

ELECTRICITY ACCESS

ESMAP BUSINESS PLAN FY21-24

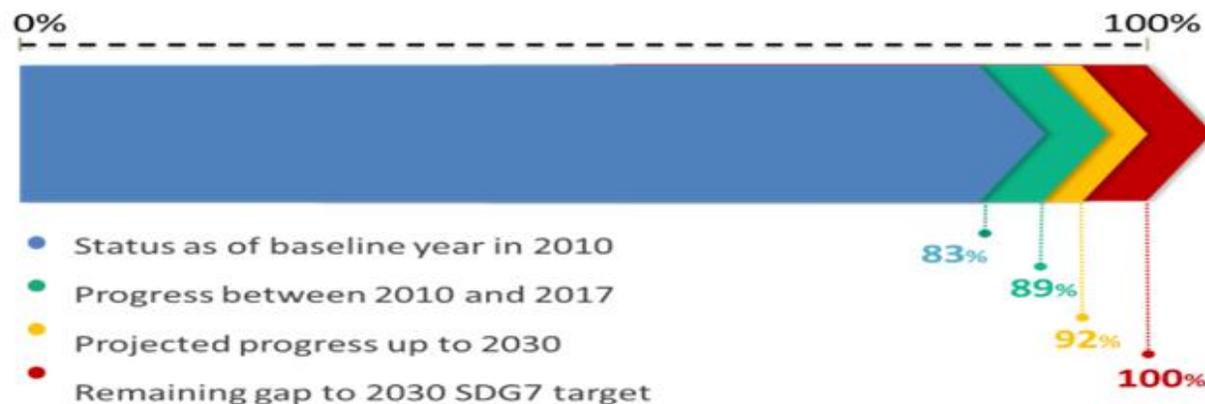
PROBLEM STATEMENT

840 million people are living without electricity today
650 million people will live without electricity in 2030 - IF business as usual continues

- Lack of electricity access affects economic productivity and opportunities for income generation, and accordingly, the ability to raise living standards. It perpetuates reliance on polluting and hazardous fuels, such as kerosene and diesel.
- Human capital formation is affected by the lack of electricity in schools.
- Health facilities continue to operate without reliable electricity, often with disastrous impacts for their patients. This is now also affecting the ability to respond to the COVID 19 crisis.
- Farmers and businesses cannot increase productivity and raise their incomes without access to reliable and affordable electricity.
- The poor use significant amounts of their limited income on expensive, low quality, and occasionally unsafe energy forms. For many of them, however, high costs of grid connection and/or solar home systems make electricity service unaffordable. The COVID-19 crisis will also disproportionately impact the poor and vulnerable.

Energy access deficit is a global problem, but it is increasingly concentrated in **Sub-Saharan Africa (SSA)**, where:

- Electrification just barely keeps pace with population growth
- 541 million lack access today, and 530 million are projected to lack access by 2030 (which will represent 90% of the global electricity access deficit in 2030)
- 1.7 million schools and health facilities, and 86% of small-holder farmers in SSA remain unelectrified today
- SSA is home to the least electrified countries, such as Burundi, Chad and Malawi (9%, 11% and 14% electrification rates, respectively);
- 16 out of 20 countries with the largest access deficit are in SSA.



THIS OUTCOME IS NOT INEVITABLE. 2030 target can be achieved if current efforts are intensified.

CONTEXT

Recent Trends:

- Energy access progress has accelerated. Nearly half a billion people were electrified between 2014 and 2017.
- Acceleration is driven by improving policy environment. The average RISE score for electrification increased from 29 to 49 between 2010 and 2017, reflecting political commitment to the universal electricity access goal, although scope for improvement still exist (only 28% of countries are classified in the highest “green” zone).
- Further acceleration is feasible thanks to technology and business model innovations, such as falling prices of solar PV/battery solutions and energy-efficient appliances, emergence of hybrid mini grids and scaling up of off-grid solar solutions, leveraging private sector investments, and contributing to climate-friendly economic development.
- Political commitment and integrated approaches combining grid, mini-grid and off-grid technologies have led to countries’ successes (e.g. Kenya, Myanmar, Rwanda, Bangladesh). These successes are being now replicated in other countries, aided by the improved availability of data and geospatial least-cost modeling tools.
- The COVID-19 crisis demonstrates the importance of energy access for emergency response and resilience.

Challenges Ahead:

A more inclusive approach and increased ambition to accelerate progress across all countries and population segments especially in SSA, is needed

- 120 million people need to be electrified each year to achieve the 2030 SDG7 target. The remaining unelectrified population is increasingly rural, remote, poor, and living in regions affected by fragility, conflict and violence (FCV). Already today, 87% of the remaining unelectrified population is rural, 25% live in FCV countries.
- The majority of 70 million displaced people do not have reliable and sustainable electricity access.
- Electrification progress is highly uneven across regions and countries. Progress has been so far driven by a handful of countries, mostly in South Asia and East Africa. The majority of 20 high impact countries are not on track to achieve universal electricity access by 2030.
- Unless mitigated, the COVID-19 crisis threatens deceleration and even reversal of electrification efforts due to financial distress of utilities, mini grids, and off-grid solar service providers. The nascent mini grid and off-grid industry and the poor, remote consumers they serve are particularly at risk.

ESMAP has created Momentum for Accelerating Access:

ESMAP has building blocks in place for a significant electrification scale-up and enhanced impacts

- ESMAP supported Governments to develop national strategies and integrated least-cost planning for universal electricity access, resulting in sector-wide programs, incorporating grid, mini grids, and off-grid technologies.
- The World Bank’s \$3 billion energy access lending was informed by ESMAP, resulting in new electricity access for over 20 million people. Through ESMAP’s support, the World Bank mini grid and off-grid investment portfolio grew from \$200 million in FY17 to over \$1 billion in FY19.
- ESMAP has benefited the energy access community through its cutting-edge, operationally-relevant knowledge and tools; such as the Off-Grid Solar Market Trend Report series and the Mini Grids for Half a Billion People report, as well as the Global Electrification Platform (GEP), which is the first open-source, open-data geospatial platform for least-cost electrification planning, covering today 46 SSA countries and expanding to other regions. The World Bank Energy and Extractives Global Practice is committed to scaling-up electricity access lending further in the next 2 IDA cycles, developing the Africa Energy Leap initiative, which will aim to electrify 300 million people in the next 6 years. ESMAP will provide data and analytics, help build an enabling environment, and inform design of resulting energy access operations for this ambitious initiative.
- ESMAP’s expertise in solar PV and battery storage technology and sustainable business models is being applied for fast-tracking electrification of public institutions in response to the COVID-19 crisis.

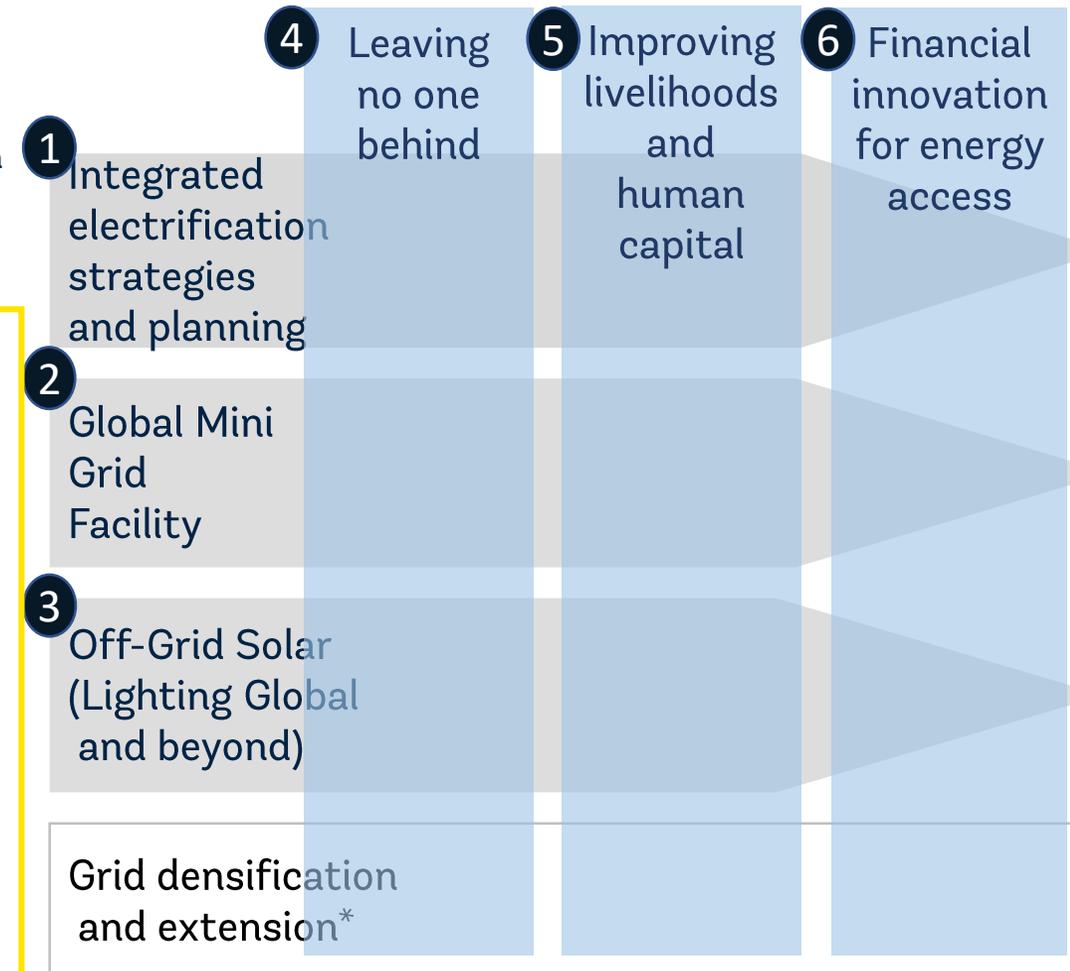
PROPOSED ESMAP RESPONSE

SIX WORKSTREAMS TO ACCELERATE ACCESS WHILE SUPPORTING INCLUDING AND IMPACT

The New Business Plan will build on what has worked, while addressing emerging new challenges. It will scale-up successful windows of (1) electrification planning (previously SE4ALL TA), (2) the Global Mini Grid Facility, and (3) Lighting Global; while incorporating three cross-cutting streams focused on (4) supporting inclusion (“leave no one behind”, expanding on existing work on refugees and host communities), (5) productive uses and human capital (building synergies with agriculture, health and education), and (6) innovations to scale-up financing for energy access. A focus on gender will be integrated throughout the various streams.

Lessons integrated in the new approach (confirmed through the External Evaluation)

- Electrification issues are interlinked; a comprehensive approach is needed to address the electricity access challenge, combining technical elements (innovative technologies, business models, policy and planning, leveraged public and private financing) with human-centered elements (demand-side and supply side interventions to leave no one behind, including poor and marginalized populations, displaced people, productive use, human capital, gender).
- The needs and affordability of the poor must be better understood to design interventions accordingly. Market based solutions can expand access rapidly, but the poor may not benefit from them, unless targeted support is provided.
- The importance of demand-side factors is often overlooked. Electrification on its own may not result in intended impacts, if not complemented by specific demand-side measures, in particular for supporting development of productive uses. Collaboration with agriculture, health and education sectors is essential for delivering intended impacts.
- Global knowledge is critical to spread emerging success stories and lessons across continents and countries, but global experiences need to be tailored to individual country circumstances.
- Costs can be reduced and impacts improved through better data on demand (households, productive uses, public institutions) and supply options (e.g. geospatial models). Open source/data interventions reduce costs for all and should be promoted.
- Environmental and social sustainability, including e-waste, consumer protection etc., need to be integral elements of the design.



* There will be no dedicated program for grid densification and extension, but support will be available to achieve goals of the cross-cutting workstreams, which are technology neutral

TECHNOLOGY WORKSTREAMS

- Integrated Electrification Strategies and Planning
- Global Facility on Mini Grids
- Lighting Global and Off-Grid Solar Scale-Up
- Grid Densification and Extension

1 INTEGRATED ELECTRIFICATION STRATEGIES AND PLANNING

WHY:

- Achieving universal access by 2030 requires a mix of grid, mini grid, and off-grid technologies, as well as accelerated implementation, and increased financial flows, including from the private sector.
- National electrification strategies and plans, using geospatial planning tools to integrate grid, mini grid, and off-grid technologies, have proven to accelerate electrification efforts while reducing costs (e.g. Rwanda, Myanmar, Kenya). These plans also improve donor coordination and are effective tools for mobilizing finance, including commercial finance, by reducing costs and risks for the private sector.
- Technology advancements and data availability are revolutionizing electrification planning. The ESMAP Global Electrification Platform (GEP) is the first open source, open data tool that can carry out high level geospatial electrification planning based on various policy scenarios. Greater availability of data, analytics and tools - including machine learning - now provide new opportunities to further enhance electrification planning through (i) better estimates of demand, and (ii) more intelligent integration of available technologies and business models to reach all user segments in both the most efficient and most inclusive manner.

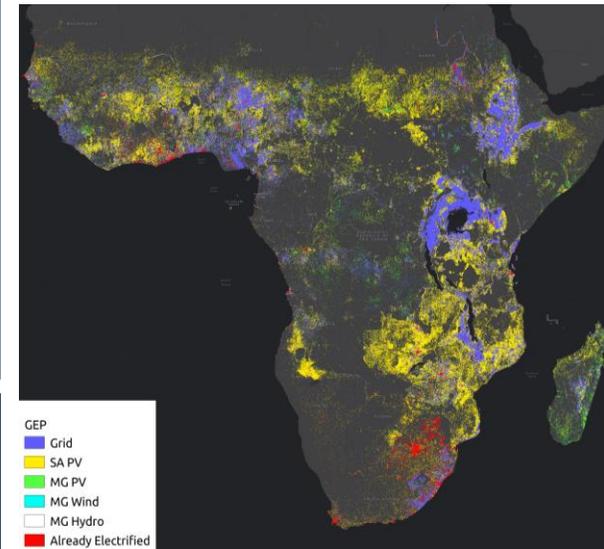
WHAT:

Increase adoption and improve implementation of national electrification strategies and least-cost electrification plans that use geospatial electrification modelling to integrate grid, mini grid, and off-grid technologies.

HOW:

- Development of tools and data sharing: Continue expanding the scope and improving the data quality and algorithms of ESMAP's Global Electrification Platform. Develop with partners additional open-source/open-data tools and methodologies for better estimation of residential, agricultural, and other demand; integration of all schools and health clinics into electrification plans; improved least-cost algorithms, including accounting for the costs of unreliability, climate externalities, and impacts of transition to energy efficient appliances. Support integration with upstream generation, T&D planning, and with other sector plans.
- TA and capacity building for Governments: Support Governments in carrying out geospatial electrification planning. Ensure that plans integrate all available technologies (grid, mini grids and off-grid) and include provision for leaving no one behind – reaching all remote, poor, marginalized users, including displaced populations and host communities, as well as schools and health clinics, and for productive uses; and that they are gender-informed. Build capacity of Governments, local academia, and other stakeholders for geospatial electrification planning through ESMAP funded training activities, including annual summer school.
- Informed operations: Provide support for the operationalization of national electrification strategies, plans and programs, including for adoption of policies and regulations to build enabling environments for electrification, mobilization of financing, and development of country-relevant business models, including for design of World Bank and other partners' electrification operations.

GEP modeling of SSA least-cost electrification pathways



2 GLOBAL FACILITY ON MINI GRIDS

WHY:

- Mini grids have the potential to electrify close to half a billion people by 2030. They have demonstrated that they can provide reliable and quality electricity (Tier 4-5) for both households and productive uses.
- Mini grids have recently started to scale up, driven by technology advances of solar PV, batteries, and energy efficient appliances, as well as improvements in smart meters, remote monitoring and planning tools.
- But significant increase in financing and improvements in policy and regulatory frameworks are needed for mini grids to fulfill their potential.

WHAT:

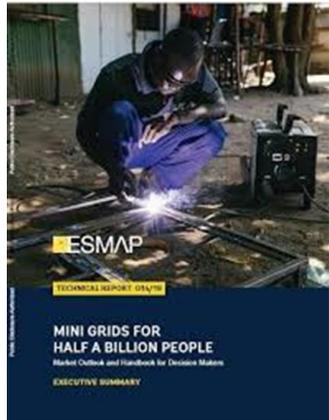
Implement "Mini grids for half a billion people" report: 210,000 solar mini grids by 2030 from 19,000 systems today, by:

- **Deploying portfolios of mini grids:** geo-spatial planning, data platform, solar hybrid systems
- **Providing superior-quality service:** 97% uptime, load factor of 45%, grid quality
- **Establish enabling mini grid business environment:** average RISE score of 80 by 2030
- **Crowd in government and private sector funding:** \$217B by 2030
- **Reduce cost of energy:** 20c/kWh by 2030

HOW:

Learning by doing through scaling project investments and expanding the overall World Bank Group investment portfolio: Providing support to operational teams and clients to prepare and implement portfolios of solar mini grid through: embedding ESMAP staff and experts within operational teams; rapid response to country-specific issues; knowledge transfer through masterclasses; and, identifying common cross-country issues to initiate global knowledge products, with a particular focus on the following aspects:

- **Technology/cost:** Drive down the costs by partnering with Governments, development institutions, and private sector to adopt the latest technologies, business models, and financing structures that can lead to cost reductions.
- **Appliances/productive use:** Support scale-up of efficient productive use appliances and partner with micro finance organizations for end user finance. Document successful approaches/models for developing productive uses on mini grids.
- **Planning:** Ensuring least-cost electrification plans correctly estimate potential of mini grids and deploy geospatial planning tools to reduce costs of portfolio development.
- **Policy and regulation:** Continue analyzing and disseminating best practices on policy and regulatory frameworks and support governments in their adoption and implementation.
- **Business models:** Analyze experience with various PPP business models and provide guidance to the Governments on which business models are most suitable to scale up mini grids in different country/policy settings including in FCV context.
- **Financing:** Document experience with viability gap financing, such as RBF. Work with IFC and other potential investors to scale-up commercial financing for mini grids. Develop instruments, e.g. risk mitigation, that would help scale up commercial financing.
- **Knowledge and convening:** Continue production of flagship reports building on "mini grids for half a billion people" report and promote knowledge exchange through global and national action knowledge events and other venues.



3 LIGHTING GLOBAL AND OFF-GRID SOLAR SCALE-UP

WHY:

- Off-grid solar technologies and business models provide the fastest and lowest cost path for closing the electricity access gap.
- They are stand-alone and modular and can reach the most remote populations, while satisfying varying needs of energy consumers – from basic electricity access for the poor, to larger systems and appliances for productive uses – leveraging innovations, and attracting private sector investments.
- Already today 420 million people use off-grid solar products. The SHS market is growing fast thanks to PAYG and other innovations.
- Universal electricity access, however, cannot be achieved without further acceleration of the off-grid solar markets, mobilizing of private and public financing in the order of \$7-11 billion (pre COVID-19 estimate), and innovations in business models and subsidies to bridge the affordability challenges of the poor.



WHAT:

- Expand off-grid solar markets to fulfill their promise to provide over 600 million people with Tier 1+ access through quality-verified off-grid solar products by 2030, leveraging both public and private funding sources.
- Focus on reaching the poor, remote, and other hard-to-reach households, including those living in regions affected by insecurity and fragility.
- Maximize the economic and human development impact of off-grid solar, especially by creating jobs and entrepreneurial opportunities for women.

HOW:

Innovate in the delivery and financing of off-grid solar electrification. The Lighting Global team of experts - financed by ESMAP and embedded in World Bank operational teams - develop new approaches for scaling up off-grid solar markets, which are then tested, demonstrated, and scaled up through World Bank projects.

The focus will be on:

- **Integration of new technologies and business models in World Bank operations**, such as approaches for adoption of larger systems, including for productive uses, private sector models for public institutions, scale-up of energy-efficient appliances, and leveraging last-mile distributors. Adapt implementation models for conditions of fragile and insecure regions.
- **Scale-up Financing.** Scale up successful financing instruments, such as working capital facilities and RBF, improving on their designs based on lessons from existing operations. Unlock more commercial financing, in particular, from local commercial banks. Ensure that financial instruments include adequate provisions for local off-grid companies.
- **Pro-poor targeting.** Develop, test and scale-up new delivery models to reach the poor and remote populations, including designing, testing and implementation of demand-side subsidies, social impact bonds, etc. to bridge the affordability gap. Integrate approaches for closing gender gaps around access to finance, female entrepreneurship, and employment.

Support Governments to improve enabling environment. Provide resources to the Governments through knowledge products, knowledge exchanges (e.g. Community of Champions) and toolkits, as well as through World Bank operations, on policy and regulatory issues, such as PAYG regulation, fiscal incentives, standards and quality assurance, consumer protection, and e-waste.

Knowledge and convening: market trends flagship reports and other publications on pertinent topics, and global, regional and country-specific off-grid events, in collaboration with key international partners, such as the Global Off-Grid Lighting Association (GOGLA) and CLASP.

GRID DENSIFICATION AND EXPANSION

There will be no dedicated program for grid densification and extension, but support for national utilities and grid-based electrification will be available to achieve the goals of the cross-cutting workstreams, which are technology neutral, and for promoting closer coordination and integration with mini grid and off-grid technologies. Additional support will be available through Annual Block Grants.

WHY:

- Grid densification and expansion remains the least-cost solution for a significant portion of unelectrified population, particularly those in peri-urban and urban areas. For example, in Ethiopia, 65% of the population lives under or near the grid (less than 2.5 km).
- Grid electricity can provide Tier 5 energy access and support energy-intensive productive uses.
- Those that have a grid electricity connection often have very low electricity consumption, constrained by reliability issues, lack of appliances and access to finance, and low awareness of productive uses.

WHAT:

Support financial and other innovations aimed at inclusive and impactful grid electrification -- connecting the poor and vulnerable populations, stimulating demand and productive use, and ensuring reliable access for schools, health clinics and other public institutions.



HOW:

- Explore new financial models – massive investment requirements suggest that neither public financing - let alone concessional financing - will meet the demand. Explore new opportunities for public-private partnerships in grid-based energy access.
- Support innovations for accelerating affordable connections and user finance for energy efficient appliances (e.g. technology neutral RBFs, PAYG/on-bill financing for appliances, collaboration with MFIs, revolving fund, etc.).
- Engage utilities in approaches for stimulating demand and support for productive uses (partnerships with appliance providers, awareness raising, partnerships with MFIs, etc.)
- Explore technical and financial innovations to connect marginalized and vulnerable communities, including refugee camps and informal settlements (where grid is the least cost solution).
- Support innovative ways to improve reliability of the grid -both through centralized and decentralized investments (e.g. battery storage, distributed RE), and innovative way of integrating grid and off-grid solutions (e.g. interconnectable off-grid solar systems and appliances, grid-connected mini grids etc.).

CROSS-CUTTING WORKSTREAMS

- Leave no one behind: Refugees & Host Communities
- Improve livelihoods and human capital
- Gender Equality

LEAVE NO-ONE BEHIND: REFUGEES & HOST COMMUNITIES

WHY:

- Displaced people are becoming a large, specific market segment that remains without electricity access. At the end of 2018, 70.8 million persons were displaced, with 70% in developing countries. Traditional electrification approaches do not work in the displaced people context.
- Public sector support and private sector innovation is needed to develop approaches for electrifying all hard to reach population segments, including displaced people and host communities.
- Current electrification efforts are mostly short-term measures in the humanitarian context; diesel systems or solar PV provided without any sustainability plan.
- Sustainable electrification of displaced people and host communities requires transitioning from a humanitarian challenge to a development solution.
- Other marginalized and vulnerable populations, such as the extremely poor and those living in conflict zones, disabled and vulnerable minorities may also require more targeted and inclusive electrification approaches.

WHAT:

- Help client countries make electrification efforts more inclusive.
- Develop adequate approaches and business models for electrification of displaced people and host communities, and to integrate support for these communities/households into the national electrification strategies, plans, and programs in at least 15 countries.
- This experience would be then applied to other marginalized/vulnerable communities and users to ensure that indeed no one is left behind by 2030.

HOW:

- **Data and analytics:** In collaboration with UNHCR, collect and disseminate key data and analytics on displaced people and host communities, and their energy demand and supply situation (through country reports and global data).
- **Knowledge products:** Preparation of knowledge products to shed light on the challenges and potential approaches, business models, financing modalities, and lessons learned from sustainable energy service provision for displaced people and host communities.
- **Informing operations:** Providing technical and financial support to World Bank operations to integrate displaced population and host communities, and other vulnerable groups, into electrification projects, demonstrating viable, sustainable, and scalable approaches to move electricity access provision from the short-term humanitarian context, to long-term development-oriented solutions.
- **Collaboration, dialogue and convening:** Building on the World Bank convening power to lead discussions between governments, humanitarian, and development organizations to work towards the inclusion of these vulnerable population groups into national electrification efforts and other development interventions.
- Training and education of local personnel on operation and maintenance of equipment to allow for human capital development.



5 IMPROVING LIVELIHOODS AND HUMAN CAPITAL

WHY:

- Covid-19 pandemic reiterated the importance of resilient livelihoods and public institutions, especially of electrified health facilities to ensure prompt response to humanitarian crisis and economic recovery.
- Demand-side factors are impeding the scale-up of electrification efforts, in particular in Sub-Saharan Africa, where electrified households often remain at minimum consumption levels, not making use of the full benefits of their electricity access. Even where potential for productive uses exists, they do not often emerge spontaneously. Low consumption, in turn, is a deterrent for utilities and service providers to connect them.
- A combination of awareness raising, increasing availability of affordable energy-efficient appliances, targeted financial support, and provision of business development services can lead to scale-up of productive uses of electricity for farmers and small businesses.
- Schools and health facilities in rural areas also remain without reliable electricity access. This limits realization of the intended human capital development impacts of electrification.
- Recent innovations in renewable energy, battery storage, remote monitoring/PAYG, data, etc. can be leveraged to provide targeted services to small-holder farmers and other rural SMEs, to support appliance ownership and to sustainably electrify public institutions through public-private partnership models.

WHAT:

Increase impact, sustainability, and pace of electrification by:

- Supporting at least 6 countries with renewable energy powered health facility as part of Covid-19 emergency response.
- Stimulating electricity use, especially for productive purposes, in electrification programs in at least 15 countries;
- Developing and expanding service-oriented models for sustainable electrification of schools, health facilities in at least 20 countries, resulting in electricity access for 1 million schools and health clinics;
- Supporting human capital through local jobs, entrepreneurial opportunities, and skills development.



HOW:

Knowledge documentation and dissemination:

- preparation of flagship reports examining (i) lessons learned from productive uses incorporating new data and technologies in proposed solutions to deliver at scale, (ii) models to strengthen the operational and financial sustainability of public institutions;
- data analytics on potential productive demand, energy demand from public institutions;
- inventory of efficient appliances with high development impact;
- innovation hub aimed at developing applications of renewable energy in emergency response.

Informed operations:

- Integrating demand-side and productive use support (e.g. access to finance, to appliances, awareness campaigns, business development services), designing gender specific interventions; and
- integrating sustainable business models for electrification of public institutions (innovations in technology, and financing).
- Robust M&E and impact evaluations to support learning, replication at scale.

Leverage internal and external partnerships (agriculture/water/health/education) for analytics, planning, co-location of investments, selected value chains/technologies (e.g. solar water pumping, solar cold chain/refrigeration for vaccines); joint approach for electrifying public institutions., including health facilities.

6 FINANCIAL INNOVATION FOR ENERGY ACCESS

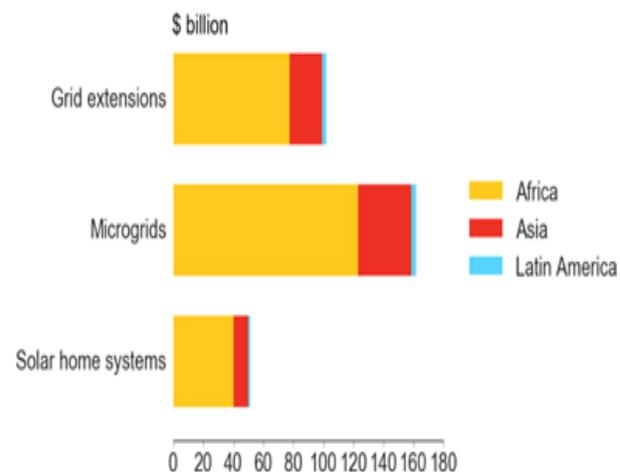
WHY:

- Electricity access remains underfunded, especially in Sub-Saharan Africa, and for distributed renewable energy solutions.
- IEA and BNEF estimate that to achieve universal access, about two-thirds of electrification financing should flow to mini grid and off-grid technologies. ESMAP reports estimate that \$200-\$300 billion is required between now and 2030 to realize the mini grid and off-grid solar potential to close the universal access gap.
- Financing flow to mini grid and off-grid technologies were only 1.2% of the total energy access flows in 2017. The scale-up resources can only be mobilized through an intelligent blending of public and private sector funding.
- Furthermore, even the funding that already exists could be utilized using more innovative and targeted approaches. E.g. user affordability constraints need to be addressed through the development of comprehensive, sustainable, and least-distortionary subsidy approaches, which should respect a level-playing field across grid, mini-grid, and off-grid technologies. User financing should go beyond connection subsidies to support financing schemes for appliances and productive uses, leveraging innovations in PAYG, on-bill financing, MFIs, etc.

WHAT

- Scale-up financing for both energy service providers and end-users to drive acceleration, inclusion and impact of energy access across all technologies (grid, mini grids, and off-grid).
- Deploy demand-side subsidies and end-user financing to support affordability of energy access connections, appliances, and productive uses.

BNEF: \$ billion needed for universal access by 2030



HOW:

Global Knowledge and regional/country grants to inform World Bank energy access operations with innovative financing and affordability approaches:

- Explore innovative risk mitigation instruments (such as guarantees and advanced market commitments) to de-risk private sector financing
 - Explore new financing structures (such as social impact bonds) that could scale-up IFC, impact investors, and commercial financing, in particular for mini grid and off-grid electrification, including for smaller, FCV, and other less attractive markets.
 - Gather lessons and innovative aspects of working capital facilities in leveraging local commercial debt for both mini grids and off-grid solar sectors.
 - Review lessons from RBF and other viability gap grant applications; develop and scale-up RBF models through IDA operations.
 - Design smart and sustainable subsidies targeting affordability of connections/off-grid systems for the poor including mechanisms for applying them fairly across technologies and business models.
 - Design innovative user financing mechanisms leveraging schemes such as PAYG, on-bill financing, automated microsavings and layaway accounts, and more effective utilization of MFI loans.
- ### Recipient-executed grants:
- Test out some of the above innovative approaches through pilots for further scale-up in lending operations.

GENDER CUTS ACROSS ALL WORKSTREAMS

WHY:

- Focus on gender diversity has far-reaching benefits with proven potential to enhance financial performance and development outcomes, enhanced product design, greater innovation, and safer work environments.
- Energy investments of USD 1.85 trillion in 2018 offering ample opportunity to address and ask who is benefiting and why.
- For example: Studies in South Africa, Nicaragua and Guatemala show that women are 9-23 % points more likely to gain employment outside the home following electrification.
- Research indicates that online marketing campaign for off-grid products targeting women reached twice as many people as messaging targeting men.
- But more remains to be done: Less than 1/4 of senior managers in off-grid companies are women across Kenya, Nigeria, and India.
- There are opportunities for participation of women in the workforce if the challenges of business culture, recruitment, and skill development can be overcome.

WHAT:

Build work streams across the electricity access program specifically focused on gender equality in:

- Employment and Leadership
- Productive Uses of Energy (Female Farmers and Business Owners)
- Women's Off-Grid Customer Segment
- Designing Projects for Outcomes

HOW:

- Scaling work on women's employment (utilities, off-grid companies) through baseline data collection, engagement with new stakeholders such as professional women's networks, universities, educational and vocational training institutes.
- Map drivers behind the **gender gaps related to productivity** including e.g. less access to financial services or business development services and design interventions in energy access projects.
- Develop a set of approaches that cut across off-grid project design – e.g. market assessments, access to credit, marketing, sales and distribution -- that are focused on **women's segment of market**.
- Ensure electricity access programs **target energy services that matter to women and girls** such as maternal health clinics, transport nodes or bus stops, markets, and toilets.



RESULTS FRAMEWORK: OUTCOMES

Program Development Objective: WBG supported countries on track to achieving universal electricity access

Target (by end of FY24)

OUTCOME 1: People, farmers, businesses and public institutions have expanded electricity access

Outcome indicator 1.1	Population with new electricity access resulting from universal access strategies, programs and plans, with specific electricity access targets, by 2030, implementation schedules and financing plans	500 million people; of which mini grid/off-grid: 300 million
Outcome indicator 1.2	30 million households and/or micro and small enterprises and small-holder farmers with new electricity access through projects/programs funded through the World Bank, Governments, development partners and associated private sector investments (measured as targets in operations approved during the business plan period)	150 million people, of which mini grid/off-grid: 90 million
Outcome indicator 1.3	Schools, health clinics and other community facilities electrified through projects/programs funded through the World Bank, Governments, development partners and associated private sector investments (measured as targets in operations approved during the business plan period)	1 million public institutions
Outcome indicator 1.4	Electricity access financing mobilized (through IDA, IBRD, climate finance and associated Government, development partner programs and private sector investments)	US\$ 30 billion, of which US\$10 billion private sector

INTERMEDIATE OUTCOME 1: Countries have adopted supportive enabling environment for an inclusive and impactful electrification

Intermediate outcome indicator 1.1	Number of countries supported by ESMAP (technical assistance and operational support for pipeline development and implementation) with electricity access deficit, which officially adopted integrated electrification strategies/least cost plans, combining grid, mini grid and off-grid technologies, with universal access targets, implementation schedule and modalities and financing plans	50
Intermediate outcome indicator 1.2	Countries that have integrated productive use interventions in electrification projects/programs and/or built synergies across energy access and agriculture interventions to support small-holder farmers	20
Intermediate outcome indicator 1.3	Countries that have adopted and launched implementation of a scalable and sustainable model for electrification of public institutions	20
Intermediate outcome indicator 1.4	Countries that have adopted integrating electrification of displaced people, host and other marginalized communities in electrification programs, with a focus on the needs of women and girls	15
Intermediate outcome indicator 1.5	Countries that have adopted pro-poor energy access subsidy and delivery model approaches	20
Intermediate outcome indicator 1.6	Percentage of IDA off-grid operations tackling women's entrepreneurship, and access to finance gaps	100
Intermediate outcome indicator 1.7	Strategies adopted at the country level on closing productivity gaps between male and female farmers and business owners	10

RESULTS FRAMEWORK: OUTPUTS

OUTPUTS: Technical advice provided to Governments and operations and knowledge products issued to scale-up electrification efforts in inclusive and impactful manner

Output 1	National electrification strategies and plans, based on geospatial least-cost modeling, integrating grid, mini grid and off-grid technologies developed with ESMAP support, and using technical resources and support provided by ESMAP's geospatial electrification team.	30
Output 2	Country-specific policy and regulatory frameworks, business models and/or financing instruments developed with ESMAP support for scaling up mini grid and off-grid electrification.	25
Output 3	Designed and piloted distinct financing innovations aiming to leverage commercial debt, crowd in private sector finance, and/or sustainably provide demand side subsidies/consumer financing.	6
Output 4	Business models developed and piloted for sustainable electrification of displaced population and host communities	3
Output 5	Sustainable business models for electrification of public institutions, developed, piloted, and results documented	3
Output 6	Approaches for stimulating demand and productive use developed, piloted, and results documented	3
Output 7	At least 6 global, own-managed knowledge reports covering mini grids, off-grid solar, productive use, public institution electrification, subsidies, and other pertinent topics	6
Output 8	At least 6 global, own-managed knowledge events covering mini grids, off-grid solar, productive use, public institution electrification subsidies, and other pertinent topics	6
Output 9	Delivery of one knowledge product or event related to gender by access program per year (duration of business plan)	4

PROPOSED BUDGET

ESMAP own managed

\$30 million

- Data and analytics
- Cutting edge knowledge
- Mobilization of experts
- M&E of innovative approaches
- Convening, Collaboration Partnerships (GOGLA, AMDA, Community of Champions, UNHCR)

ESMAP BE Grants

\$60 million

- Grants to country teams for preparation and implementation support for transformative energy access interventions

ESMAP RE Grants

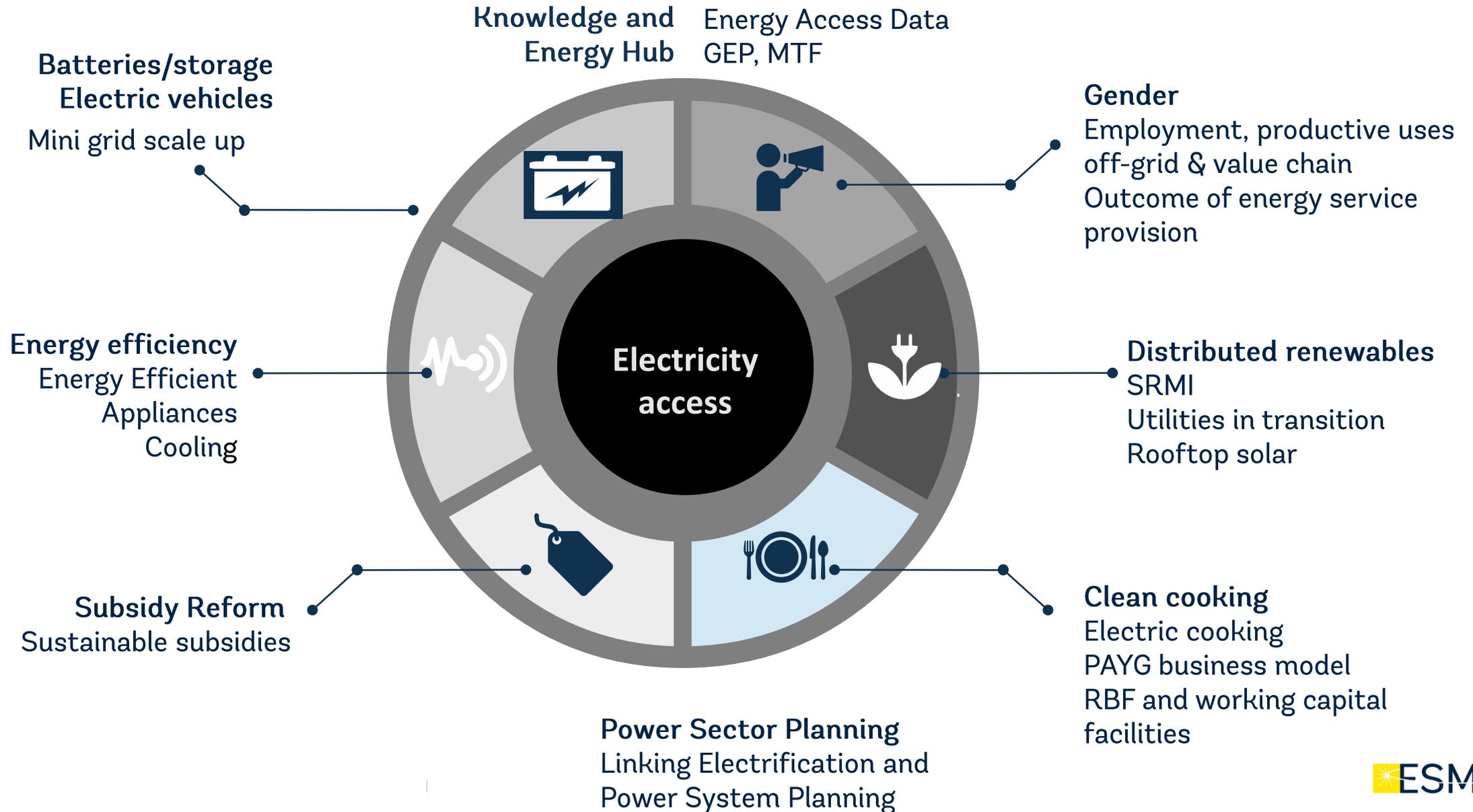
\$140 million

- To complement funding mobilized from IDA and the private sector to test new approaches (e.g. innovative risk mitigation, social impact bonds, targeted subsidies)
- To provide grant funding where lending/private sector financing not sufficient/suitable
- Example of contribution to ROGEP to target the fragile SAHEL region

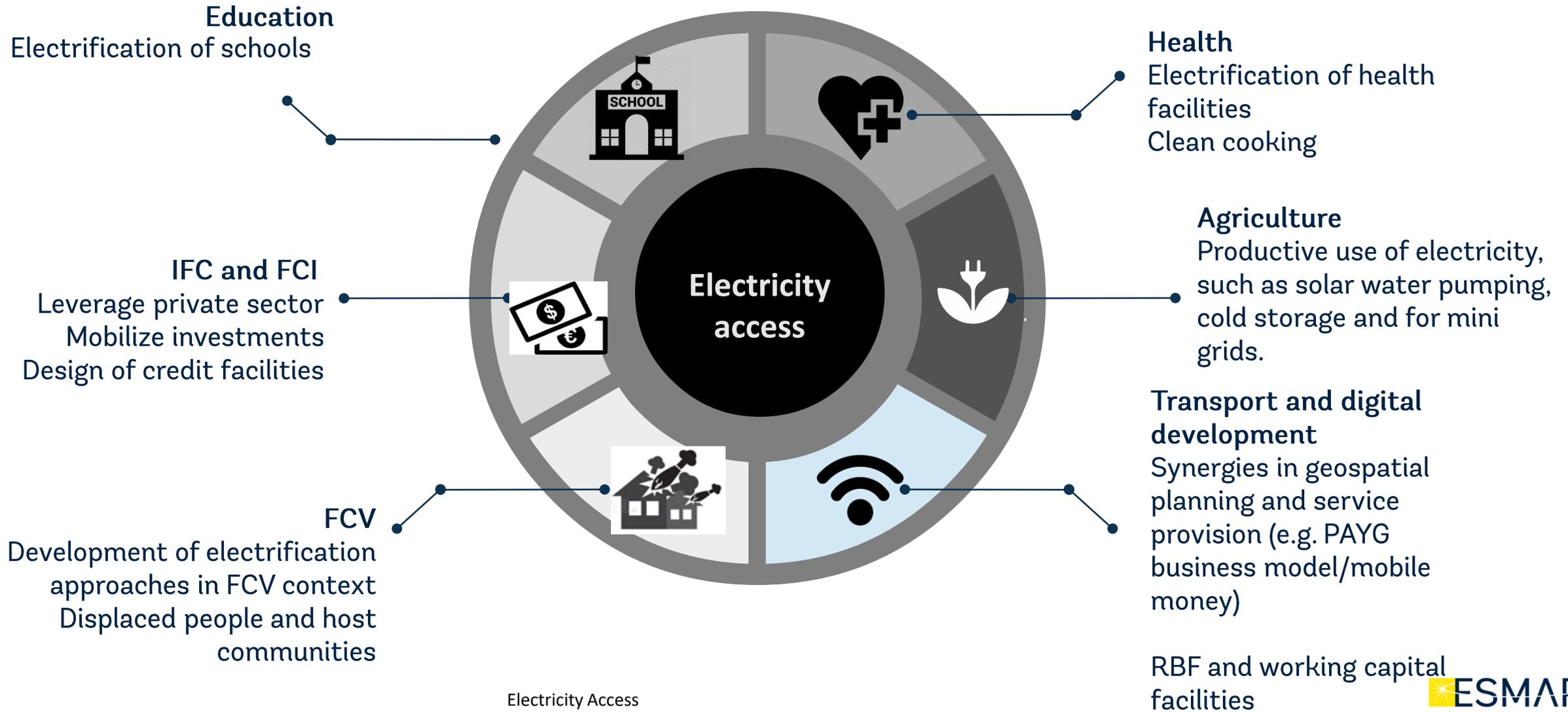
INDICATIVE RETF GRANT PIPELINE

Project Name	Description of activities	Estimated RETF grant	IDA	Estimated Delivery
Sahel Alliance G5 Countries	Increasing the affordability for the end users by providing results-based funds to cover grid connection charges for the main grid as well as cover partial capital expenditures of mini grids and standalone solar systems.	US\$30 million	US\$150 million	FY21/22/23
Myanmar National Electrification Project NEP2	Promotion of productive use of electricity, including energy efficient appliances with high development and gender impact	US\$7 million	TBD	FY21
Ethiopia ADELE	Grant funding to co-finance \$400 million ADELE project to support challenge grant competition to seek innovation for mini grid and off-grid business models and productive uses, and to pilot demand-side subsidies	US\$20 million	US\$400 million	FY22/23

STRONG SYNERGIES WITH OTHER ESMAP PROGRAMS



...AND LEVERAGING STRENGTHS OF WBG



... AND AMPLIFYING IMPACTS THROUGH COLLABORATING WITH LIKE-MINDED PARTNERS (NON-EXHAUSTIVE LIST)

Partner		Role/Purpose
External		
SE forALL	Sustainable Energy for All (SEforALL) is an international organization working with leaders in government, the private sector and civil society to drive further, faster action toward achievement of Sustainable Development Goal 7 (SDG7), which calls for universal access to sustainable energy by 2030, and the Paris Agreement, which calls for reducing greenhouse gas emissions to limit climate warming to below 2° Celsius.	Collaboration on scaling up mini grid and off-grid electrification, and clean cooking. Collaboration on data and evidence-based approaches for energy access, as well as integrated energy planning. Joint convening.
GOGLA	GOGLA is the global association for the off-grid solar energy industry. Established in 2012, GOGLA now represents over 170 members as a neutral, independent, not-for-profit industry association. Its services assist the industry to build sustainable markets and profitable businesses delivering quality, affordable off-grid electricity products and services.	Lighting Global supported GOGLA's creation. Now Lighting Global collaborates with GOGLA on specific tasks, which are likely to continue in the future, including organization of the Global Off-Grid Solar Forum and Expo, the world's premier off-grid solar event, co-publishing the flagship Off-Grid Solar Market Trends Report, and co-leading the Community of Champions, which brings together the Governments, the private sector, and development partners to discuss critical issues related to public-private collaboration to expand off-grid energy access. Future collaboration on off-grid subsidies envisaged.
AMDA	The African Mini Grid Developers Association (AMDA) is the voice of the mini-grid development industry in Africa to promote the growth and sustainable development of the mini-grid sector and act as a unified focal point for stakeholders to engage the sector. AMDA was established in 2018 and has more than 30 members. AMDA has on the ground presence in 6 countries.	ESMAP's Global Facility on Mini Grids supported the creation of AMDA at the Action Learning Event in Kenya. After AMDA's legal establishment in 2018, it is now a strategic partner in moving the industry forward in 5 key areas: (1) increasing the pace of deployment through a portfolio approach to mini grid development; (2) providing superior quality service of 97 percent uptime as well as increasing the industrywide average load factor to 45 percent; (3) crowding in private sector and government finance; (4) establishing enabling mini grid business environments in key access-deficit countries; and, (5) reducing the cost of solar hybrid mini grids to c20/kWh. Global and National Action Learning Events will be organized jointly between GFMG and AMDA.
CLASP	CLASP improves the energy and environmental performance of the appliances & equipment we use every day, accelerating our transition to a more sustainable world. Since 2016, CLASP has been working with Lighting Global, supporting the management of Lighting Global's Quality Assurance program, through a grant agreement arrangement. In addition, CLASP is managing the DFID-funded Low Energy Inclusive Appliances (LEIA) program (see below).	CLASP was selected competitively in 2016 to be the agency to take over Lighting Global's QA program. It will also manage the ESMAP grant to support Governments in the adoption and implementation of quality standards, which in turn will allow Governments to implement successful off-grid electrification programs, Further collaboration with CLASP under the LEIA program and under Efficiency for Access coalition.

PARTNERSHIPS (II)

Partner	Organization/Initiative Description	Role/Purpose
External		
ACE	The Africa Clean Energy program (ACE) is a 4-year DFID-funded program that aims to improve energy access for people and communities in sub-Saharan Africa currently without energy. It will do so by catalyzing a market-based approach for private sector delivery of quality solar home system (SHS) products and services through a Technical Assistance Facility.	Collaboration is being established to coordinate both critical global products (e.g. for PAYG toolkits for the Governments, demand side subsidies, e-waste), and for coordination of actions to support enabling environments in the sub-set of ACE countries, which also include World Bank operations, supported by Lighting Global.
LEIA	The DFID-funded Low Energy Inclusive Appliances (LEIA) program focuses on development of energy-efficient appliances for mini grid and off-grid systems, as well as a multi-stakeholder Efficiency for Access coalition, involving multiple donors, NGOs and private sector organizations, working together on scaling up markets and reducing prices for super-efficient, off- and weak-grid appropriate products, supporting technological innovation, and improving sector coordination.	Collaboration established to support energy efficient appliances. The focus is to build on the Global Lead awards to support dissemination of awarded and other high-quality appliances in the World Bank operations (e.g. through RBF), and to build on LEIA's emerging knowledge with the dissemination of energy efficient productive technologies and appliances – e.g. for solar water pumping and cold storage.
EnDev	Energising Development (EnDev) is an energy access partnership currently financed by six donor countries: the Netherlands, Germany, Norway, United Kingdom, Switzerland and Sweden. EnDev promotes sustainable access to modern energy services that meet the needs of the poor - long lasting, affordable, and appreciated by users. EnDev works in 25 countries in Africa, Asia and Latin America.	Coordinated approach to leverage local knowledge, financing and convening of both institutions.
GET-Invest	GET.invest is a European program that aims at mobilizing investments in decentralized renewable energy projects. It supports private sector business and project developers, financiers and regulators in building sustainable energy markets. In doing so, it contributes directly to the interlinked development (SDG) as well as climate change objectives (Paris Agenda).	Collaboration on global knowledge products, for example a PAYG toolkit
UNICEF	The United Nations Children's Fund is a United Nations agency responsible for providing humanitarian and developmental aid to children around the world.	Agreement to work closely on the development of sustainable model for solar off-grid electrification of schools and health clinics
WHO	The World Health Organization is a specialized agency of the United Nations that is concerned with international public health. It was established on 7 April 1948, and is headquartered in Geneva, Switzerland. The WHO is a member of the United Nations Development Group.	Partnership under HEPA for data on electrification of health facilities and development of approaches and awareness raising for electrification of health facilities

PARTNERSHIPS (III)

Partner	Organization/Initiative Description	Role/Purpose
External		
Energia	Hosted by Hivos since 2016, ENERGIA wants to contribute to universal, equal and equitable access to and control over sustainable energy for all, putting women at the center of its efforts.	Collaboration when possible on work streams related to energy access projects with a focus on employment, entrepreneurship, etc
Odyssey	Odyssey Energy Solutions is the industry platform for developing, financing and managing distributed energy systems at scale. Developed in close collaboration with the ESMAP team, Odyssey is designed to enable rapid deployment of mini-grids and SHS. The platform enables data management, tender administration and project monitoring. By tying financing to results, governments and financing institutions can design and execute large-scale, high-impact programs.	Odyssey will provide a customized, web-based data platform to monitor and track the Bank's mini-grid portfolio across all country and regional mini-grid programs. Each country-specific program will have its own portal, while an "umbrella" account will pull in certain data from each country-specific account, enabling cross-Bank data visualization and ongoing monitoring of the mini-grid portfolio. For a select set of countries, the firm will develop a set of market intelligence analytics accessible to governments and relevant World Bank units to help demonstrate mini-grid potential within the country and/or prepare for site tendering.
KTH dESA	ESMAP developed the Global Electrification Platform (GEP) in partnership with the Division of Energy Systems Analysis at the KTH Royal Institute of Technology in Sweden (KTH dESA). In addition to the modeling for the GEP, KTH dESA is supporting ESMAP with capacity building efforts around geospatial least cost planning.	KTH's Open Source Spatial Electrification Tool (OnSSET) is the first least-cost electrification model incorporated into the Global Electrification Platform. This model estimates, analyzes, and visualizes the most cost-effective electrification option for the achievement of electricity access goals.

RISKS

Risk description	Proposed Mitigation
The COVID-19 crisis causes financial distress to electricity service providers and threatens the survival of off-grid solar and mini grid companies. Impacted population unable to pay for electricity.	The World Bank is providing emergency funding to affected Governments. ESMAP is providing support to World Bank task teams and Governments to design measures to mitigate the impact of the crisis, including on electricity sector. This includes support to both the utilities and the mini grid and off-grid service providers. Key measures under development for mini grid and off-grid service providers include bridge loans and grant funding focused on maintaining customer base and staff to service them, as well as reorienting funding to support electrification of health facilities and other critical public services, creating an alternative financing stream for mini grid and off-grid companies, in coordination with other development partners and impact investors. Pro-poor subsidies will be designed and rolled out, including leveraging social safety net programs.
Government capacity to “absorb” new technologies and business models	Scale-up public and private financing is expected to boost Governments' electrification efforts. Government capacity will continue being a constraining factor, but ESMAP support in providing TA, bringing knowledge across different countries and building capacity of key stakeholders will continue mitigate the risk.
Government capacity to “break” the policy/institutional inertia	ESMAP supports the Governments to design and adopt least cost electrification planning and data for integrating grid and off-grid solutions and disseminates knowledge across countries. ESMAP is highly regarded for its data and independent analysis, and is a trusted source for the Governments to incite the needed mentality shift.
Market is not developing fast enough / leverage of private sector also not fast enough	ESMAP has developed key building blocks for the acceleration of mini grid and off-grid electrification and uses them to unlock private sector participation and funding at scale
Political economy of FCV countries is blocking electrification progress	Specific approaches suitable to different FCV contexts are being adopted, including greater reliance and collaboration with local private sector, non-profit partners and UN agencies.
Specific approaches suitable to different FCV contexts are being adopted, including greater reliance and collaboration with local private sector, non-profit partners and UN agencies.	ESMAP leverages WBG cross-sectoral nature (Agriculture, Water, Education, Health) to develop programs that address both supply and demand aspects and deliver expertise across sectors.
Lack of understanding of consumers' needs and willingness/ability to pay and affordability	ESMAP uses its data/analytics strength and its link with operations to analyze consumer data and develop sustainable approaches addressing affordability and other constraints
Fragmented electrification initiatives by different development partners stand in the way of achieving scale at the national level	ESMAP helps Governments to develop nation-wide strategies, integrating grid and off-grid solutions and uses its convening power to help bring other stakeholders on board.

UNIVERSAL ACCESS IS AN ACHIEVABLE GOAL IF WE WORK TOGETHER!

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MOVING FORWARD: PROPOSED ESMAP RESPONSE

ACCELERATION WHILE SUPPORTING INCLUSION AND IMPACT

Ensuring that all the building blocks are in place for a significant electrification scale-up and enhanced impacts

