SUSTAINABLE ENERGY FOR ALL

CLEAN ENERGY MINI-GRIDS

HIGH IMPACT OPPORTUNITY

Photo Credit: FRES Foundation

ANNUAL REPORT 2015

SUSTAINABLE ENERGY FOR ALL

In September 2011, UN Secretary-General Ban Ki-moon shared his vision for making sustainable energy for all a reality by 2030. He launched Sustainable Energy for All as a global initiative that would mobilize action from all sectors of society in support of three interlinked objectives:

1. Providing universal access to modern energy services;
2. Doubling the global rate of improvement in energy efficiency; and
3. Doubling the share of renewable energy in the global energy mix.

Sustainable Energy for All has generated significant momentum since its launch. Governments from 106 countries and the European Union have partnered with SE4All to advance the three objectives on the country level. Over 50 High Impact Opportunities (HIOs) have been identified, with a wide range of stakeholders undertaking actions that will have significant potential to advance Sustainable Energy for All. Governments, the private sector, and multilateral institutions alike are mobilizing resources in support of the initiative's three objectives.

HIGH-IMPACT OPPORTUNITY: CLEAN ENERGY MINI-GRIDS

Clean Energy Mini-Grids can be a viable and cost effective route to electrification in communities where the distance from the grid is too large and the population density too low to economically justify a grid connection. Clean Energy Mini-Grids provide an enhanced service level compared with household systems and, depending on local resources and technologies employed, can be comparable to a well-functioning grid.

In spite of the barriers such as inadequate policy, market fragmentation, limited capacity, unproven business models, and lack of access to finance, there is growing recognition of the opportunity for clean energy mini-grids to deliver on SE4ALL targets. An increasing number of national and international firms and agencies are developing projects aimed at both hybridizing existing diesel mini-grids with renewable sources, as well as installing green-field mini-grid systems to serve communities, businesses, and community services.

Clean Energy Mini-Grids High Impact Opportunity

2015 Annual Report

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I. INTRODUCTION - CHAIRMAN'S MESSAGE

Clean Energy Mini-Grids (CEMGs) can make a great contribution to ensuring access to affordable, reliable, sustainable and modern energy for all (Sustainable Development Goal 7). This goal is fundamental to just about every aspect of development, including the need to provide access to quality health care and education, achieve gender equality, create jobs and growth, ensure sustainable consumption, and effectively fight climate change.

The sustainable implementation of CEMGs can make a significant impact in the broader SE4All challenge to engineer growth without carbon. Providing remote communities with access to electricity generated from clean sources is part of the action that needs to be taken to help poor and vulnerable people to get the sustainable energy they need, while accelerating a worldwide transition to zero net carbon emissions before the end of the century, as the Intergovernmental Panel on Climate Change (IPCC) has indicated we need to do.

The effective introduction and sustainable operation of CEMGs will lead to results that stretch across all three SE4All objectives. And those three targets—universal energy access combined with major achievements in energy efficiency and renewable energy—are echoed in SDG 7. The efforts of the public and private sector partners who are involved with the Clean Energy Mini- Grids HIO have helped to provide a platform for coordinated development in this area, leading to much greater awareness of ongoing efforts in all regions and at all stages of development. This initiative is helping to share experience, build evidence and goodwill, increase local operational capacity, attract investment, and enable collaboration to catalyze faster action.

In this way, we believe that the work of the CEMGs HIO, as outlined in this Annual Report for 2015, is an excellent contribution to the vision for SE4All, which is not to duplicate the work of our partners, but to elevate it in order to speed up implementation of the goals. One of SE4All's responsibilities is to show how access, efficiency, and renewables are linked together, how they are connected to other development challenges in a world shaped by climate change, and how success in SDG 7 can be realized long before the 2030 target. CEMGs offer an excellent example of this linkage, and SE4All is well-placed to help communicate authoritatively and clearly on the progress made and the lessons learned. We look forward to presenting many more positive messages from the CEMG HIO.

Dean Cooper
Chair, Clean Mini-Grids HIO, on behalf of the Steering Committee & Members
Energy Finance Program Manager, UNEP

II. EXECUTIVE SUMMARY

This year has seen excellent progress for the UN's SE4All Clean Energy Mini-Grids High Impact Opportunity (CEMG HIO) – from the initial start-up phase after the launch in May 2014 to the development of a framework for longer-term operation. This has required consideration of longer-term strategy and governance issues, in addition to acknowledgement of the need to produce tangible outputs that represent real added value for the members.

In recognition of this potential for achieving lasting benefit, membership of the CEMG HIO has continued to increase throughout the year, reaching over 180 members by year end and reflecting a diversity of interested parties, including international financial institutions, policy makers, national development agencies, technology implementers and private investors. This mix of perspectives, interests, and needs presents a challenge for the HIO to achieve results that are relevant to all, but also an opportunity to bring together complementary stakeholders to address the sustainable market development of decentralized clean energy applications.

The following five objectives have remained the foundation for the HIO's activity:

- Support the integration of clean energy mini-grids within national and international energy plans and regulations
- Increase co-ordination and interaction in the mini-grids sector, drawing in new partners, and enabling increased partnerships, joint ventures and cross-sectoral projects
- Create agreement and knowledge of key concepts, techniques, technologies, and approaches, and supporting improved performance across the clean energy mini-grids sector
- Increase development and testing of business models through High Impact Initiatives (HIIs) and increase visibility of outcomes via transparent evaluation and reporting
- Increase visibility and recognition of clean energy mini-grids as a viable electrification approach, with a view to increasing the availability of private and public financing

The meeting of twenty HIO members, hosted by the Rockefeller Foundation in Bellagio, Italy, in March, presented the first opportunity since preparing for the launch of the HIO nine months earlier, to collectively review goals, progress, and priorities. The discussions produced clear objectives and action frameworks for each objective, providing a foundation for future activity. One outcome was the framework for a strategic plan, which brought together all the Objective targets and highlighted the need to reflect the interests of members and to update priorities regularly, given the market for CEMGs is developing quickly.

Partners agreed during the year that evidence of tangible outcomes from the work of the HIO – in addition to providing a platform for sharing knowledge and exchanging views and experience – will be crucial to maintaining the engagement of members. The need to consult with a wide range of members to determine areas with outputs of greatest value opportunity was also accepted and acted upon through the Steering Committee.

As a direct response to these needs raised by members, the HIO has, for example, carried out the two following projects (cf. section on Objective 2):

- The Mapping of Clean Energy Mini-grids Support Providers and Programmes, which maps public, philanthropic, and commercial sources of funding, technical, and other support available for the implementation of clean energy mini-grids;

- The Energy Access Practitioner Network's 2015 Energy Access Investment Directory, which showcases the best in the off-grid clean energy sector globally, from successful start-ups to prominent renewable energy pioneers, with a special section featuring the financing needs of mini-grid companies.

Raising awareness of examples of High Impact Initiatives – relevant actions carried out by members of the HIO – was also a role for the HIO that can be further developed in the future. Initiatives such as the CEMG business models being demonstrated by members such as Sparkmeter and Lumeter in various developing countries, Practical Action's Rural Sustainable Energy Development work in Zimbabwe, and OMC's efforts to bring Power Everywhere in India, all help to show the practical realities of CEMG implementation. The successes and the lessons learned can provide valuable experience for other HIO members and secure the basis for partnerships between members to help address the common challenges.

As the year progressed, the increasing number of members and the large Steering Committee raised questions about the effective governance of the CEMG HIO. Despite its growing recognition and profile, the HIO remains a voluntary organization driven solely by the interests of available participants, with valuable support from a Secretariat, which draws upon the resources of the UN Foundation and the Alliance for Rural Electrification. The result was agreement upon a new governance structure, with an Executive Group to support the broader Steering Committee and the intention to finance a "Focal Point" to add proactive direction to the HIO activities.

Towards the end of the year, the announcement of the UN's Sustainable Development Goals, including the access to energy target of SDG7, followed by global agreement to climate change reduction at COP21 in Paris, has further promoted the relevance and value of the work being undertaken by the CEMG HIO. With growing interest from the private sector regarding this business development opportunity, and growing awareness of governments in developing countries of the need for appropriate policy, regulation, and internal capacity to attract the necessary financial investment in CEMGs, the stage has been set for the HIO to play a significant role in sustainable CEMG implementation during 2016.

III. REVIEW OF THE YEAR

Within the five HIO Objective areas, a wide range of activities were undertaken throughout 2015 to raise the profile of Clean Energy Mini-Grids, draw attention to the critical issues that need to be addressed, and facilitate building the partnership required for sustainable CEMG implementation. A mapping of the international financial, technical, and other support available to enable CEMG implementation was completed, and a directory of investments related to CEMGs was also prepared and distributed. Close links with the SE4All priorities were maintained, particularly in Africa where CEMGs were featured in the Action Agenda and/or Investment Prospectus of many countries.

In broad terms, CEMG HIO members provided research and advisory services, as well as extensive knowledge-sharing and promotional activities, in order to build the capacity of stakeholders involved with remote electrification activities. A wide range of events were targeted for the inclusion CEMG-focused sessions, including World Future Energy Summit (WFES) in Abu Dhabi (January), the SE4All Annual Conference, a Mini-grids workshop in Bangalore, India (February), The Economic Commission of West African States (ECOWAS) Forum, Financing for Development in Addis Ababa, Ethiopia, The South African International Renewable Energy Conference (SAIREC 2015), and the Vienna Energy Forum in June in Austria. Quality Assurance was another focus area for the HIO, being led by U.S. Department of Energy efforts to ensure the most effective approach to sustainable CEMG implementation.

The G20 this year for the first time considered the issue of energy access in Africa, in the context of the Global Goal 7 on Ensuring access to affordable, reliable, sustainable and modern energy for all. At the first G20 Meeting of Energy Ministers in Istanbul in October an Energy Access Action Plan, with SE4All co- ordination, was agreed which included the following reference:

"Support collaborative efforts such as those of the Sustainable Energy for All High-Impact Opportunity on Clean Energy Mini-grids including the Africa-focused Green Mini-Grid Market Development Program".

Photo credit: SE4All

We hope that in the course of 2016 this endorsement will result in further partnership and support with the HIO in the run up to the Chinese G20 Presidency.

The search for cost-effective business models for CEMG implementation was facilitated by the CEMG HIO, which served as a forum for the exchange of information and experience between public and private sector stakeholders who have been involved in practical implementation. Initial investigations into accountability frameworks for CEMGs indicated that there remains a need for such measures to ensure the effective development of the sector. The HIO established good links with a range of public and private sector financiers, which has provided a platform for cost-effective development and demonstration of appropriate systems in remote areas.

Planning the future focus for the HIO was also a priority for 2015, with significant resources dedicated to the preparation of a Strategic Action Plan, which was discussed-- along with other operational issues-- at a special retreat for key HIO partners held in Bellagio, Italy. This retreat allowed a clear direction to be agreed upon for the future focus of the HIO. It also provided the basis for a common understanding of the value proposition presented by the CEMG HIO, which was essential to ensure common expectations and co-ordinated goals amongst the members.

With the growing extent of HIO activities, the need for a dedicated Focal Point has been agreed upon, with discussions underway to identify and resource a relevant manager to help direct the HIO, ensure effective co-ordination amongst partners, to help prioritize activities, and to co-ordinate the efforts of all relevant partners. The appointment of such a Focal Point will be a priority for HIO operation in 2016.

Sustainable Energy for All Annual Forum, UN Headquarters, New York, USA

The session on the Clean Energy Mini-Grids HIO during the SE4All Annual Forum convened stakeholders from the private sector, public sector, and civil society to discuss the current status of efforts to enhance the clean energy mini-grids sector, agree on the actions and partnerships required to increase the rate of deployment, and to support market transformation in developing countries.

Highlights:

- Need for new business models that lower transactional costs, aggregate financing demands, and are scalable.
- Commercial models are critical to meeting the target of 40% energy needs being met with mini-grids by 2030, as no grant can cover the 20 billion per year projected funding required to meet the target.
- Increased transparency is needed to increase private sector engagement. A conducive policy environment, reduced financial risk, and enhanced operational and demand side support, including procurement of anchor tenants, are crucial to enabling successful mini-grid ventures.

OBJECTIVE 1: Policy and Regulatory Frameworks for Mini-Grids

***Coordinators*:** EUEI PDF, SE4All GFT

1.1. Research and Advisory

There is a substantial body of knowledge available at this point, provided by a range of partners. Key resources include the book "From the Bottom Up" by Tenenbaum et al., the "Minigrid Policy Toolkit", and a range of other resources compiled by development agencies and banks, think tanks and civil societies. A list of key sources was compiled under Objective 1 of the HIO and shared through the Yammer-platform.

In terms of the key topics, three issues have emerged as particularly critical: the question of mini-grid permits and licensing, the tariff issue, and the key challenge of (future) grid integration. Progress has been made on the first issue, where a landmark publication has been produced by the GIZ programme, ProSolar, in collaboration with the Government of Kenya. This publication could, however, be complemented by deeper country-specific and cross-country analysis.

Tariffs and grid connection require urgent further and focused efforts. The tariff question requires sound analysis, balancing affordability and fairness-- in terms of on-grid and off-grid electricity costs for end-users-- with sufficiently attractive tariffs for mini-grid investors and operators. The topic of grid connection must analyze and propose workable approaches for future grid integration in terms of both technical feasibility, as well as fairness and appropriate security of investment for mini-grid investors.

It is proposed that HIO members set aside or mobilize resources to address these issues.

1.2 Country Action Agendas (AA) and Investment Prospectus (IP) Formulation

In order to enable country-owned and country-specific coordination of the implementation of the three targets of SDG-7, 40 developing countries world-wide are currently working on or have finalized SE4All Action Agendas and Investment Prospectuses. The Action Agendas set the country's targets and provide the long-term vision of energy linked to national development, which ensures the overall programmatic coherence and synergy of the accumulated efforts towards these objectives. They thereby supplement and strengthen mechanisms to coordinate international assistance and ensure alignment with the long-term priorities of the host country. The Investment Prospectuses provide an approach to operationalizing the Action Agenda by identifying and developing a set of implementable programs and projects, including their investment and regulatory requirements, that can be presented to potential private and public investors.

The development of these processes is now at a stage where the first AAs and IPs have been finalized and will be published on the SE4All website at the beginning of 2016. Existing drafts show that all of the AAs take into account the importance of clean energy mini-grids and the majority prioritize related activities regarding both the strengthening of the enabling environment as well

[1] http://www.renewableenergy.go.ke/asset_upIds/files/GIZ%20ProSolar%20Mini-Grid%20Licensing%20Guidebook.pdf

as accelerated implementation, calling also on cooperation with the CEMG HIO.

1.3 AA and IP Implementation Support

2015 was an important year in terms of tangible support to AA and IP implementation in so far as a number of initiatives have come fully online, which may, and should, play a key role. There is a strong toolbox of mechanisms available to support the formulation and implementation of mini-grid policy and regulation. The HIO's successfully concluded mapping exercise identifies key support mechanisms, which provides an important directory for orientation and allows for enhanced coordination and information exchange.

Important initiatives achieving full deployment in 2015 include the GMG programme, supported by DFID and implemented by AfDB and SE4All, ESMAP, the Clean Energy Solutions Centre, supported by Power Africa, and the Technical Assistance Facility of the European Commission. These complement existing programmes and initiatives that are active in this field, such as the World Bank's ESMAP programme, the EUEI PDF, or the numerous mini-grid related country programmes implemented by GIZ.

The key task for 2016 will be to link these operative programs with the SE4All country action process. In particular, the AAs offer the opportunity of enhanced coordination at the country level between the various initiatives. Initially, it will be crucial to identify which initiatives are already operational at the country level and covering aspects of the AAs, or that may cover additional areas, and in how far additional support needs to be mobilized. The SE4All Africa Hub's upcoming workshop on "Advancing SE4All Country Action in Africa" in February 2016 in Abidjan will be an important starting point.

In 2015, there was some preliminary discussion between HIO members around how to establish the specific role of the HIO in this context, in particular as far as information exchange and coordination of efforts is concerned. In 2016, the HIO strives to broaden member engagement, both by growing the membership base, as well as deepening involvement by increasing concrete information exchange and coordination of collaboration efforts.

Since this implies an active facilitative role, the need arises to allocate sufficient capacity in terms of man-power, e.g. at the level of the HIO secretariat.

OBJECTIVE 2: Increase co-ordination and interaction in the mini-grids sector, drawing in new partners, enabling increased partnerships/joint venture

***Coordinators**:* UN Foundation (UNF), Alliance for Rural Electrification (ARE)

2.1 Fostering Partnerships and Stakeholder Engagement

The Clean Energy Mini-grids HIO is currently supported by a Secretariat, run jointly by the UN Foundation and the Alliance for Rural Electrification. The Secretariat is responsible for managing member relations, as well as helping to draw in new partners and foster member engagement.

Over the course of the last year, the HIO membership has grown from 75 to approximately 180 members, and new members continue to join as we go forward. Members have a range of opportunities to engage in the HIO, such as the SE4All Collaboration Platform on Yammer, stakeholder conference calls intended to brief members on the progress of the HIO, webinars on themes of interest to stakeholders, as well as through participation in events where the HIO is represented. The SE4All website hosts a page dedicated to the HIO, which features key tools and information developed around mini-grids.

In addition, the UN Foundation is producing a quarterly newsletter on clean energy mini-grids featuring contributions from members and sharing best practices and developments in the clean energy mini-grids sector. The first edition of the newsletter went out in December 2015 and has been received favorably by members and other stakeholders.

Strategic Planning Meeting in Bellagio

In March 2015, supported by the Rockefeller Foundation and coordinated by the UN Foundation, the HIO convened selected stakeholders from the private sector, civil society, and policy makers in Bellagio, Italy for strategic and operational discussions to develop the longer term vision and strategy for the work on mini-grids. At the meeting, participants discussed opportunities to integrate mini-grids into the national planning of countries, agreed on a draft 3-5 year strategic plan, and made progress on developing partnerships to help deploy mini-grids in support of the goal of universal energy access by 2030.

2.2 Preparation of Material to Attract New Partners

In the last year, the HIO has helped enable some key partnerships that contributed to the publication of the following key materials for the mini-grids sector, including a web based mapping tool and the development of an initial investment pipeline of clean energy mini-grids companies and their projected investment needs over the next 12-24 months.

Investing for Energy Access: 2015 Directory of Funding and Investment Opportunities

The 2015 Investment Directory of the UN Foundation's Energy Access Practitioner Network, outlines the new "billion-dollar clean energy access investment opportunity" in decentralized clean energy solutions and services. The Directory showcases individual and aggregated financing needs and opportunities to invest in some 210 member businesses and social enterprises, as well as civil society organizations operating at the forefront of the global off-grid energy sector,

addressing energy access issues. A special section in the Directory showcased financing needs for some nearly 80 mini-/micro-grid companies delivering off-grid energy services in developing countries.

The searchable investment portal, as well as the publication showcasing organizational profiles, are now available online**.** For more information about the UN Foundation's energy access work, go to the Energy Access Practitioner Network website.

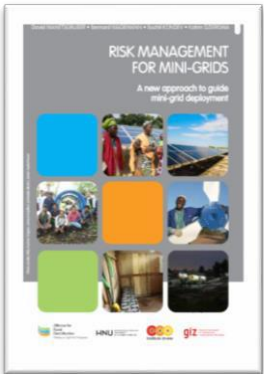
MAPPING OF CLEAN ENERGY MINI-GRIDS SUPPORT PROVIDERS AND PROGRAMS

The clean energy mini-grid sector is crucial in providing clean energy access and alleviating poverty in developing countries, but is hampered by a number of barriers such as early stage market fragmentation and unmade linkages. To address this issue, the Clean Energy Mini-Grids HIO set out to **map public, philanthropic, and commercial sources of funding, technical, and other support available for the implementation of clean energy mini-grids**.

To do so, the Alliance for Rural Electrification, on behalf of the HIO, collected information on the relevant activities of a broad group of stakeholders from the whole clean energy mini-grids value chain. The results of this project, made possible by the kind financial support of the Rockefeller Foundation and Deutsche Gesellschaft fuer Internationale Zusammenarbeit GmbH (GIZ), as well as, importantly, by the input from a wide range of stakeholders in the mini-grid markets, are reflected in a webtool, where users can filter on aspects relevant to their needs, and a publication, for the benefit of all stakeholders. You can find the **web tool** and the **publication** on the CEMG HIO website.

RISK MANAGEMENT FOR MINI-GRIDS

A significant challenge for mini-grid deployment is the communication and language gap between mini-grid developers and investors about mini-grid risks and their management.



This study, available online,was

initiated by ARE, HNU, id-eee and GIZ, to improve the business environment for mini-grid

development with a focus on greenfield projects through the provision of a guidance framework for decision-makers and development partners on issues related to the risks of mini-grids and to strengthen public-private dialogue on the promotion of private sector mini-grid development.

LAUNCH OF THE 2015 INVESTMENT DIRECTORY

During the Earth to Paris summit, on the margins of the United Nations Framework Convention on Climate Change conference (COP21) in Paris, the United Nations Foundation announced the launch of a new "billion dollar clean energy access investment opportunity" with the release of the Energy Access Practitioner Network's 2015 Energy Access Investment Directory and investment portal.

This investment opportunity showcases the best in the off-grid clean energy sector globally, from successful start-ups to prominent renewable energy

Photo Credit: UN Foundation

pioneers with a special section featuring the financing needs of mini-grid companies. The Directory has been supported by funding from the OPEC Fund for International Development, (OFID) and the Charles Stewart Mott Foundation.

2.3 Enhanced interaction and partnerships

In line with the objective to increase co-ordination and interaction in the mini-grids sector and enabling increased partnerships, the OPEC Fund for International Development (OFID) and the Alliance for Rural Electrification created a partnership, kicked off in November 2014 by the signing of a Memorandum of Understanding in the presence of Mr. Yumkella as Special Representative for the Sustainable Energy for All Initiative.

Photo credit: OFID

This cooperation led to the signing of the Grant Agreement between OFID and ARE in September 2015, with the aim of supporting the accelerated deployment, and promoting the productive use of hybrid mini-grids. The financial aid extended by OFID is intended to provide a de-risking mechanism for business ventures to stimulate replication and scaling up.

Four ARE members will implement hybrid mini-grid systems:

- In Bangladesh, Rahimafrooz Renewable Energy Ltd will install a hybrid mini-grid that includes a 80 kWp PV plant and a 40 kW diesel genset in the Island of Muradpur, benefiting 310 households (1,430 people) and 40 productive users.
- In Jharkhand, India, Association Mlinda will install 5 hybrid mini-grids in 5 rural villages, each comprising a 10 kWp PV power plant and a 7.5 kW diesel genset. In total, 250 households, 25 productive users and 5 public buildings will benefit from the project.
- In Blendio, in the Sikasso Region of southern Mali, ACCESS S.A.R.L. will install a hybrid mini-grid that includes a 32 kWp PV plant and a 68 kW diesel genset, serving 300 households and 40 productive users.
- In Mozambique, in the village of Titimane, Energias de Portugal, S.A. will install a PV/biomass hybrid mini-grid with a generating capacity of 100 kWp PV and 60 kW biomass gasification. 900 households, 33 productive users 3 community buildings will have access to electricity.

For all four projects, cash flow analysis, that included the cost of equipment replacement when required, and the tariff consumers are able and willing to pay for electricity, indicated a positive Net Present Value (NPV) and an Investment Rate of Return (IRR) that is greater than the discount rate taken into account are only possible when OFID's grant is included.

The project, recently cited by UN Deputy SG Mr. Jan Eliasson as an example of the successful partnerships needed to achieve SDG7, emphasizes the potential for scaling up, and also local capacity building and the facilitation of the creation of partnerships to assist in the future development of projects (*UN press release*).

OBJECTIVE 3: Knowledge Management and Quality Assurance

***Coordinators**:* GIZ, Global Lighting and Energy Access Partnership (Global LEAP), and the UN Foundation

3.1 Quality Assurance Framework

Background

The Quality Assurance Framework (QAF) for mini-grids aims to address some of the root challenges of providing quality and affordable power to remote customers through financially viable mini-grids by defining (1) standard technical specifications for power quality, reliability, and availability that are appropriate for different tiers of end-user service, and (2) a standard accountability and performance reporting framework that will provide a clear process of validating power delivery to customers, funders, and/or regulators. The framework addresses both alternating current (AC) and direct current (DC) mini-grids, and is applicable to renewable, fossil-fuel, and hybrid systems. The QAF will provide a flexible alternative to rigid top-down standards for mini-grids in energy access contexts, outlining a standard set of tiers of end-user service and linking them to relevant technical parameters. In addition, data generated through implementation of the QAF will provide the foundation for comparisons across projects, assessment of impacts, and greater confidence that will drive investment and scale-up in this sector. The QAF is being jointly developed by the U.S. Department of Energy (US DOE) and the U.S. National Renewable Energy Laboratory (NREL), and is part of the Clean Energy Ministerial's Global Lighting and Energy Access Partnership (Global LEAP) initiative, Power Africa's Beyond the Grid Initiative, the U.S.-India Promoting Energy Access through Clean Energy (PEACE) initiative, as well as SE4All's Clean Energy Mini-Grids HIO.

Progress to date and plans for 2016

The draft technical framework document and complimentary implementation toolkit will be published in Q1 of 2016, incorporating stakeholder feedback obtained from public-private workshops held in New Delhi India (August 2014), Dar es Salaam, Tanzania (March 2015), as well as two global webinars held in December 2014. The QAF technical document and Implementation Tool kit will be published online and available at no cost. Additional advisory support on how to implement the QAF will also be provided to government and government-affiliated practitioners through the Clean Energy Solutions Center Ask an Expert service. These resources will be publicized via an HIO webinar in March 2016 and a workshop in Q1/Q2 of 2016. The QAF is also on track to be institutionalized as part of the International Electrotechnical Commission's (IEC) rural electrification standard. US DOE/Global LEAP are also pursuing two partnerships with development partners to pilot the QAF as part of upcoming mini-grids programs in sub-Saharan Africa in 2016.

3.2 Knowledge-Sharing and Dissemination of Best Practices:

Quarterly Clean Energy Mini-grids Newsletter

Supported by the World Bank and ESMAP, and as a contribution to the Clean Energy Mini-grids HIO, the UN Foundation is producing an online quarterly newsletter on clean mini-grids. The newsletter will increase awareness of best practices in the international mini-grids sector to facilitate knowledge exchange and evidence around clean energy mini-grids as well as promote the recognition of the potential contribution that mini-grids can make towards achieving the

Sustainable Energy for All goal of universal access to modern energy services by 2030. The first edition of the Newsletter went out in December 2015 to a great response from HIO members and other stakeholders and the next edition is due to be released in March 2016.

Webinars with Stakeholders

The UN Foundation, in partnership with the Clean Energy Solutions Center, organized a webinar on *Tools to Facilitate Mini-grid Deployment* that featured presenters from GIZ, HOMER, and the UN Foundation. The presentations provided an overview of the Clean Energy Mini-grids HIO, showcased a catalogue of tools relevant for mini-grid practitioners and discussed selected tools and their uses in greater detail. The webinar generated a lot of interest and more than 300 people registered to attend the session. The presentations from the webinar are available on the Clean Energy Solutions Center website. The next webinar session is expected to be held in the first quarter of 2016 and focus on the mini-grids Quality Assurance Framework.

Knowledge products from members

Several members of the HIO made valuable contributions aimed at improving the knowledge of practitioners in the mini-grid space by publishing reports and studies on various topics related to mini-grid development and implementation. The specific outputs included:

- A report on Risk Management for Mini-grids prepared by ARE, Neu-Ulm University of Applied Sciences (HNU), the Institute for Decentralized Electrification, Entrepreneurship and Education (id-eee) and GIZ;
- An information paper on the Relevance and Implementation Possibliities for Bioenergy Technologies in Rural Electrification Markets prepared by ARE and PANGEA;
- A report on Productive Use of Renewable Energy in Africa by EUEI PDF;
- A guide to licensing a mini-grid energy service company in Kenya (How do we licence it?) prepared by GIZ; and
- A paper on Financing the DESCO S-Curve prepared by Persistent Energy Capital

OBJECTIVE 4: Support to increased development and testing of business models; transparent evaluation and reporting of sector performance

Coordinators: UNEP, IRENA

The main focus of Objective 4 activity during the year has been to improve members' awareness of prospects for the commercially-based development of mini-grids and to stimulate information exchange between members. This has also enabled partnerships that allow shared expertise to support activities geared towards the CEMG HIO aims. Some of the key issues addressed are summarized below.

4.1 Business models

Discussions hosted between members have identified key challenges, including the likely implementation speed in a new target country and the quality mini-grid service compared to the status quo. There is no single ideal business model - many different approaches can be relevant. Appropriate regulations and recently-prepared policies must be in place to enable the viability of any business model – this factor has been noted for future HIO activity. ARE has led efforts to map policies for mini-grids at a country level, which can help identify which countries are good for investment.

4.2 Funding Requirements

Members have been assisted to consider how a one-off injection of public sector funding at the outset of CEMG implementation (to support the initial capex costs) can attract the required private sector finance. The mini-grid example in Senegal, where 10% of the upfront costs were paid by the targeted community, has been considered during member deliberations. Members have concluded that there is some reliance on public sector funding because CEMGs are not yet mature enough to be self-sustainable.

PRIORITY FUTURE ACTIONS

Following the 2015 focus of Objective 4 members on shared experience in the development of new business models, with increasing efforts to commission case studies and evaluations of business models, the priorities agreed for consideration in 2016 include:

1. Consultation with ARE members to identify relevant tools for tracking progress
2. UNEP/IRENA raising the attention of Objective 4 members to any tools identified by the HIO
3. Development of an interactive network of members and associates to share experience and leverage the benefit of partnerships
4. Disseminate (and develop as necessary) country case studies to stimulate broader interest
5. Identification of CEMG demonstration projects, which can provide a source of learning and motivation
6. Education of investors (people willing to pay for CEMGS) and working with them to identify their needs
7. Preparation of a guide aiming to educate policy makers about the most significant actions they need to take to improve their country's CEMG investment environment
8. Provision of details from members of relevant activities they know of that involve research to understand the market for CEMGs in target countries
9. Development of structures to track the openness of countries for private sector investment, and the progress of CEMG implementation
10. Preparation of a guide (either by the HIO, or by individual members, depending upon available resources) for countries to identify what key actions should be taken to improve their investment environment and so make the preparation of business models for CEMGs more attractive.

4.3 Case studies

Some Objective 4 members are currently preparing case studies of their mini-grids activities in developing countries; examples from ARE can be found in many of their publications, which are all available online. Such case studies are valuable to highlight best practice and lessons learned. However, members recognize that all case studies are exceptional in one way or another so cannot be used as models for direct replication, but rather adapted to local conditions.

4.4 Tracking progress

Members are not currently aware of any standard template for tracking CEMG initiatives, and have requested UNEP to track the openness of countries (i.e. their willingness to provide conditions that are attractive for private sector investment in CEMGs), which may motivate Governments to develop the necessary investment environment. ARE will consult members regarding the use of such templates for tracking CEMG project activities. From their experience, GIZ has highlighted tools that they have used for tracking progress through monitoring, reporting and verification (MRV) processes[3], though there are currently no MRV tools specifically related to CEMGs.

4.5 Business development support

Members have agreed to establish a network to provide mutual support for business development activities, with the intention to focus on a few countries that are ready to receive clean energy technologies. Exchange of experience between members will be useful to facilitate progress, particularly in developing appropriate business models and financing mechanisms. Joint approaches to international financial institutions would also be welcome.

4.6 Other Issues to be addressed

At present, there are not enough sales of mini-grids to justify the development costs or volume production, so aggregated activity through Objective 4 is welcome. The realities of what power mix people are willing and able to pay for is key to successful business; a consumer demand-driven approach is required to establish a viable market. Objective 4 members will aim to address all aspects of a successful business model including – assessment of demand, projecting demand profiles, variations in domestic load, and need for anchor loads.

[3] An example of GIZ activity related to MRV can be found at http://mitigationpartnership.net/mrv-tool-how- set-national-mrv-systems

OBJECTIVE 5: Increase visibility and recognition of clean energy mini-grids amongst financiers

Coordinators: DFID

5.1 Ensuring visibility of clean energy mini-grids experience and results amongst financiers

The CEMG HIO was represented at a number of events, as listed in previous sections. However, a stronger indicator of increasing financier attention on CEMG firms includes the following recent investments and press releases:

- In October, Acumen, OPES Impact Fund, and HERi Africa invested in HIO member Devergy, an organization that operates in Tanzania and was initially backed by HIO member Persistent Energy Capital.
- The Jumeme Joint Venture in Tanzania, which includes HIO member Inensus, received financing from the AfDB Sustainable Energy Fund for Africa (SEFA) in January 2015.
- In August 2015, SEFA was awarded "Power Transaction of the Year" by the East African Power Industry for its role in financing Jumeme at the awards gala, which gathered about 1,200 industry leaders and professionals in Nairobi, Kenya and further increased visibility.

Photo: Energy Platform of Nigeria

A Nigerian Investors Preview Conference was held on 27th November in Lagos, linking Mini-Grid developers to potential investors who are interested in harnessing the business opportunities in Nigeria's rapidly growing mini-grid market. The event was run by HIO member GIZ's Nigerian Energy Support Programme (NESP), with EU support, and HIO member REEEP.

5.2 Improving data and benchmarks on funding requirements and returns Include most efficient use of public support to enable private investment

The demand for further work on this, facilitated by the HIO, was reinforced at the Bellagio meeting in February, which set the following question for further cross-sector research:

- Derive a total figure for financial commitments to CEMGs from the mapping undertaken by ARE;
- Characterize financing demand from HIO members and link to the co-ordination and communication Objective 5 (UNF);
- Complete a cost of electricity study (ESMAP);
- Participate in relevant events to raise visibility with investors (All); and
- Establish a range of innovative HII funds (DFID to consider the best process).

It is expected that the World Bank/ESMAP Green Mini-Grids Facility will commission research into this question in 2016.

5.3 Supporting the creation of HIIs providing financing at scale for clean energy mini-grids

- An update on the DFID-supported Green Mini-Grids Africa programme, which is providing financing of £30m in Kenya and £30m in Tanzania for mini-grids, is provided in the December e-newsletter to members.

- As part of the African Development Bank GMGs Market Development Programme (MDP), a tender was advertised and awarded for exploratory work on Access to Finance for the GMGs sector in Africa, which will start in January 2016. This work will explore available financing as well as gaps in the architecture and propose solutions which could form future High Impact Initiatives for the Bank, or other financing institutions.

IV. EXAMPLES OF MEMBER CONTRIBUTIONS

Some examples of HIO member activities are provided below:

Mulanje Electricity Generating Agency (MEGA)

1. **Project Title:**
   Powering Development in Mulanje

2. **Location:**
   Mulanje, Malawi

3. **The challenge:**
   Increasing access to electricity for rural communities in Mulanje

4. **Clean energy solution:**
   Micro-hydro mini-grid

5. **Project financing arrangements:**

Grant co-finance from Scottish Government, Global Environment Facility and Sukambezi Association Trust (through Fairtrade).

6. **Project outcome and lessons learned?**

80kW micro-hydro generator with 300 households connected. 15 businesses and community facilities benefitting from the electricity. Improved watershed management of the forest reserve catchment area.

7. **Contact & link:**
   Daniel Kloser, General Manager MEGA (gm@mega.mw) or visit their website.

Photo credit: Practical Action

Practical Action

1. **Project Title:**
   Rural Sustainable Energy Development in Zimbabwe (RUSED)

2. **Location:**
   Manicaland Province and Masvingo Province, Zimbabwe Southern Africa

3. **The challenge:**
   Lack of access to modern, affordable and sustainable renewable energy services for the rural population in Zimbabwe is a major development barrier and remains under-addressed by the government. This project aimed to illustrate:

   1. The potential of mini-grids to bring economic and social benefits to communities,
   2. The willingness of the poor to pay for energy
   3. That local, community collective governance of services can be an effective ownership model for remote communities.

4. **Clean energy solution**:
   Micro-hydro and solar energy

5. **Project financing arrangements:**

   The €2-million-dollar project was funded by the European Union ACP Energy Facility and Oxfam from 2011 to 2015.

Photo credit: Practical Action

6. **Project outcome and lessons learned?**

   In Himalaya the project established an 80kW micro hydro scheme now powering two irrigation schemes totaling 25 hectares and two energy centres. Simbengadzibve Energy Centre has a grinding mill and a saw mill. The saw mill is the most crucial income generating part of the system. Farmers now sell value added poles which are fetching higher prices. The grinding mill is providing services to 250 small scale farmers. In Gutu, 60 hectares benefiting 250 families are now being powered using solar energy, five energy kiosk centers were also set up, two schools and a clinic were electrified.

7. **Lessons emerging**

   - An energy kiosk model can be used to reach out to last mile customers in accessing energy services
   - Market linkages is a key component to the sustainability of developmental projects

8. **Contact & link:** Godfrey Sibanda, www.practicalaction.org

Omnigrid Micropower Company (OMC)

1. **Location:**
   Uttar Pradesh, India

2. **The challenge:**

To provide the 200 million residents of Uttar Pradesh with access to affordable power while also cutting carbon emissions.

3. **Clean energy solution:**

OMC serves mobile networks and rural customers through a series of solar micro-power plants that are strategically placed and operated in off-grid communities. OMC found that powering cellular towers with these solar plants, versus diesel, replaced the need for captive power infrastructure and allowed any excess power to be domestic and commercially used in neighbouring villages.

Photo credit: OMC

4. **Project financing arrangements:**

OMC sells power to mobile networks and off-grid communities. They match the cost of diesel and other fuels so that households can afford to switch service providers. For operators, tariffs decrease as more customers enrol, and as site loads increase.

5. **Project outcome and lessons learned?**

With 100 operational micro power plants that serve one million people, OMC is on the way to achieving the long-term goal of reaching 3,500 cell towers and 10 million individuals by 2018.

Over its four-year lifespan, OMC's experience has continued to highlight the importance of scalability, a diverse customer base that includes businesses and the wider community, recruitment, and staff training programs to a project's sustainability and success. A major challenge they've faced is the high operational storage and distribution fees often faced by energy providers.

6. **Contact & link:**
   For more information, please visit OMC's website.

SparkMeter

1. **Location:**
   Developing countries around the world

2. **The challenge:**

Extending access to underserved markets poses duel challenges: bringing power to rural communities comes at a great cost to utilities, and paying for energy services poses a challenge to low-income households. Without customer payment, utilities are unable to invest in maintenance or provide reliable services, which decreases customer retention and payment rates.

3. **Clean energy solution:**

In recognition of the challenges facing utilities and consumers in low- income communities in developing countries, SparkMeter was developed as a mutually beneficial solution to address affordability and reliability of energy services in these markets. SparkMeter's remote monitoring capabilities allow utilities to expand to rural communities at a lower cost, also allowing them to operate more efficiently and reliably, while customers in these markets pay only for the energy they consume on a pre, post, or scheduled basis.


Photo credit: SmartMeter

4. **Project financing arrangements**

Customers pay only for the energy they use on a schedule (pre- or post- payment) basis and can track their consumption costs in real time.

5. **Project outcome and lessons learned?**

SmartMeter can be tailored to each grid operators needs and is being uniquely used by organizations around the world, such as Husk Power, Gham Power, EarthSpark International, and E.On Off Grid Solutions.

6. **Contact & link:**

To learn more about SparkMeter, please email contact@sparkmeter.io or visit the website.

Lumeter

Photo credit: Lumeter

1. **Project Title**:
   Lumeter Networks and Limye Pa w partnership

2. **Location**:
   Tuffet, Haiti

3. **The challenge**:
   Providing energy supply for domestic use in rural Tuffet.

4. **Clean energy solution**

   Prepaid AC mini-grid meters powered by biomass gasifiers. The project, which as powered over 30 homes in Tuffet, was covered by NPR, here.

5. **Project financing arrangements**:
   This project is built around "Pay-as-you-Go", and allows customers to prepay and track their usage using the meter. Farmers are able to sell bio-waste for electricity, which, in many cases, provides electricity to homes for the first time.

6. **Lessons emerging**

   Following community feedback, Lumeter added a number of features to the newest version of the AC mini-grid meter , including the ability for compatible inverters from leading manufacturers (such as Victron and Studer) to signal certain groups of customers to automatically and intelligently limit demand during overload conditions.

7. **Contact & link:**

   To learn more, please contact Mitra Ardron (mitra@lumeter.net) or visit their website.

EarthSpark

1. **Location**:
   Haiti

2. **The challenge**:
   Provide energy solutions to low-consumption customers in rural, off-grid Haiti

3. **Clean energy solution:** Solar powered smart microgrid

4. **Project financing arrangements**: EarthSpark partners with local Haitian communities, such as Les Angles, to provide community driven solutions. Customers can pre- pay, track their usage, and are afforded "time-of-use" pricing.

5. **Project outcome and lessons emerging:** EarthSpark has 440 customers and, in Spring 2015, partnered with Enèji Pwòp and committed to building 80 microgrids by 2020, serving 200,000 people. EarthSpark strives to empower the community by offering prepayment plans, knowledge around choice and energy usage, and economic opportunity.

Photo credit: Earthspark

6. **Contact & link:**

For more information, please contact Allison Archambault (allison@earthsparkinternational.org) or visit their website.

V. STRATEGIC DIRECTION

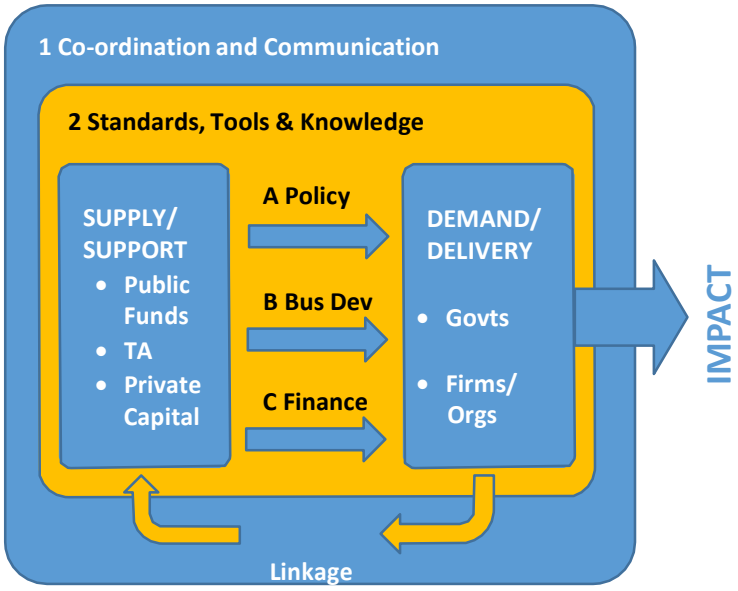
This year marked a shift from the initial establishment phase of the CEMG HIO following its launch in mid-2014 to the practicalities and needs for longer-term, sustainable operations. The need for strategic direction and appropriate governance structures were priorities to address, though the need for tangible outputs was also recognised as essential to bring real value to members.

1. Results from Bellagio

Following the initial six months of operation to successfully establish the Clean Energy Mini-Grids HIO, the Steering Group recognised that the HIO must enter a second phase of operation, which involved clear strategic direction and prioritising the focus. To address these issues, a gathering of invited CEMG experts representing a wide range of stakeholder groups was hosted by the Rockefeller Foundation in Bellagio, Italy.

The overall aim of the HIO was agreed as: "to be recognised as the world leader in promoting access to energy from Clean Energy Mini-Grids; to transition from raising awareness to become the point of reference for CEMG activity".

The key objectives included: awareness of worldwide activities; facilitate partnerships; facilitate market development; provide tools and resources. The outcomes from these discussions were a series of tangible actions that related directly to the five main areas of HIO activity, namely i) co-ordination and communication, ii) standards, tools and knowledge, iii) integration of CEMGs into policy and regulatory frameworks, iv) support to business development models and v) increased flows of finance. The interrelation of these activity lines agreed at Bellagio is illustrated in the diagram below.



Key actions were agreed as the follow-up to Bellagio discussions and these included the preparation of a mapping of funds questionnaire, increased interaction between Objective Leads, revision of the strategic plan, membership guidelines, increased link between public and private sector, effective use of Yammer for internal communications, increased interaction with

other HIOs, establishment of a full-time position to co-ordinate the HIO work, development of a detailed operations strategy, and preparation of a business plan as a foundation for fundraising. Several of these issues were addressed during 2015, though further efforts will be required to address all of the Bellagio targets.

2. Summary of Workplan

A draft action plan was prepared for the June 2015 Steering Committee call, based upon the outputs from Bellagio. This was reviewed by Objective Leads to ensure that the plans specified in the document concurred with the current status and intentions. It was agreed that this Action Plan should be used as the basis for HIO activity, providing a useful guidance document for all involved. On this basis, it should be reviewed and updated regularly (e.g. at 6-monthly intervals).

The Action Plan provides a broad vision, goals, resourcing needs, metrics for reporting, and priority activities for each of the five principal HIO Objectives. The need to integrate these objectives was recognized as a crucial issue to ensure the co-ordination, complementarity and maximum cost-effectiveness of HIO activities.

The Action Plan recognized that resources and budget will be a critical factor and the approach to potential supporters will need to be very well co-ordinated. Another common need was the development and implementation of appropriate metrics against which to monitor the level of achievement – independent reporting of achievements and the value added by the activities related to this SE4All HIO will be an essential measure of success and foundation for future support.

The plan noted that additional staff resources are essential at SE4All and the Secretariat for the development of this and related HIOs to share relevant information between HIOs, to ensure coordination with Energy Access Committee consultations on this issue, to link with relevant external initiatives, and to guarantee that the latest HIO developments are accounted for in any assessments of strategic direction and value of SE4All activity in this area.

3. Agreed Value Statement

Following the detailed deliberations in Bellagio and the subsequent development of the Strategic Action Plan, it was agreed that the ultimate goal of the HIO should be clear to all members and written in a form that could be presented to external parties. Consequently, a “value proposition” was prepared for the HIO.

This required consideration and agreement of the HIO concept – what are we trying to achieve? Was the HIO intended to provide leadership in the field of CEMG, or should it provide general support to a loose network of stakeholders – or something else? Where did the HIO fit in the global CEMG picture, which continued to attract growing interest? Clear targets were required, particularly as a basis to subsequently find the necessary resources (including funding) to achieve these targets.

SE4ALL Clean Energy Mini-Grids High Impact Opportunity Value Proposition

The UN SE4All CEMG HIO shares information and experience from global sources, supporting practitioners to implement sustainable CEMG solutions of all sizes, including modifications of existing isolated grids and construction on greenfield sites. This involves bringing together the relevant public and private sector actors to identify and prepare effective routes for investment in CEMGs - helping to develop practical business models, matching appropriate technologies to local energy resources, liaising with Government to motivate effective policy and regulation, and so offsetting the perceived investment risks. The CEMG HIO helps the implementers to understand the demand from local markets and to respond according to these needs, thereby supporting the development of local ownership and sustainable interventions. The CEMG HIO raises awareness amongst potential customers, suppliers, financiers and policy makers regarding the benefit of CEMGs for meeting the basic needs of remote communities, and also enabling productive activity that can generate income and so break the poverty chain, leading to economic and social upliftment and associated environmental benefits.

4. Revised Support Structure

Following extensive discussion between the Co-ordination Group and the Objective Leads that were established by the end of last year, it was agreed that a revised support structure should be introduced to streamline the management of the HIO and provide the basis for more pro-active capability between monthly co-ordination calls. It was important to consider the likely needs of the HIO, which ranged from the demands of members for clarity of decision-making processes and accountability, the need for flexibility and responsiveness to emerging issues in the dynamic CEMG environment, and the need to reflect the current voluntary/informal nature of structures and resources associated with the HIO.

A revised governance structure was agreed with the following format
(a visual representation can be found here):

- **Focal Point**: person dedicated to the HIO; responsible for overall co-ordination, promotion, stakeholder interaction, attracting members and support
- **Steering Committee**: elected Chairperson, Objective Leads, and other nominated members of key stakeholder groups - based on previous arrangements for the Co-ordination Group
- **Objective Leads**: two nominated contact points for each Objective, responsible for setting the direction for the objective, interacting with relevant members and ensuring implementation of related action; also to communicate regularly with other Objective Leads
- **Members (or "Partners ")**: implementing activities, sharing experience, promotion/outreach of activities (as current)
- **Secretariat**: support with co-ordination, member interaction, events/promotion, hosted jointly by the UN Foundation and the Alliance for Rural Electrification.

In addition, to enable more regular consideration of issues than the monthly Steering Committee calls, an Executive Group consisting of the Chair, Secretariat, and invited Objective Leads (for discussion of specific issues) has been established.

5. Need for Proactivity - Agreement of Focal Point

The Focal Point envisaged under the new HIO governance structure will have three main areas of focus:

- Help to **drive the HIO**, providing the overall **co-ordination** of efforts to encourage the expansion of CEMG use in developing countries, particularly in Africa.
- A **spokesperson** for the HIO, owning the core messages of the HIO and finding relevant opportunities to raise awareness of the HIO activity.
- Establish close links with the SE4All Global Facilitation Team and with the coordinators of other HIOs, helping to **direct** CEMG HIO activities accordingly.

It was agreed that key activities to be undertaken by the Focal Point will include: i) providing direction for the HIO, ii) coordinating activities and member interaction, iii) promoting the HIO, and iv) attracting financial support for the HIO

6. Priorities for 2016

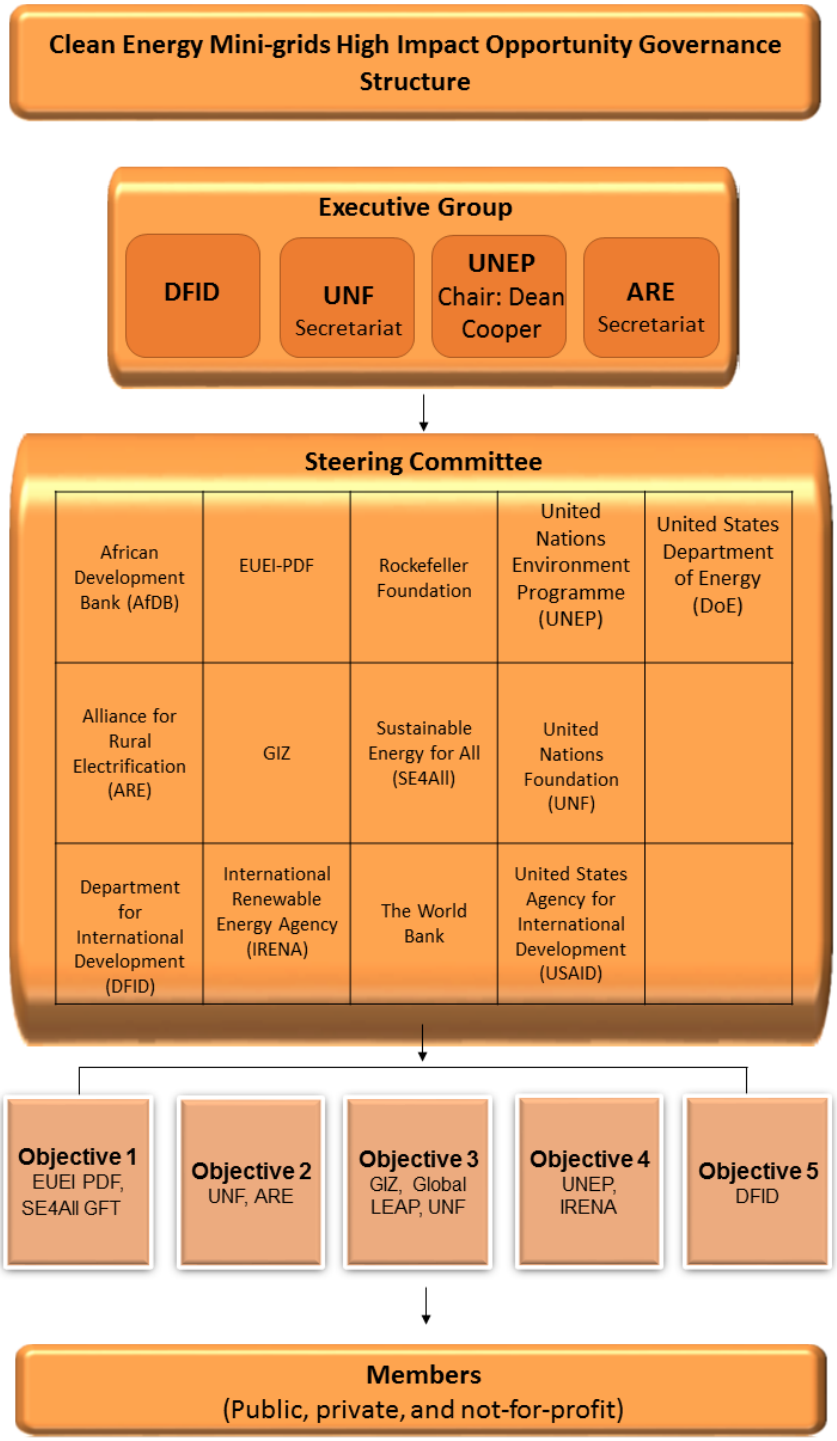
A priority for 2016 will be to enhance the profile of the HIO as a facilitating mechanism for supporting, promoting, and co-ordinating the actions of member organisations in order to effectively progress towards the goal of achieving significantly increased electrification using renewable energy technologies. This will involve some key priorities:

- Securing support for the Focal Point role will be important in terms of ensuring an adequate degree of driving and co-ordination of the HIO.
- With the founding members still largely in place in terms of the chair and objective leadership roles, it will be important to offer the wider membership the chance to participate in these roles if they have the interest and ability to do so.
- While the Yammer, website, and Twitter provide forums for communication, and a CEMG newsletter has recently been added with WB/ESMAP support, further and improved media for high value communications to and between members should be explored.
- Specific outputs from the HIO should be defined and agreed by members in order to offer some products that will add value to members' activities (such as the mapping tool and investment directory in 2015).

For more information about the Clean Energy Mini-grids High Impact Opportunity, please visit the website or email minigridshio@se4all.org.

Annex I – SE4All CEMG HIO Governance Structure

The graphic below represents the agreed upon Clean Energy Mini-grids governance structure. Please note that, at this time, Dean Cooper (UNEP) is the HIO chair.



Annex II – SE4All CEMG HIO Member Organizations

The table below reflects the membership of the HIO as of December 31, 2015.

CEMG HIO Members	
Accenture Development Partnerships (ADP)	McGeown Associated
Adaptive Microgrids	ME SOLshare Ltd.
Advanced Solar Industries	Mer Gao Power
Advancing Engineering Indonesia	Mercy Corps
AETS	MicroEnergy International
Africa Growth and Energy Solutions	Microgrid Labs, inc.
African Association for Rural Electrification (CLUB-ER)	Mwerick International
African Development Bank	National Rural Electric Cooperative Association
African Enablers	Navigant Research
African Solar Designs Ltd.	Netherlands Institute for Environmental Assessment (PBL)
All Power Labs	Nevada Solar Designs
Alliance for Rural Electrification	Novozymes
AMBILORECO	Npedia Enterprise Limited
Ankur Scientific Energy Technologies Pvt Ltd.	Oazyz Energy, LLC
Anova Integrated Systems Limited	Orbis Development Partners
ARNERGY Solar Limited	Orbit.com Consult Limited
Atmasurya Solar	Partnership International
Avant Guarde Innovations Pvt Ltd.	Persistent Energy Capital LLC
B2D/LimyÃ¨ Pa w	PHPower
Bialystok University of Technology	Power Africa, USAID
Bio-energy Mission Cell, Dept. of Planning, U.P.	Power: On
Business and Technology International	PowerGen Renewable Energy
Carbon Trust	Practical Action
CEFA Tanzania	Practical Action (Zimbabwe)
Cellstrom GmbH	Product Health Ltd.
ChrisJoe Power	Proximity Designs
Clarke Energy Associates	PWC
Community Energy Scotland	Reiner Lemoine Institute gGmbH
Coperson-Hill Ltd.	Remergy A/S
Creation's Eden Energies	Renewable Energy Deployment Advocacy and Development Network
Dealer Tecno Srl	Renewable Energy Industries Association of Malawi

DEAT Capital	Renewable Energy Policy Network for the 21st Century (REN21)
Department of Energy	Renovagen Ltd.
Deutsche Gesselschaft (GIZ) GmbH	Rockefeller Foundation
Devergy	Rural renewable Energy Alliance
E2P Group	RVE.SOL- Soluçoes de Energia Rural Lda
EarthSpark International	Samaritan Touch Multimedia Ltd.
East-West Center	Schneider Electric
EcoEnergy Finance	School of Advanced International Studies (SAIS), Johns Hopkins University
Ecoprise Bio-Solutions PLC	Scottish Government
ECOWAS Center for Renewable Energy and Energy Efficiency (ECREEE)	SE4All Global Facilitation Team (GFT)
Energias de Portugal (EDP)	SE4All Sustainable Bioenergy HIO
Energias sin Fronteras	SESI
Energy Development Industries (EDI)	SgurrEnergy Ltd.
Eolicar Srl	Siemens Energy
EU Energy Initiative Policy Dialogue Facility (EUEI PDF)	Sierra Club
EUDITI Ltd.	Skynotch Energy Africa
Evonet	SLE Global (Sustainable Energy and Living)
Fear the Skunk Consulting	Smart Hydro Power
Firefly Solar Generators	SME Funds- GoSolar Africa
First Solar	SNV
Foundation Rural Energy Services (FRES)	Soluz, Inc.
GED Consult	Solydair Energies
General MicroGrids, Inc.	SteamaCo
Ghana Capital Partners	STG International
Global Village Energy Partnership (GVEP) International	Strategy&
Green Housing and Energy Limited	SunEdison
Hawaii Natural Energy Institute, University of Hawaii	Supreme & Co. Pvt. Ltd.
Helios Social Enterprise	Sustainable Capital Advisors
Horizon Energy Group	Sustainable Economy Solutions
IEA-PVPS Task 9	Sustainable Energy Associates
IED- Invest	Sustainable Energy for All (SE4All)
IFC	Tessa Power
iMergEnergy	The OPEC Fund for International Development (OFID)
Imperium Alliance Limited	The Turing Trust
In Situ Technologies	The World Bank
INENSUS	Thermal Motors LLC
INGOvation, Inc.	Trojan Battery Company
Institute for Sustainable Power	UK Department for International Development

Institute for Sustainable Power	UNIAFRICA
Institute of Development Studies	United Nations Environment Programme
Instituto de EnergÃa Solar	United Nations Foundation
International Renewable Energy Agency (IRENA)	United States Agency for International Development
IQgrid Ltd.	United States Department of Energy
Jaza Energy, Inc.	University of Cape Town
Jeunes Volontaires pour l'Environnement, JVE-RDC	University of Southampton
Kaboni Carbon Consultancy	UNSW
Karibu Solar	UPC Technical University of Catalonia
Kenyan Ministry of Energy and Petroleum	VALDAS & Co. Ltd.
Konserve Consult Limited	Village Infastructure
KTH Royal Institute of Technology	Virunga Power
Lawrence Berkeley National Laboratory	Winrock International
Limye Pa w	WS Atkins International Ltd.
Lumeter Networks	Yiitidi
Malmok Vision	Youngblood Capital Group, LLC
Malus Global Ltd.	ZeroBase Energy