unit to country/regional activities.

Although there was a decrease in disbursement for SIDS DOCK, over 75% of the remaining balance of the SIDS DOCK MDTF has been committed to consultant contracts. Overall, costs for ESMAP program management, communications and knowledge management decreased in FY2017 by about 36%. Similarly, program management costs for SIDS DOCK and ASTAE decreased by 41% and 62%, respectively, as economies of scales are realized in management of the three MDTFs.

TABLE 9.2: ESMAP, ASTAE, and SIDS DOCK Disbursements, FY2015-17 (US\$ thousands)

	FY2015				FY2016				FY2017			
	ESMAP	ASTAE	SIDS		ESMAP	ASTAE	SIDS		ESMAP	ASTAE	SIDS	
Project Cost	\$25,082.21	\$4,858.66	\$1,040.88	94%	\$33,974.83	\$5,471.33	\$1,968.60	95%	\$34,510.85	\$5,482.61	\$1,559.00	97%
Africa	8,972.78		539.23		11,973.99		52.18		10,970.67		263.99	
East Asia	2,680.42	3,801.59	36.39		3,052.50	3,289.12	419.04		3,787.35	3,201.84	481.56	
Europe & Central Asia	2,224.79				3,265.22				3,024.96			
Latin America & Caribbean	2,110.19		465.26		2,231.31		1,497.37		2,675.92		813.46	
Middle East & North Africa	413.85				2,100.21				3,128.17			
South Asia	2,834.55	1,014.09			2,191.04	2,182.22			2,348.51	2,280.76		
Global Program	5,845.62	42.98			9,160.56				8,575.28			
Program Management, Comm & KM	\$1,708.45	\$58.18	\$165.30	6%	\$1,991.33	\$104.05	\$66.68	5%	\$1,280.84	\$39.92	\$39.67	3%
Program Management	736.29	58.18	89.57		829.12	87.30	55.63		591.41	39.92	39.67	
Governance (CG, TAG)	85.37				58.17				129.11			
Trust Fund Administration	151.51				12.86				60.22			
Portfolio Management (Monitoring & Evaluation)	189.51				641.44	16.76			27.21			
Knowledge Management	97.95		75.72				11.05		6.75			
Communication and Outreach (publications, website, & other dissemination)	447.81				449.75				466.14			
Total	\$26,790.65	\$4,916.84	\$1,206.18		\$35,966.15	\$5,575.39	\$2,035.28		\$35,791.69	\$5,522.53	\$1,598.67	
Of which:												
Funded by Donors	26,572.43	4,916.84	1,206.18		35,516.15	5,575.39	2,035.28		35,391.69	5,522.53	1,598.67	
Funded from World Bank budget	218.22				450.00				400.00			

Breakdown, by Region and Thematic/Cross-Cutting Areas

Table 9.3 presents disbursements by region and ESMAP's Thematic and Cross-Cutting areas. Annual Block Grants (ABGs) comprised the largest portion of ESMAP's portfolio, followed by Renewable Energy Resource Mapping, at 26% and 13%, respectively, of total disbursements for ESMAP in FY2017. Within the ABG portfolio, disbursements in the Africa Region was 47% of the total ABG disbursements and 12% of the total ESMAP disbursements in FY2017.

TABLES 9.3: ESMAP, ASTAE, and SIDS DOCK Disbursements, by Program Area, FY2017 (US\$ thousand)

	CROSS-CUTTING SOLUTIONS			ENERGY ACCESS					RENEWABLE ENERGY				ENERGY EFFICIENCY		
	Annual Block Grants	Energy Subsidy Reform	SEforALL Knowledge Hub	ECCH	SEforALL TA	Mini Grids	Urban Poor	Global Lighting	GGDP	RE Mapping	VRE	Solar Support	EE Buildings	EE City Services	Other Programs
Africa	4,399.9	217.4		55.3	1,344.7	484.0	109.3	838.9	350.3	2,251.8	254.7	145.1	50.1	143.2	326.0
East Asia	1,252.2	278.3		256.7	98.4				234.7	1,041.7	97.8	70.5	26.1	428.2	2.6
Europe & Central Asia	979.4	1,134.6		229.6			43.1		89.1		31.1	21.6	83.8	412.5	
Latin America & Caribbean	619.4	238.7		81.3	82.6			1.3	348.7		458.8	48.4	69.0	722.6	5.0
Middle East & North Africa	1,453.9	1,558.1												116.1	
South Asia	587.6	47.4			299.9					802.9	384.9		23.8	202.0	
Global Program	98.6	803.6	2,744.9	510.1		1,391.7	278.3	0.8	404.2	515.5	155.2	79.1	821.6	574.2	197.5
Program Management, KM & Communications															1,280.8
Total	9,391.0	4,278.2	2,744.9	1,133.1	1,825.6	1,875.7	430.7	840.9	1,427.1	4,611.9	1,382.6	364.9	1,074.4	2,598.8	1,812.0

TOTAL DISBURSEMENT

	ESMAP	ASTAE	SIDS	Total
Africa	10,970.7		264.0	10,970.7
East Asia	3,787.4	3,201.8	481.6	7,470.8
Europe & Central Asia	3,025.0			3,025.0
Latin America & Caribbean	2,675.9		813.5	3,489.4
Middle East & North Africa	3,128.2			3,128.2
South Asia	2,348.5	2,280.8		4,629.3
Global Program	8,575.3			8,575.3
Program Management, Knowledge Management & Communications	1,280.8	39.9		1,360.4
Total	35,791.7	5,522.5	1,598.7	42,912.9

Note: Other Programs include programs implemented by ESMAP unit and other departments that are not part of World Bank Regions (e.g. Gender, Climate, etc.).

ABOUT ESMAP

ESMAP is a multi-donor trust fund administered by the World Bank Group (WBG), anchored in the Energy & Extractives Global Practice in Washington, DC. As a long-standing partnership between the WBG 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 WBG's country policy dialogue and lending programs in the energy sector.

ESMAP's program includes both regional and country-focused activities implemented primarily by regional energy teams at the World Bank and global initiatives managed by the ESMAP program unit. The ESMAP core unit of about 30 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 ener-

gy, energy efficiency, energy subsidy reform, gender, communications, and monitoring and evaluation. The unit is also responsible for the management and administration of the 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 and Extractives Global Practice. The CG meets annually to review the strategic direction of ESMAP, its achievements, use of resources, and funding requirements. A Technical Advisory Group (TAG) consisting of three international experts appointed by the CG provides informed, independent opinions to the CG about the purpose, strategic direction, and priorities of ESMAP. The TAG also provides advice and suggestions to the CG on current and emerging global energy sector issues likely to impact ESMAP's client countries.

OUR DONORS

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Iceland | Ministry of Foreign Affairs

Italy | Ministry of Foreign Affairs and International Cooperation

Japan | Ministry of Finance

Lithuania | Ministry of Foreign Affairs; Ministry of the Environment

Luxembourg | Ministry for Sustainable Development and Infrastructure

The Netherlands | Ministry of Foreign Trade and Development Cooperation

Norway | Ministry of Foreign Affairs

The Rockefeller Foundation

Sweden | Swedish International Development Cooperation Agency

Switzerland | Swiss State Secretariat for Economic Affairs

United Kingdom | Department for International Development

The World Bank Group

ANNEX A

SUMMARY OF THE CONSULTATIVE GROUP MEETING FOR ENERGY TRUST-FUNDED PROGRAMS

MARCH 31—APRIL 02, 2017

The Consultative Group (CG) meeting for the Energy Sector Management Assistance Program (ESMAP) was held at Washington, DC, during March 31 – April 02, 2017. This summary covers the discussions during the Open Sessions held on March 31 and April 01, 2017.

Mr. Riccardo Puliti, Senior Director for the Energy and Extractives Global Practice (EEX), welcomed the new donor (Rockefeller Foundation) to the CG; he also welcomed the two new members of the Technical Advisory Group (TAG)—Ms. Richenda Van Leeuwen and Mr. John Heath. Mr. Puliti thanked the donors who have confirmed pledges of resources to ESMAP and emphasized the shared objectives and opportunities between development partners and the work of ESMAP. His remarks stressed the importance of analytical and advisory work supported through ESMAP in helping shape the country policy dialogue and investments at the World Bank Group (WBG), and in improving the quality and performance of WBG-financed projects, thus, leveraging millions of ESMAP resources into billions of resources from the WBG and other financing sources.

The Open Sessions, chaired by Mr. Rohit Khanna, ESMAP Program Manager, included presentations and discussions of the TAG report and examples of ESMAP support in the major thematic and cross-cutting areas. Discussion highlights for each session are provided below.

Session 1: TAG Report

The TAG report was introduced by Ms. Tamara Babayan, TAG Member, and noted, in summary, that while adequate conditions are present for ESMAP to meet the objectives set out in the FY2017-20 Business Plan, there are risks associated with underfunding and uncertainty of allocations to the different programs. This risk could be mitigated to some extent through the addition of new donors and fundraising, though caution needs to be exercised to ensure that a larger group of donors does not reduce the effectiveness of ESMAP governance.

- **Integrated Energy Systems.** CG members expressed support for an integrated energy system approach proposed by TAG, particularly in middle-income countries.
- **IFC Collaboration.** There was concern that collaboration with IFC was not adequately highlighted in the TAG report, given areas of partnerships such as *Lighting Global* and *Excellence in Design for Greater Efficiencies* (EDGE).
- **Results Indicators.** CG members requested TAG to focus its reports on results at the outcome level. Suggestion from CG members that Asia Sustainable

and Alternative Energy Program (ASTAE) results indicators be applied to ESMAP activities, and was accepted by ESMAP management (see summary of Session 13).

- **Donor Coordination.** The TAG report's recommendation on the importance of donor coordination was well-received by the CG. However, several CC members opined that the TAG report's concern that financial resources are shifting from multilateral channels to bilateral channels is misplaced.
- **Theory of Change.** CG members appreciated the *ESMAP Theory of Change* document, though some remarked that the role of ESMAP is expressed quite modestly in the document.

- **Content of the TAG Report.** Several CG members remarked that the TAG report should focus on more strategic advice to the CG in the context of a portfolio assessment, for example, with a stronger analysis of ESMAP's positioning in the Climate Agreement and Sustainable Development Goals (SDGs). TAG could also analyze the Annual Block Grants portfolio with a view to advising the CG on client demand and capacity. Some CG members also requested TAG to advise on the following points: multilateral engagements and how to improve coordination; linking energy transition work to national/regional and global policy development; and, benchmarking for ESMAP performance assessment.

Session 2: SEforALL Knowledge Hub

Ms. Vivien Foster, Global Lead, EEX, updated the CG on the different elements of Sustainable Energy for All (SEforALL) Knowledge Hub.

GLOBAL TRACKING FRAMEWORK (GTF)

- GTF provides a dashboard to measure progress towards the SEforALL 2030 objectives for the three SEFORALL pillars (energy access, energy efficiency, and renewable energy).
- New elements in 2017 include: coordinating with the United Nations (UN) to feed GTF results into UN Secretary General's annual progress report to the High-Level Political Forum; regional profiles in partnership with the UN Regional Economic Commissions to bring content and messages closer to policy makers; streamlined annual reporting; and introduction of a statistical model for measuring energy access.

REGULATORY INDICATORS FOR SUSTAINABLE ENERGY (RISE)

- RISE provides a set of indicators to compare national policy and regulatory frameworks for sustainable energy of 111 countries. The tool further provides all background regulations and documents.
- Africa generally scores poorly on energy access. Half of the countries with low energy access lack policies to encourage the adoption of off-grid solar power. In terms of energy efficiency, 7 out of 20 high impact countries still have some way to go in adopting the necessary regulations for energy efficiency improvements.
- RISE outreach and dissemination efforts were successful and included a large social

media campaign, as well as traditional major media outlets.

MULTI-TIER FRAMEWORK (MTF)

- MTF provides a framework to measure household electricity access categorized in 5 tiers, rather than the traditional binary approach. The global energy access survey covers 15 countries.
- The first survey from Rwanda was completed.

STATE OF ENERGY ACCESS REPORT (SEAR)

- The SEAR will be launched in May 2017, at the Vienna Energy Forum. It is structured around a number of key questions (status, challenges, synergies, business models).
- Key messages include: (i) there is a need for stronger commitment from countries lagging in achieving the SEFORALL targets; (ii) decreasing costs of technologies are large opportunities; and (iii) innovative delivery mechanisms are required for scale-up and are being demonstrated particularly in the off-grid space.

The CG appreciated that ESMAP's SEFORALL Knowledge Hub produces accurate, comprehensive, and robust methodologies to inform investments and policies through data collection, analysis, and visualization. There was acknowledgement that RISE and GTF have attracted a lot of interest and are being widely cited and used. Discussion focused on the following issues:

- **Coordination with SEforALL and SREP.** ESMAP's partnership with SEforALL focuses on advocacy and communications including media work and forums. ESMAP and SEforALL keep each other informed about their activities. SEforALL also provided a small funding amount on a one-time basis to allow for participation of UN Regional Economic Commissions in GTF2017. Scaling-up Renewable Energy Program, Climate Investment Funds (SREP) is co-funding the MTF surveys in SREP countries
- **Non-alignment of SDG7 and SEforALL targets in GTF Report.** There is political sensitivity to global agencies reporting on SDG process, because the latter is country driven. Nonetheless, the UN draws on GTF to prepare the UN Secretary General's annual progress report to the High-Level Political Forum on the state of progress towards the SDGs.
- **Identifying High Impact Opportunities.** The team clarified that the main purpose of RISE is to identify hotspots and noted that RISE coverage will be extended with the next version to be released in 2018.
- **Data Lag.** The team acknowledged that it was impossible to narrow the data lag (the current report employs data from 2014) given the production cycle of the report.

Session 3: ESMAP Support to Kenya: Sector Reforms, Energy Access, and Renewable Energy

Ms. Sudeshna Banerjee, Lead Energy Specialist, EEX, made an introductory presentation of WBG and ESMAP support in the energy sector in Kenya that has been a long-term and holistic engagement concentrating on three key pillars: (i) **environmental sustainability**, focusing on increasing generation capacity with renewable energy, specifically geothermal and hydropower, and attracting private sector participation; an ESMAP-funded national geothermal strategy is under preparation; (ii) **social sustainability**, focusing on increased electrification through an urban poor program through last-mile grid intensification and, more recently, an off-grid program for connecting households in remote areas (mini grid and PV); ESMAP-funded geospatial planning, MTF survey, and power demand studies are instrumental in their design; and (iii) **financial sustainability**, focusing on support for cost-recovery tariffs, WBG guarantee program and better borrowing terms for the private sector; ESMAP-funded support for an implementation roadmap of an energy bill is underway.

ESMAP has played a key role in informing the activities in each of the key intervention pillars to increase the level of energy access and shift focus toward renewable energy in a sustainable way. Discussions centered on how the WBG is funding the energy sector in Kenya through a multi-faceted, comprehensive program that would not be possible without ESMAP support:

- **Green Growth.** Some CG members noted that it was still difficult to judge whether green growth has sufficient support in Kenya given that 1,000 MW of coal power plants are still in operation. The team emphasized that the Government of Kenya is committed to green energy and that geothermal is expected to provide the base load, and, along with hydropower become the dominant fuel.
- **ESMAP Focus on a Few Countries.** Some CG members, encouraged by the comprehensive approach in Kenya and Ukraine wondered whether ESMAP should focus on a few countries with more cross-cutting engagements. The team responded that focusing on a limited number of countries would mean losing the core feature of ESMAP—the flexibility to respond to demand and missing opportunities for impact in several countries from which knowledge could be disseminated globally. This topic came up again during the discussion on ESMAP support in Ukraine (see summary of Session 4).
- **Power Demand Forecasting.** The team noted that ESMAP is financing a power demand study, as it is important to understand the profile of demand projects since supply is outpacing demand currently. It was also noted that last-mile electrification has attracted almost \$1 billion in donor funding.

In summary, the CG appreciated the good example of Kenya of how ESMAP can be comprehensively utilized to address various energy challenges in a country through just-in-time assistance, planning

tools and technical expertise, as well as policy influence in more than one thematic area, such as energy access (grid integration, off-grid solutions) and renewable energy. CG members noted the important lessons for slum electrification and access in peri-urban areas from the Kenya activity, and encouraged ESMAP to do more in this area in other countries.

Session 4: ESMAP Support to Ukraine: Sector Reforms and Energy Efficiency

Ms. Ani Balabanyan, Lead Energy Specialist, EEX, made an introductory presentation of ESMAP's comprehensive support to Ukraine: (i) the largest beneficiary of ESMAP Annual Block Grants (\$4.3 million over a 4-year period) in the World Bank's European and Central Asia (ECA) region; (ii) support was provided to enhance energy efficiency and reform electricity and gas markets, and reform energy tariffs and subsidies; (iii) the three major challenges for the Ukrainian energy sector are security of primary energy supply, high energy intensity, and fiscal drain on account of high energy subsidies; (iv) the WBG addresses those challenges by engagements in power, gas, energy efficiency (including city-level work on buildings and urban transport), district heating, and tariff and subsidy reform; (v) some of the remaining challenges are Naftogaz unbundling and establishment of wholesale and retail competition, containing fiscal cost of social protection schemes, revising subsidy settlement to ensure transparency, improving financial viability of district heating, and developing the legal framework for an energy efficiency fund; and (vi) ESMAP support allows comprehensive engagements in multiple sectors along with the ability to respond flexibly to client needs.

CG members appreciated the detailed presentation on ESMAP's support across the energy sector in Ukraine and a few suggested that ESMAP consider focusing on selected countries for comprehensive support. ESMAP management clarified that there are indeed a few countries—i.e., Kenya, Myanmar, Nigeria, and Ethiopia - where ESMAP supports comprehensive efforts. However, while some core countries represent an opportunity for comprehensive support across sectors and constitute good cases. ESMAP's strength is the flexibility to engage not only in those countries but also globally in a timely manner according to client demands. Furthermore, ESMAP could have significant impacts with a single initiative in a country. Other points that emerged during the discussion:

- **Social Protection.** The experience from Ukraine has shown that working with the social assistance ministry is crucial to designing adequate social protection responses. Similarly, consistent messaging is key to garner support for reforms.¹
- **Donor Coordination.** The Ukraine project team clarified that while there is no co-financing agreement with the European Commission in Ukraine, complementarity is ensured through the different support mechanisms and regular consultation as

¹ Discussion also referred to the experience with reforms in Egypt where a share of the savings from subsidy reform were dedicated to

social sectors/health/education, which helped in the messaging around subsidy reform.

issues emerge. Donor coordination is well-developed and ensured through platforms

on different sectors (e.g., gas, power, tariffs, etc.).

Session 5: Energy and Gender Programs

Ms. Vanessa Lopes Janik, Operations Officer, ESMAP, updated the CG on work to mainstream gender into energy operations, covering the following elements: (i) building the evidence about the link between energy and gender and the importance of responding to gender concerns and gaps in energy projects; (ii) mainstreaming gender into ESMAP's projects through integrating gender in internal processes, gender technical input, and targeted actions and outputs including integrating gender in ESMAP's Energy Access Program (SEforALL Multi-Tier Framework (MTF) survey, Efficient, Clean Cooking and Heating (ECCH), Energy Access for Urban Poor, Green Mini Grids), Renewable Energy Program (Geothermal, VRE grid integration, RE resource mapping), Energy Efficiency Program and Energy Subsidy Reform Facility; and (iii) expanding the program from Africa and East Asia (AFREA and ASTAE, respectively) to all regions. Particular emphasis was given to the program's tools and publications, including the forthcoming analytical report on *Getting to Gender Equality in Energy Infrastructure*.

Several CG members made positive and supportive comments about the program, congratulated the team on their accomplishments, and welcomed its continuation and expansion to other regions. The team provided examples of the process, actions, and results of the technical assistance to projects for Senegal, Tanzania, and Ethiopia. The author of the *Getting to Gender Equality* report provided an overview of the methodology and findings.

A question was raised on how the team is managing the shift from a stand-alone gender program to one that cuts across all of ESMAP's work and, now, all World Bank regions. The team acknowledged the challenge of managing breadth versus depth, and noted emphasis has been placed on partnerships with social, gender and energy teams across the Bank in new activities. Efforts are also being made to ensure ownership from energy teams in terms of task management and cost sharing to help successfully mainstream gender into these programs.

Session 6: ASTAE and SIDS DOCK Support Programs

ASIA SUSTAINABLE AND ALTERNATIVE ENERGY PROGRAM

Mr. Rohit Khanna, Program Manager, ESMAP, opened with a discussion of the future of ASTAE, noting that the ASTAE trust fund closes on June 30, 2017, but the intention under the current FY2017-20 business plan is for ASTAE to continue as a program with ESMAP funding.

However, with the current level of resources pledged for ESMAP, it will be difficult to fund ASTAE at the same level that was available for the business plan period FY2012-17 with resources provided by Netherlands, Sweden, and United Kingdom. The intention is to program \$12 million for the Asia Energy Transition initiative as a follow-up to ASTAE for the FY2017-20 business plan period from

ESMAP resources. Detailed discussion of the way forward was deferred to the CG Closed Session (held on April 22, 20147).

During the discussion on ASTAE activities, the team clarified that in programming \$24 million in the last business plan cycle, half was directed to renewable energy, one-third for energy access, and about 15 percent for energy efficiency; all the resources are expected to be fully disbursed by June 2017. It is worth noting that the expected outcomes generated by ASTAE-funded activities have exceeded initial business plan targets. The team referred to examples of ASTAE-funded activities in Philippines (support for electricity cooperatives), Mongolia (scaling up renewable energy), and Indonesia (regulatory framework on geothermal) that have resulted in leveraging of ASTAE resources. Several CG members made positive references to ASTAE's results framework and suggested that a similar approach be considered for ESMAP.

SMALL ISLAND DEVELOPING STATES

Ms. Silvia Martinez Romero, Senior Energy Specialist, ESMAP, provided an update on the status of the SIDS DOCK portfolio and highlighted the impact of several projects. In Sao Tome and Principe, SIDS DOCK support has led to a \$29 million investment lending operation, while the geothermal exploration support to Dominica and Saint Lucia has led to

the preparation of two lending operations of up to \$60 million. In Seychelles and Mauritius, the projects have had significant impact on renewable energy targets, policies, and technical requirements.

The current pipeline contains 10 projects across the Pacific, Caribbean, and Africa. While disbursements have been slow, especially in the initial stages of each project, implementation speed is currently improving. To ensure full implementation of current projects as well as new projects to be funded from the second tranche of funding by Japan, ESMAP is requesting Denmark and Japan to extend the SIDS DOCK Support Program grant agreement closing date from June 2018 to December 2020.

A CG Member asked if ESMAP continues to collaborate with UNDP on implementation of activities and if the grant agreement extension would also include UNDP. The team clarified that ESMAP collaborated with UNDP on program coordination and donor reporting until UNDP closed their part of the program in the summer of 2016 but continues to coordinate with UNDP on any country-level activities. ESMAP management confirmed that the grant agreement extension will only concern ESMAP administered funds.

The CG members representing Denmark and Japan indicated that they will confirm the extension of the SIDS DOCK Support Program grant agreement as soon as possible.

Session 7: Energy Efficiency Thematic Area

Mr. Ivan Jaques, Senior Energy Specialist, ESMAP, made an introductory presentation, emphasizing how ESMAP-financing supports scaling-up energy efficiency in cities to change business-as-usual and

to avoid locking in costly, polluting, and inefficient development through: (i) mobilizing the private sector and leveraging financing; (ii) promoting market transformation in building energy efficiency; (iii) catalyzing a strategic shift in client countries and WBG operations to mainstream energy efficiency in projects; and (iv) facilitating partnerships to harness knowledge, experience, and good practices.

In responding to queries from CG members, the team emphasized that ESMAP's work in energy efficiency is part of the Bank's energy engagement and closely linked to broader sector issues. In the current business plan, ESMAP seeks to enhance its focus on IDA countries. The discussion focused on the following topics:

- **Collaboration.** In response to a CG member query regarding collaboration, the team offered the following examples: (i) with the IFC to develop the EDGE program, to explore and facilitate linkage with World Bank IBRD/IDA operations, and to develop a pilot (with the urban and climate change practices of the World Bank) for exploring how auction mechanisms could finance building energy efficiency; and (ii) with the World Bank Water Global Practice to promote energy efficiency in water supply and sewerage.
- **Focus on Low-income Countries.** ESMAP is expanding its efforts, including through other World Bank Global Practices, in order to support IDA delivery, for example, by supporting integration of energy efficiency in a housing project in Cote d'Ivoire led by the World Bank's Social, Urban, Rural and Resilience (SURR) Global Practice, and working with the Water Global Practice on utility efficiency improvements.
- **Sector Reforms and Standards & Codes.** The team gave further details on how ESMAP energy efficiency interventions are embedded in the Bank's broader policy dialogue in the energy sector, including on pricing. The team identified examples such as the work in Panama to develop energy efficiency standards and codes for building and appliances.
- **Sustainable and Efficient Buildings.** There was also discussion on how ESMAP could support a triple-win through the integration of phase down of hydrofluorocarbons (HFCs - powerful greenhouse gases) targeted by the Kigali Amendment to the Montreal Protocol, with energy efficiency, especially in the case of measures related to space cooling and refrigeration, which are linked to ESMAP's work.

Session 8: Energy Access Thematic Area

An introductory presentation was made by Ms. Dana Rysankova, Senior Energy Specialist, ESMAP, covering the following main points: (i) international community is not on target to achieve global universal access in line with SEforALL targets unless we effectuate a rapid acceleration; (ii) such acceleration is possible, as exemplified by Kenya, with timely support from ESMAP, IDA, and other development financing partners; (iii) ESMAP has the right tools and experience to help with the acceleration through its programs on grid electrification, mini grids, and clean cooking and heating;

(iv) *Lighting Africa* is a good example of how support can be used for mini grids and clean cooking and heating to reach the inflection point in market transformation; (v) challenges ahead include policy inertia towards change, underperforming utilities, and bridging the gap between cost of service and consumer affordability; and (vi) solutions to these challenges exist, but require consistent support, sharing of best practices, and continued innovation.

The CG acknowledged ESMAP's approach straddling the public and private sectors towards to accelerate energy access. Discussions were around the following topics:

- **Energy Access as a Public Good.** Responding to a CG member's query about whether access can be provided to the poorest households using a public good model, the ESMAP team emphasized that reaching universal access will require both scaling up private-based solutions (to reach households capable of paying for electricity) and public support solutions for poorer households and those living in remote areas. In this context, results-based financing mechanisms have proven useful in reaching underserved poorer populations.
- **Developing Local Capacities.** Building local capacities is an essential part of developing an electrification program. In particular, as the progress accelerates, it is essential to work simultaneously develop adequate capacity for both utilities and private providers to expand.
- **Geospatial Analysis.** ESMAP is working on improving geospatial least-cost electrification tools. In the past, the focus of these tools was to chart the least-cost electrification grid roll-out, with less attention to how mini grids and off-grid solutions could be integrated. Now, geospatial planning includes zooming in the off-grid areas on population clusters, to inform both government and the private sector. The least-cost planning algorithms are also being improved. The decision of which households should be grid or off-grid electrified should be based on expected loads (e.g., for smaller loads, off-grid technologies may be a more viable option). Finally, geothermal planning is used more as a dynamic tool that allows scenario planning, in order to, for example, take into account different realities on the ground (financial strength of utilities, generation capacity, etc.) and therefore develop alternative paths to achieve universal access through a combination of grid and off-grid solutions.

Session 9: Renewable Energy Thematic Area

Mr. Pierre Audinet, Senior Energy Economist, ESMAP, presented the objective, scope and challenges of the renewable energy activities which, since FY2014, have provided more than \$30 million in support to 40+ countries. As renewable energy costs are declining and investments are picking up across the globe, ESMAP provides support to organize, manage, and facilitate efficient renewable energy scale-up and avoid unplanned growth. ESMAP does this by: (i) creating consensus around key renewable energy issues; (ii) pushing boundaries to help countries on a renewable energy trajectory,

for instance, through strategic planning and long-term engagements (e.g., in Vietnam, ESMAP has been engaged since 2010 through interventions to promote renewables that have resulted in several policy changes and planned investments in solar PV); (iii) leveraging public and private capital; and (iv) building partnerships to maximize impact. The renewable energy program is proposing to address key challenges for ESMAP to scale up support with the following measures: (i) meeting growing demand by implementing a programmatic and wholesale approach; (ii) building consensus to clarify the role of the public sector; and (iii) expanding partnerships to maximize impact of constrained resources.

CG Members strongly supported the strategic direction and scope of activities supported under the ESMAP renewable energy thematic area, with the discussion centered around the following topics:

- **Leveraging of Finance.** In response to queries from several CG members regarding financial leveraging to scale-up and meet SDG targets, the ESMAP team highlighted that ESMAP support for concentrated solar power (CSP) has leveraged more than \$2 billion for the 500+ MW Noor I-III CSP project in Morocco, while the Global Geothermal Development Program is expected to leverage more than \$1.5 billion in public and private capital. The team also noted that the challenges linked to variable renewable energy (VRE) integration will require significantly more concessional funding support while generating commercial financing for generation is somewhat easier. The CG encouraged all ESMAP programs to similarly focus on mobilizing investments.
- **Support for Wind, Hydropower, Biomass, and other Renewable Energy Technologies.** The ESMAP team clarified that while support for wind energy has not been a part of the ESMAP/WBG portfolio in recent years given private sector financing of the sector, it could be considered in the future, similar to ESMAP's approach to solar, with a primary focus on resource mapping,² development of auxiliary infrastructure (such as solar parks), and improvement of the broader regulatory framework. Apart from the resource mapping activities on small-hydropower and biomass, there are no dedicated global programs on hydropower and biomass in ESMAP and demand for support to these technologies is met through Annual Block Grants.
- **ESMAP Tools.** In response to CG queries regarding demand for ESMAP tools, the team noted that the Global Solar Atlas webpage, which was launched in January 2017, has generated more than 40,000 page views. ESMAP seeks to create additional interest in client countries and is focusing dissemination efforts on developers and public institutions. Going forward, ESMAP is shifting the focus of the solar mapping activities from modelling development to installation of measurement stations for which there is

² In Ethiopia, a good example of such approaches, ESMAP has conducted wind mapping activities and the WB is now working with Denmark on wind development to increase bankability of wind projects through site measurements, preparation of standardized power purchase agreements (PPAs), and other regulatory support.

growing demand.³ In parallel, ESMAP is working to launch the Global Wind Atlas to complement the Global Solar Atlas.

- **Partnerships.** Several CG Members inquired about the collaboration with the IFC and other external stakeholders, such as SEforALL, IRENA, and the International Solar Alliance. The team described the close coordination with IFC on country-level activities under the WBG *Scaling Solar* initiative. For example, in those countries where the independent power producer (IPP)-based procurement of solar capacity is not feasible, ESMAP has the ability to support alternative approaches to the procurement of such capacity. With IRENA, there is close collaboration on mapping and on auction design capacity building. ESMAP hosts the Knowledge Hub under the SEforALL; further collaboration with the SEforALL network to disseminate ESMAP knowledge products is under consideration. ESMAP stands ready to work with the International Solar Alliance (ISA) under the framework of the Memorandum of Understanding (MoU)⁴ signed between the World Bank and ISA in June 2016.

³ Analysis of the cost-benefit of measurement investments shows potential benefits of \$70 million when 1GW of installed capacity is informed by a publicly funded measurement campaign, at the cost of \$0.5-1million.

⁴ The MoU envisions strengthening cooperation in areas such as mobilization of financing for deployment of solar energy, technical assistance and knowledge transfer, and organization of selected events. ESMAP partnered with ISA in the launch of the Global Solar Atlas and has also set aside resources to finance a limited number of experts within ISA's envisioned Solar Policy and Investment Advisory Hub (SPIAH).

Session 10: Africa Grid Solar Program

The opening presentation by Mr. Pierre Audinet, Senior Energy Economist, ESMAP, conveyed: (i) the problem being addressed; (ii) the WBG approach; and (iii) the ESMAP technical assistance component. The Africa region is endowed with massive solar resources and need for energy access with regional variations in endowments and capacities: (i) the West African Power Pool with a weak grid and good resources; (ii) the East African Power Pool with better grids but poor resources; and (iii) the South African Power Pool with medium-quality grid connectivity and good resources. Therefore, a regional approach is being undertaken to remove some of the barriers, help integrate the regional market, and harmonize regulatory rules. Close collaboration with IFC is maintained with the IFC focusing on procuring generation, while the World Bank focuses on grid infrastructure.

ESMAP proposed to allocate a significant share of its Solar Support Program budget to this initiative. ESMAP support will also focus on the coordination between hydropower and solar, along with the required grid integration studies to pre-identify and address issues that may emerge from high penetration of renewables. Efforts are also underway to mobilize additional funds from the China Trust Fund and the Korean government.

Some CG members voiced concern whether it is the right time, place and packaging for large-scale solar projects in Africa. One of the concerns related to the integration of high shares of renewables in regions with weak grid infrastructure such as in Africa. The World Bank team clarified that addressing these constraints is one of the priorities of the Bank's program.

CG members also requested information on how the Program would collaborate with other initiatives and actors, such as American Renewable Energy Institute (AREI), IRENA's Africa Clean Energy Corridor, and the African Development Bank.

Session 11: Asia Energy Transition (Follow the Carbon)

The introductory presentation by Ranjit Lamech, Director EEX, covered the following main points: (i) the next five years are critical to accelerate energy transition and reduce climate change impact; (ii) the Energy Transition Asia (planned ESMAP budget of \$12 million) focuses on six countries—China, Indonesia, Vietnam, India, Pakistan, and Philippines in East and South Asia—to curb mitigation of 260 Gt CO₂ emissions from coal-fired power plants by scaling up renewable energy and energy efficiency in those countries; (iii) the project builds upon four pillars—concessional finance (GCF, GEF, etc.), technical assistance, partnership and outreach, and knowledge exchange; and (iv) for financing of the necessary investments the initiative pursues two levels of partnership—delivery of co-financing together with ADB and AIIB as well as domestic and international commercial financing.

There was broad support from the CG for the initiative and ESMAP's upstream role in helping deliver technical assistance. CG Members had the following suggestions regarding the initiative:

- **Climate Diplomacy.** Several CG members suggested that the climate diplomacy instruments of the donor countries (e.g., through the G20 process) could be deployed in coordination with the WBG's Climate Leaders to help promote the initiative.
- **Domestic Policy Issues.** Local pollution issues could be the entry point for the dialogue on clean energy interventions. The proposed initiative should also be cognizant of the local tax regimes in the participating countries that could be antithetical to the energy transition agenda.
- **Hydropower Scale Up.** The World Bank's Energy and Water Global Practices collaborate on employing donor resources that have been provided for hydropower scale up.

Session 12: Annual Block Grants for Energy Sector Governance, Markets, and Planning

Mr. Victor Loksha, Senior Energy Economist, ESMAP, introduced ESMAP support through Annual Block Grants (ABGs), making the following main points: (i) achieving the goals of SDG7 requires well-functioning power sectors; (ii) "cascade" approach to infrastructure finance puts commercial finance and sector reforms first; (iii) ESMAP approach in FY2017-20 is to support regions with ABGs⁵ in the areas of governance, planning, and markets, prioritizing utilities/energy sector reform, power system planning, and regional integration of infrastructure; (iv) between FY2014-16, 50 completed activities in 33 countries funded by \$9.8 million in ABGs informed \$1.5 billion of WBG operations; and (v) ABGs support private sector participation in the energy sector through mobilization of non-Bank resources for development finance and joint work with IFC.

A CG member suggested that ABG be retitled as "Regional Allocation for Policy and Planning Support (RAPPS)," to emphasize that the modality is more than just a provider of financial resources. In particular, TAG recommended that ESMAP develop new tools and approaches for utility reforms in the context of the Bank's rethinking of power sector reforms and increasing penetration of variable renewable energy.

ESMAP management clarified that the ABG modality grants on average \$1 million per year per region and that the ESMAP business plan is flexible; there are possibilities of supplementing funds to ABGs with specific thematic programs, such as Gender or Hydropower. Finally, ESMAP will look into suggestion of a new label for the ABG modality.

⁵ For example, ABGs offer technical assistance to government bodies, regulators, or system operators on institutional/governance structures attractive to private sector, cutting-edge options for market design, power sector reform options, and lessons from experience.

Session 13: Presentation of New M&E Portal

The new M&E portal was introduced by Ms. Brenda Manuel, Senior Operations Officer, ESMAP. CG members welcomed the new Portal and made the following suggestions to strengthen the ESMAP M&E system: (i) seek volunteers (TAG, some CG members) to test the new portal; (ii) ESMAP to adopt ASTAE indicators, with all the associated caveats; (iii) provide link or data on energy indicators from the [WBG Corporate Scorecards](#);⁶ (iv) review established indicators of ESMAP donors to determine whether they can be easily captured as part of M&E reporting; and (v) explore registering/publishing ESMAP data to the International Aid Transparency Initiative (IATI) Standard.⁷

It was also agreed that the reporting format agreed with the European Commission be considered for reporting on the thematic and cross-cutting programs. CG members were requested to review the European Commission's format and provide feedback to ESMAP management. One donor requested that the annual portfolio review be posted on the ESMAP website.

ESMAP's has developed a Risk Framework (shared with the CG at the meeting) to identify assumptions or risks to achieve outcomes. CG members were requested to provide their comments to ESMAP management.

Session 14: Energy Subsidy Reform

Ms. Sheoli Pargal, Lead Energy Economist, ESMAP, provided an update on the Energy Subsidy Reform Facility (ESRF), highlighting that energy subsidies are still large today (\$325 billion)—relative to those on renewables—despite the fall in oil prices globally. The persistence of energy subsidies leads to overuse of fossil fuels and undermines climate change mitigation; moreover, subsidies tend to be regressive. Energy subsidy reforms require a holistic approach to the issue, including appropriate diagnostics, such as political economy and poverty and social impact analyses. It is also key to address the root cause of power utility financial problems that necessitate subsidies in regions such as Africa. The ESRF represents a shift in the Bank's approach to energy subsidy reform by addressing the issue in a comprehensive manner and providing hands-on, customized, multi-year technical assistance to country teams, with due consideration of social and political sustainability. Discussions focused on the following issues:

⁶ The World Bank Group/World Bank Corporate Scorecards provide an overarching view of the results and performance indicators of the three World Bank Group institutions: The World Bank (WB), the International Finance Corporation (IFC), and the Multilateral Investment Guarantee Agency (MIGA). The Scorecards are published annually in the Fall with an update issued in the Spring.

⁷ The IATI Registry provides links to the data published by all registered organizations or programs using the IATI Standard.

- **Scope of ESRF Activities.** A CG member inquired about the scope and coverage of subsidies under the facility. A few CG members asked how subsidies are defined and measured, remarking on the need to understand how subsidies are calculated by other international organizations, as well. The team responded that the ESRF covers fuels, district heating, and power subsidies. A multifaceted Energy Subsidy Reform Assessment Framework (ESRAF) is being developed by the World Bank, which is expected to provide a consistent basis for diagnostic work by World Bank teams engaging in the measurement of energy subsidies and design/implementation of energy subsidy reform. It will be made publicly available for partners to use, as well.
- **Continued Support and Absorptive Capacity.** A few CG members expressed interest in increasing their involvement on the energy subsidy reform issue but asked whether the budget allocated to ESRF can be absorbed. The team noted that there is significant demand from countries in different regions, that ESRF responds to demand, and that absorptive capacity is not a problem.
- **Global Advocacy and Partnerships.** A CG member indicated that ESRF should play a larger role in global advocacy as the energy subsidy reform issue needs even more international attention. Another member inquired how ESRF coordinates with the Global Subsidies Initiative (GSI) and the Friends of Fossil Fuel Subsidy Reform (FFFSR) beyond the forthcoming FFFSR Spring Meetings side-event being organized by the World Bank through the Nordic Executive Director's office. They asked that the routine coordination between ESRF, IEA, and GSI that was in place earlier be reactivated. Donors expressed interest in being kept informed about bilateral activities connected to ESRF financing.
- **Energy Subsidy Reform and Climate Change.** A CG member noted that energy subsidy reform is an integral part of the global response to climate change. The pilot Energy Subsidy Reform - Energy Efficiency Swap supported by ESMAP in Ukraine is a good example of what can be done at the technical assistance level and further initiatives in this respect would be welcomed. A CG member inquired about ESRF's interaction with carbon pricing initiatives and associated peer exchanges. The ESMAP team confirmed that the World Bank's Macro-Fiscal Global Practice and Climate Change Cross-Cutting Solutions Area are engaged in these discussions.
- **Specific Results and Country Briefs.** Several CG members welcomed the sample Country Brief for Ukraine that had been shared and requested that similar knowledge products be made available. All donors expressed interest in the reporting template that has been agreed with the European Commission. The team noted that ESRF is a young facility and while its support has helped in cases such as Ukraine and Egypt, it is still a bit early to report additional results.

In closing, it was agreed that the reporting format of the European Commission will be shared with all donors. Additional briefs on ESRF country engagements and outcomes will be shared as work

progresses. Ways of strengthening cooperation with International Institute for Sustainable Development's Global Subsidies Initiative (IISD/GSI) and other partners will be examined going forward.

Session 15: Communications and Knowledge Management

COMMUNICATIONS

Ms. Nansia Constantinou, Communications Officer, ESMAP, presented the communications work during the last year: (i) outlining ESMAP's communication objectives and approaches; (ii) highlighting the main successes and deliverables; (iii) introducing ESMAP's new website; and (ii) setting forth proposals for simplifying content, including ESMAP's Annual Report.

Several CG members appreciated that ESMAP's communications team had accomplished a lot in one year, especially with the development of the new website. Discussions were around the following topics:

- **Social Media.** Several CG members noted that social media would help ESMAP's outreach and dissemination, remarking that such outreach must be targeted through identified regional or local channels. Acknowledging the usefulness of social media, the ESMAP team agreed to explore the feasibility of reopening ESMAP's own channels taking into consideration WBG guidelines. The TAG also raised a question about developing a mobile application (app) for ESMAP, an option that has not been explored yet.
- **Branding.** CG members emphasized their interests in further strengthening of the ESMAP brand, especially within the WBG and among partners. The team reassured the CG that ESMAP has been very focused on branding and will further enhance brand prominence when it serves best to do so. Examples are RISE and SEAR websites, which were developed based on the new ESMAP site design to align with ESMAP's image. In some instances, it makes more sense to leverage the WBG brand, placing ESMAP under this larger umbrella.
- **Annual Report.** The proposal for a leaner and more interactive Annual Report was supported by the CG. Some members noted that while the Annual Report provides a great snapshot of ESMAP's progress, information on specific topics and activities can still lack the granularity needed for donor-specific reporting to governments. A potential approach is to prepare a lean Annual Report and provide supplemental information, such as the program-level reports in the format agreed with the European Commission, Impact stories and country briefs, through links to the new website and M&E database. It was also noted that preparing a leaner report would free up resources to pursue additional communication efforts.

KNOWLEDGE MANAGEMENT

Mr. Ramesh Ramankutty, Lead Specialist, ESMAP, provided an update on the implementation of the ESMAP Knowledge Management (KM) work plan, emphasizing that elements of ESMAP KM were developed to straddle the M&E and Communications functions of ESMAP, and to connect seamlessly to the KM agendas of World Bank Energy Global Practice and World Bank Group. The work plan, was initiated with an audit of current KM work at ESMAP and an assessment of potential audiences, undertaken in consultation with World Bank's Energy Global Practice KM and Global Solutions Leads. The Work Plan contains eight elements across four pillars:

- **People:** (i) Expert Connector—to facilitate internal and external stakeholders in connecting to ESMAP staff; and (ii) People Flow—to manage the in and out flow of ESMAP staff for operational effectiveness.
- **Products:** (i) Knowledge Menu—to create menu of knowledge products per audience/desired impact; and (ii) Energy Radar—to create a mechanism to monitor internal and external energy knowledge (i.e., demand, gaps, hot topics).
- **Processes:** (i) Knowledge Impact—to simplify and streamline knowledge dissemination for higher impact; and (ii) Answers Now—to design a simple process for embedding ESMAP in large Q&A initiatives.
- **Platforms:** (i) Online Knowledge Repository—to ensure ESMAP knowledge is stored and easy to find by key stakeholders; and (ii) Face-to-Face—to provide platform for personal interactions.

The alignment of responsibilities across ESMAP and EEX for activities under the eight elements is being finalized as a prelude to implementation during FY2017-18.

The CG requested that attention be also paid to outward-facing elements of KM so that external stakeholders also benefit from the work of ESMAP. Several CG members acknowledged the benefits of ESMAP staff members and/or WBG TTLs visiting their respective organizations during their travels through Europe to provide updates on ESMAP work; similar appreciation was expressed regarding invitations to WBG/ESMAP events in partner countries.

ESMAP Knowledge Forum. Several CG members supported the proposal from ESMAP management to hold an ESMAP Knowledge Forum in autumn 2017; a couple of CG members indicated their willingness to host the event and agreed to follow up after consultations with their respective organizations.

Annex B

Results and Targets Achieved for FY17-20 Business Plan

THEMATIC/CROSS CUTTING	TARGETS FOR FY2017-20 BUSINESS PLAN	RESULTS ACHIEVED FY2017
	<p>10 countries confirm using the results of ESMAP-supported energy sector assessments in policy decisions</p>	<p>2 out of 10</p> <p>In Serbia, ESMAP-funded TA represents the first systematic assessment of the natural gas sector in Serbia and the first time the Government is committing to fact based decision making in the context of the financial stabilization of the national gas utility Srbijagas</p> <p>In Kenya, the completed tasks under ESMAP-supported TA have contributed to the institutional capacity to transition to a competitive wholesale market and enhanced ERC's capacity to undertake Regulatory Impact Assessment (RIA) on specific regulations.</p>
<p>ABGs for Governance, Markets and Planning</p>	<p>Preparation of 10 new investment and TA lending operations, 10 existing operations informed; Mobilization of private sector investment and other non-Bank resources facilitated in 10 countries</p>	<p>18 out of 20</p> <p>18 new and existing lending operations informed</p> <p>5 out of 10: mobilization of co-financing or other financiers</p>
	<p>Clients in 20 countries confirm enhanced institutional capacity to improve the performance of the power sector</p>	<p>5 out of 20</p> <p>Jordan Energy Sector Assistance strengthened NEPCO's capacity in procurement procedures by conducting a review of NEPCO's current procurement practices</p> <p>Uzbekistan Power System Dispatch and Renewable Energy Integration helped build the institutional capacity in the Government and Uzbekenergo (UE) – the holding company that oversees the energy sector - for integrated power generation and transmission planning</p> <p>Kenya: Implementation Roadmap of Energy Bill the transition to a competitive</p>

wholesale market

Moldova: Just-in-time Support to streamlining of District Heating regulatory methodologies and processes allowed updating existing power system models and provided hands-on HVDC training to Moldelectrica

Greater Mekong Sub-Region (GMS) Power Market Development Programmatic TA informed government policy and regulations in the power sector and improved compatibility of national regulatory frameworks in the GMS, reflecting international best practice.

Energy Access Efficient Clean Cooking & Heating	4 cooking heating country program operations or activities developed in the lending portfolio, of which 2 with an explicit approach for improved equity of male and female participation across the value chain.	0 out of 4 (Kenya project approved in July 2017 and Kyrgyzstan project approved in Oct. 2017 will be reported in FY18)
	2 countries or programs with new or with updated enabling and regulatory frameworks.	2 out of 2 The East African Community Customs Union approved reduction of import duty rate from 25% to 10% for appliance for solid fuel (Legal Notice No. EAC/32/2016). Hebei province of China adopted the updated stoves emission standard and testing protocol and the results-based incentive mechanism in its stove promotion program.
	4 enterprises that are “new entrants” in a specific country or market segment for clean cooking & heating	12 (exceeded the target) 8 new enterprises under the Indonesia project and 11 under the Uganda project
Energy Access Global Facility on Mini Grids	3 new World Bank operations informed	1 out of 3 Niger: Solar Electricity Access Project
	US\$50 million of concessional funds mobilized	US\$35M IDA Investments (Niger)
	5 countries supported for project identification and preparation	7 out of 5 Ghana, Haiti, Liberia, Kenya, Nepal + Niger, Nigeria
	5 countries provided with technical assistance for project implementation	3 out of 5 Mali, Myanmar, Tanzania

Energy Access Lighting Global	At least 8 WB projects with solar off-grid components supporting growth of sustainable markets, mobilizing private sector funding	4 out of 8 Lighting Africa-supported projects with sizeable off-grid components were approved in FY17 (Rwanda, Zambia, Niger)
	2 new WB energy access projects supported	1 out of 2 Argentina Metropolitan Buenos Aires Urban Transformation Project
Energy Access Urban Poor Electricity Access Program	2 projects with expanded scope of beneficiaries	--
	2 South-South exchanges conducted	1 out of 2 Kenya Electricity Expansion Project (P153179) brought together utility experts from Rio Light, EPM and Eskom.
Energy Access SE4ALL Technical Assistance	5 countries have been supported in the definition and implementation of energy sector wide approaches and tools	1 of 5 countries Kenya
	At least 4 existing geo-spatial plans improved	0 out of 4 Improved geospatial plan for Nigeria underway (greater focus on mini-grid and off-grid activities)
	At least 8 WBG operations informed	4 out of 8 4 new operations informed by FY17 grants (Argentina, China, Tanzania, Vietnam)
Energy Efficiency Energy Efficient Cities Project Preparation Facility	Support TA for ≥35 cities/regions/countries	19 out of 35 19 cities/regions/countries, including: Argentina (Buenos Aires), Kazakhstan (Almaty, Astana), Panama, Mongolia (Ulaanbaatar), China (Anshan, Fushun, Fuxin, Gaizhou, Metropolitan Shanghai, Shenyang), Ukraine (Chernihiv, Dnipro, Kamianets-Podilsky, Kherson, Kharkiv, Mykolaiv, Odessa, Ternopil)
Energy Efficiency Efficient and Sustainable Buildings	At least 5 buildings-related WBG operations include sustainable energy components	1 out of 5 Metropolitan Buenos Aires Urban Transformation Project
	Increased knowledge and capacity in at least 8 countries to assess and inform building-related planning, policies and investments	0 out of 8

	At least 7 country building-related policies/plans/strategies informed	2 out of 7 TA in Mongolia to enable the development of a Roadmap for Efficient Heating in Ulaanbaatar TA to assist two Kazakhstan cities (Astana and Almaty) to efficiently plan and implement EE investment programs in municipal sectors
	Policy and/or regulatory reforms on energy subsidies and pricing reforms applied by at least 3 client countries	2 out of 3 Serbia and Iraq
Energy Subsidy Reform & Delivery TA Program	Country diagnostics in 10 countries. Country demand for further TA and/or implementation of reform following 30% of diagnostic assessments.	0 out of 10 Energy Subsidy Reform Assessment Framework (ESRAF). Decision Meeting was held on June 29, 2017. Country pilots are being initiated in FY18. 3 additional regional studies covering country diagnostics had been prepared (9 countries)
	10 events produced per year; member participation on the platform of at least a third of government members, 300 members by the end of period, 3 significant known collaborations	8 out of 10 Energy Week showcase, 4 BBLs; 2 ESROC webinars; Spring Meetings event with FFFSR held in 2017 255 out of 300 ESROC members
	3 new World Bank operations informed	3 out of 3 Indonesia: Geothermal Energy Upstream Development Turkey Geothermal Development Project Chile Technical Assistance for Geothermal Development Project
Renewable Energy Global Geothermal Development Plan	New round of concessional funds mobilization	--
	Needs assessment in 3 countries	0 out of 3 Preliminary work on a needs assessment for data management in geothermal exploration projects
Renewable Energy Renewable Energy Resource Mapping	>5 external projects informed/supported	4 out of 12 Indonesia, small hydro data helping to inform least-cost electrification Pakistan, solar data used to inform preparation of Pakistan Solar and Renewable Energy Program
	Target of >\$15m in additional funding leveraged More than 12 countries apply innovative geospatial, GIS, open data and analytics to decision-making	Vietnam, solar data incorporated into a geospatial planning exercise to develop a

		Solar Strategy Zambia, solar data (maps and measurements) used to inform preparation of Scaling Solar II
Renewable Energy Solar Technologies Technical Assistance Program	At least 7 new grid-connected solar investment projects financed by WBG and/or other donors and private sponsors	0 out of 7 Support to the preparation of Haiti's Renewable Energy for All Project (to be approved in October 2017)
	At least 8 country assessments, feasibility studies and project structuring completed	1 out of 8 A study to assess the effectiveness of using limited public financial resources in the form of grants, concessional loans and risk mitigation instruments to leverage private capital for the development of grid connected solar projects
Renewable Energy Variable Renewable Energy Grid Integration Support Program	At least 5 new World Bank operations informed	2 out of 5 Mongolia: Second Energy Sector Project India: Shared Infrastructure for Solar Parks
	At least 2 external projects informed/ supported	--
	At least 7 country planning strategies informed	2 out of 7: Sri Lanka: Capacity Building for Planning and VRE Grid Integration; India: Solar Parks – Grid Integration Study and Capacity Building
	At least 5 Country Policies informed	--
SEforALL Knowledge Hub	RISE 2017, RISE 2018, RISE 2020	RISE 2017: www.rise.esmap.org
	GTF 2017, GTF 2018, GTF 2019, GTF 2020	GTF 2017: www.gtf.esmap.org
	MTF 2018 and MTF 2020	--
	SEAR 2017 and SEAR 2019	SEAR 2017: www.esmap.org/sear

ANNEX C

COMPLETED, NEW, AND ONGOING ACTIVITIES, FY2017

Note: Activities may be receiving funding from multiple Thematic Areas.

EA = Energy Access

EE = Energy Efficiency

GPM = Governance,
Planning, & Markets

O = Other

RE = Renewable Energy

SR = Subsidy Reform

Table C.1| ESMAP Completed Activities, FY2017

COUNTRY/REGION	COMPLETED ACTIVITY	PRIORITY (if applicable)
ENERGY ACCESS		
AFR	AFREA II	Lighting Global
China	Clean Stoves Initiative in Supporting Hebei Pollution Prevention and Control Program	Efficient and Clean Cooking & Heating
Lao PDR	Background Analysis and Design of Health Impact Results-based Financing Mechanism for Clean Stove Initiative	Efficient and Clean Cooking & Heating
ENERGY EFFICIENCY		
Bangladesh	Open Accessibility Planning for Integrated and Inclusive Transport in Dhaka	Efficient City Services
Bangladesh	Energy Efficiency Improvement Program in Industries	Efficient City Services
China	Developing an Innovative Energy Efficiency Financing Mechanism in China	Efficient City Services
China	Green Logistics for Chinese Municipalities	Efficient City Services
China	Energy Saving Management Action Plan for Water and Wastewater Utilities in Guilin	Efficient City Services
EAP	Inclusive Green Growth for East Asia & Pacific Region Cities	Efficient City Services
EAP	Green Transport ICT	Efficient City Services
Global	Data Analytics for Intelligent Energy Systems	Efficient City Services
Global	Capacity Building	Efficient City Services
India	Efficient & Sustainable City Bus Services: Capacity Building Program in Fuel Efficiency	Efficient City Services
Kyrgyz Republic	Urban Development Project	Efficient City Services
Kyrgyz Republic	Efficiency Improvements of the District Heating System in the Kyrgyz Republic	Efficient City Services
LCR	Latin America & Caribbean Region Urban Energy Efficiency	Efficient City Services
LCR	Achieving Energy Efficient Transport in Cities in Latin America	Efficient City Services
Mexico	Municipal Energy Efficiency Project	Efficient City Services

Mexico	International Conference on Energy Efficiency in Cities ^{GPM}	Efficient City Services
South Asia	Scaling Up Energy Efficiency and DSM Business Line in South Asia	Efficient City Services
Tanzania	Dar es Salaam City Water and Sewerage Services Energy Efficiency Review	Efficient City Services
Tanzania	Cycle Mapping for Improved Urban Mobility	Efficient City Services
GOVERNANCE, PLANNING, & MARKETS		
AFR	AFREA II: New Models to Scale Up Power Generation Investments in Africa	
AFR	AFREA II: Power and Agriculture in Sub-Saharan Africa	
AFR	Uganda-DRC 220kV Interconnector	
AFR	AFREA II: African Rural Electrification Concession	
AFR	Cost Review of Transmission Development in Africa	
AFR	Regional Study on the Performance of Distribution Utilities in Sub-Saharan Africa	
Bangladesh	Analysis of Economy-wide Impact of Energy Sector Reforms in Bangladesh	
Bangladesh	Policy and System Requirements for Scaling Up Power Trade in Bangladesh	
Bosnia & Herzegovina	Power Sector Note	
Brazil	Interface between Carbon and Energy Pricing Policy	
China	Developing Low-Carbon Strategy for Shenzhen	
ECA	Energy Efficiency Financing Option Papers for Kosovo, Turkey, and Georgia	
ECA	Directions for the Energy Sector in the Western Balkans ^{SR}	
Egypt, Arab Republic of	Gas Regulator Capacity Building	
Gabon	AFREA II: Rural Electrification and Water Services Sustainability Mechanism	
Global	Gender Equality and Development e-Course	
Global	Gender and Large Energy Infrastructure	
Global	Thirsty Energy: The Case of China	
Indonesia	Indonesia-Philippines South-South Knowledge Exchange Event	
Jordan	Energy Sector Assistance: NEPCO Restructuring, Procurement Review, LNG Capacity Building	
Kyrgyz Republic	Improving Enabling Environment for Small Hydropower in Kyrgyzstan	
LCR	Energizing Agriculture: Enhancing Efficiency in Agriculture in Latin America & Caribbean Region	
LCR	Challenges and Opportunities in the Energy Sector	
Lebanon	Assessment of the Legal and Administrative Barriers for the Development of the National Hydropower Market for Lebanon	
Madagascar	Support for the Development of Small Hydropower IPP	
Mali	AFREA II: Support to Energy Services Access	

Mexico	Supporting a Low Carbon Economy
MNA	Benchmarking Electricity Utilities Performance in the Middle East & North Africa Region
Moldova	Power System Interconnection Analysis
Myanmar	Economic Cost of Natural Gas Study
Nigeria	AFREA II: Electrification Access Program Development
Nigeria	Unlocking Nigeria's Potential for Gas
South Sudan	South Sudan Energy Sector Technical Assistance Project
Tunisia	Strategic Development of Energy Sector in Tunisia, Phase II
Tunisia	Tunisia-Italy Electricity Transmission Interconnection Project
Turkey	Sustainability of Electricity Distribution Companies
Ukraine	Ukraine JIT: Advice to the Design of Energy Efficiency Fund
Uzbekistan	Impact of Energy Subsidies: Way Forward
Uzbekistan	Power Sector Planning Study
Vanuatu	Energy Sector Development Project
Vietnam	Equitization and Divestiture Strategy for the Vietnam's Electricity Generation Companies
Vietnam	Electricity Market Simulation Model of Vietnam
Vietnam	Roadmap for Natural Gas Market Development
West Bank & Gaza	Securing Energy for Development in West Bank & Gaza

RENEWABLE ENERGY

Guatemala	Guatemala Wind and Solar Integration Study	Integrating Variable Renewables
Indonesia	Renewable Energy Resource Mapping and Geospatial Planning: Indonesia	Resource Assessment & Mapping
LCR	Scaling Up Distributed Generation with Roof-top Solar PV	Integrating Variable Renewables
Lebanon	Wind Energy Resource Mapping: Lebanon	Resource Assessment & Mapping
Madagascar	Renewable Energy Resource Mapping and Geospatial Planning: Madagascar	Resource Assessment & Mapping
Malawi	Renewable Energy Resource Mapping and Geospatial Planning: Malawi	Resource Assessment & Mapping
Seychelles	Improving Electricity Planning	Integrating Variable Renewables
Sri Lanka	Capacity Building for Planning and Variable Renewable Energy Grid Integration	Integrating Variable Renewables

SUBSIDY REFORM

China	Urumqi District Heating Pricing Technical Assistance
China	Fossil Fuel Subsidy Study
Egypt, Arab Republic of	Subsidy Reforms TA from the Energy Subsidy Reform and Delivery Technical Assistance Facility, Phase II
Global	Enhancing Knowledge Sharing on Subsidy Reforms: Case Studies on Political Economy of Energy Subsidy Reform
Iraq	Energy Subsidies and Tariff Reform
LCR	Energy Subsidy Reform in Central America

Ukraine	Moving Forward Energy Tariffs Reforms
Western Balkans	Supporting Energy Subsidy Reform in Southeast Europe

Table C.2| ESMAP New Activities, FY2017

COUNTRY/REGION	NEW ACTIVITY	PRIORITY (if applicable)
ENERGY ACCESS		
AFR	Africa Clean Cooking Energy Solutions (ACCES), Phase II	Efficient and Clean Cooking & Heating
AFR	Increased Electricity Access Support (AGAT) ^{GPM}	Mini Grid Global Facility SE4ALL TA
Argentina	Metropolitan Buenos Aires: Efficient and Sustainable Urban Settlements ^{EE}	Energy for the Urban Poor Efficient & Sustainable Bldgs Efficient City Services
Armenia	Support to PSRC with Review of Investment Plans ^{GPM}	Energy for the Urban Poor
Colombia	Colombia: Energy Sector Engagement	Lighting Global SEforALL TA
Congo, Republic of	Power Sector Reform and Electricity Access Support ^{GPM, SR}	SEforALL TA
ECA	Clean and Efficient Heating in Kyrgyzstan and Tajikistan	Efficient and Clean Cooking & Heating
Kenya	Kenya Geospatial Plan ^{GPM, RE}	Mini Grid Global Facility Integrating Variable Renewables Resource Assessment & Mapping Solar Support Program
Moldova	Just-in-time Support to Streamlining of District Heating Regulatory Methodologies and Processes ^{EE, GPM}	Efficient and Clean Cooking & Heating Energy for the Urban Poor Efficient City Services
Nepal	Project Preparation for Business Models for Private Sector-Led Mini-Grid Energy Access Project	Mini Grid Global Facility
Niger	PV Hybridization of Diesel-based Isolated Grids ^{GPM, RE}	Mini Grid Global Facility Solar Support Program
Niger	Support to Innovative Financing Mechanisms and Business Models to Increase Access through Solar Technologies	Lighting Global Mini Grid Global Facility
Ukraine	Technical Assistance for the Ukraine District Heating Energy Efficiency Project ^{EE}	Efficient and Clean Cooking & Heating Efficient & Sustainable Bldgs Efficient City Services
ENERGY EFFICIENCY		
Albania	Project for Integrated Urban and Tourism Development	Efficient City Services
Brazil	BRAZEEC Project Preparation ^{RE}	Efficient & Sustainable Bldgs Efficient City Services Integrating Variable Renewables Solar Support Program
Central America	Towards an Effective Implementation of Energy Efficiency Initiatives in Panama	Efficient & Sustainable Bldgs Efficient City Services

China	Supporting Project Preparation of Shanghai Urbanization Financing and Innovation Project	Efficient City Services
China	Energy Saving Management Action Plan for Water Utilities in Liaoning	Efficient City Services
China	Supporting Implementation of New Urbanization Strategy in Chongqing	Efficient City Services
Cote d'Ivoire	Urban Density and Quality Buildings for an Energy Efficient Abidjan	Efficient & Sustainable Bldgs
ECA	Financing of Public Buildings in the Western Balkans GPM	Efficient & Sustainable Bldgs
ECA	Energy, Gender, and Social Inclusion in the ECA Region	Efficient City Services
Global	Scaling-Up Energy Efficiency Investments in Water Utilities	Efficient City Services
Global	Efficient and Sustainable Buildings	Efficient & Sustainable Bldgs
India	Strategic Options for Energy Efficiency Scale-Up ^{GMP}	Efficient & Sustainable Bldgs
Kazakhstan	Energy Efficiency Transformation in Astana and Almaty ^{GPM}	Efficient & Sustainable Bldgs Efficient City Services
Kyrgyz Republic	Energy Efficiency in Public Buildings in Kyrgyzstan	Efficient & Sustainable Bldgs
Mongolia	Ulaanbaatar Efficient Heating Project	Efficient & Sustainable Bldgs
Philippines	Improving Energy Efficiency in Public Buildings	Efficient & Sustainable Bldgs
Ukraine	Sustainable Urban Mobility for Odessa	Efficient City Services
Ukraine	District Heating Sector Transition ^{GPM}	Efficient City Services
Ukraine	Energy Efficiency Fund Development Technical Assistance	Efficient & Sustainable Bldgs
Vietnam	Energy Efficiency for Industrial Enterprises GCF Proposal	Efficient City Services

GOVERNANCE, MARKETS & PLANNING

Afghanistan	Energy Study	
AFR	Lighting Africa	
AFR	AFREA II: Gender and Energy Program	
AFR	Africa Energy Strategy	
AFR	Low Carbon Options for Small Power Systems in Sub-Saharan Africa ^{RE}	Integrating Variable Renewables
Albania	Power Exchange Implementation Support in Albania	
Algeria	Algeria Vision 2035: Energy Efficiency	
Brazil	Smartening the Grid to Fix Broken Utilities: Sharing the Experience of the Large Eletrobras Project	
Brazil	Revisiting Power and Gas Sector Reforms in Brazil ^{RE, SR}	Integrating Variable Renewables
Caribbean	Caribbean Energy Sector Strategic Support	
Congo, Democratic Republic of	Power Sector Report and Policy Dialogue	
EAP	East Asia & Pacific Region Gender and Energy Facility	
India	Support to 24x7 Scheme for Jharkhand ^{RE}	Integrating Variable Renewables
Indonesia	Development and Pilot of Solar Auction Roadmap Workshop ^{RE}	Solar Support Program
Iraq	Power Sector Planning and Operations Improvement	
Kosovo	District Heating Sector Assessment	
LCR	Energy Sector Policy Notes for LC6 Andean Countries	

LCR	Energy Markets: Challenges and Opportunities, Phase II ^{RE}	Integrating Variable Renewables
LCR	Latin America & Caribbean Region Energy and Gender Program	
Malawi	Energy Policy Review and Sector Engagement Strategy ^O	
MNA	Increasing Pan-Arab Regional Energy Trade	
Myanmar	Support for Implementation of the Sustainable Energy for All and National Electrification Program in Myanmar	
Papua New Guinea	National Policy on Benefit Sharing in Hydropower Projects	
São Tomé & Príncipe	Strengthening Energy Monitoring/Planning	
SAR	Analyzing the Benefits of Improving Generation Efficiency of Power Plants in Bangladesh and Pakistan	
Solomon Islands	Tina River Hydropower Development Project: Benefit Sharing and Technical Quality Assurance	
Uganda	AFREA II: Uganda Clean Cooking Supply Chain Expansion	
Ukraine	Market Assessment of Small Hydro Rehabilitation in Ukraine	
Ukraine	Advancing Energy Tariff and Subsidy Reform Implementation ^{SR}	
Uzbekistan	Power System Dispatch and Renewable Energy Integration ^{RE}	Integrating Variable Renewables
RENEWABLE ENERGY		
AFR	Solar Resource Mapping: East Africa	Resource Assessment & Mapping
Armenia	Variable Renewable Energy Grid Integration Support	Solar Support Program
Bangladesh	Renewable Energy Resource Mapping: Bangladesh	Resource Assessment & Mapping
Cabo Verde	Distributed Renewable Energy	Integrating Variable Renewables
Ethiopia	Renewable Energy Resource Mapping	Resource Assessment & Mapping
Global	State of Electricity Access Report (SEAR) Dissemination	Integrating Variable Renewables
Global	Global Solar Atlas	Solar Support Program
Global	ESMAP Solar Support Program	Solar Support Program
Global	Global Wind Atlas	
Global	Effectiveness of Public Finance in Attracting Private Capital for Grid Connected Solar Projects	Solar Support Program
Haiti	Solar and Variable Renewable Energy Integration	Integrating Variable Renewables Solar Support Program
Lao PDR	Renewable Energy Resource Mapping: Lao PDR	Resource Assessment & Mapping
Mongolia	Renewable Energy Integration for Mongolia's Western Energy System	Integrating Variable Renewables
Serbia	Power System Study	Integrating Variable Renewables
Turkey	Geothermal Development Project (co-hosting of the 2 nd IGC Türkiye Geothermal Congress 2017) ^{GPM, RE}	Global Geothermal Development Solar Support Program
Vietnam	Scaling-Up Solar PV in Vietnam	Solar Support Program
Western Africa	Variable Renewable Integration in the West Africa Power Pool Grid	Integrating Variable Renewables

SEforALL

Global	Multi-Tier Framework Enterprise Survey
Global	Sustainable Energy for All Global Tracking Framework, 2017

SUBSIDY REFORM

Belarus	Heat Tariff Reform and Social Impact Mitigation Study
Kyrgyz Republic	Energy Sector Reforms in Kyrgyz Republic
Myanmar	Support for Sustainable and Socially Inclusive Electricity Pricing and Reform
Nepal	Energy Tariff Reform in Nepal

Table C.3| ESMAP Ongoing Activities, FY2017

COUNTRY/REGION	NEW ACTIVITY	PRIORITY (if applicable)
ENERGY ACCESS		
AFR	AFREA II: Africa Electrification Initiative	Mini Grid Global Facility
Congo, Democratic Republic of	AFREA II: Scaling Up Electricity Access, DRC	Energy for the Urban Poor SE4ALL TA
Global	Global Facility for Promotion of Green Mini Grids	Mini Grid Global Facility
Global	Efficient, Clean Cooking and Heating (ECCH) Program	Efficient and Clean Cooking & Heating
Indonesia	Supervision and Preparation of Scale-Up of Indonesia Cook Stove Initiative Pilot	Efficient and Clean Cooking & Heating
Kyrgyz Republic	Kyrgyzstan Improving Efficiency of Individual Heating Solutions	Efficient and Clean Cooking & Heating
Lao People's Democratic Republic	Lao PDR Cook Stove Initiative	Efficient and Clean Cooking & Heating
LCR	Central America Clean Cooking Initiative	Efficient and Clean Cooking & Heating SE4ALL TA
Liberia	Liberia Renewable Energy Access Project	Mini Grid Global Facility
Mali	Rural Electrification Hybrid System: CEMG Initiative	Mini Grid Global Facility
SAR	Developing Improved Solutions for Cooking	SE4ALL TA
ENERGY EFFICIENCY		
Egypt, Arab Republic of	Towards Energy Efficiency Implementation in Cities in Egypt	Efficient City Services
Global	City Energy Efficiency Transformation Initiative: Low Carbon Growth for Cities through Energy Efficiency	Efficient City Services
Global	Exploring the Potential for the Application of Solar PV Pumping Technologies in the Water Supply Sector: Utility Energy Efficiency Business Model	Efficient City Services
Global	EDGE Green Building Market Transformation Program	Efficient & Sustainable Bldgs
Global	Capacity Building for Leaders in Energy Efficient	Efficient City Services

	Urban Transport Planning, Phase II	
LCR	Energy Efficient Cities Program	Efficient City Services
Lebanon	Promoting Energy Efficiency in Bus Rapid Transit	Efficient City Services
Mexico	Sustainable Land Use for Energy Efficient Cities	Efficient City Services
Morocco	City Energy Efficiency ^{GPM}	Efficient City Services
Uzbekistan	Towards Energy Efficient Resilient Cities in Uzbekistan	Efficient City Services
GOVERNANCE, MARKETS & PLANNING		
AFR	AFREA II: Africa Electrification Initiative	
AFR	Increased Electricity Access Support Program	
AFR	Role of Subsidies: Financing Electricity Supply and Providing Affordable Access in Sub-Saharan Africa	
Africa	AFREA II: Africa Clean Cooking Energy Solutions (ACCES)	
Africa	AFREA II: Gender and Energy Program	
Belize	Energy Resilience for Climate Adapt	
Bolivia	International Workshop on Deploying New Solar Technologies in Isolated Rural Areas: Supporting their Adoption in the Latin America & Caribbean Region	
Botswana	Renewable Energy and Energy Efficiency Strategies	
China	Promotion of Power Sector Reform to Unlock Renewable Energy Development	
Cote d'Ivoire	Electricity Access Scale Up Program	
Ethiopia	Energy Sector Review and Strategy	
Global	Rethinking Power Sector Reform	
India	North East Region Assessment of Transmission & Distribution Projects Impact on Access to Electricity	
India	Support to Electricity Distribution System Strengthening and Modernization in Andhra Pradesh	
Indonesia	Support to the Integrated Catchment Management-informed project preparation of Matenggeng Pumped Storage Hydro-Electrical Project	
Indonesia	Local Benefit Sharing for Hydropower Projects in Indonesia	
Kenya	Implementation Roadmap of Energy Bill	
Mekong	Greater Mekong Sub-Region Power Market Development Programmatic Technical Assistance	
Myanmar	National Electrification Project: Inclusive Community Participation	
Nepal	Conflict Management and Prevention for Energy Projects	
Serbia	Serbia Natural Gas Sector Analysis ^{RE}	Global Geothermal Development
Somalia	AFREA II: Somalia Power Sector Development Master Plan	
Tuvalu	Energy Sector Development Project	
Ukraine	Facilitating Electricity and Gas Market Reforms in Ukraine	
Vietnam	Support the MOIT to Finalize the Design of Next Phase of the Vietnam National Energy Efficiency Program, 2016-20	

OTHER

Global	Capacity Building for Leaders in Energy Efficient Urban Transport Planning, Phase II	
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RENEWABLE ENERGY

Cabo Verde	Distributed Solar Energy Systems Project	Integrating Variable Renewables
Chile	Technical Assistance for Sustainable Geothermal Development in Chile	Global Geothermal Development
Djibouti	Geothermal Exploration Project	Global Geothermal Development
Ethiopia	Renewable Energy Resource Mapping and Geospatial Planning: Ethiopia	Resource Assessment & Mapping
Ethiopia	Energy Sector Review and Strategy	Integrating Variable Renewables
Fiji	Pre-Feasibility Study and Roadmap for Development Geothermal Power in the Republic of Fiji	Global Geothermal Development
Global	ESMAP Variable Renewable Energy Grid Integration Support Program	Integrating Variable Renewables
India	Solar Parks: Grid Integration Study and Capacity Building	Integrating Variable Renewables
Indonesia	Capacity Strengthening and Risk Mitigation for Geothermal Development	Global Geothermal Development
Kenya	Geothermal Strategy	Global Geothermal Development
LCR	Technical Assistance for Geothermal Project Preparation in Latin America & Caribbean Region	Global Geothermal Development
Maldives	Renewable Energy Resource Mapping and Geospatial Planning: Maldives	Resource Assessment & Mapping
Nepal	Renewable Energy Resource Mapping: Nepal	Resource Assessment & Mapping
Pacific Islands	Variable Renewable Energy Grid Integration for Pacific Islands Sustainable Energy Industry Development Project	Integrating Variable Renewables
Pakistan	Renewable Energy Resource Mapping and Geospatial Planning: Pakistan	Resource Assessment & Mapping
Papua New Guinea	Renewable Energy Resource Mapping and Geospatial Planning: Papua New Guinea	Resource Assessment & Mapping
Tanzania	Renewable Energy Resource Mapping and Geospatial Planning: Tanzania	Resource Assessment & Mapping
Vietnam	Renewable Energy Resource Mapping and Geospatial Planning: Vietnam	Resource Assessment & Mapping
Zambia	Renewable Energy Resource Mapping Initiative: Zambia	Resource Assessment & Mapping

SEforALL

Global	Global Rollout of Readiness for Investment in Sustainable Energy (RISE)	
Global	Global Survey for Multi-Tier Energy Access Tracking	

SUBSIDY REFORM

Algeria	Energy Subsidies and Price Reform in Algeria	
Armenia	Improvement of Power-Tariff Setting and Addressing of Social Impacts of Tariff Increases	
Azerbaijan	Poverty and Social Impacts of Improving Fiscal Sustainability and Quality of Power Distribution in Azerbaijan	
Egypt, Arab	Programmatic Energy Reforms in Egypt	

Republic of Ethiopia	Energy Sector Review and Strategy
Global	Energy Subsidy Reform Knowledge Events
Global	Energy Subsidy Reform Online Community
Global	Energy Subsidy Reform Assessment Framework (ESRAF)
Global	Energy Subsidy Reform Knowledge Products
Haiti	Distributional Analyses and Reform Options for Petroleum Price Reforms in Haiti, Phase II
Madagascar	Pump Fuel Price Subsidy Removal Technical Assistance
MNA	Support to Middle East & North Africa Countries Preparedness of Social Safety Nets for Subsidy Reform: Algeria, Djibouti, Jordan, Morocco, Tunisia, and Yemen
Ukraine	Advancing Energy Tariff and Subsidy Reforms
Vietnam	Electricity Vietnam Communications Strategy for Tariff Reform
Vietnam	Energy Subsidy Reform, Phase I

ANNEX D

PUBLICATIONS, FY2017

ISBN, PUB. NO., OR ISBN	COUNTRY/REGION	TITLE	AUTHOR/TTL
Live Wire 2017/76	AFR	Increasing the Potential of Concessions to Expand Rural Electrification in Sub-Saharan Africa	Richard Hosier, Morgan Bazilian, and Tatia Lemondzhava
P149443 ESMAP Technical Report 010/16	AFR	Rural Electrification with the Shield Wire Scheme in Low-Income Countries: Design, Construction, and Operation	Francesco Illiceto (Consultant)
P149522	Belize	The Power System in the Eye of the Storm: The Call for Energy Resilience and Climate Adaptation in Belize	Migara Jayawardena, Borja Garcia Serna, and Jeesun Han
P156263	Bhutan	Managing Environmental and Social Impacts of Hydropower in Bhutan	Mats Johan Rikard Liden and Rohit Mittal
P154867	Egypt	Energy Efficiency and Rooftop Solar PV Opportunities: Report Summary	Pedzisayi Makumbe
P155434 ESMAP Country Brief	Egypt	Energy Subsidy Reform Facility Country Brief: Egypt	
P157135	Georgia	Europe And Central Asia: Energy Efficiency Financing Option Papers for Georgia ENGLISH Georgian	Jas Singh
P156771 ESMAP Technical Report 011/17	Global	Assessing and Measuring the Performance of Energy Efficiency Projects	Monali Ranade, Martina Bosi, Sara Mills-Knapp, Stephane De La Rue Du Can, and International Institute for Energy Conservation
	Global	Energy Storage Trends and Opportunities in Emerging Markets	ESMAP and IFC
P145157	Global	Enhancing Power Sector Resilience: Emerging Practices to Manage Weather and Geological Risks	Xiaoping Wang, Ray Brown, Guillaume Prudent Richard, and Katrina O'Mara
978-1-4648-0838-8 WB Directions in Development	Global	Extending the Life of Reservoirs: Sustainable Sediment Management for Dams and Run-of-River Hydropower	George W. Annandale, Gregory L. Morris, and Pravin Karki
Live Wire 2017/74	Global	Increasing the Use of Liquefied Petroleum Gas in Cooking in Developing Countries	Richenda Van Leeuwen, Alex Evans, and Besnik Hyseni
Live Wire 2017/71	Global	Mobilizing Risk Capital to Unlock the Global Potential of Geothermal Power	Roberto La Rocca, Peter Johansen, Laura Berman, and Migara Jayawardena
P154461	Global	Regulatory Indicators for Sustainable Energy (RISE): A Global Scorecard for Policy Makers	Banerjee, Sudeshna Ghosh; Moreno, Francisco Alejandro; Sinton, Jonathan Edwards; Tanya Primiani, and Joonkyung Seong
P148200	Global	SEAR: Energy Access – Building Resilience in Acute and Protracted Crises	Andreas Thulstrup and Indira Joshi

P148200	Global	SEAR: Energy Access – Food and Agriculture	Oliver Dubois, Alessandro Flammini, Ana Kojakovic, Irini Maltoglou, Manas Puri, and Luis Rincon
P148200	Global	SEAR: Energy Access & Electricity Planning	Mark Idwal Howells, Hans Holger Rogner, Dimitris Mentis, Dimitris, and Oliver Broad
P148200	Global	SEAR: Energy Access & Gender – Getting the Right Balance	Soma Dutta, Annemarije Kooijman, and Elizabeth W. Cecelski
P148200	Global	SEAR: Energy Access and the Energy-Water Nexus	Diego Juan Rodriguez, Anna Delgado, and Antonia Averill Sohns
P148200	Global	SEAR: Energy Efficiency – A Key enabler for Energy Access	Matt Jordan, Jenny Corry, and Ivan Jaques
P148200	Global	SEAR: Modern Energy Access & Health	Jem Porcaro, Sumi Mehta, Matthew Shupler, Sarah Kissel, Michaela Pfeiffer, Carlos Francisco C. Dora, and Heather Adair-Rohani
P148200	Global	SEAR: Results-Based Financing a Promising New Tool for Energy Access	Marco Hüls, Marcel Raats, Josh Sebastian, Martijn Veen, and John Ward
P148200	Global	SEAR: The Climate Change-Energy Access Nexus	Sameer Akbar and Gary Kleinman
P148200	Global	SEAR: The Power of Human Capital – Multi-Level Capacity Building for Energy Access	Emanuela Colombo, Lorenzo Mattarolo, Politecnico di Milano, Stefano Bologna, and Diego Masera
P148200	Global	State of Electricity Access Report (SEAR) Report Overview	
978-1-4648-1084-8	Global	Sustainable Energy for All Global Tracking Framework (GTF): Progress toward Sustainable Energy	
P155434 ESMAP Country Brief	Haiti	Energy Subsidy Reform Facility Country Brief: Haiti	
P147807	India	Communication Research on Energy Efficiency in India: Communication Needs Assessment and Stakeholder Mapping	Heather B. Worley, Ashok Sarkar, Padmanaban Mukhi, Padu S. Neha, Amit Kumar, Jayakrishnan Nair, and Soni Manish
P147807	India	India's State-Level Energy Efficiency Implementation Readiness	Ashok Sarkar, Naha Mukhi, Padu S. Padmanaban, Amit Kumar, Kulbhushan Kumar, Manoj Bansal, Shyamasis Das, Shuboday Ganta, and Anurag Verma
	India	Utility Scale DSM Opportunities and Business Models in India	Ashok Sarkar, Neha Mukhi, Padu Padmanaban, Amit Kumar, Kulbhushan Kumar,

			Manoj Bansal, and Shuboday Ganta Oliver Knight
P145273	Indonesia	Small Hydropower Mapping and Improved Geospatial Electrification Planning Indonesia Small Hydro Resource Mapping in Indonesia: GIS Database - User Manual Solar Resource and Photovoltaic Potential of Indonesia	
P145350	Madagascar	Small Hydro Resource Mapping: Prefeasibility Study, Phase 2 – Mahatsara ENGLISH French Small Hydro Resource Mapping: Prefeasibility Study - Fanovana English French Small Hydro Resource Mapping: Hydrological Resource Report, Phase 2 – Ground-based Data Collection English French Small Hydro Resource Mapping: Hydropower Atlas (final report) ENGLISH FRENCH Small Hydro Resource Mapping: Small Hydro Mapping Report, Phase 3 – Production of a Validated Resource Atlas ENGLISH FRENCH	Oliver Knight
P146018	Maldives	Solar Resource Mapping: Annual Solar Resources Report	Oliver Knight
P161130	Myanmar	Solar Resource and Photovoltaic Power Potential of Myanmar	Oliver Knight
P146140	Pakistan	Biomass Resource Mapping: Implementation Report Biomass Resource Mapping: Biomass Atlas (final report) Solar Resource Mapping: Maintenance Visit Report, Tier2 – Meteorological Station, University of Engineering & Technology, Lahore Solar Resource Mapping: Final Model Validation Report Solar Resource Mapping: Installation Report, Tier 2 – Meteorological Station, University of Engineering & Technology, Lahore Solar Resource Mapping: Maintenance Visit Report, Tier 2 - Hyderabad Solar Resource Mapping: Maintenance Visit Report, Tier 1 - Quaid-E-Azam Solar Park, Punjab	Oliver Knight

		Solar Resource Mapping: Maintenance Visit Report, Tier2 – University of Engineering & Technology, Peshawar Wind Resource Mapping: Maintenance Visit Report - All Sites Wind Resource Mapping: Implementation Plan, Phase 2	
P145287	Tanzania	Small Hydro Resource Mapping: Site Visit Report - List of Most Promising Sites Wind Resource Mapping: Close Out Report	Oliver Knight
P148147	Tunisia	Natural Gas: State of Play, Challenges, Prospects and Options By 2030 FRENCH	Anas Benbarka and Moez Cherif
P146501	Turkey	Europe and Central Asia: Energy Efficiency Financing Option Papers for Turkey	Jas Singh and Dilip Limaye
P157135	Turkey	Options for Financing Energy Efficiency in Public Buildings in Turkey ENGLISH TURKISH	Jas Singh, Dilip R. Limaye, Joseph Melitauri, Rhedon Begolli, Yasemin Örucü, Aditya Alexander Lukas, Selma Zahirovic, and Dardan Velija
P155872	Turkey	Turkey: Towards Improving the Service Quality of Electricity Distribution Companies ENGLISH TURKISH	Ayse Yasemin Orucu, Pedro Antmann, and Ayse Yasemin Orucu
P155434	Ukraine	Energy Subsidy Reform Facility Country Brief: Ukraine	
P152135	Uzbekistan	Uzbekistan: Scaling Up Energy Efficiency in Buildings: Short-to-Medium-Term Priorities and Recommended Action ENGLISH Russian	Feng Liu and Robert Wilfred Tromop
EAP Gender Brief	Vietnam	Results of Collaboration for Social Inclusion in the Trung Son Hydro Power Project, Vietnam	Helle Buchhave
P145513	Vietnam	Solar Resource Mapping: Site Selection Solar Resource Mapping: Implementation Plan Biomass Resource Mapping: Implementation Plan Biomass Resource Mapping: Training Workshop Report	Oliver Knight
P157348	West Bank and Gaza	Securing Energy for Development in West Bank and Gaza Report Summary Annexes	Sara Badiei, Vivien Foster, Samuel Kwesi Ewuah Ogua, and Roger Coma Cunill
P145271	Zambia	Solar Resource Mapping: Site Installation Reports	Oliver Knight

ACRONYMS

ABG	Annual Block Grant	NEP	Nation Electrification Project
ASTAE	Asia Sustainable and Alternative Energy Program	NREL	National Renewable Energy Laboratory
CEB	Ceylon Electricity Board	PPIAF	Public-Private Infrastructure Advisory Facility
CG	Consultative Group	PV	photovoltaic
C-SERMS	Caribbean Sustainable Energy Strategy and Roadmap	RBF	results-based financing
CTF	Clean Technology Fund	RE	renewable energy
DPL	development policy loan	RISE	Regulatory Indicators for Sustainable Energy
ECCH	Efficient, Clean Cooking and Heating	RREA	Rural and Renewable Energy Agency
EDGE	Excellence in Design for Greater Efficiencies	SDG	Sustainable Development Goal
EE	energy efficiency	SEAR	State of Electricity Access Report
EMAE	Empaesa de Agua e Electricidade	SEforALL	Sustainable Energy for All
ENA	Electric networks of Armenia	SIDS	Small Island Developing States
ESROC	Energy Subsidy Reform Online Community	SREP	Scaling Up Renew Energy Program
FY	fiscal year	TA	technical assistance
GGDP	Global Geothermal Development Plan	TAG	Technical Advisory Group
GHG	greenhouse gas	TRACE	Tool for Rapid Assessment of City Energy
GOGLA	Global Off-Grid Lighting Association	VRE	variable renewable energy
GTF	Global Tracking Framework	WBG	World Bank Group
IBRD	International Bank for Reconstruction and Development	WORLD BANK REGIONS	
IDA	International Development Association	AFR	— Sub-Saharan Africa
IFC	International Finance Corporation	EAP	— East Asia and Pacific
MDFT	multi-donor trust fund	ECA	— Europe and Central Asia
MTF	Multi-Tier Framework	LCR	— Latin American and Caribbean
NDC	Nationally Determined Contribution	MNA	— Middle East and North Africa
		SAR	— South Asia

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