

ANNEX A

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

APRIL 9–11, 2018

The Consultative Group (CG) meeting for the Energy Sector Management Assistance Program (ESMAP) was held in Washington, DC on April 9–11, 2018. This summary covers the discussions during the Open Sessions held on April 9 and 10, 2018.

Mr. Riccardo Puliti, Senior Director for the World Bank (WB) Energy and Extractives Global Practice (EEX), opened the event by emphasizing the vital role that ESMAP plays within the Energy Global Practice. He highlighted ESMAP's impacts on global policy and World Bank investment, as well as ESMAP's global convening power, which provides a public good to all development partners. He also stressed that the demand from World Bank clients for ESMAP's support far exceeds the resources currently available, given the scale and scope of the World Bank's country programs in the energy sector.

The CG meeting's Open Sessions, chaired by Mr. Rohit Khanna, ESMAP Program Manager, included presentations and discussions of the Technical Advisory Group (TAG) report and ESMAP activities in the thematic and cross-cutting areas. Discussion highlights for each session are provided below.

Session 1: Technical Advisory Group Report to the Consultative Group

The TAG report was introduced by Mr. John Heath, TAG member, and aimed to present a strategic view of the energy sector, highlighting ESMAP's role. He noted that off-grid options—including mini grids—and renewable energy technologies can now offer a solution to bridging the energy access gap. ESMAP's response to this changing landscape has been positive. ESMAP has scaled up support in geospatial planning, utility reform, power system planning, and electricity markets. The TAG made recommendations for further investment in the areas of power systems planning, gender, clean cooking, and solar power resources.

- **Energy Transition.** ESMAP is a key enabler of the global energy transition. ESMAP's role can be further strengthened if it focuses more on governance and market planning, considering the lack of planning in many client countries.
- **Gender.** The TAG agreed that ESMAP has come a long way in terms of incorporating gender considerations across its business plan and recommended a stronger next phase to cover gender considerations across the supply chain, extending the focus to beneficiaries and suppliers.
- **Clean Cooking and Heating.** This sector is one of the most challenging because it has multiple impacts, such as health, environment, gender, and climate. Additional donor resources are needed to scale up investments in access to clean cooking and heating. The Multi-Tier Framework (MTF) provides a comprehensive way to measure and track progress, but more focus is needed on "clean" and health impacts.
- **Solar.** Scaling up solar capacity is a key area for ESMAP, but it is currently underfunded, with many client countries expressing strong interest in assistance with policy and planning.

Session 2: The New Monitoring and Evaluation Portal

Ms. Brenda Manuel, Senior Operations Officer and lead of the ESMAP Portfolio Management team, described the features and functionalities of the new ESMAP Monitoring and Evaluation (M&E) portal, a part of the new ESMAP website. The portal makes ESMAP's portfolio data easily accessible to users who can generate customized reports

based on their information needs. Ms. Manuel demonstrated the portal to the CG, highlighting its various functions, including tracking and analysis of ESMAP activities and results.

- **Application Programming Interface.** The CG expressed interest in building the M&E portal on an application programming interface (API) to allow cross-linkages with donor organizations' databases. The ESMAP Portfolio Management team will explore the possibility of building an API, subject to clearance consistent with the World Bank's Access to Information Policy.
- **Indicators.** The CG expressed interest in connecting the ESMAP M&E portal and the World Bank corporate scorecard indicators portal. The ESMAP Portfolio Management team welcomes receiving donor-reported indicators from the CG to determine their consistency with ESMAP's own indicators, and the potential to easily capture and provide these indicators within the M&E portal.

Session 3: ESMAP Support to Middle East and North Africa

Mr. Erik Fernstrom, Practice Manager, EEX, presented a comprehensive view of ESMAP's support to the Middle East and North Africa (MNA) region. The region is going through a social and economic transition, leading to increased fragility and in some cases, conflict. At the economic level, several countries in the region face a lack of competitiveness, rising debt levels triggered by high subsidies, and an over-reliance on public sector service delivery. ESMAP enables the region to address these challenges and countries to benefit from their natural resources to pave the way for sustainable growth. For example, an ESMAP activity in Yemen is using geospatial planning to improve energy access and sustainability, despite the ongoing conflict. ESMAP also supports concentrating solar power (CSP) and the development of a national program of efficient public lighting in Morocco and geothermal exploration in Djibouti. The ESMAP Energy Subsidy Reform Facility (ESRF) is assisting the governments of Egypt and Lebanon to address the economic and social aspects of getting energy prices right. ESMAP is also supporting energy for development in the West Bank and Gaza.

- **Gender.** While ESMAP has done an excellent job of mainstreaming gender in its activities, the CG would like to see more proactivity to support female entrepreneurs, increase women's participation in the job market, and ensure that subsidy reform analyzes gender impacts.
- **Refugees and Migrants.** Countries and humanitarian organizations are requesting assistance for long-term infrastructure for refugees. Further, while utility systems are being strengthened in some countries, migrants often lack steady incomes to access services. The CG notes that ESMAP support is needed both in developing infrastructure and in increasing access to services.
- **Conflict.** The CG expressed interest in examining how to rebuild energy sector infrastructure after conflicts. To rebuild stronger sectors, ESMAP should consider solutions in refugee and migrant communities that could be replicated when refugees return to their home countries.
- **Concentrating Solar Power.** Success in CSP across the region has encouraged other countries to invest in the technology. The World Bank Noor-Ouarzazate CSP project in Morocco has created local jobs, reduced emissions, and lowered the cost of CSP technology. Knowledge sharing between countries and replication have begun and are expected to continue.

Session 4: ESMAP Support to Africa

Ms. Karen Bazex, Senior Energy Specialist, EEX; Mr. Rahul Kitchlu, Senior Energy Specialist EEX; and Ms. Ani Balabanyan, Lead Energy Specialist, EEX, discussed the World Bank's comprehensive engagement in Africa, which is focused on four goals: achieving universal access by 2030, accelerating Africa's energy transition, building operationally and financially viable utilities, and integrating regional energy systems. ESMAP has provided crucial support to Africa across all these areas.

- **Ethiopia's Electricity Sector.** ESMAP has been instrumental in supporting the country's overall sector reform. The Ethiopia Energy Sector Review and Strategy led to the development of the National Electrification Program (NEP) Implementation Roadmap for grid and off grid access. In turn, the NEP informed the preparation of the US\$375 million Ethiopia Electrification Program. ESMAP is also strengthening the overall "access ecosystem" through knowledge from Regulatory Indicators for Sustainable Energy (RISE), Multi-Tier Framework (MTF) national baseline, national geographic

information system (GIS) platform, M&E system, and knowledge exchanges. In addition, it has supported the government's renewable energy Independent Power Project (IPP) Reform Program through the preparation of a wind atlas, as well as ongoing wind measurements in specific sites. These will be used to launch wind power transactions to promote private sector participation.

- **Nigeria's Power Sector Recovery Program.** ESMAP-funded diagnostic work and analytics were critical to guide the ongoing sector reform. A working group was established to prepare a Power Sector Recovery Program, aiming to restore the sector's financial viability, improve power supply to meet demand, strengthen institutional frameworks, enhance transparency and stakeholder engagement, implement policies that promote investor confidence, and establish a contract-based electricity market.
- **Regional Power Trade.** ESMAP's assistance on power pools is focusing on defining pragmatic roadmaps for World Bank support to power trade and addressing a key obstacle to regional trade, namely payment arrears for cross-border transactions in West Africa. ESMAP-supported analysis and recommendations were presented to Ministers of the West African Power Pool and are informing the preparation of various operations to help secure cross-border payments.

- **Clean Cooking.** The ESMAP team outlined its work in promoting clean cooking solutions through the ESMAP-supported Africa Clean Cooking Energy Solutions (ACCES) initiative. In Ethiopia, for example, urban areas are already using electric cookstoves due to low electricity prices, but there is a need to promote high-efficiency electric cooking devices and expand access to more populations.
- **Hydropower.** The World Bank's regional strategy supports hydropower projects, but approaches differ in each country based on least-cost investment options to diversify power supply. While ESMAP support has been limited, it funded a regional study analyzing hydropower trends in Africa.
- **Geospatial Analysis.** The CG expressed concern about the cost of geospatial analysis, which can be high when conducted on a country-by-country basis. The team responded that it is conducting sub-regional geospatial analyses in East Africa, South Africa, and West Africa.
- **Clean Energy.** The World Bank is promoting clean energy by building the capacity of regional organizations (such as ECOWAS Centre for Renewable Energy and Energy Efficiency [ECREE] in West Africa) to design programs, take ownership of program implementation, and coordinate national actors. Through the Lighting Africa and Lighting Global programs, ESMAP is supporting decentralized solar solutions in Africa.

Session 5: Renewable Energy

Mr. Oliver Knight, Senior Energy Specialist, ESMAP, presented the Renewable Energy Thematic Area, which includes four windows (Geothermal, Renewable Energy Resource Mapping, Solar Scale-Up, and Variable Renewable Energy [VRE] Grid Integration) and the Small Island Developing States trust fund (the SIDS DOCK Support Program). Over the past year, ESMAP has observed a sustained increase in demand from clients and World Bank task teams and has made considerable efforts to provide wholesale solutions that are applicable to multiple teams and clients. ESMAP foresees that many projects will span multiple windows and is planning to scale up support on solar projects to respond to and encourage diversification of the portfolio (i.e., floating and rooftop solar, and storage). A proposal to add support for on- and offshore wind was also presented. The discussion included the following key points:

- **Funding.** To continue this work at the current scale, additional funding is needed. The Renewable Energy Initiative has approved activities totaling US\$13.2 million, with an additional US\$5.5 million in the pipeline for FY2019/20. Assuming a similar level of demand for new activities, funding will fall short by US\$8.7 million (conservative estimate). Additional funding will enable expanded support for solar power, wind power (especially offshore wind), strengthened VRE integration and power system planning, and new geospatial planning tools with global relevance.
- **Geothermal.** The CG suggested that more work is needed on geothermal heating in temperate-climate client countries. ESMAP noted that energy demand growth, confirmed geothermal resources, and a cool climate are a rare combination and there may not be adequate client demand for substantial assistance in geothermal district heating and industrial energy.

- **Global Solar Atlas and the Global Wind Atlas.** The CG was pleased to see that use of these tools is steadily increasing (the Global Solar Atlas has already reached 10,000 users per month). ESMAP anticipates updates to these tools in FY2019 to improve data quality and usability. For the Global Wind Atlas, the resolution will soon be increased to 250m from 1km. The data from both websites are increasingly used by other institutions. For instance, data has been included in the IRENA Global Atlas and integrated into country geospatial models developed by the National Renewable Energy Laboratory (NREL): <https://www.re-explorer.org/>.
- **Planning and Power Markets.** ESMAP sees an increased focus on planning across all regions and interest in understanding commercial and market-related constraints and barriers for increasing renewable energy penetration. For example, ESMAP's VRE Grid Integration and the Power System Planning teams have received several requests to help minimize curtailment due to both technical and commercial constraints. Going forward, ESMAP will emphasize both planning and market development.
- **Small Island Developing States.** The support program is being implemented at a relatively satisfactory rate. Projects delayed mainly due to local constraints are now picking up pace. With the second tranche of the Japanese contribution (US\$6 million) supporting projects in Dominica, the Solomon Islands, and St. Lucia, the SIDS program will be fully committed. ESMAP presented detailed information on the program to the Japanese Executive Director's Office and the Danish CG member in separate meetings.
- **Energy Storage.** Increased client demand on storage is evident as ESMAP has received several proposals for support to storage related both to Solar and VRE windows. Weak regulatory environments for storage affects cost recovery in many developing countries, hampering scale-up. ESMAP or climate finance support could help improve understanding about technologies and markets to help strengthen implementation.
- **Wind Power Proposal.** ESMAP proposes additional support on wind power, noting that it lags behind solar activities in the World Bank's pipeline. Yet, onshore wind prices are comparable to solar, and offshore wind could be a viable medium-term opportunity in several countries. ESMAP proposes extending support on solar to onshore wind, and most likely a new program to support offshore wind that is modeled on the original proposal for the Global Geothermal Development Plan, to be developed in close partnership with IFC. To implement this, ESMAP needs experienced staff, stronger donor engagement, and additional funding. The CG was very supportive of the proposal, noting the strong client interest, as evident from an international training event in the Netherlands in 2017. The CG also highlighted that offshore wind can be attractive if developed in proximity to large coastal and river delta metropolises to avoid constraints in transmission and land availability. The CG emphasized that ESMAP and the World Bank should consider the Maximizing Finance for Development (MFD) approach and welcomed the suggested focus on public investments in evacuation infrastructure, preparatory studies, and integrated planning, while leaving investments in generation assets generally to the private sector. ESMAP intends to prepare a more detailed proposal for consideration by interested CG members.

Session 6: Governance, Markets, and Planning

Ms. Vivien Foster, Lead Economist, EEX, presented the Rethinking Power Sector Reform initiative that focuses on themes, such as political economy, utility restructuring and governance, regulation, cost recovery, power markets, and technology disruption. Preliminary findings highlighted a wide geographic variation in the uptake of reform pointing out significant gaps between the reforms announced and those implemented. Many World Bank client countries fall in the category of limited uptake of reform. The discussion emphasized the importance of identifying to what extent reforms had discernible impacts on power sector performance. When the technical phase of work is completed in 2018, it will provide an important opportunity for stakeholder dialogue and consensus building. A flagship report and series of policy papers are planned.

Hydropower Preparation Facility Proposal

Mr. Pravin Karki, Senior Hydropower Specialist and Global Lead, EEX, presented a proposal for creating a new Hydropower Preparation Facility under ESMAP to finance technical and analytical work on hydropower

development. The proposed facility would support World Bank efforts to scale up hydropower to meet its Climate Action Plan and renewable energy targets. The examples of Nepal and Papua New Guinea were presented to show how solid upstream work and risk management

could lead to socially and environmentally responsible hydropower development. The discussion focused on the following topics:

- **Hydropower's New Role.** A CG member highlighted the untapped potential of hydropower, the importance of project preparation, and the environmental and social aspects, and encouraged CG members to support the implementation of this facility. It was also pointed out that hydropower can allow for more development of wind and solar plants.
- **Environmental and Social Standards.** The CG pointed to the importance of better designed hydropower projects and inquired whether the World Bank can play a lead role in ensuring these projects have adequate environmental and social standards. The CG also highlighted that more needs to be done in Africa and that the World Bank can move the agenda forward, building on its experience and convening power. The CG pointed out that in some countries, water scarcity may affect hydropower planning. The World Bank team confirmed that it is considering these limitations when assisting clients to develop their hydropower capacity.
- **Private and Public Investment.** CG members pointed out that there is strong interest from private parties to engage in hydropower development and that World Bank engagement builds trust and confidence for the private sector to engage in this area.

Power Systems Planning

Mr. Debabrata Chattopadhyay, Senior Energy Specialist, EEX, highlighted ESMAP's role in providing technical support to World Bank clients, regions, and project teams. ESMAP's work in this area is closely linked with Renewable Energy—especially VRE integration—and Energy Access—especially Geospatial Planning and Mini

Session 7: Energy Subsidy Reform Facility

Ms. Sheoli Pargal, Lead Energy Economist, ESMAP, presented the progress and achievements of the Energy Subsidy Reform Facility (ESRF). She highlighted the multifaceted approach of reforming subsidies and provided an overview of the ESRF strategy going forward. New directions include improving utility performance and repeating engagements to deepen and consolidate reform through the World Bank's policy lending and IMF programs. The discussion focused on the following issues:

- **Budget and Targets.** The CG inquired if the ESRF can use its remaining budget of US\$14 million in the next two years, to which the ESMAP team noted that

Grids. It aims to standardize support on dispatch diagnosis, least-cost analysis, climate co-benefit assessment, and transmission analysis, and to address demand in new areas such as access, country Nationally Determined Contributions (NDCs), and resilience, among others. To meet growing demand across regions, ESMAP needs to scale up and accelerate its support to about 30 additional countries. The funding gap to achieve these goals is estimated at US\$1 million for 2018–20. The discussion focused on the following topics:

- **Capacity Building.** This area is an integral part of the work. For example, through training and other activities, Bangladesh has improved its institutional capacity to update its energy master plan. The CG stressed the importance of an open source model that allows country staff to be involved in the design process.
- **Integration.** The ESMAP team pointed that while there could be some overlap, VRE integration is not just grid-scale integration but also distributed integration, and covers more than planning, including utility regulation, grid codes, and market design issues. A well-coordinated program is needed between the two areas of work.
- **Nationally Determined Contributions.** The ESMAP team noted that going beyond electricity to cover other sectors in addressing targets set in country NDCs would require adding team capacity for incorporating sector-wide models.
- **Coordination with DFID's Strategic Energy Planning White Paper.** The principles and the concept of a White Paper were developed by the World Bank for further discussion with partner organizations during the SEforALL Forum in Lisbon. The ESMAP team agreed to reflect the outcomes of the discussion in the document.

the current acceleration in demand is expected to help disburse the budget. The ESMAP team also noted that it will strengthen collaboration with other

ESMAP teams on cross-cutting topics, which would also stimulate demand for more comprehensive approaches to subsidy reform. Overall, the facility is on track with respect to results and commitments under the business plan. The target on policy and regulatory reforms to be achieved was increased from three countries to five. The ESMAP team considers this target to mean subsidy reductions, although policy and regulatory reforms that contribute toward a reduction of subsidies are much broader and have been implemented in many countries.

- **Smart Reform.** The CG asked to what extent the facility is pursuing “smart reforms,” whereby resources freed up by subsidy reforms are redirected to transform the energy sector. The ESMAP team indicated that the ESRF is broadly embracing this approach by embedding technical assistance within broader sector reform dialogue, including strengthening utility creditworthiness, and encouraging investment in renewable energy. In Egypt, for example, successful subsidy reductions following ESMAP and World Bank support have led

to a scale-up for renewable energy. In response to a CG remark on whether utility underperformance fell within the scope of the ESRF, the ESMAP team pointed out that it underlies many existing subsidies in client countries.

- **Energy Efficiency.** In response to the CG’s comment on relevance of energy efficiency and subsidy reform, the ESMAP team agreed that energy efficiency is an integral part of the process, citing the example of Ukraine where a fund for energy efficiency is being set up following subsidy reform to invest in energy efficiency. However, there is often reluctance to prioritize subsidy reform as a key to addressing energy inefficiency because of the associated barriers to reform.
- **Collaboration with GSI and OECD.** Providing further details on the GSI and OECD collaboration, the ESMAP team explained that cooperation primarily focuses on knowledge exchange. There is routine dialogue with GSI and its partnership is sought in the coming year to prepare a knowledge-sharing event.

Session 8: Energy Efficiency

Ms. Martina Bosi, Senior Energy Economist and Mr. Ivan Jaques, Senior Energy Specialist, provided an overview of ESMAP’s Energy Efficient Cities thematic area, which focuses on Energy Efficient City Services and Efficient and Sustainable Buildings. They highlighted the program’s cross-sectoral approach and provided examples of successful engagements. For the second half of the business plan, they proposed to continue the scale-up of energy efficiency (EE) through sustainable delivery models and financing mechanisms, engage in new areas such as pilot auction models for green buildings and electric mobility, and integrate EE with other sectors’ activities and objectives, such as resilience and clean cooling. The team expects that these efforts will reveal many untapped opportunities and enhance demand for ESMAP support. CG members commended the progress of this work and its cross-sectoral approach, as well as the efforts to mobilize private sector financing. The ESMAP team was encouraged to improve the results narrative around the impact of this work. The discussion focused on the following issues:

- **Budget and Prioritization.** The CG inquired about the budget surplus for the Efficient and Sustainable Buildings window to which the ESMAP team specified that the US\$4 million surplus is due to the additional Swiss State Secretariat for Economic Affairs (SECO) contribution for the Kyrgyz Republic energy efficiency project and that more than 50% of the total amount has already been disbursed or allocated. The CG also asked about activity prioritization given that demand exceeds the available budget. The team prioritizes activities based on ESMAP’s Business Plan and the World Bank’s Climate Change Action Plan, link to operations, focus on IDA and energy transition countries, and potential for replication.
- **New Demand.** The ESMAP team noted the increased demand for urban EE, especially in Africa, where prioritizing and implementing EE has been more challenging than in other regions. A regional ESMAP activity in Botswana, Ghana, and Zambia aims to identify EE investment opportunities and establish a regional facility to strengthen capacity. The team can potentially expand to other countries and it is working with development partners to ensure complementarity.
- **Barriers and Incentives to Energy Efficiency.** The CG inquired about barriers and incentives to mainstreaming EE. The ESMAP team responded that it is working with clients on customized delivery

models and financing mechanisms and pushing for longer-term engagements to support broader client development goals. An example is Brazil, where the engagement began with two city energy diagnostics and evolved into an array of analytical work that led to financing mechanisms to increase private sector investments in energy efficiency in public lighting and industry.

- **Collaboration with Other Global Practices.** The ESMAP team indicated that it evaluates World Bank Global Practice (GP) priorities and objectives before proposing ways to mainstream EE. In Transport, for

example, EE is one of the key action areas to reducing greenhouse gas emissions and local air pollution. **Electric mobility** has the potential to transform transport and energy systems and the ESMAP team plans to do more to help countries create the right enabling environment. The **Cooling agenda** is also a key area for collaboration; in fact, the Efficient and Sustainable Buildings initiative, which is set up to also cover appliances, proposes to partner with the World Bank's Montreal Protocol team to advance work in this area.

Session 9: Knowledge Hub, including GTF, MTF, RISE, & SEAR

Ms. Elisa Portale, Senior Energy Specialist, ESMAP, presented four knowledge products developed to track the sustainable development goal on energy (SDG7)—**Tracking SDG7: The Energy Progress Report** (formerly known as the **Global Tracking Framework**), the **Multi-Tier Framework (MTF)**, the **Regulatory Indicators for Sustainable Energy (RISE)**, and the **State of Energy Access Report (SEAR)**—highlighting their interconnection and the complementarity. The CG noted that this work is very valuable and expressed interest in strengthening the connection among these products. The ESMAP team and CG members agreed on a more robust effort to communicate findings, to strengthen ESMAP's visibility as the coordinating mechanism for these products, to explore coordination of indicators through the MTF, and to mobilize stakeholders for more investment in clean cooking. Specific points raised include

- **Impact of this Knowledge.** The CG praised the work completed and asked for examples of country-specific impacts. The ESMAP team shared the cases of Rwanda and Cambodia where MTF findings are already impacting national planning. Rwanda accepted the MTF module into its national survey, which will help sustain a longer-term effort to track progress.
- **Clean Cooking.** The CG expressed an interest in more data on clean cooking. The ESMAP team stressed that the MTF provides detailed data on cooking and impacts, never available before. The team has also been in dialogue with GACC, Endev/GIZ, and WHO to help develop a framework to better capture the health implications of using lower-tier cookstoves. Unfortunately, not all countries see this as a priority and both the CG and ESMAP agreed that there should be more effort to strengthen client interest.
- **Updating State of Energy Access Report.** The CG raised concerns about the future SEAR and the use of its findings. The ESMAP team mentioned that the qualitative nature of SEAR's content determines the frequency of the report and assured the CG that SEAR has been quoted and referenced in impact evaluations, case studies, and elsewhere. The MTF provides grid and off grid data and could be used to complement SEAR. CG suggested producing another edition of SEAR focusing on clean cooking.

Session 10: Energy Access

ESMAP Senior Energy Specialists Ms. Dana Rysankova, Mr. Jon Exel, and Ms. Yabei Zhang, and Energy Specialist Ms. Rutu Dave updated the CG on the Energy Access thematic area, which includes the Efficient and Clean Cooking and Heating (ECCH) initiative, as well as a comprehensive approach to accelerate electrification through the SEforALL Technical Assistance Program, Global Mini Grid Facility, Lighting Global, and Urban Poor initiative. The discussion focused on the following issues:

- **Increased Importance of Energy Access.** With the recent call for proposals and collaborators across GPs such as Health, Environment, and Agriculture, demand for ESMAP support has increased significantly. Demand is especially high for geospatial planning tools, Lighting Global, and Mini Grids. The Urban Poor initiative is also picking up momentum while ECCH is strengthening crucial internal partnerships across sectors and with external stakeholders. Demand on electricity access

is large in Sub-Saharan Africa where the World Bank is supporting a multibillion-dollar effort to help countries design projects. ESMAP is building team capacity to meet this demand but more resources may be needed.

- **Electric Cooking and Mini Grids.** Household affordability was discussed. The examples of Ethiopia, the Kyrgyz Republic, and Tajikistan show that low electricity prices are incentives to use more electricity for cooking. In many African countries, where prices are high, electric cookstoves are less of an option for poor households. The ESMAP team will explore the option of using mini grids to provide affordable electricity for cooking.
- **Results-Based Financing.** The ESMAP team is collaborating with the World Bank health team on using the averted disability adjusted life years (ADALYs) as an indicator to measure the health impacts that can lay a foundation for a results-based financing (RBF) mechanism that incentivizes health, gender, and climate co-benefits.
- **Urban Poor.** ESMAP's experience in providing safe, legal, and affordable electricity connections for urban slum populations can be replicated for the forcibly displaced and refugee host communities in urban and peri-urban areas. Kenya, for example, wanted to offer solutions to host communities but lacked the tools to target beneficiaries. Therefore, a partnership with the UN Refugee Agency (UNHCR) has been initiated to tackle this type of data challenge and benefit host country projects by providing access to UNHCR's data and on-the-ground expertise.
- **Mini Grids.** The discussion focused on operators and project developers, which include (i) local operators (small to medium businesses), (ii) intermediaries (international specialized developers), and (iii) large global corporations that are moving from high-income countries to low-income countries. The ESMAP team is conducting a benchmark study to track the costing of mini grids including the individual components. The team has also initiated discussions with several partners to bring the overall mini grid development costs down. One way to reduce cost is by inviting developers to submit business plans requesting minimum subsidy levels.
- **Donor Coordination at the Country Level.** The CG pointed out that ESMAP should further strengthen coordination of World Bank/ESMAP activities with donors at the country level. The ESMAP team agreed and noted that it has been promoting this type of coordination by organizing learning events (for example, the latest mini grid event in Nigeria) that provide an opportunity for all partners to discuss and coordinate. In Kenya, the ESMAP team is expanding relevant working groups for better coordination. The World Bank is also part of the Energy Africa dialogue, where most countries are part of donor working groups, and it is also collaborating with the Alliance for the Sahel, initiated by France.

Session 11: Gender and Energy

Ms. Vanessa Lopes Janik, Operations Officer, ESMAP, presented the progress of the Gender and Energy work, highlighting its impact on World Bank projects. She also focused on how it strengthened knowledge and established linkages with other ESMAP areas such as geothermal, energy efficiency, and clean cooking initiatives. CG members were pleased with the accomplishments of the work on gender and expressed interest in exploring new areas such as women in science, technology, engineering, and math (STEM); energy workforce; childcare; etc. They also noted that ESMAP should continue to play a key role globally in this area. Topics raised include

- **Practical Experiences in World Bank Projects.** The CG commended the experience in Africa and East Asia and the Pacific and the new regional gender and energy programs. ESMAP has helped develop a strong repository of best practices and practical experiences, as well as a roster of global gender experts. To meet the World Bank corporate goals on gender equality, demand continues for ESMAP support not only during project design but also throughout implementation and completion. The ESMAP team follows a learn-by-doing approach to help cope with large demand and is working closely with Social and Gender units across the World Bank. The CG was keen to learn more about how gender can be incorporated in the transport sector. The ESMAP team highlighted a project in Brazil to show the impact of improved street lighting on women.

- **Partnerships and Knowledge.** The CG wanted to learn more about strengthening partnerships. The ESMAP team responded that it has strengthened its outreach through knowledge-sharing events, the new People's Centered Accelerator, and a new work stream on data. ESMAP closely collaborates with ENERGIA, UN Women, USAID, IUCN, ECOWAS-ECREE, and many others. An e-course on Gender and Energy was converted to a self-paced course that also offers niche modules within the gender sphere. A Technical Report, [Getting to Gender Equality in Electricity Infrastructure](#), was also recently published and disseminated.
- **Gender Inclusion, Women in the Workforce, and Childcare.** The CG was keen on exploring these new areas. In Morocco, a World Bank project promoted gender inclusion in STEM fields and as a result, additional financing is now ensuring female engineers are included in the projects and the energy sector. In terms of childcare, some initial work is being done regarding working with utilities to improve working conditions for women and families, for example, in Ethiopia and Vietnam.
- **Women and Off-Grid Solar Energy.** The CG raised a question about increasing women's access to and participation in the off-grid solar sector. The ESMAP team responded that while more work needs to be done in this area, there are successful examples. In Gaza, a World Bank project ensures women have better access to solar energy and business training and it provides support to small and medium enterprises. In Haiti, a World Bank project provides financing to the private sector to ensure female participation in the supply chain of new off-grid projects.

Session 12: Communications Strategy and Knowledge Management Action Plan

Ms. Nansia Constantinou, Communications Officer, ESMAP, provided an update on the communications work. She presented how the team responded to the CG's requests from the previous year to strengthen ESMAP's brand, communicate results, and establish linkages with partners/influencers on media and social platforms. She also highlighted the successful launch of the new ESMAP website, which grew online audiences by almost 150%, and ESMAP's new interactive Annual Report promoted on online channels, which generated almost 60,000 pageviews. Following her presentation, Ms. Heather Austin, Publishing Associate/Knowledge Management Coordinator, ESMAP, summarized the progress in implementing ESMAP's knowledge management strategy. This includes the creation of targeted knowledge products based on audience needs and a revamped branding and publications strategy. The CG commented on the progress of this work, noting a stronger visibility for ESMAP in several global events. Specific issues raised include

- **Coordination with Donor Communications Teams.** Per the CG's suggestion to strengthen coordination with donor communications teams, the ESMAP team agreed to develop a plan and align outreach. It will also flag relevant content to donors and relevant partners through a targeted strategy based on stakeholder mapping.
- **Social Media.** The CG suggested highlighting cooperation with donors and partners on social media to help strengthen the conversation. The ESMAP team noted that it ran multiple social media campaigns, which included hashtags of donors and partners, but agreed to strengthen these references in the future.
- **Website.** The CG noted that the donor countries were not among the top visitors to ESMAP's website. The ESMAP team responded that messages were targeted to audiences that are more likely to be from developing countries. The team also mentioned that selected content is also made available in other languages to reach country-specific audiences. The average time spent on the website was discussed based on metrics about energydata.info. The ESMAP team noted longer times are not necessarily an indicator of a successful site as users may visit a site for very specific information (i.e., downloading a report). CG members suggested using energypedia.com to link ESMAP content with specific countries or regions. Another suggestion was to produce a brief overview video on ESMAP's mission to which the ESMAP team noted that it was already in production.

ANNEX B

RESULTS AND TARGETS ACHIEVED FOR FY2017–20 BUSINESS PLAN

Regions:

AFR = Africa

EAP = East Asia and Pacific

ECA = Europe and Central Asia

LAC = Latin America and the Caribbean

MNA = Middle East and North Africa

SAR = South Asia Region

TARGETS FOR FY2017–20 BUSINESS PLAN

RESULTS ACHIEVED FY2017–18

ANNUAL BLOCK GRANTS FOR GOVERNANCE, MARKETS AND PLANNING

10 countries confirm using the results of ESMAP-supported energy sector assessments in policy decisions

6 out of 10

- 1) Bangladesh — support to the Government, the regulator, and system operator on the requirements for transition to a market regime that will enable Bangladesh to participate in a power market;
- 2) Jordan — Recommendations to National Electric Power Company's (NEPCO's) management and board of directors lead to NEPCO's board approving an organizational restructuring;
- 3) Kenya — Energy Regulatory Commission (ERC), regulations have been analyzed and recommendations for amendments made;
- 4) Madagascar — Standard Power Purchase Agreements (PPAs) and Standard Concession Agreements (CAs), and Safeguard frameworks for small hydro IPPs have been prepared, expected to inform the Government on competitive processes for the development of small hydro with private sector investments.
- 5) Serbia — first systematic assessment of the natural gas sector in Serbia, including developing draft reform measures for addressing the financial distress and unsustainable debt of the natural gas utility and by developing methodology for investment assessment; and
- 6) Vietnam — Develop for Vietnam Electricity Utility (EVN) a comprehensive strategy for unbundling and divesting its generation assets, including a timeline for the launch of IPO/strategic investor transactions;

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

35 operations informed (*exceeded the target*)

Mobilization of co-financing or other financiers in 5 out of 10 countries

Clients in 20 countries confirm enhanced institutional capacity to improve the performance of the power sector

16 out of 20

Ghana, Haiti, Jordan, Kenya, Liberia, Moldova, Nepal, Niger, Nigeria, Uzbekistan, and the Greater Mekong Sub-Region (Vietnam, Thailand, Lao PDR, China, Cambodia, Myanmar)

5 countries provided with technical assistance for project implementation

4 out of 5

- 1) Water, Electricity and Urban Development Project (PEEDU - P106975);
- 2) Kenya Off-grid Solar Access Project for Underserved Countries (P160009);
- 3) Ghana Energy Sector Transformation Initiative Project (P163984); and
- 4) Myanmar: National Electrification Project (P152936);

ENERGY ACCESS | EFFICIENT CLEAN COOKING AND 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
2 countries or programs with new or updated enabling and regulatory frameworks

3 out of 4

- 1) Kenya Off Grid Solar Access Project (P160009)
- 2) Kyrgyzstan Heat Supply Improvement Project (P157079)
- 3) Bangladesh RERED II cooking component (P165400)

3 out of 2 (exceeded the target)

- 1) 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).
- 2) Hebei province of China adopted the updated stoves emission standard and testing protocol and the results-based incentive mechanism in its stove promotion program.
- 3) Indonesia national standard body has upgraded its national standard for cookstoves to adopt the Indonesia Clean Stove Initiative-Water Heating Test (CSI-WHT).

4 enterprises that are “new entrants” in a specific country or market segment for clean cooking and heating

21 out of 4 (exceeded the target)

10 new enterprises in Indonesia and 11 in Uganda

ENERGY ACCESS | GLOBAL FACILITY ON MINI GRIDS

3 new World Bank operations informed

5 out of 3 (exceeded the target)

- 1) Niger Solar Electricity Access Project (P160170)
- 2) Haiti Renewable Energy for All (P156719)
- 3) Haiti Modern Energy Services for All (P154351)
- 4) Kenya Off-Grid Solar Access Project (K-OSAP) (P160009)
- 5) Nigeria Electrification Project (NEP) (P161885)

US\$50 million of concessional funds mobilized

US\$253.1M out of US\$50M (exceeded the target)

- Haiti: US\$3M IDA Investments
- Haiti: US\$25.1M IDA Investments
- Kenya: US\$40M IDA Investments

- Niger: US\$35M IDA Investments
- Nigeria: US\$150M IDA Investments

5 countries supported for project identification and preparation

6 out of 5 (exceeded the target)

- 1) Haiti Renewable Energy for All (P156719);
- 2) Haiti Modern Energy Services for All (P154351);
- 3) Kenya: Off-grid Solar Access Project for Underserved Counties (P160009);
- 4) Nepal Private Sector-Led Mini-Grid Energy Access Project (P149239);
- 5) Niger Solar Electricity Access Project (P160170); and
- 6) Nigeria Electrification Project (P151885)

5 countries provided with technical assistance for project implementation

6 out of 5

- 1) Ghana: Additional Financing for Energy Development and Access Project (P147878);
- 2) Liberia Renewable Energy Access (P149683);
- 3) Mali Rural Electrification Hybrid System Project (P131084);
- 4) Myanmar: National Electrification Project (P152936);
- 5) Rwanda Renewable Energy Fund (P160699); and
- 6) Tanzania Energy Development & Access Expansion Project (P101645)

ENERGY ACCESS | LIGHTING GLOBAL

At least 8 World Bank projects with solar off-grid components supporting growth of sustainable markets, mobilizing private sector funding

8 out of 8

Lighting Africa/Lighting Global-supported projects with sizeable off-grid components were approved in FY2018, including:

- 1) Niger Solar Electricity Access Project (P160170)
- 2) Rwanda Renewable Energy Fund Project (P160699)
- 3) Zambia Electricity Service Access Project (P162760)
- 4) Kenya Off Grid Solar Access Project (P160009)
- 5) Haiti Modern Energy Services for All (P156719)
- 6) Haiti Renewable Energy for All Project (P154351)
- 7) Pakistan Sindh Solar Energy Project (P159712)
- 8) Nigeria Electrification Project (P161885)

ENERGY ACCESS | URBAN POOR ELECTRICITY ACCESS PROGRAM

2 World Bank energy access projects supported

3 out of 2 (exceeded the target)

- 1) Argentina Metropolitan Buenos Aires Urban Transformation Project (P159843)
- 2) Yemen Integrated Urban Services Emergency Project (P164190)
- 3) Yemen Emergency Electricity Access Project (P163777)

2 projects with expanded scope of beneficiaries

3 out of 2 (exceeded the target)

- 1) Democratic Republic of Congo: Rehabilitation of Distribution Grids
- 2) Dominican Republic: Distribution Grid Modernization and Loss Reduction

2 South-South exchanges conducted	<p>3) Yemen: Support to Recovery of Electricity Services in Yemen: Emergency Electricity Access Project and Power Sector Recovery and Reconstruction Program</p> <p>1 out of 2</p> <p>Kenya Electricity Expansion Project (P153179) brought together utility experts from Rio Light, EPM, and Eskom</p>
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ENERGY ACCESS | SEforALL TECHNICAL ASSISTANCE

5 countries have been supported in the definition and implementation of energy sector-wide approaches and tools	<p>5 of 5</p> <p>Kenya, Madagascar, Malawi, Mozambique, and Zambia</p>
At least 4 existing geospatial plans improved	<p>2 out of 4</p> <p>Support provided for update of Kenya and Myanmar geospatial electrification plans</p>

ENERGY EFFICIENCY | ENERGY EFFICIENT CITY SERVICES

At least 8 World Bank Group operations informed	<p>15 out of 8 (exceeded the target)</p> <p><i>15 operations informed by grants:</i></p> <p>Existing:</p> <ol style="list-style-type: none"> 1. Albania: Project for Integrated Urban and Tourism Development (PIUTD) (P155875) – approved by the Board in FY17 2. Argentina Metropolitan Buenos Aires Urban Transformation Project (P159843) – approved by the Board in FY17 3. Kazakhstan Energy Efficiency Project (P130013) – approved by the Board in FY13 4. Ukraine District Heating Energy Efficiency Project (P132741) – approved by the Board in FY14 5. Uzbekistan Bukhara and Samarkand Sewerage Project (P112719) – approved by the Board in FY10 6. Uzbekistan Syrdarya Water Supply Project (P111760) – approved by the Board in FY11 7. Uzbekistan Alat and Karakul Water Supply Project (P118197) – approved by the Board in FY13 8. Vietnam Energy Efficiency for Industrial Enterprises Project (P151086) – approved by the Board in FY17 <p>New (approved by the Board in FY18):</p> <ol style="list-style-type: none"> 1. Brazil FinBRAZEEC: Financial Instruments for Brazil Energy Efficient Cities (P162455) 2. China Liaoning Safe and Sustainable Urban Water Supply project (P158713) 3. Côte d'Ivoire Greater Abidjan Port – City Integration Project (P159697) 4. India Energy Efficiency Scale-up Program (P162849) 5. Kyrgyz Heat Supply Improvement Project (P157079) 6. Lebanon Greater Beirut Public Transport Project (P160224) 7. Uzbekistan District Heating Energy Efficiency Project (P146206)
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Support at least 30 cities/regions/countries with technical assistance on energy efficient city services

At least 20 city plans or projects informed

34 out of 30 (exceeded target)

ESMAP is providing technical assistance for energy efficiency city plans or projects in 34 cities/regions/countries, including:

- **FY17:** Argentina (Buenos Aires), China (Anshan, Fushun, Fuxin, Gaizhou, Metropolitan Shanghai, Shenyang), Kazakhstan (Almaty, Astana), Panama, Mongolia (Ulaanbaatar), Ukraine (Chernihiv, Dnipro, Kamianets-Podilsky, Kherson, Kharkiv, Mykolaiv, Odessa, Ternopil)
- **FY18:** Botswana, Brazil, India (Kolkata, Shimla and nationwide), Egypt (Cairo), Georgia (Tbilisi), Ghana, Indonesia, Morocco, Serbia (Belgrade), Uzbekistan (Namangan and nationwide), Vietnam, and Zambia.

ENERGY EFFICIENCY | EFFICIENT AND SUSTAINABLE BUILDINGS¹

At least 10 buildings-related World Bank Group operations include sustainable energy components

10 out of 10

- 1) Argentina: Metropolitan Buenos Aires Urban Transformation (P159843)
- 2) India: EE Scale-Up Program (P162849)
- 3) Côte d'Ivoire: Affordable Housing Finance (P161658)
- 4) Côte d'Ivoire: Greater Abidjan Project (P159697)
- 5) Kazakhstan: EE Project (P130013)
- 6) Kyrgyzstan: Heat Supply Improvement Project (P157079)
- 7) Montenegro: Second EE Project (P165509)
- 8) Brazil: Financial Instruments for Brazil Energy Efficient Cities (P162455)
- 9) Marshall Islands: Sustainable Energy Development Project (P160910)
- 10) Mexico PRESEM Additional Finance for Energy Efficiency in Public Buildings (P165585)

At least 7 country building-related policies/plans/strategies informed

4 out of 7

- 1) Kazakhstan: City government adopts recommended EE financing mechanism (Almaty and Astana)
- 2) Panama: Building codes and green labeling standards
- 3) Vietnam: Mandatory EE policy adopted and to be approved by the Prime Minister's Office
- 4) Western Balkans: Bosnia, Kosovo, and Montenegro have detailed proposals to establish EE Funds or revolving financing schemes

7 knowledge products developed and disseminated to World Bank Group staff, clients, and global fora

5 out of 7

- 1) Report on Assessing and Measuring the Performance of EE Projects
- 2) Study on Using the Climate Auction Model to Catalyze Energy and Resource Efficient Buildings

¹ The indicators and targets of the results framework have been updated to (i) be consistent with the revised ESMAP business plan and (ii) reflect progress and achievements to date. The following changes were made during FY18: (a) Increase of target for informed operations from five to 10; (b) Increase of target for knowledge products from three to seven; and (c) Increase of target for knowledge exchanges from two to three.

	<ul style="list-style-type: none"> 3) <i>Live Wire</i>: Exploiting Synergies between Rooftop Solar PV and Energy Efficiency in the Built Environment 4) <i>Live Wire</i>: Financing EE: Revolving Funds 5) <i>Live Wire</i>, 3 issues: EE in the Public Sector, Residential EE, and EE in Industry
3 knowledge exchanges supported or organized	<p>2 out of 3</p> <ul style="list-style-type: none"> 1) First knowledge exchange event on Energy Efficient Buildings and Neighborhoods in Côte d'Ivoire (with GABC and ADEME) 2) Sustainable financing knowledge event organized between Armenia and Montenegro
ENERGY SUBSIDY REFORM AND DELIVERY TECHNICAL ASSISTANCE FACILITY	
Policy and/or regulatory reforms on energy subsidies and pricing reforms applied by at least 5 client countries ²	<p>6 out of 5 (exceeded the target)</p> <ul style="list-style-type: none"> 1) Algeria — Government to prepare the progressive elimination of subsidies and design of a targeted cash transfer program, based on Bank recommendations; 2) Iraq — power subsidies for the non-poor were removed; 3) Madagascar — fuel subsidy eliminated in June 2017; 4) Rwanda's regulator implemented new electricity tariffs effective August 13, 2018, which raise the average cost recovery level, introduce new tariff categories, rationalize tariffs for selected consumers, and include quarterly "automatic tariff adjustment;" 5) Serbia — increase in electricity tariffs between 2015–17 accompanied by an expansion of coverage under the Government's Energy Vulnerable Customer Program; and 6) Tunisia — first round of electricity and gas tariff adjustments enacted with the target of moving energy subsidies from 1.8% of GDP in 2017 to 1.5% of GDP in 2019
Diagnostic reports in at least 5 countries per year ³	<p>43 out of 5 reports/fiscal year (exceeded target):</p> <p>37 completed and 6 draft reports covering 18 countries (and one in MENA as a regional activity) completed.</p>
At least 5 Bank lending operations informed over the business plan period ⁴	<p>10 out of 5 over business plan period (<u>exceeded target</u>):</p> <ul style="list-style-type: none"> 1) Iraq: Second Expenditure Rationalization, Energy Efficiency and State-Owned Enterprise Governance Programmatic Development Policy Financing DPF (P161167) 2) Jordan: Second Programmatic Energy and Water Sector Reforms Development Policy Loan DPL (P160236)

² Original indicator/target: Policy and/or regulatory reforms on energy subsidies and pricing reforms applied by at least 3 client countries. Revision took place in FY18: The original target has been updated to take into account good progress and achievements to date.

³ Original indicator/target: Country diagnostic in 10 countries. Revision took place in FY18: The original target has been updated to take into account good progress and achievements to date.

⁴ Original indicator/target: Country demand for further TA and/or implementation of reform following 30% of diagnostic assessments. Revision took place in FY18: The original indicator has been dropped because demand does not follow linearly and could come about years later.

- 3) Myanmar: First Macroeconomic Stability and Fiscal Resilience DPO (P152734)
- 4) Egypt: Second Fiscal Consolidation, Sustainable Energy and Competitiveness DPF (P161228)
- 5) Serbia: First Public Expenditure and Utilities Development Policy DPL1 Loan (P155694)
- 6) Madagascar: Public Finance Sustainability and Investment Development Policy Financing Operation (P160866)
- 7) Tunisia: investment, competitiveness and inclusion DPL (P161483)
- 8) Egypt: Third Fiscal Consolidation, Sustainable Energy, and Competitiveness Programmatic Development Policy Financing (P164079)
- 9) Madagascar: Public Finance sustainability and Investment DPF II (P164137)
- 10) Jordan: First Equitable Growth and Job Creation Programmatic DPF (P166360)

Knowledge Exchange/Events/Outreach, including:

- 10 events produced per year (including BBLs, ESROC webinars);
- 300 members on platform by the end of period; and
- 3 known collaborations between countries (knowledge exchange that is not an ESROC webinar) over the period.

- World Bank Energy Week showcase
- 9 BBLs
- 6 ESROC
- 255 ESROC members on platform
- **Country briefs** prepared that cover efforts at subsidy reform in Madagascar, Kyrgyz Republic, and Serbia
- **Energy Subsidy Reform Assessment Framework** completed (9 modules addressing different aspects of energy subsidy reform)
- COP23 Side Event in Bonn: Energy Subsidy Reform: A comprehensive approach (Panel discussion with Mexico, Indonesia, Ukraine, Jordan, Morocco, and the IMF) iCoP Newsletter launched – 7 issues circulated and published

RENEWABLE ENERGY | GLOBAL GEOTHERMAL DEVELOPMENT PLAN

3 new World Bank operations informed

3 out of 3

- 1) Chile: Technical Assistance for Geothermal Development Project (P152820)
- 2) Indonesia: Geothermal Energy Upstream Development (P161644)
- 3) Turkey: Geothermal Development Project (P151739)

New round of concessional funds mobilization

Green Climate Fund support for Indonesia under consideration

Needs assessment in 3 countries

0 out of 3

Consultants have been engaged to define best practices in geothermal exploration data management. Needs assessments will be based on the findings of the consultants.

RENEWABLE ENERGY | RENEWABLE ENERGY RESOURCE MAPPING

>5 WBG operations informed ⁵	3 out of 5 <ol style="list-style-type: none">1) Pakistan: Sindh Solar Energy Project (P159712)2) Zambia: Scaling Solar Energy Guarantee Project (P163958)3) Zambia: Second Scaling Solar Guarantee (P157943)
>5 non-ESMAP funded solar/wind measurement projects adopt ESMAP-developed standards/guidelines	5 out of 5: <ol style="list-style-type: none">1) Armenia: Utility Scale Solar Power Project (P163316)2) Malawi Energy Sector Project (P099626)3) Madagascar: IFC Scaling Solar4) Senegal: IFC Scaling Solar5) Zambia: IFC Scaling Solar
>15,000 monthly users on the Global Solar Atlas by end of FY19	9,600 out of 15,000: Average of 9,600 users per month
>10,000 monthly users on the Global Wind Atlas by end of FY19	4,700 out of 10,000: Average of 4,700 users per month

RENEWABLE ENERGY | SOLAR SCALE-UP PROGRAM

>10 WBG operations or external projects informed ⁶	7 out of 10 <ol style="list-style-type: none">1) Ethiopia: Ethiopia Electrification Program (ELEAP) (P160395)2) Haiti: Modern Energy Services for All (P154351)3) Haiti: Renewable Energy for All (P156719)4) India: Shared Infrastructure for Solar Parks (P154283)5) Kenya: Off-Grid Solar Access Project for Underserved Counties (P160009)6) Mongolia: Second Energy Sector Project (P152343)7) Pakistan: Sindh Solar Energy Project (P159712)
>12 country planning strategies or country policies informed	2 out of 12 <ol style="list-style-type: none">1) Vietnam: Government decision to pilot a solar auction with WB assistance2) Turkey: inputs to regulatory frameworks for rooftop solar development

⁵ Original Indicators/Targets: >US\$15m in additional funding leveraged, >5 external projects informed/support, >12 countries apply innovative geospatial, GIS, open data and analytics to decision-making. Revision took place in FY18. Rationale for the revision: As a result of the new focus on the Global Solar Atlas (GSA) and Global Wind Atlas (GWA), corporate pressures to shift solar and wind measurement campaigns to client execution, and a proposed shift of resources from the RE Mapping to the Solar window, the original targets are no longer relevant. The revised indicators and targets reflect ESMAP's aim to disseminate the methodology and lessons learned on solar/wind measurement campaigns rather than raise additional funding and support solar/wind scale-up and consolidation of efforts through the GSA/GWA. Meanwhile, we believe several WBG operational projects will directly use the outputs from the original set of countries, so that target has been revised.

⁶ Original Indicators/Targets: >5 new World Bank operations informed, >2 external projects informed/ supported, >7 country planning strategies informed, >5 country policies informed. Revision took place in FY18. Rationale for the revision: The original targets have been consolidated and updated to take into account good progress and achievements to date and focus of the program on support to full-fledged Bank operations and not only country planning strategies or policies.

RENEWABLE ENERGY | VARIABLE RENEWABLE ENERGY GRID INTEGRATION SUPPORT PROGRAM⁷

At least 8 new World Bank operations informed

9 out of 8 (exceeded the target)

- 1) Ethiopia Electrification Program (P160395)
- 2) Gambia Electricity Restoration and Modernization Project (P163568)
- 3) Haiti Renewable Energy for All (P156719)
- 4) Haiti Modern Energy Services for All (P154351)
- 5) India Share infrastructure for Solar Parks (P154283)
- 6) Kenya Off-Grid Solar Access Project for Underserved Countries(P160009)
- 7) Mongolia Second Energy Sector Project (P152343)
- 8) Morocco Noor Solar Power Project Additional Financing (P164288)
- 9) Togo Energy Sector Support and Investment Project (P160377)

At least 10 country planning strategies or policies informed

8 out of 10

- 1) Costa Rica: Scaling Up Distributed Generation with Roof-top Solar PV
- 2) Guatemala: Guatemala Wind and Solar Integration Study
- 3) Haiti: Haiti Solar and VRE Grid Integration
- 4) India: Solar Parks — Grid Integration Study and Capacity Building
- 5) Mongolia: Renewable Energy Integration for Mongolia's Western Energy System
- 6) Sri Lanka: Capacity Building for Planning and VRE Grid Integration
- 7) Uzbekistan: Power System Planning Study
- 8) Vietnam: Accommodating the 20 GW Variable Renewable Energy Target for 2030 in Vietnam Power System

SEFORALL KNOWLEDGE HUB

RISE 2017, RISE 2018, RISE 2020

RISE 2017: <http://rise.esmap.org/>

GTF 2017, GTF 2018, GTF 2019, GTF 2020

GTF 2017: <https://trackingsdg7.esmap.org/>

MTF 2018 and MTF 2020

[Cambodia](#), [Ethiopia](#), [Rwanda](#)

SEAR 2017 and SEAR 2019

SEAR 2017: <http://esmap.org/sear/>

⁷ Original targets were: (a) at least 5 new World Bank operations informed; (b) at least 2 external projects informed/ supported; (c) least 7 country planning strategies informed; and (d) least 5 country policies informed. Targets (c) and (d) have been combined to "at least 10 country planning strategies or policies informed."

ANNEX C

COMPLETED, NEW, AND ONGOING ACTIVITIES, FY2018

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

EA = Energy Access

EE = Energy Efficiency

GMP = Governance, Markets & Planning

O = Other

RE = Renewable Energy

SEforALL Knowledge Hub = Sustainable Energy for All

SR = Subsidy Reform

Regions:

AFR = Africa

EAP = East Asia and Pacific

ECA = Europe and Central Asia

LAC = Latin America and the Caribbean

MNA = Middle East and North Africa

SAR = South Asia Region

Table C.1 | ESMAP Completed Activities, FY2018

COUNTRY/ REGION			COMPLETED ACTIVITY	PRIORITY (if applicable)
ENERGY ACCESS				
AFR		AFREA II: Africa Electrification Initiative ^{GMP}		Green Mini Grids
Indonesia		Supervision and Preparation of Scale-Up of Indonesia CSI Pilot		Efficient, Clean Cooking & Heating
LAC		Central America Clean Cooking Initiative (CACCI)		Efficient, Clean Cooking & Heating
ENERGY EFFICIENCY				
Albania		Albania: Project for Integrated Urban and Tourism Development		Energy Efficient City Services
China		Energy Saving Management Action Plan for Water Utilities in Liaoning		Energy Efficient City Services
Egypt, Arab Republic of		Towards Energy Efficiency Implementation in Cities in Egypt		Energy Efficient City Services
Global		Capacity Building for Leaders in Energy Efficient Urban Transport Planning – 2		Energy Efficient City Services
Global		EDGE Green Building Market Transformation Program		Energy Efficient Buildings
LAC		Brazil Energy Efficient Cities Program		Energy Efficient City Services
Philippines		Philippines: Improving Energy Efficiency in Public Buildings		Energy Efficient Buildings
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		
Algeria		Algeria Vision 2035: Energy Efficiency		
Belarus		Belarus: End User Heat Control and Cost Allocation Project		
Belize		Energy Resilience for Climate Adapt		

Columbia	Support to Conference: "Dialogues on the Future of Energy 2017"
Georgia	Analytical Support for Assessment of Contingent Liabilities
LAC	Energy Markets: Challenges and Opportunities, Phase II
MNA	Benchmarking Electricity Utilities Performance in the MNA Region
Serbia	Serbia Natural Gas Sector Analysis
Serbia	Serbia Power System Study
Turkey	Turkey Rooftop Solar Photovoltaic Market Assessment

RENEWABLE ENERGY

Kenya	Kenya Geothermal Strategy	Global Geothermal Development Plan
LAC	Energy Markets: Challenges and Opportunities – Phase II ^{GMP}	Integrating Variable Renewables
Mongolia	Renewable Energy Integration for Mongolia's Western Energy System (RE4WES)	Integrating Variable Renewables
Serbia	Serbia Natural Gas Sector Analysis ^{GMP}	Global Geothermal Development Plan
Serbia	Serbia Power System Study ^{GMP}	Integrating Variable Renewables
Turkey	Turkey Rooftop Solar Photovoltaic Market Assessment ^{GMP}	Solar Scale-Up Program

SUBSIDY REFORM

Ukraine	Ukraine: Advancing Energy Tariff and Subsidy Reforms
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Table C.2 | ESMAP New Activities, FY2018

COUNTRY/ REGION	NEW ACTIVITY	PRIORITY (if applicable)
ENERGY ACCESS		
AFR	Africa Regional Geospatial Planning Support	SEforALL TA
AFR	Integrating Bio-digesters for Cooking into Small Farm Activities	Efficient, Clean Cooking & Heating
Bangladesh	Increasing the Sustainability and Efficiency of Fuelwood Supply Value Chain to Increase Access to Efficient and Clean Cooking in Bangladesh	Efficient, Clean Cooking & Heating
Burundi	Burundi Landscape Restoration and Resilience Project	Efficient, Clean Cooking & Heating
Dominican Republic	Technical Assistance for Distribution Grid Modernization and Loss Reduction in the Dominican Republic	Energy Access for Urban Poor
Global	GIS Electrification Planning Global	SEforALL TA
Global	SEforALL Technical Assistance PMA	SEforALL TA
Malawi	Malawi: National Electrification Strategy	SEforALL TA
Mongolia	Support to the Preparation of Electricity for Heating Program in Ulaanbaatar ^{GMP}	Efficient, Clean Cooking & Heating
Myanmar	Off-Grid Access in Myanmar	Lighting Global, Green Mini Grids
Pakistan	Pakistan: Punjab Energy Efficient Municipal Service ^{EE}	Lighting Global

Pakistan	Pakistan: Renewable Energy for Rural Off-Grid Electrification	Lighting Global
Tanzania	Tanzania: National Urban Electrification Scale-Up	Energy Access for Urban Poor
Tanzania	Tanzania Power Sector Review ^{GMP, RE}	SEforALL TA
Yemen, Republic of	Yemen: Support to Recovery of Electricity Services	Energy Access for Urban Poor
ENERGY EFFICIENCY		
AFR	Energy Efficiency Investment Opportunities in Africa	Energy Efficient Buildings, Energy Efficient City Services
Albania	Development of a Financing Mechanism for Energy Efficient Public Buildings in Albania	Energy Efficient Buildings
Belarus	Belarus: Market Assessment for the Thermal Retrofit of Multi-Apartment Buildings ^{GMP}	Energy Efficient Buildings
Chile	Local Action to Support Chile's Nationally Determined Contributions Achievement (Energy Efficiency Building Retrofits)	Energy Efficient Buildings
Egypt, Arab Republic of	Egypt: Alternative Fuels and Raw Materials for Cement	Energy Efficient City Services
Georgia	Georgia's Energy Efficiency and Social Equity	Energy Efficient Buildings
Georgia	Tbilisi Energy Efficiency Enhancement for Urban Regeneration	Energy Efficient Buildings, Energy Efficient City Services
Global	City Energy Efficiency Transformation	Energy Efficient City Services
Global	IFC EDGE Program: China, Nigeria, and Certification for Existing Buildings	Energy Efficient Buildings
Global	Leaders in Urban Transport Planning-Tech Content	Energy Efficient City Services
India	India Capacity Building in Bus Fuel Efficiency II	Energy Efficient City Services
India	Implementation Plan for E-Mobility in Kolkata, India	Energy Efficient City Services
Indonesia	Scaling Up Energy Efficiency in Indonesia	Energy Efficient Buildings, Energy Efficient City Services
Jordan	Jordan: Designing a Program for Energy Efficiency Improvement in Residential Buildings	Energy Efficient Buildings
Kyrgyz Republic	Enhancing Energy Efficiency of Education Facilities in Kyrgyzstan	Energy Efficient Buildings
Marshall Islands	Promotion of Energy Efficiency Program — Republic of Marshall Islands	Energy Efficient Buildings
Mexico	Improving Energy Efficiency in Schools and Hospitals in Mexico	Energy Efficient Buildings
Mongolia	IFC: Energy Asset Rating for Mongolian Buildings	Energy Efficient Buildings
Montenegro	Montenegro: Sustainable Energy Efficiency Financing for Public Buildings	Energy Efficient Buildings
Pakistan	Pakistan: Punjab Energy Efficient Municipal Service ^{EA}	Energy Efficient City Services
Serbia	Study of Potential for Transit-Oriented Development and Land Based Financing in Belgrade	Energy Efficient City Services
Turkey	Turkey: Sustainable Financing Mechanism for Energy Efficiency Renovations in Municipal Buildings ^{GMP}	Energy Efficient Buildings
Uzbekistan	Urban Heating Strategy for Uzbekistan	Energy Efficient City Services
Uzbekistan	Uzbekistan: Energy Efficiency in Water Utilities	Energy Efficient City Services
Vietnam	Energy Efficiency Improvement in Water and Wastewater Management in Vietnam	Energy Efficient City Services
Vietnam	Improving Energy Efficiency in Vietnam	Energy Efficient Buildings, Energy Efficient City Services

GOVERNANCE, MARKETS & PLANNING

AFR	Facilitating Power Trade in Sub-Saharan Africa
AFR	Reform Options for the Bi-national Power Generation and Transmission Utility of Benin and Togo
Armenia	Preparation of Model Power Purchase Agreement for Small Renewable Energy Projects in Armenia
Bangladesh	Scaling Up Renewable Energy in Bangladesh
Belarus	Belarus: Market Assessment for the Thermal Retrofit of Multi-Apartment Buildings ^{EE}
Belarus	Belarus Power Sector Study
Brazil	Brazilian Power Sector Reform: Technical Review and Inputs to Consultation Process
Brazil	Dissemination of Results: The Power and Gas Sector Reform in Brazil
China	Supporting Power Sector Reform to Promote Energy Transition in China
Colombia	Support to Conference: "Dialogues on the Future of Energy 2017"
Djibouti	Djibouti Power Sector Diagnostic
Dominica	Preparation of Dominica Geothermal Risk Mitigation Project
ECA	Just-in-Time Renewable Energy Development Support for Central Asia ^{RE}
Georgia	Analytical Support for Assessment of Contingent Liabilities
Global	Off-Grid Electrification Power Systems Planning
India	Supporting Government of India's 24x7 Power for All Program
Kyrgyz Republic	Energy Efficiency Improvements in Public Buildings in the Kyrgyz Republic
Lebanon	Engaging in Difficult Electricity Subsidies and Tariff Reform: The Case of the Lebanese Republic
MNA	Increasing Pan-Arab Regional Energy Trade
Moldova	Promoting Competition in Moldovan Electric Power Market through Regional Integration
Mongolia	Support to the Preparation of Electricity for Heating Program in Ulaanbaatar ^{EA}
Myanmar	Support for Implementation of the Sustainable Energy for All and National Electrification Program in Myanmar
Myanmar	Support for Renewable Energy Development in Myanmar
Nepal	Solar Measurement Campaign in Nepal and Additional Budget for Renewable Energy Resource Mapping and Geospatial Planning
Nigeria	Nigeria — Preparation and Implementation Support for a Power Sector Recovery Program ^{SR}
Pakistan	Support for Hydropower Development in Khyber Pakhtunkhwa
Philippines	Agus Hydropower Cascade Rehabilitation
SAR	Energy Sector Engagement Strategies for South Asia
SAR	South Asia Gender and Energy (Sage) Facility ^{GMP}
Sri Lanka	Sri Lanka Energy InfraSAP
Sudan	Sudan Electricity Sector Development Policy Note ^{SR}
Tanzania	Tanzania Power Sector Review ^{RE, EA}

Tunisia	Enhancing the Performance and Financial Viability of the Tunisian Energy Sector ^{SR}
Tunisia	Power Interconnector — Project Preparation Technical Assistance in the Republic of Tunisia (Bank-Executed Trust Fund)
Turkey	Turkey: Sustainable Financing Mechanism for Energy Efficiency Renovations in Municipal buildings ^{EE}
Ukraine	Development of Market Compatible Renewable Energy Framework in Ukraine ^{RE}
Ukraine	Support to Implementation of Reforms in Ukrainian Gas Sector
Uzbekistan	Uzbekistan: Strategic Advisory for Improvement in Corporate Governance
Vietnam	Vietnam: Preparing for Liquefied Natural Gas Imports
Zimbabwe	Zimbabwe Power Sector Technical Assistance

RENEWABLE ENERGY

AFR	Hydro-connected Solar PV towards Accelerating Utility Scale Solar Generation in West Africa	Solar Scale-Up Program
Bangladesh	Scaling Up Renewable Energy in Bangladesh ^{GMP}	Solar Scale-Up Program, RE Mapping
Central African Republic	Support for the Promotion and Implementation of Solar PV Projects in Central African Republic	Solar Scale-Up Program
ECA	Just-in-Time Renewable Energy Development Support for Central Asia	Solar Scale-Up Program
Egypt, Arab Republic of	Support for Egypt–World Bank Group Partnership for the Design and Implementation of Solar Photovoltaic Auctions	Solar Scale-Up Program
Global	ESMAP Solar Scale-Up Program	Solar Scale-Up Program
Global	Global Geothermal Development Plan	Global Geothermal Development Plan
Global	Global Solar Atlas II	RE Mapping
Global	International Solar Alliance (ISA) Support	Solar Scale-Up Program
Global	Renewable Energy Resource Assessment and Mapping Initiative	RE Mapping
Global	Renewable Energy Resource Mapping: Knowledge Management	RE Mapping
Guinea Bissau	Utility-Scale Solar-Plus-Storage for Energy Security in Guinea Bissau	Solar Scale-Up Program
India	India: Grid Integration Support for Power System Operation Corporation Limited (POSOCO)	Integrating Variable Renewables
Indonesia	Indonesia: Resource Risk Mitigation for Geothermal Development	Global Geothermal Development Plan
Indonesia	Support for Indonesia–World Bank Group Partnership for the Design and Implementation of Solar PV Auctions	Integrating Variable Renewables, Solar Scale-Up Program
LAC	Upstream Analysis for the Development of the Scaling Solar Program in Nicaragua	Solar Scale-Up Program
MNA	Comparative Analysis of Utility-scale Energy Storage: Options in the MNA Region	Integrating Variable Renewables
Mongolia	Support Mongolia with price setting of Solar Energy	Solar Scale-Up Program
Mongolia	Sustainable Energy Development in Mongolia	Integrating Variable Renewables

Niger	Niger Solar Development — Zinder Project Pre-feasibility Analysis	Integrating Variable Renewables, Solar Scale-Up Program
Tanzania	Tanzania Power Sector Review ^{EA, GMP}	Solar Scale-Up Program
Turkey	Turkey Geothermal Development Project (CO ₂ Soil Emissions Study)	Global Geothermal Development Plan
Ukraine	Development of Market Compatible Renewable Energy Framework in Ukraine ^{GMP}	Solar Scale-Up Program
Vietnam	Accommodating the 20 GW Variable Renewable Energy Target for 2030 in Vietnam Power System	Solar Scale-Up Program

SEforALL KNOWLEDGE HUB

Global	Global Survey for Multi-Tier Energy Access Tracking 2	
Global	SDG 7 Tracking Report 2018	

SUBSIDY REFORM

AFR	Electricity Subsidy Reform in Guinea, Mali, and Togo	
Burkina Faso	Subsidy Reform in Burkina Faso	ESRAF
Global	Efficient Clean Cooking and Heating (ECCH)	
Jordan	Jordan: Expansion of Social Safety Nets to Support Electricity Lifeline Tariff Rationalization	ESRAF
Kosovo	Kosovo Power Sector Financial Recovery and Electricity Tariff Subsidy Reform	
LAC	Dialogue on the Role of Regulators Regarding Fossil Fuel Subsidies in the Transition towards the Energy Sector of the Future	
LAC	Honduras: Toward Cost-Reflective Tariff Regulation for the Power Sector	
Madagascar	Madagascar: Energy Sector Financial Sustainability Studies	
Mongolia	Support for Sustainable and Socially Inclusive Electricity and Heat Pricing Reform in Mongolia	
Mozambique	Support to the Implementation of Mozambique's Fuel Subsidy Reform	
Nigeria	Nigeria — Preparation and Implementation Support for a Power Sector Recovery Program ^{GMP}	
Rwanda	Rwanda: Power Sector Sustainability Study	
Sudan	Sudan Electricity Sector Development Policy Note ^{GMP}	
Tajikistan	Tajikistan Electricity Tariff Setting and Mitigation of Social Impacts	
Tunisia	Enhancing the Performance and Financial Viability of the Tunisian Energy Sector ^{GMP}	
Uzbekistan	Energy Subsidies in Uzbekistan: Impact and the Way Forward (Phase I)	

Table C.3| ESMAP Ongoing Activities, FY2018

COUNTRY/ REGION	NEW ACTIVITY	PRIORITY (if applicable)
ENERGY ACCESS		
AFR	Africa Clean Cooking Energy Solutions (ACCES) — Phase II	Efficient, Clean Cooking & Heating
AFR	Africa Regional Geospatial Planning Support	SEforALL TA
AFR	Increased Electricity Access Support (AGAT)	SEforALL TA, Green Mini Grids
AFR	Integrating Bio-digesters for Cooking into Small Farm Activities	Efficient, Clean Cooking & Heating
AFR	Lighting Africa	Lighting Global
AFR	Regional Coordination of Africa SEforALL Technical Assistance Program	SEforALL TA, Lighting Global, Energy Access for Urban Poor, Green Mini Grids, Efficient, Clean Cooking & Heating
Burundi	Burundi Landscape Restoration and Resilience Project	Efficient, Clean Cooking & Heating
Burundi	SEforALL Technical Assistance for Burundi	SEforALL TA
Colombia	Colombia: Energy Sector Engagement	SEforALL TA, Lighting Global
Congo, Democratic Republic of	AFREA II: DRC — Scaling Up Electricity Access	SEforALL TA, Energy Access for Urban Poor
Dominican Republic	Technical Assistance for Distribution Grid Modernization and Loss Reduction in the Dominican Republic	Energy Access for Urban Poor
ECA	Clean and Efficient Heating in Kyrgyzstan and Tajikistan	Efficient, Clean Cooking & Heating
Global	Efficient, Clean Cooking and Heating (ECCH) Program	Efficient, Clean Cooking & Heating
Global	Energy Access for the Peri-urban/Urban Poor	Energy Access for Urban Poor
Global	GIS Electrification Planning Global	SEforALL TA
Global	Global Facility for Promotion of Green Mini Grids	Green Mini Grids
Global	Lighting Global — ESMAP Own-Managed	Lighting Global
Global	SEforALL Technical Assistance PMA	SEforALL TA
Guinea	SEforALL Technical Assistance for Guinea	SEforALL TA
India	India Efficient, Clean Cooking and Heating (ECCH)	Efficient, Clean Cooking & Heating
Kenya	Kenya Geospatial Plan ^{RE}	Green Mini Grids
Kyrgyz Republic	Kyrgyzstan Improving Efficiency of Individual Heating Solutions	Efficient, Clean Cooking & Heating
Lao PDR	Lao PDR Cook Stove Initiative	Efficient, Clean Cooking & Heating
Liberia	Liberia Renewable Energy Access Project	Green Mini Grids
Liberia	SEforALL Technical Assistance for Liberia	SEforALL TA
Malawi	Malawi: National Electrification Strategy	SEforALL TA
Mali	Mali Rural Electrification Hybrid System: China Environmental Management Group (CEMG) Initiative	Green Mini Grids
MNA	Africa Regional Geospatial Planning Support	SEforALL TA

Moldova	Moldova: Just-in-Time Support to Streamlining of District Heating Regulatory Methodologies and Processes ^{EE}	Efficient, Clean Cooking & Heating, Energy Access for Urban Poor
Mongolia	Support to the Preparation of Electricity for Heating Program in Ulaanbaatar ^{GMP}	Efficient, Clean Cooking & Heating
Mozambique	SEforALL TA for Mozambique	SEforALL TA, Green Mini Grids, Energy Access for Urban Poor, Lighting Global
Myanmar	Off-Grid Access in Myanmar	Lighting Global, Green Mini Grids
Nepal	Nepal: Developing Improved Solutions for Cooking	SEforALL TA
Nepal	Nepal: Project Preparation for Business Models for Private Sector-Led Mini-Grid Energy Access Project	Green Mini Grids
Niger	Niger: Support to Innovative Financing Mechanisms and Business Models to Increase Access through Solar Technologies	Green Mini Grids, Lighting Global, and Energy Access for Urban Poor
Pakistan	Pakistan: Punjab Energy Efficient Municipal Service ^{EE}	Lighting Global
Pakistan	Pakistan: Renewable Energy for Rural Off-Grid Electrification	Lighting Global
Senegal	SEforALL TA for Senegal	SEforALL TA
Tanzania	Tanzania: National Urban Electrification Scale-Up	Energy Access for Urban Poor
Tanzania	Tanzania Power Sector Review ^{GMP, RE}	SEforALL TA
Ukraine	Ukraine: Technical Assistance for the Ukraine District Heating Energy Efficiency Project ^{EE}	Efficient, Clean Cooking & Heating

ENERGY EFFICIENCY

AFR	Energy Efficiency Investment Opportunities in Africa	Energy Efficient Buildings, Energy Efficient City Services
Argentina	Metropolitan Buenos Aires: Efficient and Sustainable Urban Settlements	Energy Efficient City Services
Belarus	Belarus: Market Assessment for the Thermal Retrofit of Multi-Apartment Buildings ^{GMP}	Energy Efficient Buildings
Brazil	FinBRAZEEC Project Preparation ^{RE}	Energy Efficient Buildings, Energy Efficient City Services
China	Supporting Implementation of New Urbanization Strategy in Chongqing	Energy Efficient City Services
China	Supporting Project Preparation of Shanghai Urbanization Financing and Innovation Project	Energy Efficient City Services
Côte d'Ivoire	Urban Density and Quality Buildings for an Energy Efficient Abidjan	Energy Efficient Buildings
ECA	Energy, Gender, and Social Inclusion in the ECA Region	Energy Efficient City Services
ECA	Financing of Public Buildings in the Western Balkans ^{GMP}	Energy Efficient Buildings
Georgia	Tbilisi Energy Efficiency Enhancement for Urban Regeneration	Energy Efficient Buildings, Energy Efficient City Services
Global	City Energy Efficiency Transformation Initiative: Low Carbon Growth for Cities through Energy Efficiency	Energy Efficient City Services
Global	Efficient and Sustainable Buildings	Energy Efficient Buildings
Global	Exploring the Potential for the Application of Solar Photovoltaic Pumping Technologies in the Water	Energy Efficient City Services
Global	IFC EDGE Program: China, Nigeria, and Certification Existing Buildings	Energy Efficient Buildings
Global	Leaders in Urban Transport Planning-Tech Content	Energy Efficient City Services
Global	Scaling Up Energy Efficiency Investments in Water Utilities	Energy Efficient City Services

India	Implementation Plan for E-Mobility in Kolkata, India	Energy Efficient City Services
India	India Capacity Building in Bus Fuel Efficiency II	Energy Efficient City Services
India	India: Strategic Options for EE Scale-up ^{GMP}	Energy Efficient Buildings
Indonesia	Scaling Up Energy Efficiency in Indonesia	Energy Efficient Buildings, Energy Efficient City Services
Jordan	Jordan: Designing a Program for Energy Efficiency Improvement in Residential Buildings	Energy Efficient Buildings
Kazakhstan	Energy Efficiency Transformation in Astana and Almaty ^{GMP}	Energy Efficient Buildings, Energy Efficient City Services
Kyrgyz Republic	Energy Efficiency in Public Buildings in Kyrgyzstan	Energy Efficient Buildings
Kyrgyz Republic	Enhancing Energy Efficiency of Education Facilities in Kyrgyzstan	Energy Efficient Buildings
LAC	Towards an Effective Implementation of Energy Efficiency Initiatives in Panama	Energy Efficient Buildings, Energy Efficient City Services
Lebanon	Lebanon: Promoting Energy Efficiency in Bus Rapid Transit	Energy Efficient City Services
Marshall Islands	Promotion of Energy Efficiency Program — Republic of Marshall Islands	Energy Efficient Buildings
Mexico	Improving Energy Efficiency in Schools and Hospitals in Mexico	Energy Efficient Buildings
Mexico	Mexico: Sustainable Land Use for Energy Efficient Cities	Energy Efficient City Services
Moldova	Moldova: Just-in-Time Support to Streamlining of District Heating Regulatory Methodologies and Processes ^{GMP, EA}	Energy Efficient City Services
Mongolia	IFC: Energy Asset Rating for Mongolian Buildings	Energy Efficient Buildings
Mongolia	Ulaanbaatar Efficient Heating Project	Energy Efficient Buildings, Energy Efficient City Services
Montenegro	Montenegro: Sustainable Energy Efficiency Financing for Public Buildings	Energy Efficient City Services
Morocco	Morocco City Energy Efficiency ^{GMP}	Energy Efficient City Services
Pakistan	Pakistan: Punjab Energy Efficient Municipal Service ^{EA}	Energy Efficient City Services
Serbia	Study of Potential for Transit-Oriented Development and Land Based Financing in Belgrade	Energy Efficient City Services
Ukraine	Ukraine District Heating Sector Transition ^{GMP}	Energy Efficient City Services
Ukraine	Ukraine: Sustainable Urban Mobility for Odessa	Energy Efficient City Services
Ukraine	Ukraine: Technical Assistance for the Ukraine District Heating Energy Efficiency Project ^{EA}	Energy Efficient Buildings, Energy Efficient City Services
Uzbekistan	Towards Energy Efficient Resilient Cities in Uzbekistan	Energy Efficient City Services
Uzbekistan	Uzbekistan: Energy Efficiency in Water Utilities	Energy Efficient City Services
Vietnam	Energy Efficiency Improvement in Water and Wastewater Management in Vietnam	Energy Efficient City Services
Vietnam	Improving Energy Efficiency in Vietnam	Energy Efficient Buildings, Energy Efficient City Services
Vietnam	Vietnam Energy Efficiency for Industrial Enterprises Global Citizen Foundation Proposal	Energy Efficient City Services

GOVERNANCE, MARKETS & PLANNING

AFR	AFREA 2: Africa Clean Cooking Energy Solutions (ACCES)
AFR	AFREA 2: Gender and Energy Program ^o
AFR	Africa Energy Strategy
AFR	Facilitating Power Trade in Sub-Saharan Africa
AFR	Increased Electricity Access Support (AGAT) ^{EA}
AFR	Lighting Africa ^{EA}
AFR	Operational Support — AFREA2

AFR	Reform Options for the Bi-National Power Generation and Transmission Utility of Benin and Togo
Afghanistan	Afghanistan: Energy Study
Albania	Power Exchange Implementation Support in Albania
Armenia	Preparation of Model Power Purchase Agreement for Small Renewable Energy Projects in Armenia
Bangladesh	Scaling Up Renewable Energy in Bangladesh ^{RE}
Belarus	Belarus: Market Assessment for the Thermal Retrofit of Multi-Apartment Buildings ^{EE}
Belarus	Belarus Power Sector Study
Botswana	Botswana Renewable Energy and Energy Efficiency Strategies
Brazil	Brazilian Power Sector Reform: Technical Review and Inputs to Consultation Process
Brazil	Dissemination of Results: The Power and Gas Sector Reform in Brazil
Brazil	Revisiting Power and Gas Sector Reforms in Brazil ^{SR, RE}
China	Promotion of Power Sector Reform to Unlock Renewable Energy Development
China	Supporting Power Sector Reform to Promote Energy Transition in China
Congo, Democratic Republic of	AFREA II: DRC — Scaling Up Electricity Access ^{EA}
Congo, Democratic Republic of	DRC Power Sector Report and Policy Dialogue
Congo, Republic of	Republic of Congo: Power Sector Reform and Electricity Access Support ^{SR, EA}
Côte d'Ivoire	Côte d'Ivoire: CI Electricity Access Scale Up Program
Djibouti	Djibouti Power Sector Diagnostic
Dominica	Preparation of Dominica Geothermal Risk Mitigation Project
EAP	Dissemination and Knowledge Sharing
EAP	Greater Mekong Sub-Region (GMS) Power Market Development Programmatic Technical Assistance
ECA	Financing of Public Buildings in the Western Balkans ^{EE}
Egypt, Arab Republic of	Programmatic Energy Reforms in Egypt — Technical Assistance
Ethiopia	Ethiopia Energy Sector Review and Strategy ^{SR, RE}
Ghana	Ghana Energy Sector Reform Support
Global	East Asia and Pacific Gender and Energy Facility
Global	Off-Grid Electrification Power Systems Planning
Global	Rethinking Power Sector Reform
India	India: North East Region — Assessment of Training and Development Projects Impact on Access to Electricity
India	India: Strategic Options for Energy Efficiency Scale-up ^{EE}
India	India: Support to Electricity Distribution System Strengthening and Modernization in Andhra Pradesh
India	India: Support to 24x7 Scheme for Jharkhand ^{RE}
India	Supporting Government of India's 24X7 Power for All Program

Indonesia	Local Benefit Sharing for Hydropower Projects in Indonesia
Indonesia	Support to the Integrated Catchment Management (ICM)– Informed Project Preparation of Matenggeng Pumped Storage Hydro-Electrical Project
Iraq	Iraq Power Sector Planning and Operations Improvement
Kazakhstan	Energy Efficiency Transformation in Astana and Almaty ^{EE}
Kenya	Kenya: Implementation Roadmap of Energy Bill
Kenya	Kenya Geospatial Plan ^{EA, RE}
Kyrgyz Republic	Energy Efficiency Improvements in Public Buildings in the Kyrgyz Republic
LAC	Assessment of Geothermal Potential in LAC
LAC	Caribbean Energy Sector Strategic Support
LAC	LAC Energy and Gender Program
Malawi	Malawi: Energy Policy Review and Sector Engagement Strategy
MNA	MNA Energy and Gender Program
MNA	Increasing Pan-Arab Regional Energy Trade
Moldova	Moldova: Just-in-Time Support to Streamlining of District Heating Regulatory Methodologies and Processes ^{EA, EE}
Moldova	Promoting Competition in Moldovan Electric Power Market Through Regional Integration
Mongolia	Support to the Preparation of Electricity for Heating Program in Ulaanbaatar ^{EA}
Morocco	Morocco City Energy Efficiency ^{EE}
Mozambique	SEforALL Technical Assistance for Mozambique ^{EA}
Myanmar	Myanmar National Electrification Project: Inclusive Community Participation
Myanmar	Support for Implementation of the Sustainable Energy for All and National Electrification Program in Myanmar
Myanmar	Support for Renewable Energy Development in Myanmar
Nepal	Solar Measurement Campaign in Nepal and Additional Budget for Renewable Energy Resource Mapping
Niger	PV Hybridization of Diesel-based Isolated Grids ^{EA, RE}
Nigeria	Nigeria: Preparation and Implementation Support for a Power Sector Recovery Program ^{SR}
Pakistan	Support for Hydropower Development in Khyber Pakhtunkhwa
Papua New Guinea	PNG: National Policy on Benefit Sharing in Hydropower Projects
Philippines	Augus Hydropower Cascade Rehabilitation
São Tomé and Príncipe	São Tomé and Príncipe: Strengthening Energy Monitoring/Planning
SAR	Energy Sector Engagement Strategies for South Asia
SAR	South Asia Gender and Energy (SAGE) Facility ^{GMP}
Sri Lanka	Sri Lanka Energy InfraSAP
Somalia	AFREA 2: Somalia Power Sector Development Master Plan
Solomon Islands	Tina River Hydropower Development Project: Benefit Sharing and Technical Quality Assurance
Sudan	Sudan Electricity Sector Development Policy Note ^{SR}
Tanzania	Tanzania Power Sector Review ^{RE, EA}

Tunisia	Enhancing the Performance and Financial Viability of the Tunisian Energy Sector
Uganda	AFREA II — Uganda Clean Cooking Supply Chain Expansion
Ukraine	Facilitating Electricity and Gas Market Reforms in Ukraine
Ukraine	Market Assessment of Small Hydro Rehabilitation in Ukraine
Ukraine	Support to Implementation of Reforms in Ukrainian Gas Sector
Ukraine	Ukraine: Advancing Energy Tariff and Subsidy Reform Implementation
Ukraine	Ukraine District Heating Sector Transition ^{EE}
Uzbekistan	Uzbekistan Power System Dispatch and Renewable Energy Integration ^{RE}
Vietnam	Vietnam: Preparing of Liquefied Natural Gas Imports
Zimbabwe	Zimbabwe Power Sector Technical Assistance

OTHER

AFR	AFREA 2 Gender and Energy Program ^{GMP}
Global	Gender: Knowledge Dev and Dissemination
Lao PDR	Renewable Energy Resource Mapping: Lao PDR ^{RE}

RENEWABLE ENERGY

AFR	Hydro-Connected Solar PV towards Accelerating Utility Scale Solar Generation in West Africa	Solar Scale-Up Program
AFR	Solar Resource Mapping: East Africa	RE Mapping, Solar Scale-Up Program
AFR	Variable Renewable Integration in the West Africa Power Pool Grid	Integrating Variable Renewables
Armenia	Armenia: VRE Grid Integration Support	Integrating Variable Renewables, Solar Scale-Up Program
Bangladesh	Renewable Energy Resource Mapping Bangladesh — ESMAP	RE Mapping
Bangladesh	Scaling Up Renewable Energy in Bangladesh ^{GMP}	Solar Scale-Up Program, RE Mapping
Brazil	FinBRAZEEC Project Preparation ^{EE}	Integrating Variable Renewables, Solar Scale-Up Program
Brazil	Revisiting Power and Gas Sector Reforms in Brazil ^{GMP, SR}	Integrating Variable Renewables
Cabo Verde	Cabo Verde: Distributed Renewable Energy	Integrating Variable Renewables
Central African Republic	Support for the Promotion and Implementation of Solar PV Projects in Central African Republic	Solar Scale-Up Program
Chile	Technical Assistance for Sustainable Geothermal Development in Chile	Global Geothermal Development Plan
EAP	VRE Grid Integration for Pacific Islands Sustainable Energy Industry Development Project	Integrating Variable Renewables
Egypt, Arab Republic of	Support for Egypt–World Bank Group Partnership for the Design and Implementation of Solar PV Auctions	Solar Scale-Up Program
Ethiopia	Ethiopia Energy Sector Review and Strategy ^{GMP, SR}	Integrating Variable Renewables, Solar Scale-Up Program, Global Geothermal Development Plan

Ethiopia	Ethiopia Renewable Energy Resource Mapping	RE Mapping
Global	ESMAP — Effectiveness of Public Finance in Attracting Private Capital for Grid-Connected Solar Projects	Solar Scale-Up Program
Global	ESMAP Solar Support Program	Solar Scale-Up Program
Global	ESMAP Variable Renewable Energy Grid Integration Support Program	Integrating Variable Renewables
Global	Global Geothermal Development Plan	Global Geothermal Development Plan
Global	Global Solar Atlas	RE Mapping
Global	Global Wind Atlas	RE Mapping
Global	International Solar Alliance (ISA) Support	Solar Scale-Up Program
Global	Renewable Energy Resource Assessment and Mapping Initiative	RE Mapping
Global	Renewable Energy Resource Mapping	RE Mapping
Guinea-Bissau	Utility-Scale Solar-Plus-Storage for Energy Security in Guinea Bissau	Solar Scale-Up Program
Haiti	Haiti Solar and VRE Integration	Integrating Variable Renewables, Solar Scale-Up Program
India	India: Grid Integration Support for Power System Operation Corporation Limited (POSOCO)	Integrating Variable Renewables
India	India — Support to 24x7 Scheme for Jharkhand ^{GMP}	Integrating Variable Renewables
Indonesia	Indonesia Capacity Strengthening and Risk Mitigation for Geothermal Development	Global Geothermal Development Plan
Indonesia	Indonesia: Resource Risk Mitigation for Geothermal Development	Global Geothermal Development Plan
Indonesia	Support for Indonesia–World Bank Group Partnership for the Design and Implementation of Solar PV Auctions	Integrating Variable Renewables, Solar Scale-Up Program
Kenya	Kenya Geospatial Plan ^{GMP, EA}	Integrating Variable Renewables, Solar Scale-Up Program, RE Mapping
Lao PDR	Renewable Energy Resource Mapping: Lao PDR	RE Mapping
LAC	Technical Assistance for Geothermal Project Preparation in LAC	Global Geothermal Development Plan
LAC	Upstream Analysis for the Development of the Scaling Solar Program in Nicaragua	Solar Scale-Up Program
Malawi	Renewable Energy Resource Mapping and Geospatial Planning: Malawi	RE Mapping, Solar Scale-Up Program
Maldives	Renewable Energy Resource Mapping and Geospatial Planning: Maldives	RE Mapping
MNA	Comparative Analysis of Utility-scale Energy Storage: Options in the MNA Region	Integrating Variable Renewables
Mongolia	Sustainable Energy Development in Mongolia	Integrating Variable Renewables
Nepal	RE Resource Mapping: Nepal	RE Mapping
Niger	Niger Solar Development – Zinder Project Pre-Feasibility Analysis	Integrating Variable Renewables, Solar Scale-Up Program
Niger	PV Hybridization of Diesel-based Isolated Grids ^{GMP, EA}	Solar Scale-Up Program
Pakistan	Renewable Energy Resource Mapping and Geospatial Planning: Pakistan	RE Mapping

Papua New Guinea	Renewable Energy Resource Mapping and Geospatial Planning: Papua New Guinea	RE Mapping
Tanzania	Renewable Energy Resource Mapping and Geospatial Planning: Tanzania	RE Mapping
Tanzania	Tanzania Power Sector Review ^{GMP, EA}	Solar Scale-Up Program
Turkey	Turkey Geothermal Development Project (CO ₂ Soil Emissions Study)	Global Geothermal Development Plan
Uzbekistan	Uzbekistan Power System Dispatch and Renewable Energy Integration ^{GMP}	Integrating Variable Renewables
Vietnam	Accommodating the 20 GW Variable Renewable Energy Target for 2030 in Vietnam Power System	Integrating Variable Renewables
Vietnam	Renewable Energy Resource Mapping and Geospatial Planning: Vietnam	RE Mapping
Vietnam	Scaling Up Solar PV in Vietnam	Solar Scale-Up Program
Zambia	Zambia Renewable Energy Resource Mapping Initiative	RE Mapping

SEforALL KNOWLEDGE HUB

Global	Global Rollout of Readiness for Investment in Sustainable Energy (RISE)	
Global	Global Survey for Multi-Tier Energy Access Tracking	
Global	MTF Enterprise Survey	
Global	SDG 7 Tracking Report 2018	
Global	SEAR Dissemination	

SUBSIDY REFORM

AFR	Electricity Subsidy Reform in Guinea, Mali, and Togo	
Algeria	Energy Subsidies and Price Reform in Algeria	
Armenia	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	
Belarus	Belarus Heat Tariff Reform and Social Impact Mitigation Study	
Brazil	Revisiting Power and Gas Sector Reforms in Brazil ^{GMP, RE}	
Burkina Faso	Subsidy Reform in Burkina Faso	ESRAF
Congo, Republic of	Republic of Congo: Power Sector Reform and Electricity Access Support ^{GMP, EA}	
Ethiopia	Ethiopia Energy Sector Review and Strategy ^{GMP, RE}	
Global	Efficient Clean Cooking and Heating (ECCH)	
Global	Energy Subsidy Reform and Delivery: Safeguarding the Poor and Vulnerable	
Global	Energy Subsidy Reform Assessment Framework (ESRAF)	ESRAF
Global	Energy Subsidy Reform Knowledge Events	
Global	Energy Subsidy Reform Knowledge Products	
Global	Energy Subsidy Reform Online Community	
Haiti	Distributional Analyses and Reform Options for Petroleum Price Reforms in Haiti — Phase II	
India	India: Direct Benefit Transfer for Electricity to Farmers in Rajasthan	
Jordan	Jordan: Expansion of Social Safety Nets to Support Electricity Lifeline Tariff Rationalization	ESRAF
Kyrgyz Republic	Energy Sector Reforms in Kyrgyz Republic	

LAC	Dialogue on the Role of Regulators Regarding Fossil Fuel Subsidies in the Transition towards the Energy Sector of the Future
LAC	Honduras: Toward Cost-Reflective Tariff Regulation for The Power Sector
Madagascar	Madagascar Pump Fuel Price Subsidy Removal Technical Assistance
MNA	Support to MENA Countries Preparedness of SSNs for Subsidy Reform — Algeria, Djibouti, Jordan, Morocco, Tunisia, Yemen
Mongolia	Support for Sustainable and Socially Inclusive Electricity and Heat Pricing Reform in Mongolia
Mozambique	Support to the Implementation of Mozambique's Fuel Subsidy Reform
Myanmar	Myanmar: Support for Sustainable and Socially Inclusive Electricity Pricing and Reform
Nepal	Energy Tariff Reform in Nepal
Rwanda	Rwanda: Power Sector Sustainability Study
Tajikistan	Tajikistan Electricity Tariff Setting and Mitigation of Social Impacts
Uzbekistan	Energy Subsidies in Uzbekistan: Impact and the Way Forward (Phase 1)
Ukraine	Ukraine Energy Efficiency Fund Development Technical Assistance
Vietnam	Vietnam: Energy Subsidy Reform Phase 1

ANNEX D

ESMAP PUBLICATIONS, FY 2018

ISBN, PUB NO., OR PROJECT NO.	COUNTRY/ REGION	TITLE	AUTHOR/TTL
Live Wire 2017/85	Afghanistan	A GIS Approach to Planning Electrification in Afghanistan	Alexandros Korkovelos, Morgan Bazilian, Dimitrios Mentis, Mark Howells
P150323	AFR	Double Dividend: Power and Agriculture Nexus in Sub-Saharan Africa	Sudeshna Ghosh Banerjee, Kabir Malik, Andrew Tipping, Juliette Suzanne Georgette Besnard, John D. Nash
P018952	AFR	Rural Electrification Concessions in Africa: What Does Experience Tell Us?	Richard Hosier, Morgan Bazilian, Tatia Lemondzhava, Kabir Malik, Mitsunori Motohashi, David Vilar de Ferrenbach
P146621	AFR	Scalable Business Models for Alternative Biomass Cooking Fuels and Their Potential in Sub-Saharan Africa	Jan Friedrich Kappen, Richard H. Hosier, Nuyi Tao, Besnik Hyseni, Kenta Usui
P160031	Armenia	Armenia Tariff Rebalancing: Final Report	World Bank
P150942	Brazil	Lighting Brazilian Cities: Business Models for Energy Efficient Public Street Lighting	Megan Meyer, Luiz Maurer, Javier Freire, Christophe De Gouvello
P156666	Cambodia	Cambodia - Beyond Connections: Energy Access Diagnostic Report based on the Multi-Tier Framework	Rutu Dave, Sandra Ofelia Keller, Bonsuk Koo, Gina Fleurantin, Elisa Portale, Dana Rysankova
P153716	China	Thirsty Energy: Modeling the Water Energy Nexus in China	Diego Juan Rodriguez, Morgan Bazilian, Anna Delgado Martin, Fernando Miralles-Wilhelm
ESMAP IMPACT Issue 11	China	World Partners and ESMAP: Long-Term Strategic Partners in China's Energy Transition	ESMAP
P147472	ECA	Scaling Up Thermal Retrofit of Residential and Public Buildings in Eastern Europe	Claudia Ines Vasquez Suarez, Feng Liu, Grzegorz Peszko
P133231	ECA	Western Balkans: Directions for the Energy Sector	Claudia Vasquez, Rhedon Begolli, Linda Van Gelder, Sameer Shukla
P156666	Ethiopia	Ethiopia – Beyond Connections: Energy Access Diagnostic Report based on the Multi-Tier Framework	Gouthami Padam, Dana Rysankova, Elisa Portale, Bryan Bonsuk Koo, Sandra Keller, Gina Fleurantin
	Global	Energizing Finance: Scaling and Refining Finance in Countries with Large Energy Access Gaps	SEforALL

	Global	Low Carbon Cities: Exploring New Crediting Approaches to Deliver Carbon and Climate Finance	Martina Bossi
P152424	Global	Tool for Rapid Assessment of City Energy (TRACE 2.0): A Manual for Experts and City Officials	ESMAP
P167379	Global	Tracking SDG7: The Energy Progress Report	International Energy Agency, International Renewable Energy Agency, United Nations, World Bank Group, World Health Organization
	Global	Using Climate Auction Model to Catalyze Energy and Resource Efficient Buildings	Martina Bosi, World Bank Group, Carbon Trust
P157812	Global	Guidance for Comprehensive Energy Subsidy Reforms: Energy Subsidy Reform Assessment Framework (ESRAF) Good Practice Note, Overview	Thomas Flochel, Sudarshan Gooptu
P157812	Global	Identifying and Quantifying Energy Subsidies: Energy Subsidy Reform Assessment Framework (ESRAF) Good Practice Note 1	Masami Kojima
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