

## ESMAP BUSINESS PLAN FY2021-2024

### Affordable, Reliable, Sustainable and Modern Energy: Universal Access, Zero Carbon

#### Introduction

The ESMAP Business Plan for FY2021-2024 lays out our programs working towards the overarching twin objectives of achieving universal energy access by 2030 and advancing decarbonization in support of international commitments on climate change, consistent with the World Bank's mission of ending extreme poverty and boosting shared prosperity.

The Business Plan sets out ESMAP's theory of change, strategic priorities, program areas, results framework and target budget for FY2021-2024 (i.e., July 1, 2020 to June 30, 2024). The Business Plan package consists of the following documents:

1. Business Plan Outline (this document), consisting of an Overview of the Energy Sector; Principles of ESMAP's Operating Model; Summary of the proposed Business Plan's programs, key performance indicators and budgets; Theory of Change; Summary of the Technical Advisory Group Workshop on the new Business Plan; and ESMAP's Response to COVID-19.
2. Program Proposals in the form of six slide-decks.

The Business Plan is meant to be flexible to adapt to changes in the sector context over the next four years. The Consultative Group is informed and consulted on adaptive measures taken by ESMAP management. In particular, recognizing the extraordinary conditions caused by the COVID-19 (coronavirus) pandemic, this Business Plan will incorporate flexibility in order to respond to the rapidly evolving situation. This includes contributing both to the immediate crisis response phase (such as power supply to critical health facilities), but also the medium to long term recovery effort in a manner that supports the Energy Transition and builds a more sustainable and resilient energy sector (see Annex 2).

To date, ESMAP has achieved significant progress towards the objectives of the FY17-20 Business Plan in support of the SDG7 and the Paris Agreement, including:

- 154.8 million beneficiaries (households, communities, public facilities, utilities, industrial enterprises etc.) expected to be reached by ESMAP-informed World Bank development financing;
- 76.3 million people expected to gain access to electricity;
- USD 26.8 billion World Bank development financing informed;
- USD 15.8 billion external financing mobilized, including private sector;
- 17.7 GW of renewable energy expected to be installed;
- 646 million metric tons of CO<sub>2</sub> emissions expected to be reduced;
- 6.06 E<sup>8</sup> MWh projected lifetime energy and fuel savings to be achieved; and
- USD 119 million disbursed in regional/country and global grants.

**Cumulative donor contributions and pledges are about USD 320 million, as of the December 31, 2019.**

#### Overview of the Energy Sector

**According to the upcoming 2020 Tracking SDG7 report, despite significant progress in recent years, the world is at risk of not meeting the global energy targets set in the United Nations Sustainable Development Goal 7 (SDG7) for 2030.** The SDG Target 7.1 is to ensure universal access to affordable, reliable, and modern energy

services (7.1.1 focuses on the proportion of the population with access to electricity and 7.1.2 on the proportion relying primarily on clean fuels and technologies for cooking). Target 7.2 is to increase substantially the share of renewable energy in the global energy mix. Target 7.3 is to double the global rate of improvement in energy efficiency. Target 7.A is to promote access to technology and investments in clean energy, with 7.A.1 focusing on international public financial flows to developing countries in support of clean and renewable energy.

**Ensuring affordable, reliable, sustainable and modern energy for all by 2030 remains possible but will require stronger efforts, particularly to reach some of the world's poorest populations (leaving no one behind) and to significantly improve energy systems' sustainability in the context of climate change.** The COVID-19 pandemic implies additional challenges and risks for the achievement of the SDG7 targets.

Key messages from the **2020 Tracking SDG7** report are:

- Recent years have seen a rapid growth in access to electricity after an accelerated deployment of affordable electrification options, including on- and off-grid solutions. As a result, the global population without access to electricity decreased to 789 million in 2018 from 1.2 billion in 2010. Those still lacking access are increasingly concentrated in Sub-Saharan Africa.
- Meanwhile, the global population without access to clean cooking solutions remained largely unchanged, standing at close to 3 billion in 2018, mostly in Asia and Africa.
- Renewable energy accounted for 17.3 percent of global total energy consumption in 2017 (increasing from 16.3 percent in 2010), with solar PV and wind contributing to the fast growth of renewables in electricity generation, but less headway was made in heat and transport.
- With respect to energy efficiency, the rate of global primary energy intensity has slowed in recent years. Global primary energy intensity reached 5.0 megajoules per U.S. dollar in 2017, equivalent to a 1.7 percent rate of improvement from 2016—the lowest since 2010.
- International public financial flows to developing countries in support of clean and renewable energy reached \$21.4 billion in 2017 (doubling the level of 2010). However, only 12 percent of financial flows in 2017 reached the least-developed countries, which are the furthest from achieving SDG 7 targets.

**Reaching the targets set by SDG7 requires robust and enforced regulatory frameworks for energy access, renewable energy and energy efficiency.** Progress on sustainable energy outcomes has often been preceded by long-term efforts to strengthen policy and regulatory environments. According to the Regulatory Indicators for Sustainable Energy report (RISE 2018) there has been significant improvement in sustainable energy policies globally: the number of countries with advanced policy frameworks for sustainable energy has more than tripled between 2010 and 2017 – from 17 (largely OECD) countries to 59. Nevertheless, the overall average country RISE score is still only 58 out of 100.

**The RISE report also highlighted that poor creditworthiness of utilities undermines the sustainable energy agenda.** As of 2017, only about half of all power utilities met several basic creditworthiness requirements. Moreover, performance on almost all dimensions of creditworthiness has deteriorated since 2012. The situation is particularly acute in low-access countries, where the proportion of utilities meeting basic creditworthiness criteria dropped to 37 percent in 2017. The economic impacts of the COVID-19 pandemic are likely to worsen finances of utilities in many countries.

**Universal access to affordable, reliable electricity and clean cooking and mitigation of climate change are identified as two priority areas which should drive the energy sector.** The IEA’s flagship World Energy Outlook (WEO) 2019 points out these challenges presented by “the gap between the promise of energy for all and the fact that almost one billion people still do not have access to electricity” and “the gap between the latest scientific evidence highlighting the need for evermore-rapid cuts in global greenhouse gas emissions and the data showing that energy related emissions hit another historic high in 2018” (WEO, 2019). A rapidly evolving landscape of new technologies and innovations creates opportunities for advancing the energy transition necessary for universal access and climate change mitigation (Figure 1).

**Figure 1: Developments in Energy and Climate Change**



## ESMAP Business Plan for FY2021-2024

The ESMAP Business Plan for FY21-24 will, therefore, focus on these twin objectives: achieving universal access by 2030 and advancing decarbonization across the energy sector in support of international commitments on climate change. By supporting the World Bank’s regional advisory services and analytics, serving as a center of global knowledge and expertise, and through collaboration with development partners and climate finance, ESMAP will play a critical role in shaping the World Bank’s achievement of its IDA and Climate Change Action Plan targets.

Pursuant to these objectives, ESMAP will have four inter-linked programs which focus on **Clean Cooking, Electricity Access, Renewable Energy** and **Decarbonization** and will be underpinned by two cross cutting programs: on **Foundations for the Energy Transition** and **Energy Data and Analytics**. The ESMAP Business Plan also draws on the conclusions and recommendations of the External Evaluation (see Appendix 2).

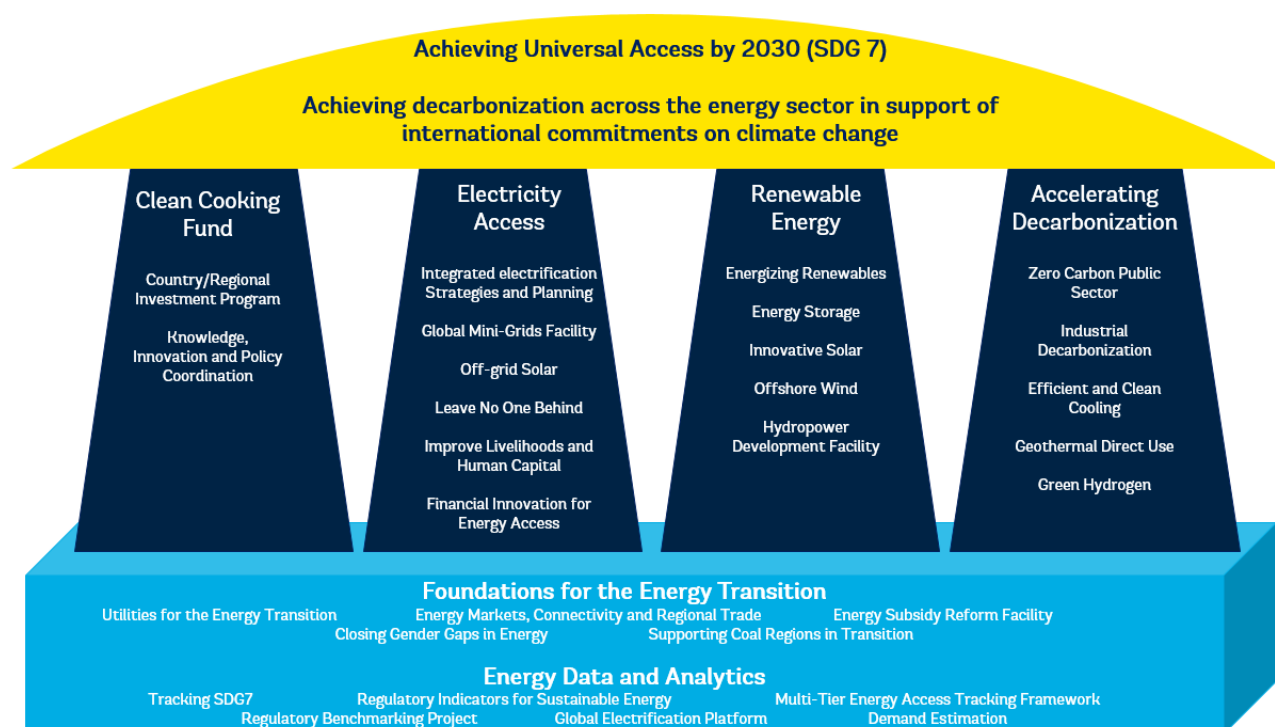
The overall budget target for the ESMAP Business Plan FY21-24 is about USD 1.3 billion, of which USD 540 million would be for Bank-executed activities (primarily advisory services and analytics) and USD 740 million would be for Recipient-executed grants (primarily co-financing IBRD/IDA operations; the largest components are USD 450 million for the Clean Cooking Fund and about USD 100 million for the COVID-19 response to electrify health facilities through renewable energy).

The impact indicators for the ESMAP Business Plan are:

- External financing mobilized, including private sector
- Number of people provided with access to renewable energy
- Number of beneficiaries expected to be reached
- Metric tons of CO2 emissions expected to be reduced per year
- Projected lifetime energy and fuel savings

Table 1 provides a summary of ESMAP programs, budgets and key indicators and targets.

**Figure 2: ESMAP Business Plan FY21-24 Program Areas**



## ESMAP Business Plan: Cross-Cutting Areas

**Foundations for the Energy Transition** will address the prerequisites for expanding energy access and taking climate action: fixing sector fundamentals to ensure operationally effective and financially creditworthy utilities; appropriate legal, regulatory, fiscal and contractual frameworks; pricing energy right; strong regulatory institutions; and, sound energy planning. Tackling weak governance and social aspects of the energy transition are essential. Without an enabling environment in which contracts are honored and regulations enforced, and in which competition is fair and open, it will be difficult to attract the private capital required for universal access

and zero carbon energy systems. Box 1 summarizes the scope of ESMAP programs to support Foundations for the Energy Transition in FY21-24.

**Box 1: ESMAP SUPPORT TO FOUNDATIONS FOR THE ENERGY TRANSITION**

**A well-functioning, financially sound power sector constitutes a solid foundation for the energy transition.**

ESMAP will support countries in least cost planning; developing competitive markets and power trade; removing energy subsidies and other distortions; and designing regulation to ensure the sector maintains financial viability and service standards.

**New technologies, digital development, and declining costs of renewables & storage offer opportunities to accelerate the energy transition, but are also disrupting existing models, creating winners and losers.**

ESMAP will assist countries to design policies and regulations that enable entry of new service providers while helping utilities take advantage of new technology opportunities to improve quality of service; at the same time, ESMAP will help countries plan and manage the social and distributional impacts of change as the sector moves to a new decarbonized, decentralized and digitalized paradigm.

**Gender equality enables the energy sector to draw on the talents and potential of both men and women as employees and entrepreneurs, as well as meeting the energy service needs and desires of diverse consumers. ESMAP will scale up its efforts to promote gender equality in the energy sector through knowledge, data, policy reform, and interventions in World Bank projects.**

**Advancing gender equality is necessary for a sustainable energy sector.** ESMAP's activities to promote gender equality in the energy sector complement the World Bank's Umbrella Facility for Gender Equality. The proposed ESMAP program goes deep in the energy sector and embeds learning and experience within World Bank operations with the potential to impact key areas of the WBG gender strategy: endowments, jobs, entrepreneurship, and voice. In particular, ESMAP enhances the preparatory and upstream work that Bank teams and clients need, such as providing better gender data and rigorous knowledge of what works to close gaps between women and men. Gender equality will be a cross-cutting theme across all programs, with a specific focus on closing gaps in employment, entrepreneurship, and access to modern energy services. Box 2 summarizes ESMAP's gender program for FY21-24.

### **Box 2: ESMAP'S GENDER AND ENERGY PROGRAM**

**The ESMAP Gender and Energy Program is helping to strengthen women's roles as consumers, employees, and entrepreneurs in the energy sector.**

Aligned with the World Bank Group's Gender Strategy, ESMAP will work with countries to design and implement policies, strategies and project level initiatives to close gender gaps in the energy sector.

**Six regional programs have been established to enable the World Bank to better respond to the specific gender equality challenges and opportunities of each region.**

A focus on gender equality has also been integrated across ESMAP's other work areas, including renewable energy, energy access, and energy efficiency. To achieve such results, ESMAP combines global knowledge work with support for country activities, such as:

- Collecting and generating data on key gender gaps to strengthen the analysis and design of actions and indicators; for example, energy-access rates by household heads, and rates of labor force participation.
- Testing innovative approaches and providing technical support for advancing women's employment and the productive use of energy through World Bank and Development Partners' operations.
- Designing approaches to closing gender gaps through World Bank policy dialogue and lending.
- Capturing and disseminating lessons learned from the knowledge work, to improve the design of energy projects.
- Building a network of strong partnerships across sectors and external stakeholders to enhance the impact of work on gender equality.

**Energy Data and Analytics** program will strengthen data collection in the energy sector, including household surveys methodologies, geospatial data collection, and satellite data. It will serve as a one-stop shop for open data, providing reliable and good quality data through validation methodologies and inter- agency collaboration processes. It will also provide analytic toolkits (for example, country data profiles) for easier data usage by practitioners and decision-makers for planning and project design. Box 3 summarizes the ESMAP Energy Data and Analytics program for FY21-24.



### Box 3: ESMAP'S ENERGY DATA AND ANALYTICS PROGRAM

**Lack of availability and quality of primary data in the energy sector hinder informed decision-making by governments and their development partners.**

ESMAP will strengthen primary data collection in the energy sector and improve data collection, validation and standardization approaches, including household surveys methodologies, energy policy, geospatial and satellite data collection, and inter-agency and inter-Global Practice collaboration. This will include an update of the Multi-Tier Framework, with a dedicated section addressing the issue of “leaving no one behind”, which will provide more in-depth analysis on what would be required to reach extremely vulnerable groups.

**Need to improve data accessibility for all internal and external stakeholders.**

ESMAP will provide a one-stop shop data and knowledge platform / data repository (EnergyData.info) where all energy related information can be found and utilized, as well as standardize and harmonize various types of datasets to improve inter-operability.

**Need to develop relevant and up-to-date data analytics to help World Bank operations units and external stakeholders in their decision making.**

ESMAP will provide analytic toolkits (for example, country data profiles, RISE and SDG7 Tracking analytical platform, as well as an advanced version of the Global Electrification Platform) for easier data usage for practitioners and decision makers for planning and project design.

## ESMAP Business Plan: Focus on energy access

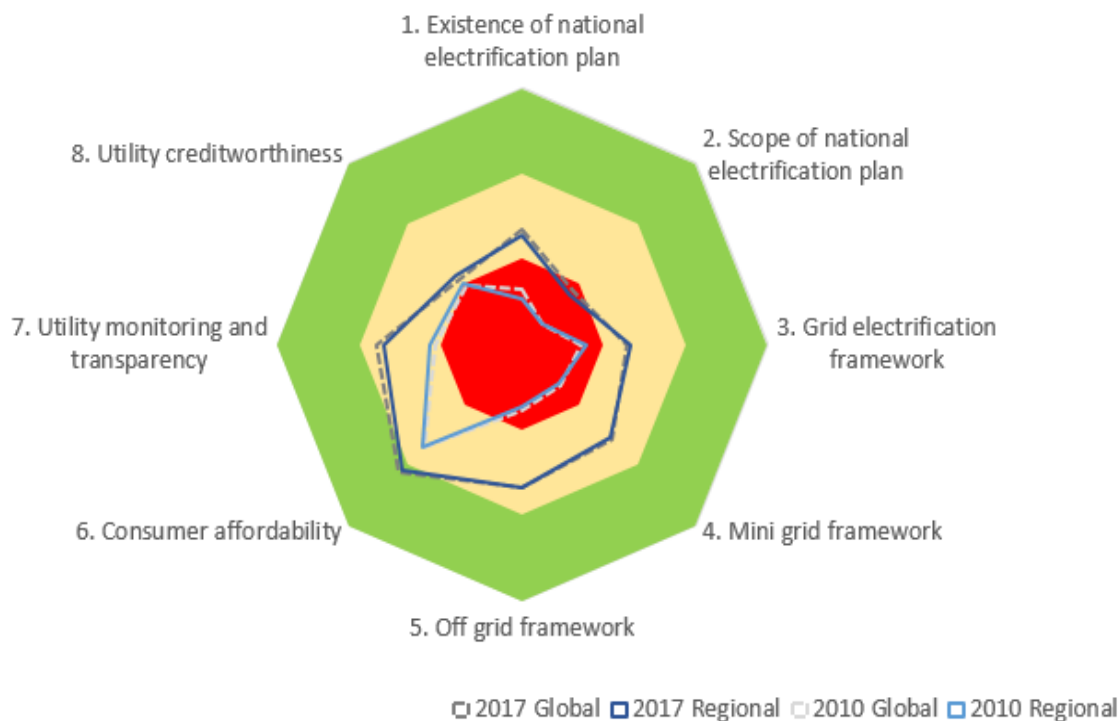
**Despite acceleration in electrification in recent years, 789 million people still lacked access to electricity in 2018. Electrification progress has been highly uneven across regions, and across countries.** In most of the top 20 access-deficit countries, the electrification rate between 2010 and 2018 did not keep pace with population growth. As a result, and without accounting for the disruptions of the COVID-19 crisis, the 2020 Tracking SDG7 Report forecasts that 620 million people will still lack electricity access by 2030, 85 percent of them in Sub-Saharan Africa (SSA). Lack of access to electricity is also overwhelmingly linked with poverty: in all 20 high access deficit countries, electrification rates are four times higher in the top household expenditure quintile than in the bottom quintile.

**Sub-Saharan Africa is where the access battle will be won or lost** – today 548 million people live without electricity in SSA and average residential electricity consumption per capita in SSA excluding South Africa was 80 kWh per year in 2017, barely enough to power one light bulb for a few hours each day. For the continent, although access advances outpaced population growth after 2010, the trend has reversed recently and the number of people in the region lacking access between 2016 and 2018 remained stable. While Kenya can pride itself on being the fastest-electrifying country in the world, in other countries with large access deficits, including Angola, Burkina Faso, DR Congo and Nigeria, electrification rates have remained virtually unchanged or even declined.

**Over one million health and education facilities in Africa lack reliable electricity supply, restricting these institutions' ability to deliver essential public services and impeding human development outcomes.** In SSA, less than one-third of health facilities and schools have access to electricity today. Another third is lacking reliable electricity. The COVID-19 pandemic accentuates the urgent need to electrify health facilities for the treatment of patients, testing for the virus and cold chain for medicine and eventually vaccine delivery. Health facilities electrification will also have other long-term benefits, including reduced child and maternal mortality

rates. Teaching children in schools with electricity is critical as the nature of work evolves in response to rapid technological change, accentuated also by COVID-19 shift towards virtual learning.

**Figure 3: RISE assessment on electricity access in Sub-Saharan Africa, 2018**



**Connecting the last of the unserved populations may be more challenging than past electrification efforts, since many such populations live in remote locales or overburdened cities.** Globally, 85 percent of the unelectrified population lives in rural areas, where affordability is low and costs of service provision high, often prohibitive for traditional grid extension methods. Furthermore, about 30 percent of the unelectrified population lives in fragile or conflict-affected countries. According to the UNHCR, over 85 percent of the world’s 68.5 million forcibly displaced people are hosted by developing countries, and most of them lack access to legal, safe, reliable, and affordable electricity.

**Recognizing that future energy access efforts need to be more inclusive and leave no one behind -- with targeted approaches for distinct vulnerable groups that are informed by a thorough understanding of affordability of energy services -- ESMAP will support innovations in policies, financing and business models to target access for the poor; households in remote areas; refugees and host communities; and, female-headed and other vulnerable households.** This will include, among other aspects: (i) improving energy sector planning to prioritize inclusion of the poor in general, as well as specific groups such as refugees and host communities; (ii) designing, piloting and scaling up sustainable demand-side subsidies for both grid and off-grid electrification, targeting the poor and vulnerable populations; (iii) demonstrating how renewable energy mini-grids and off-grid solar solutions can sustainably serve this population segment, (iv) adapting mini-grid and off-grid solar business models for fragile and conflict regions; (v) supporting innovative business models with the ability to reach the poor and remote populations, such as making “pay-as-you-go” more affordable, and leveraging last-mile distributors; (vi) strengthening support to communities and households to develop productive uses of electricity to promote inclusive local development, and (vii) working towards universal electrification of health and education facilities to support human capital objectives.



**All these activities will be supported by an analysis of gender gaps and specific measures aimed at their closure.** This will include ensuring that energy planning and national electrification programs include provisions for vulnerable female populations, such as female-headed households, increasing female participation in the newly created off-grid clean energy supply chains, and improving financial inclusion for female entrepreneurs in off-grid business and for productive uses. Additionally, this also means ensuring that vulnerable groups are being accounted for in the various surveys being conducted under the Energy Data and Analytics program.

**A much-needed acceleration of electrification efforts is feasible thanks to the emergence of new, climate-friendly distributed technologies, such as solar PV and battery storage.** Data from the ESMAP Multi-Tier Framework (MTF) Household Surveys show that the fastest-electrifying countries, such as Kenya, Ethiopia and Myanmar, are those that pursue a parallel track of grid and off-grid electrification. Already today, some 50 million people have their basic energy needs being met with quality-verified off-grid solar products, and solar-powered mini grids are expanding fast in countries with large unelectrified populations. For example, MTF data show that mini grid and off-grid technologies are already providing access to 29 percent of the electrified population in Kenya and 46 percent in Myanmar (MTF surveys 2019). In addition, distributed technologies are expected to play a crucial role in electrifying public institutions such as health and educational facilities.

**MTF surveys also show that the past (grid) electrification efforts have been skewed towards higher income population.** For example, 57 percent and 59 percent of households in the highest expenditure quintile in Myanmar and Kenya, respectively, have grid electricity access, compared to only 18% (in both countries) of households in the lowest expenditure quintiles. This gap, however, is narrowing thanks to the emergence of off-grid solutions, which tend to target lower income households. In Myanmar, for example, 65% of the lowest quintile households are served by off-grid solutions. In Kenya, more than one-fourth of the bottom 40% households are served by off-grid solutions. To maximize the benefits of access to electricity and improve livelihoods, supporting demand and stimulating productive use of electricity must also become integral parts of electrification programs.

**While universal electrification has caught the attention of policy and decision makers, access to clean cooking has been neglected.** Over 85 percent of the population (around 900 million people) in SSA lacked access to clean cooking in 2018—and at current growth rates this number is projected to increase to 970 million by 2030. The access rates are still in single digits in almost half of SSA countries. Exposure to household air pollution from incomplete combustion of traditional biomass fuel accounts for nearly 700,000 premature deaths annually in SSA – 50 percent of which are children under 5 years – and an annual welfare loss of USD 115 billion. Time spent on fuel collection and cooking tasks leads to a loss of labor output of around USD 21 billion, particularly affecting women and girls, who spend over three times as much time on these tasks in households that do not use clean fuels. Furthermore, 88 percent of biomass used in SSA is non-renewable, contributing to deforestation, land degradation, and greenhouse gas (GHG) emissions.

Based on MTF survey results<sup>1</sup>, on average, about 80% of households are in Tiers 0-2. Access to clean cooking solutions is much worse in rural areas: virtually, all the households in rural areas are in Tiers 0-1. Results show that female household members spend much more time cooking than male household members, making women more susceptible to the impacts of indoor air pollution. Similarly, data show that women spend more time than men collecting fuels (MTF surveys).

**Ensuring access to clean cooking fuels and technologies is a persistent development challenge which requires a renewed impetus.** According to the Tracking SDG7 Report, to reach universal clean cooking targets by 2030

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<sup>1</sup> Rwanda, Ethiopia, Cambodia, Myanmar, Honduras, Zambia, Sao Tome and Principe, and Nepal.

and outpace population growth, the annual average increase in access must rise to 3 percentage points, from the rate of <1 percentage point observed between 2010 and 2018.

**Governments in low-access countries are responding to the energy access challenge, but policy and regulatory frameworks still need improvements.** Reaching the remaining unserved people will require strong policy commitments, mobilization of private financing and comprehensive electrification planning at the national level. The data from the Regulatory Indicators for Sustainable Energy (RISE) series show that countries with an energy access deficit have been consistently improving their policy and regulatory environment for energy access, although substantial room for progress still exists, particularly in Sub-Saharan Africa. The fastest progress has been achieved in improving frameworks for mini-grid and off-grid electrification, but this remains very uneven across countries – with the least electrified and FCV countries lagging behind.

**Governments are also increasingly adopting comprehensive national electrification strategies with universal access targets using geospatial data and least-cost planning algorithms that define cost-effective electrification paths.** Implementation of these plans, however, often remains challenging, as many governments lack appropriate capacity to effectively support deployment of these technologies and to enable private sector-driven business models.

**Keeping the cost of delivered power affordable requires** that least cost generation expansion plans guide investment; utilities procure power competitively; regulators ensure that system commercial and technical losses are capped; and, utilities have information and incentives to adopt efficient new technologies, including digitalization of their operations, as appropriate. The establishment of power markets and trade is critical for expanding sources of power and bringing costs down through competition, as well as for facilitating the use of low-cost renewables and enhancing reliability. Utilities will need appropriate regulatory support to ensure that they are able to cover incurred grid and other costs even when connected consumers adopt distributed energy resources such as rooftop solar, etc., particularly as they will be required to provide firm power as back-up when needed.

**Financing for energy access needs to increase, particularly for Sub-Saharan Africa.** It is estimated that approximately USD 50 billion needs to be invested every year between now and 2030 to achieve universal electrification in Sub-Saharan Africa – against the USD 10 billion that was committed in 2017. Globally, financing that specifically targets mini-grid and off-grid electricity generation has been steadily growing since 2010 but remains very low compared to what is needed to reach universal access. It accounts for only 1.2% of total energy access investments according to the latest SEforALL Energizing Finance report. This is in stark contrast to the IEA's estimates that two-thirds of new energy access investments should be targeting mini-grid and off-grid technologies. ESMAP estimates that renewable energy mini grids could cost-effectively serve nearly half a billion people. Bloomberg New Energy Finance has calculated that about USD 200 billion in investment is required for mini-grid and off-grid electrification between now and 2030 to achieve universal electrification. The financing gap is even worse for clean cooking. Annual residential clean cooking investment needs are about USD 4.4 billion per year globally, and yet the current traceable sector investment averages just USD 32 million a year, according to the 2019 Energizing Finance report.

Boxes 4 and 5 summarize ESMAP's FY21-24 programs on access to electricity and clean cooking.

#### Box 4: ESMAP PROGRAMS ON ELECTRICITY ACCESS

**With 140 million people to be electrified each year to achieve the 2030 SDG7 target, there is a pressing need to accelerate progress across all countries and population segments, especially in Sub-Saharan Africa.**

ESMAP will support the scale-up of a comprehensive approach by the World Bank and other development partners that includes innovative technologies, business models, policy and planning, and leverages public and private financing, building on the successes of ESMAP initiatives such as integrated electrification planning, the Global Facility on Mini Grids, and Lighting Global. In particular, ESMAP will support *Africa Leap*, an initiative being developed by the World Bank to establish the enabling conditions and mobilize the necessary financing to achieve universal access in Sub-Saharan Africa by 2030, in collaboration with clients and development partners (see Figure 4).

**A more inclusive approach is necessary to electrify the remaining population which is increasingly located in rural, remote, poor, and fragile regions.**

ESMAP will go beyond technology workstreams to ensure attention to cross-cutting areas such as leaving no one behind, productive uses and human capital, innovations to scale-up financing, and gender equality. This includes promoting universal electricity access for all health facilities and schools by 2030.

**New challenges such as the COVID-19 crisis could threaten the momentum built to accelerate electricity access.**

ESMAP's work will focus on mobilizing resources and providing guidance to clients and partners in their response to the immediate crisis by electrifying health facilities, as well as on mitigating negative impacts on the nascent mini grid and off-grid solar industries which are essential for achieving universal access. In the medium term, expanding electricity access and supporting productive uses will contribute to the recovery effort. Sustainable electrification, particularly through decentralized renewable energy solutions, will help build resilience against future (climate, health and other) shocks.

#### Box 5: ESMAP CLEAN COOKING FUND

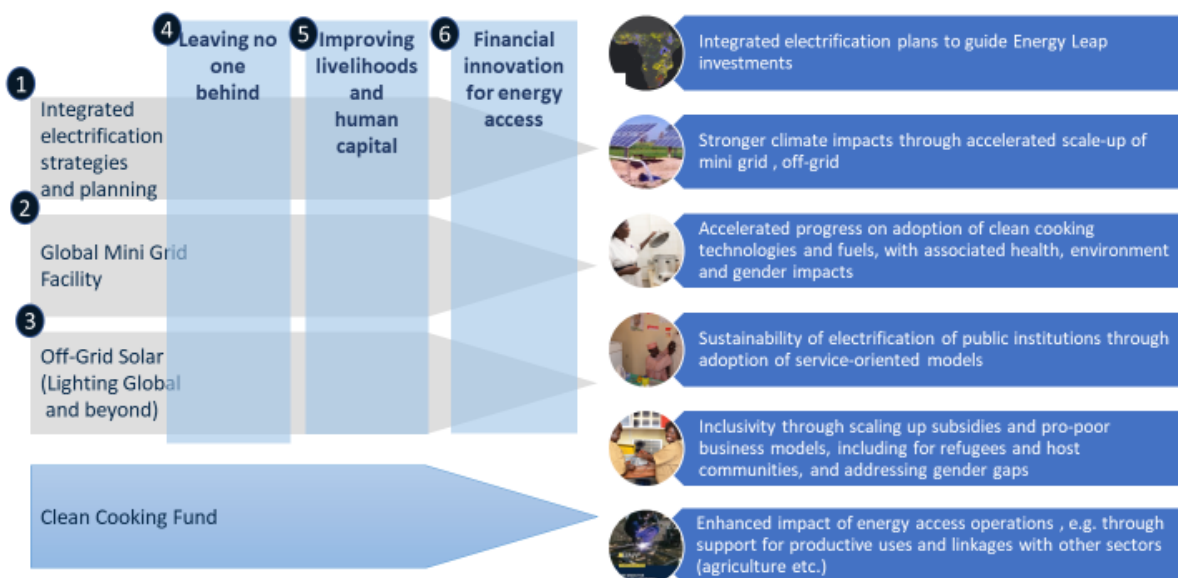
**Dedicated grant resources are needed to mobilize public and private investments and high-level political commitment to clean cooking. The Clean Cooking Fund will co-finance World Bank/MDB country or regional investment projects to scale-up public and private investment in clean cooking sector.**

The Clean Cooking Fund proposes to leverage at least 1:1 World Bank/MDB financing; catalyze technology and business innovations by generating additional revenue sources of incentives across clean-cooking value chains; support development partners to mobilize high-level political commitment at both global and country level; build capacity of various stakeholders; generate and disseminate knowledge; and promote continued innovation in technology, business and policies.

**Three interlinked areas of intervention are needed to scale-up investment in the clean cooking sector.** The Clean Cooking Fund will support the enabling environment to fill awareness gaps in knowledge, policy and capacity; access to finance (mainly co-financed by WB/MDBs) to support and enable enterprises and businesses to access commercial finance; and, Results-Based Financing to provide results-based grants for the public goods currently underdelivered due to the affordability gap. ESMAP will also support technological, business, policy, and financing innovations/pilots that are integrated into country/regional projects.

**Figure 4: Africa Energy Leap**

**ESMAP will support Africa Energy Leap: Mobilize IDA and Development Partners - 800 million people gain access to electricity; 100% of clinics and schools are electrified; 500 million people gain access to cleaner cooking, by 2030.**



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## ESMAP Business Plan: Focus on climate change

**The world is not on track to meet the objectives of the Paris Agreement and a dramatic strengthening of the NDCs is needed in the short term.** The latest IPCC Special Report warns that if greenhouse gas emissions continue to increase at the current rate, global average temperature is likely to rise by a further 1.5°C between 2030 and 2052. This would mean that temperate regions warm up by about 3°C and that the number of hot days increases in most terrestrial regions. Building on these results, the UNEP authored “Emissions Gap Report 2019” stresses the need for immediate action through significant strengthening of NDCs and calls for fundamental structural changes to the global economy in order to achieve a decarbonization path consistent with the objectives of the Paris Agreement.

**Models that limit global warming to 1.5°C expect to meet energy demand with lower energy use, including through enhanced energy efficiency, and require rapid electrification of end uses with renewables; but, current rates of progress are not enough.** To achieve the objectives of the Paris Agreement, renewables would have to supply 70–85% of electricity by 2050. In the transport sector, the share of low-emission final energy would need to rise from less than 5% in 2020 to about 35–65% in 2050, while the electricity share of energy demand in buildings would need to be about 55–75%. However, according to the Tracking SDG7 Report, 2017 progress on energy efficiency and renewable energy is not on track to achieve this. Energy intensity has decreased at varied rates across end-use sectors, with the fastest progress in transport (freight and passenger), where the average annual rate of improvement was slightly more than 2 percent. However, a decrease in intensity improvement in the services and agriculture sectors was the most noticeable. Given current and planned policies, annual energy intensity improvements are projected to average 2.3 percent between 2017

and 2030 – substantially below the rate of intensity improvement of 3 percent needed to achieve the objectives of the Paris Agreement. For renewables, the share of renewable energy in the global energy mix continued to increase, reaching 17.3 percent of total final energy consumption (TFEC) in 2017. The share of renewables in electricity consumption increased by 0.7 percentage point to 24.7 percent in 2017 – which represents a deceleration compared to the year-on-year growth recorded in 2016. Only 9.2 percent of heat was generated from modern renewables and the share of renewable energy in transport flattened in 2017, remaining at 3.3 percent in 2017. Financially strong off-taker utilities will be essential if IPPs are to invest in renewables.

**There is a gap between the expectation of a fast, renewables-driven energy transition and the reality of today’s energy systems in which reliance on fossil fuels remains stubbornly high**, according to the IEA’s flagship World Energy Outlook 2019 (WEO 2019). Additionally, the IEA warns that the momentum behind global energy efficiency improvements is faltering. The WEO 2019 notes that solar PV and some other renewable power technologies are turning initial policy and financial support into large-scale deployment, and increasingly cost-competitive offshore wind projects are on course to attract a trillion dollars of investment – all of which is good news – but that transforming the entire energy system will require progress across a much wider range of energy technologies, including energy efficiency, CCUS, hydrogen, and others. It will also require action across all sectors, not just electricity. The IEA also notes that though electric mobility is advancing rapidly in many countries, the appetite among consumers for bigger and heavier cars like SUVs is also growing and this is offsetting the benefits from adoption of electric vehicles. The speed at which battery costs decline will be a critical variable for power markets as well as for electric vehicles.

**Investments in clean energy need to ramp up since creating a climate-safe global energy system requires USD 110 trillion worth of investments by 2050, compared to USD 95 trillion currently planned**, according to IRENA’s publication “Transforming the energy system – and holding the line on rising global temperatures”. Additionally, much of the USD 95 trillion currently planned for investments by 2050 must be redirected from fossil fuel investments to clean technologies, meaning annual investments in renewables need to more than double in the coming decade. A key enabler will be the reduction of subsidies to fossil fuels, which amounted to \$427 billion in 2018 (IEA).

Boxes 6 and 7 summarize ESMAP’s FY21-24 programs to promote renewable energy and accelerate decarbonization of end-uses.

#### **Box 6: ESMAP SUPPORT TO RENEWABLE ENERGY**

**Mature renewable energy technologies (onshore wind, hydro, solar, geothermal) need to be scaled up rapidly and significantly.**

ESMAP will support countries throughout the processes of scale-up by implementing its unique and comprehensive SRMI offer (including mobilizing climate finance for clients) and ensure that promising hydropower projects are supported in their development through the Hydropower Development Facility.

**New RE technologies enlarging the field of possibilities for developing countries need to be fostered to allow for leapfrogging.**

ESMAP will assist countries to take advantage of new technology opportunities to benefit from local resources and diversify their renewable energy supply through technologies such as offshore wind, innovative solar, and energy storage technologies.

**Comprehensive support taking into account local socio-economic and environmental benefits is needed for true transformation of the sector sustainable over time.**

ESMAP will work with countries to design socio-economic roadmaps, local value chain strategies and technology-specific environmental and social frameworks for emerging technologies to bring local benefits beyond electricity delivered, such as jobs, local development, business creation, closing of gender gaps and environmental benefits.

#### **Box 7: ESMAP's PROGRAMS TO ACCELERATE DECARBONIZATION**

**The public sector has large potential for decarbonization across many areas and can lead by example.**

ESMAP will support clients in implementing a Zero Carbon Public Sector by making investments and implementing policies that achieve decarbonization across buildings, transport, and utilities.

**Decarbonization of industry and other energy-intensive activities is essential to meet climate change goals but technology innovation on multiple fronts is needed.**

ESMAP will support targeted technological innovation and scale-up of process electrification, radical gains in efficiency, use of modern renewables for process heat (including geothermal), carbon capture storage and use, moves to a more circular economy, and scale-up of key game-changing technologies such as green hydrogen.

**There is window of opportunity to meet growing need and demand for cooling while avoiding the threat of run-away energy demand and GHG emissions and simultaneously help meet multiple SDGs.**

ESMAP will support comprehensive and cross sectoral approach to improve access to essential and sustainable cooling, including the mobilization of climate finance with the establishment of a Cooling Facility.

## **Climate Change Adaptation and Resilience**

**Climate change also poses direct risks to power sector investments as many of the assets are highly sensitive to environmental variables such water availability, cyclones, heat waves and flooding.** It is imperative to account for and address these changing conditions during development and design of power sector



infrastructure. Several ESMAP programs will have significant climate adaptation co-benefits. For example, from an adaptation and resilience perspective, cooling is a necessity. By 2030, over half of the world's population will live in hot climates with increasing exposure to potentially dangerous heat conditions. As extreme heatwaves become more frequent, widespread installation of air conditioning will increase energy demand and exacerbate climate impacts. Efficient, clean cooling is essential for climate resilience of populations, workplace productivity, food security, and healthcare delivery.

In the power sector, an interconnection that connects a hydro-dominated system with one that has significant non-hydro resources including solar can also build resilience in both systems as resources (especially hydro and solar) can complement each other. Hydropower is already a significant contributor to climate change mitigation through emission free energy generation. Hydropower can play an important role in climate change adaptation through water resource management and energy storage. Mini grids can in turn complement transmission and distribution system because local communities can continue to receive supply even when a cyclone disrupts flow from the main grid due to outage of power lines. Energy storage systems can add further to system resilience in both the main grid and the mini-grid because it can provide frequency control services to the main power system and storage functions for both the main grid and mini-grids.

As the penetration of VRE increases in developing countries often with weak grid, storage can be very useful in adding resilience for extreme weather events like cyclones that can shut down, or reduce, output from wind/solar and may also cause transmission outages. The largest BESS installation in the world in South Australia was motivated by grid failures arising from storms and since then has been very helpful in avoiding outages not only from storms, but also from power station failures during a major heatwave in neighboring Victoria. Finally, many of the smart grid technologies for transmission and distribution can be instrumental in building resilience. These may include synchrophasors that allow the system operator to get rapid updates to system conditions in a fraction of second and initiate manual/automated actions that can prevent a grid failure under extreme weather conditions. There are dynamic line monitors that allow lines to carry extra power from wind power hubs during high wind periods, but also prevents a catastrophic failure by lowering line capacity during a heatwave.

**In summary, several ESMAP programs (such as on hydropower, efficient cooling, mini-grids, Next Generation Utilities, and regional markets and power trade) would consider that the policy and investment outcomes not only have climate mitigation impacts, but also contribute towards climate adaptation and resilience.** In these areas, ESMAP will also draw on collaboration with other programs in the World Bank, such as the Global Facility for Disaster Reduction and Recovery (GFDRR) and the new Climate Support Facility.

## Principles of ESMAP's Operating Model

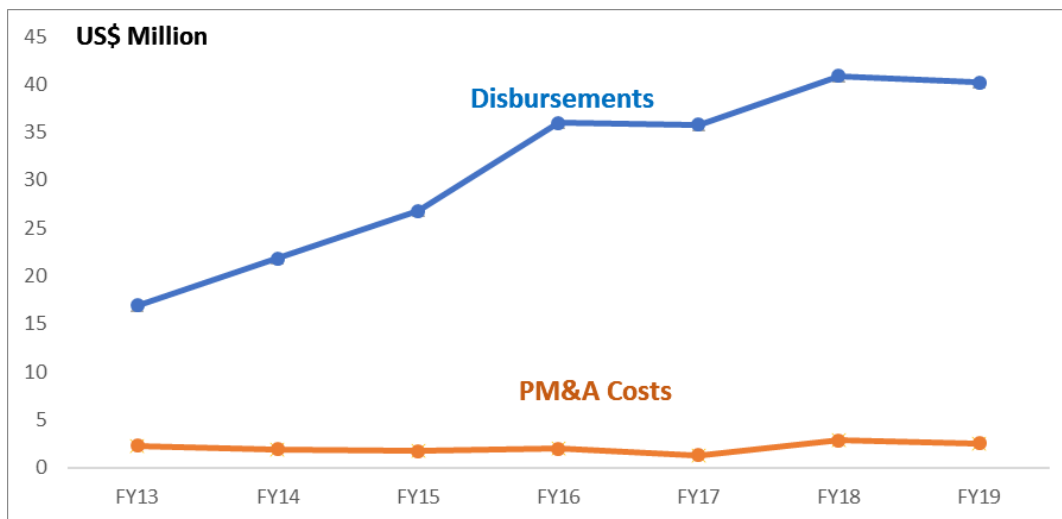
ESMAP's operating model to implement the Business Plan will be based on the following principles:

- ESMAP will continue to be fully integrated in the World Bank's Energy Global Practice with a view to informing World Bank policy dialogue and lending through ESMAP's centers of technical expertise. This will involve a combination of own-managed global knowledge work, technical support to World Bank operations by ESMAP staff, and provision of country-based grants to World Bank regional and IFC operational units.
- ESMAP will seek to influence the global energy agenda with cutting-edge knowledge drawn from World Bank operations and the Bank's role as a source for development data, collaborating with other

multilateral and bilateral organizations, initiatives and programs, as well as partnering with non-governmental organizations, think-tanks, research institutions, and industry groups.

- ESMAP will harness the World Bank’s convening power to promote international cooperation and foster knowledge exchange in its areas of comparative advantage.
- ESMAP will draw on the World Bank’s unique multi-sector expertise and global presence to ensure that energy programs reflect the synergies across SDGs and cross-country experiences.
- ESMAP’s programs will support the achievement of the World Bank’s corporate priorities, such as climate change action; gender equality; support to fragile and conflict-affected states; and maximizing finance for development.
- ESMAP will support World Bank-implemented Advisory Services and Analytics (ASA) activities, as well as recipient-executed technical assistance and investment activities
- In order to support World Bank clients to go from analysis to action, ESMAP will mobilize finance for the Business Plan’s program areas from the GCF, CIF or grants directly through ESMAP to co-finance IBRD/IDA lending in new and emerging areas of the energy transition. Such funding for recipient-executed technical assistance and investment activities will be channeled through ESMAP when the projects require grants due to affordability, innovation, risk, or global public goods aspects, or in the absence of other financing sources.
- ESMAP will agree multi-year country programs with World Bank regional energy units, taking a whole-of-sector approach to achieving the overarching objectives of energy transition and energy access. Funding will continue to be provided through a mix of Annual Block Grants for flexible, just-in-time assistance to clients, and global programs with strategic targets and dedicated technical support.
- ESMAP will formally become the “umbrella” trust-funded program of the World Bank’s energy practice. Through the “umbrella”, ESMAP would provide donors with the option to make “preferenced” supplemental contributions to specific recipient-executed country/regional grants (RETFs) -- for example, co-financing IBRD/IDA operations either through the core ESMAP MDTF or “associated” TFs under the ESMAP umbrella. Donors could also channel funding to UN agencies and MDBs through ESMAP.
- ESMAP will continue to benefit from economies of scale in managing its growing portfolio. From FY13 to 19, ESMAP annual disbursements have increased from about USD 17 million to over USD 40 million, a 138% increase, while Program Management and Administration (PM&A) costs have essentially remained flat, with FY13 PM&A costs totaling about USD 2.3 million, compared to the FY19 total of USD 2.6 million (a 12% increase) (see Figure 5). Such efficiency gains for ESMAP are realized by using a single governance structure and secretariat. ESMAP’s secretariat would continue to provide unified operational guidelines and manage the monitoring and evaluation (M&E) function, ensuring that reporting requirements are met, in particular, reporting to ESMAP’s donor partners.

**Figure 5: ESMAP Disbursements vis-à-vis Program Management & Administration (PM&A) Costs**

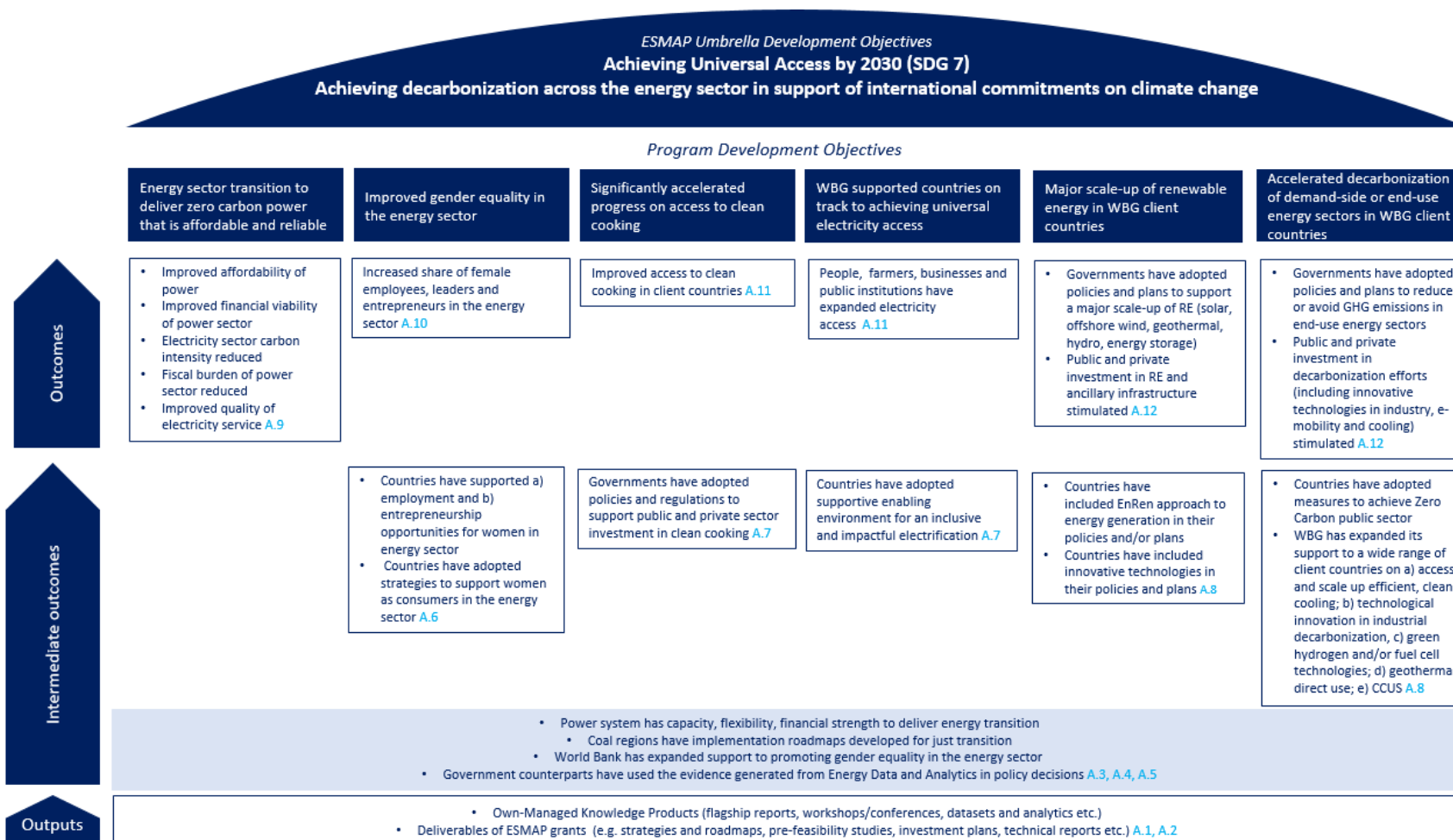


## ESMAP Business Plan: Theory of Change

The ESMAP Theory of Change is an overarching view of the results that ESMAP strives to achieve to contribute to the umbrella development objectives: achieving universal access by 2030 and achieving decarbonization across the energy sector in support of international commitments on climate change. In line with the recommendations of the ESMAP External Evaluation, the Theory of Change illustrates that foundational intermediate outcomes (focusing on the energy sector reform for sustainable energy transition, promoting gender equality in the sector, and informing policy decisions with energy data and analytics) enable higher-level results across programs. The Theory of Change is accompanied by a comprehensive Results Framework that defines *indicators* and *targets* to measure the progress towards achieving the development objectives (Appendix 1).

Table 1 describes the proposed ESMAP programs along with the respective budgets and selected program outcome indicators and targets.

Figure 6: ESMAP Theory of Change



**ASSUMPTIONS**

- A.1. Availability of practical knowledge on cutting edge technologies and approaches in energy sector and on strategies to mobilize private investment, as well as global and country data responds to the demand from the WBG operational teams and clients for developing tailored approaches to energy access and decarbonization.
- A.2. ESMAP grants are demand-based and provide the analytical foundation for the World Bank and client policy decisions.
- A.3. Well performing utilities and markets, with appropriate regulation, plans and incentives (e.g. through subsidy reform) enable countries to deploy non-carbon intensive technologies and attract private sector investments, setting the stage for results across the electricity access, clean cooking, renewable energy and demand-side decarbonization sectors.
- A.4. Evidence-based World Bank and public interventions (e.g. geospatial planning, demand estimation, MTF for access etc.) increase their accuracy and contributes to achieving demand-driven results across all ESMAP thematic programs.
- A.5. Expansion of the World Bank support to promoting gender equality in energy sector requires that the operational teams and clients implement specific activities aimed at closing the gender gap between women and men. This stimulate adoption of respective policies on gender across ESMAP's thematic programs.
- A.6. Governments' adoption of practical policy measures and strategies stimulates increased opportunities for women as employees and entrepreneurs in the energy sector.

- A.7. Adoption of specific policy measures (national electrification strategies, mini-grid regulations, business models to procure clean cookstoves etc.) set up the trajectories for countries to follow for increased access to electricity and clean cooking.
- A.8. Expansion in the World Bank and client engagements (technical assistance, RETF-funded pilots, World Bank country strategies, including strategies for mobilization of private financing) on innovative technical aspects of promoting the generation of renewable energy and end-user decarbonization leads to both policy and investment (World Bank lending and private).
- A.9. Power sector readiness to leverage modern, clean technologies and business models will enable energy sector transition.
- A.10. Expansion of employment and entrepreneurship opportunities for women in the energy sector, as well as access to clean sources of energy and cooking will result in broader benefits (economic, social, health etc.).
- A.11. Policies and investments to expand access to electricity and clean cooking contribute to both achieving the universal access and accelerating decarbonization through deployment of clean technologies (green mini-grids, SHS, clean cookstoves etc.)
- A.12. Implementation of renewable energy generation and demand-side decarbonization projects (both World Bank and privately financed) creates direct benefits by adding GW of renewables in the countries' energy mix and reducing GHG emissions; while the policy commitments generate additional longer-term benefits putting the World Bank client countries on track to achieving the international commitments on climate change.

**Table 1: ESMAP Proposed Programs**

PROGRAM	Bank-executed (own managed and grants)	Recipient- Executed Grants	Selected Results Framework Indicators and Targets
<b>Foundations for the Energy Transition</b>	<b>USD 177 mln</b>	<b>USD 36 mln</b>	<ul style="list-style-type: none"> <li>Reduction in average cost of power supplied in 70% of ESMAP supported countries</li> <li>RISE score on utility creditworthiness reaches the green threshold (66.67) in all ESMAP supported countries</li> <li>768 kg CO<sub>2</sub> equivalent/MWh carbon per unit power generated (doubling the annual rate of decline observed for 2014-2019)</li> <li>USD 2 billion reduction in fiscal transfers in the countries receiving ESMAP support during business plan</li> <li>1-point improvement in Doing Business score on Reliability of Supply and transparency of tariff against baseline 2.3 (doubling the 0.5-point improvement over FY18-20)</li> <li>USD 50 billion World Bank lending leveraged for improved affordability, improved financial viability, reduced carbon intensity, transition in coal regions, reduced fiscal burden, and improved quality of electricity service</li> <li>5 GW of coal capacity reduced through coal plant retirement/re-purposing</li> <li>At least 20 countries with official plans to reform energy subsidies</li> <li>2 Coal Regions with implementation roadmaps developed for Just Transition</li> <li>15 additional countries implementing initiatives to enhance women's employment at the utility level</li> <li>70% of World Bank operations supported by ESMAP meet the Gender Tag to close gaps between women and men</li> </ul>
Utilities for the Energy Transition	USD 30 mln		
Energy Markets, Connectivity and Trade	USD 30 mln	USD 20 mln	
Energy Subsidy Reform Facility	USD 30 mln	USD 10 mln	
Closing Gender Gaps in Energy Sector	USD 18 mln		
Supporting Coal Regions in Transition	USD 44 mln	USD 6 mln	
Annual Block Grants	USD 25 mln		
<i>Program Sub-Total (BETF+RETF)</i>	<b>USD 213 mln</b>		
<b>Clean Cooking Fund</b>	USD 50 mln	USD 450 mln	<ul style="list-style-type: none"> <li>200 million people gaining access to clean cooking resulting from policies, programs and strategies</li> <li>100 million people gaining access to clean cooking resulting from financed projects USD 2 billion investments mobilized (including both public and private financing)</li> </ul>
<i>Program Sub-Total (BETF+RETF)</i>	<b>USD 500 mln</b>		
<b>Electricity Access</b>	USD 90 mln	USD 140 mln	<ul style="list-style-type: none"> <li>500 million people with new electricity access resulting from universal access strategies, programs and plans informed by ESMAP, of which mini-grid/off-grid: 300 million</li> <li>150 million people with new electricity access through projects funded through the World Bank, Governments, development partners and associated private sector investments, of which mini-grid/off-grid: 90 million</li> <li>1 million public institutions (schools, health clinics and other community facilities) electrified through ESMAP-informed projects funded through the World Bank, Governments, development partners and associated private sector investments</li> <li>USD 30 billion electricity access financing mobilized, of which USD 10 billion from private sector</li> </ul>
<i>Program Sub-Total (BETF+RETF)</i>	<b>USD 230 mln</b>		
<b>Renewable Energy</b>	<b>USD 78 mln</b>	<b>USD 105.5 mln</b>	<ul style="list-style-type: none"> <li>60 GW RE capacity additions under government policies and plans up to 2030, of which 20 GW from Offshore Wind</li> <li>32.5 GW RE capacity commitments (direct and enabled through ancillary infrastructure and grid improvements) under financed projects               <ul style="list-style-type: none"> <li>20 GW from En-Ren (solar, on-shore wind, geothermal)</li> <li>3 GW from Innovative Solar</li> <li>4.5 GW from Hydropower Development Facility</li> <li>5 GW from Offshore Wind</li> </ul> </li> <li>USD 25 billion financing leveraged for projects that increase RE capacity</li> </ul>

PROGRAM	Bank-executed (own managed and grants)	Recipient- Executed Grants	Selected Results Framework Indicators and Targets
Energizing Renewables En-Ren (formerly SRMI)	USD 22.5 mln	USD 63.5 mln	<ul style="list-style-type: none"> <li>- USD 3 billion WB financing leveraged</li> <li>- USD 22 billion private financing leveraged</li> <li>• 15 GWh battery storage capacity commitments under financed projects</li> </ul>
Energy Storage	USD 18 mln	USD 12 mln	
Innovative Solar	USD 7.5 mln		
Offshore Wind	USD 10 mln		
Hydropower Development Facility	USD 20 mln	USD 30 mln	
<i>Program Sub-Total (BETF+RETF)</i>	<b>USD 183.5 mln</b>		
<b>Accelerating Decarbonization</b>	<b>USD 84 mln</b>	<b>USD 10 mln</b>	<ul style="list-style-type: none"> <li>• 11,400 lifetime MtCO2e expected GHG emissions reduced or avoided under government policies and plans up to 2030</li> <li>• 470 lifetime MtCO2e expected GHG emissions reductions under financed projects</li> <li>• 73 projects financed that reduce or avoid GHG emissions               <ul style="list-style-type: none"> <li>- 25 projects target decarbonization in the public sector</li> <li>- 15 projects include use of innovative technologies in industry</li> <li>- 25 projects are “cooling informed”</li> <li>- 4 projects include green hydrogen</li> <li>- 4 projects include geothermal direct use</li> </ul> </li> <li>• USD 4.55 billion of financing leveraged for projects that support accelerated decarbonization               <ul style="list-style-type: none"> <li>- USD 3.1 billion WB financing leveraged</li> <li>- USD 350 million private financing leveraged</li> <li>- USD 1.1 billion private financing leveraged</li> </ul> </li> </ul>
Zero Carbon Public Sector	USD 26 mln		
Industrial Decarbonization	USD 18 mln	USD 7 mln	
Efficient and Clean Cooling	USD 25 mln		
Geothermal Direct Use	USD 3 mln	USD 3 mln	
Green Hydrogen	USD 12 mln		
<i>Program Sub-Total (BETF+RETF)</i>	<b>USD 94 mln</b>		
<b>Energy Data and Analytics</b>	USD 41 mln		<ul style="list-style-type: none"> <li>• 100% World Bank energy lending operations informed by using the Energy Data &amp; Analytics datasets, applications and knowledge reports (including using energy data to close gender gap in energy services)</li> <li>• 100% of new World Bank advisory services and analytics projects supported by ESMAP confirm and illustrate the use of Energy Data &amp; Analytics datasets, applications and knowledge reports 10 well-established global initiatives (publications, indexes, research series, white papers from global institution including World Economic Forum, UN, IRENA, IEA) use Energy Data &amp; Analytics outputs</li> </ul>
<i>Program Sub-Total (BETF+RETF)</i>	<b>USD 41 mln</b>		
<b>ESMAP Program Management and Administration*</b>	USD 20 mln		
<i>Program Sub-Total (BETF+RETF)</i>	<b>USD 20 mln</b>		
<b>ESMAP TOTAL</b>	<b>USD 540 mln</b>	<b>USD 741.5 mln</b>	
<b>GRAND TOTAL</b>	<b>USD 1,281.5 bn</b>		

\*Covers the following items: Managing the Program, Personnel management, Trust fund administration and donor relations, Consultative Group meetings and Technical Advisory Group, M&E, Communications, and Knowledge Management.



## **ANNEX 1: ESMAP’s Technical Advisory Group Workshop, September 18-19, 2019**

ESMAP convened a Technical Advisory Group (TAG) of leading thinkers in the energy sector<sup>2</sup> for a two-day brainstorming and consultation workshop with ESMAP staff to inform the preparation of ESMAP’s FY21-24 Business Plan. ESMAP’s objective was to engage with practitioners and experts from academia, international organizations, World Bank clients, think tanks, and the private sector, to better understand the implications of recent changes in its operating environment (such as accelerating climate change, technological disruptions in the energy sector) for its support to World Bank clients to achieve SDG7 and the Paris Agreement objectives, as well as for its role in defining and advancing the global agenda on sustainable energy.

### ***Workshop design***

The following broad questions were used to guide the workshop:

- How is the energy sector expected to evolve over the coming years? What can be expected in terms of sector structure, institutions, operating models in the next 5 years? In the next decade? How can ESMAP prepare its clients for these changes and support them to adapt to the changes that are coming?
- What should ESMAP prioritize as thematic priorities, keeping in mind its comparative advantages?
- Looking forward, in which areas should ESMAP direct its research efforts so that it remains at the cutting edge and is relevant over the next decade? What is being done by others and with whom would it be most productive to collaborate?
- What lessons from the experience of developed and developing countries are relevant for ESMAP as it looks to the next 5-10 years? How can it best leverage the efficiencies and agility of the private sector?

### ***Messages and recommendations: ESMAP approach and areas of focus***

The TAG suggested that ESMAP follow a problem-solving approach, drawing on different areas of expertise as needed, rather than orienting itself around particular themes. While emphasizing the importance of specialization and expertise within ESMAP, it warned against the development of thematic silos. Moreover, ESMAP should continue to build alliances, complementing its partners, and use its convening power to bring national stakeholders together.

The TAG agreed that ESMAP’s overall direction should be given by SDG7 and the Paris Agreement. It felt that a concerted effort should be made to achieve universal access by 2030: the topic should be given high visibility at the Bank/Fund Annual Meetings, among other fora, and ESMAP could usefully adopt a country focused “mission approach” for achieving this high-level goal.

A clean energy systems approach underpinned by integrated energy sector planning (including least-cost expansion and incorporation of all sources of flexibility) ought to be the foundation for ESMAP/Bank assistance, with data transparently driving decisions. Members of the TAG commended ESMAP’s role in data collection, publication and use.

The TAG supported the idea of a distinct ESMAP workstream on utilities, in view of their criticality for continued service delivery under the energy transition. It underlined the need for appropriate regulation in order to prevent

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<sup>2</sup> The TAG consisted of the following nine individuals: Thiago Barral, EPE, Brazil; Carlos Batlle, Comillas Pontifical University’s Institute for Research in Technology (IIT), Spain and MIT; Nicola Borregaard, EBP Chile; Abderrahim Jamrani, MASEN, Morocco; Andreas Kuhlmann, DENA, German Energy Agency; Luciano Martini, CEM/MI, Italy; Ajay Mathur, TERI, India; Damilola Ogunbiyi, Nigerian Rural Electrification Agency; and Dana Younger, formerly IFC.

incumbent utilities from constraining entry/competition and to encourage adoption of new technologies (e.g., by ensuring cost recovery and appropriate allocation of grid costs in the context of distributed energy resources).

The TAG recommended that ESMAP support research and innovation in new technologies, especially with regard to their potential adoption by developing countries. Options suggested included a “challenge” approach, funding pilot models or other means of learning by doing, and, stepping up south-south learning and exchange. The TAG noted that solutions must be customized to local/country/regional needs, and local benefits (such as jobs) assured to avoid harm to those unable to absorb shocks. Further, ESMAP should mainstream climate resilience in its work. The TAG suggested that ESMAP undertake the necessary preparation (for example through research, pilots, etc.) to provide a full package of TA/services on: (i) Decarbonization of hard-to-abate sectors (cement, steel, petrochemicals, air and sea transport); (ii) Cooling; and, (iii) Power fuels (e.g., ammonia, hydrogen), carbon capture, use and storage, and all forms of energy storage. It also encouraged ESMAP to incorporate digitalization, IT and artificial intelligence in its offerings.

Finally, the TAG advised ESMAP to continue working across World Bank Global Practices: at the nexus of agriculture-energy-water, and with the transport and urban sectors. ESMAP ought not to lose momentum under existing programs which are doing well, including Geothermal Energy and Sustainable Cities. Building on work to date, it should make a concerted effort to move forward the Clean Cooking and Gender in Energy agendas.

## ANNEX 2: ESMAP Response to COVID-19

The COVID-19 pandemic and associated country-wide lock-downs have led to a global decline in employment and consumer demand resulting in an unprecedented contraction in global economic activity, even as commodity prices are at historic lows. In the short term, management of the crisis is focused on ensuring a strong health response and addressing immediate humanitarian and social protection needs including of those who have been pushed into poverty. Energy sector interventions can contribute to this response by ensuring reliability of supply for health facilities providing essential services during COVID-19.

ESMAP has developed a COVID-19 Emergency Power Supply Response Strategy Note that is guiding World Bank teams in structuring IBRD/IDA projects on ensuring urgent, adequate and reliable, clean energy for critical health facilities. ESMAP is also exploring with development partners the establishment of a facility to provide grant co-financing for low-income and fragile IDA countries that are constrained in their resources for urgently electrifying health facilities in the face of the pandemic.

In addition to being an “essential service” in the emergency response phase, the energy sector has been directly impacted by the economic down-turn and by pandemic imposed restrictions: lower demand has resulted in reduced utility revenues across the board and limited ability to finance O&M and investments, affecting reliability of supply. Cash flows are also stressed in the off-grid and mini-grid segments of the sector, undermining their ability to continue in operation and limiting prospects for extension of service. All these factors are ultimately a drag on the prospects for eventual recovery.

But as infections are brought under control and economic activity recovers, it will be important to ensure that both the emergency response to the pandemic and recovery from it do not undermine achievements on climate change and the energy transition - in short that we “build back better”.

The ESMAP Business Plan for FY21-24 is well positioned to support client countries in addressing these challenges and “building back better” by taking actions that will support a robust and sustainable recovery and increased resilience to future shocks. Policies that enable the Energy Transition can help recovery from COVID19 by: (i) responding to the livelihood challenges aggravated by the crisis and boosting domestic economic activity; (ii) ensuring continuity in provision of affordable, reliable and clean energy, including for productive uses and facilities providing public services; and (iii) helping to alleviate fiscal pressures by reducing the burden of energy costs on the economy.

ESMAP’s support for the Energy Transition will inform World Bank and country responses in the recovery from the COVID crisis along three main channels.

- **Creation of clean energy jobs.** This will be accomplished through acceleration of the shift to renewable energy, including in the off-grid and mini-grid space, and a zero-carbon public sector. Skill development and training for green jobs in coal regions in transition address the social dimension of the transition away from fossils.
- **Enhanced fiscal space.** Reform of fossil fuel and power subsidies along with stronger but targeted social protection systems can directly reduce the fiscal burden of the energy sector; investment in RE will help create fiscal space by taking an “invest to save” approach that would lower the need for spending on fuels.
- **Reliable, affordable and resilient electricity supply.** Support to enhance utility operational and financial performance, develop energy markets and the uptake of digital technologies allowing exploitation of demand response and decentralized generation in combination with off-grid and mini-grid supply will result in lower cost, more reliable power for underpinning growth and recovery that is also more resilience to future shocks. The emergency response supported by ESMAP, focused on providing reliable and clean (solar PV plus battery) electricity to health facilities, will avoid proliferation of diesel systems and will serve

as a basis for a larger public institutions electrification program, leveraging renewable energy mini grid and off-grid solar technologies.

ESMAP will inform various intervention pathways, which will include budgetary support through Development Policy Financing, which offers opportunities to accelerate the adoption of Energy Transition policies directly, and more traditional Investment Project Financing, which may be used by clients for more direct stimulus spending on infrastructure or energy access investments.