High Impact Opportunity on Clean Energy Mini-grids
Report for the period of July-December 2014

I. EXECUTIVE SUMMARY

The first 6 months of the Clean Energy Mini-Grids HIO have been focussed on continuing to develop 1) the rationale and added value of the HIO, 2) the structure and membership arrangements, and 3) the objectives and activities.

The following were the key milestones in the first 6 months:

- **4-5th June – Launch of the HIO at the SE4ALL Forum in New York with 30 members to a packed room based on founding HIO Document.** Followed by a first face to face meeting of founding members at Rockefeller.
- **16-17 June – HIO presented in Asia** at ADB-hosted IOREC Conference in Manila, Philippines
- **July – HIO Yammer site established** on SE4ALL Collaboration Platform, and developed to correspond with HIO structure
- **End August – HIO public website goes live on SE4ALL.org** with new membership invitation and online joining form, HIO members invited onto Yammer
- **End August -** Publication of a newsletter by ARE dedicated to mini-grids, with a guest editorial by K.K. Yumkella of SE4ALL on the HIO, as part of the ARE Mini-grid Campaign
- **Early September – HIO database** goes live for membership management
- **End September – First draft Objective Workplans** are uploaded by objective co-ordinators to the Yammer for member inputs and comments.
- **14th October – open monthly co-ordination meeting** in Washington DC at UN Foundation, member review of the Objective Workplans
- **15-16th October – Mini-Grids Conference hosted by U.S. Department of State, USAID, World Bank and UN Foundation concludes by requesting HIO to co-ordinate follow-up on actions arising from the event**
- **November – Plan agreed for programme mapping of GMGs sector** to be led by the HIO Secretariat; proposal to be finalized to funder

- **18th November – HIO presented in Africa** at African Mini-Grids Summit in Nairobi
- **December – first 6 monthly report produced** and inputs requested from HIO members, before finalisation and public issue in January 2015

Headline achievements

While the HIO has so far focussed on building the structures for co-operation, the members of the HIO have continued to develop and deliver their High Impact Initiatives within the framework of the HIO. Some key achievements by members in the last 6 months of note, which have relevance across objectives, include the following:

- **Approval of DFID support to the Green Mini-Grids Africa programme** in Kenya and Tanzania, plus an Africa Regional Facility in co-operation with the African Development Bank and World Bank/ESMAP.
- **Launch of the Mini-Grids Policy Toolkit by the EUEI-PDF, ARE and REN21.**
- **Development of an investment business case by UNEP, in partnership with Energia de Portugal, for clean energy mini-grids in Mozambique**, with a village in Niassa Province now selected for the practical demonstration of a 330kW mini-grid, which will be based upon solar PV and biomass gasification using waste from a local cotton producer.
- **Government backing for Clean Energy Mini-Grids programmes proposed by UNEP in South Africa and Tanzania**, in association with the UK's Carbon Trust and CSIR of South Africa, and Helios Social Enterprise for Tanzania; these programmes are expected to electrify 5 and 10 remote, currently unserved villages respectively.
- **The Rockefeller Foundation formally approved the launch of the *Smart Power for Rural Development* initiative** to promote sustainable business models that deliver renewable electricity and spur economic development among poor, underserved rural populations. The $75M initiative will focus on India and aims to electrify 1,000 villages in the next three years (2014-2017). As of January 2014 the program expects to have almost 30 mini-grids up and running in U.P. and Bihar.

Plans for the Next 6 Months

- Completion of the initial Sector Mapping of funders and initiatives, led by ARE
- Launch of the Green Mini-Grids Africa Market Development Facility by AfDB

- First calls for proposals for technology, policy and financing research into Green Mini-Grids by WB/ESMAP launched
- Develop a 5 year vision for the HIO with members to present at the SE4ALL Forum in June 2015
- Completion of a draft Mini-Grids Quality Assurance Framework by the US Department of Energy in the Spring of 2015 and initialization of partnerships to pilot the framework. The framework is also on track to be incorporated into the relevant International Electrotechnical Commission (IEC) rural electrification standard upon completion.
- Publication of a joint UNEP/UCB (University of California Berkeley Collage) paper: "Increasing Private Capital Investment into Energy Access: the Case for Mini-grid Pooling Facilities", which explores a promising new business model for clean energy mini-grids.
- Joint UNEP/TERI/MEI mini-grid workshop aimed at *"Identifying the missing link: Enabling low-income markets through clean mini-grid solutions" i*n Bangalore, India on 22 April (space for more participants, and more sponsors welcome!)
- Commencement of phase 2 implementation of the UNEP/EdP business model demonstration for clean energy mini-grids in Mozambique.

Headline Asks To Members

- Engage in the HIO, via the Yammer Group and particularly with the 5 objectives – contribute your ideas and views to strengthen the value of the HIO.
- Make sure your activities and initiatives are included in the respective Objectives, to improve their visibility and help other HIO members co-ordinate better with your work.
- Seek to join with other members to pool skills/experience and help co-ordinate the increasing number of clean energy mini-grids activities, thereby helping to achieve the most cost-effective use of available resources.
- Engage in the consultations on High Impact Initiatives by other members, to strengthen their impact and relevance to the group – e.g. the AfDB consultation on the Green Mini-Grids Africa Market Development Facility.
- Help to match resources available from some members (e.g. funding, technical assistance, promotional instruments) to programmes/initiatives designed by other members that seek to expand the sustainable implementation of clean energy

mini-grids; announcement of such resources and planned initiatives through HIO information tools will enable this match-making potential.

II. HIO SETUP AND MEMBERSHIP

1. Actions and achievements since June 2014

Setting up the Secretariat
Of the coordinating partners, the United Nations Foundation (UNF) and the Alliance for Rural Electrification (ARE) have been tasked to co-host and share the responsibilities of the Secretariat for the HIO.

Templates for member registration; principles and rules of participation
The HIO now has a webpage under the main SE4ALL website, with an online membership registration form that is forwarded to and reviewed by UNF as co-Secretariat each time a new membership request is made.

The HIO concept note is publicly available on the webpage for the reference of interested parties and potential members. A document outlining the HIO membership invitation, rules of engagement, and means for participation is also included on the webpage for new members' reference. In addition, a 2-page factsheet providing basic information about the HIO, its objectives, and its membership is available to share with those interested in learning more.

To date, 75 external partners have joined the HIO membership (see annex 4). As co-Secretariat, UNF keeps a running list of all joining members, and communicates with the membership on behalf of the HIO as needed. Via monthly calls and targeted messaging, UNF has leveraged its Energy Access Practitioner Network platform to disseminate information about the HIO among members, and recruited a number of members, particularly those already participating in the Practitioner Network's Mini-/micro-grids Working Group, to participate in the HIO as well.

Monthly HIO Co-ordination Group conference call
As co-Secretariat, UNF is handling the logistics of the monthly coordinating calls, including setting up the calls, distributing conference call details, and circulating the call notes. The agenda and minutes are produced by the co-chairs of the Co-ordination Group, which has been DFID up until December 2014, and will be UNEP for the second half of the first year.

Meeting of members
UNF hosted the first extraordinary HIO co-ordination meeting open to all members on October 15th, 2014. The meeting was attended by about 30 members, where the group discussed the latest progress of each of the five HIO Objectives, with a brief review of work-plans and roundtable of inputs on relevant activities.

Storing of relevant documents
Publicly available documents pertaining to the HIO, such as the HIO concept note, are available on the SE4ALL Clean Energy Mini-grids webpage. A wider strategy for information management will need to be developed in the coming period, with the ESMAP Knowledge Hub, as well as Energypedia possible portals.

Documents still under review, pertaining to specific work streams under each of the five objectives of the HIO, or those under consideration by the HIO coordinating committee and/or the broader membership are housed under the HIO's Yammer group under the Sustainable Energy for All Collaboration Platform, facilitated by the SE4ALL GFT.

2. Plans for the next six months

- The HIO steering group members will continue to work on outreach and membership recruitment on behalf of the HIO, through targeted media communications, continued awareness raising through existing networks and beyond, and at future events hosted by members or others. As co-Secretariat, UNF will contribute through its Energy Access Practitioner Network membership and partners.
- In collaboration with the SE4ALL IT team and others in the HIO, UNF will seek to streamline the membership signup process for added functionality and automation, such as creating a self-updating membership list on the HIO page, a direct Yammer sign-up link to eliminate the manual step of emailing new members, etc.
- UNF and ARE will continue to highlight and host events relevant to the HIO membership on an ongoing basis as resources allow, and UNF will provide a direct link to the HIO webpage from the new iteration of the Practitioner Network website to drive more traffic to and increase interest in the HIO.

3. Offers and asks to the members

- Share information about the HIO within their own networks and at events they participate in in order to recruit more members.
- Input on ways in which we can interact with HIO members better, and keep them engaged in the HIO process as well as upcoming HIIs as the membership matures.

III. OBJECTIVE SUMMARIES

OBJECTIVE 1: Policy and Regulatory Frameworks for Mini-Grid

Support the integration of clean energy mind-grids within national and international energy policy and regulatory frameworks.

Coordinators: EUEI PDF, SE4ALL GFT

1.1. Research and Advisory

1.1a) HIO member achievements to date:

- Milestone publications are available:
    - World Bank, Tenenbaum et.al.: "From the Bottom Up - How Small Power Producers and Mini-Grids Can Deliver Electrification and Renewable Energy in Africa", https://openknowledge.worldbank.org/handle/10986/16571
    - EUEI PDF, REN21, ARE: "Mini-Grid Policy Toolkit", http://euei-pdf.org/thematic-studies/mini-grid-policy-toolkit (English and French version available)
    - EUEI PDF, regional advisory project, "Supportive Framework Conditions for Green Mini-Grids (SADC / RERA)", http://euei-pdf.org/regional-studies/supportive-framework-conditions-for-green-mini-grids
- Various outreach events took place where specifically the issue of policy and regulatory frameworks for mini-grids was highlighted, for example
    - RECP (EUEI PDF) Workshop on Green Mini-grids in West Africa, http://euei-pdf.org/dialogue-events/recp-workshop-on-green-mini-grids-in-west-africa
    - RECP (AFD)-workshop (Paris, November 2014): "Séminaire d'échanges sur l'électrification rurale à partir d'énergies renouvelables en Afrique subsaharienne"
    - Presentation of the Toolkit and thus GMG outreach at Italy-Africa / AEEP event (Rome, October 2014), http://euei-pdf.org/sites/default/files/files/field_pblctn_file/Italy%20Africa%20Initiative%20programme.pdf
    - UNF/WB/US workshop on Mini-Grids in Washington, 16-17 October 2014

- ARE/GIZ Workshop "Clean Energy Hybrid Mini-grids in Remote Areas – an Investment Opportunity", Bad Hersfeld (9 April 2014)

1.1b) Plans for next 6 months

- Set-up and maintain online information (literature, best practices, investor's needs) platform
- Step-up outreach and awareness-creation (to countries and beneficiaries)

1.2 Country Action Agenda (AA) and Investment Prospectus (IP) Formulation Support

1.2a) HIO member achievements to date:

- Support to AA and IP Formulation is being provided through Africa-Hub, hosted by AfDB. During a meeting between EUEI PDF and AfDB (10/2014) initial issues re. linkage of HIO and support provided through Africa-Hub were discussed
- Various stakeholder consultation events (SE4All consultations, and other relevant consultations) provided contributions with regards to mini-grids, e.g. "Energy Stakeholder Dialogue Forum" in Nairobi, Kenya, organized in the context of the Africa-EU Energy Partnership (AEEP)

1.2b) Plans in the next 6 months:

- Further discussions on integration of mini-grids into AAs and IPs to be undertaken in 2015
- Further progress relies on Mapping Exercise, which will need to establish relevant ongoing efforts
- SNV will continue talks for the engagement of government and private sector actors to increase public private involvement. Early efforts have shown interest from private sector willing to explore opportunities as 'off takers' and public sector interest in contributing in kind.

1.3. AA and IP Implementation support

1.3a) HIO member achievements to date:

- Various ongoing initiatives:
  - **DFID** "Green Mini-grids (GMG) Africa Facility"
    - Focused policy advisory activities to be undertaken through AfDB-SEFA in selected countries

        - Market Development Component through one of 5 "business lines" to provide GMG policy advisory can act to provide a follow up to prioritisation of mini-grids in AAs
    - **EUEI PDF** to continue to avail GMG policy & regulatory advisory on request by partner countries / institutions
    - **GIZ-programmes** to continue to provide policy advice relevant to mini-grids in: Afghanistan, Fiji, India, Kenya, Madagascar, Nigeria, Philippines, Rwanda, Senegal, Tanzania, Uganda
    - Other partners are providing relevant support, e.g. **ESMAP**, **AfDB** (under **SEFA**)
    - **Power Africa's** Beyond the Grid initiative
    - SNV initiative: Solar based mini-grid project implementation in 2015 in rural Zimbabwe with strong focus on sustainable community-based management system and private sector participation. Similar initiative is expected in Burkina Faso.

1.3b) Plans for next 6 months:

- Need to bring into HIO other partners working in the policy realm, or at a minimum get information about their activities from them
- Further progress and coordination relies on Mapping Exercise, which will need to establish relevant ongoing efforts

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 Actions and achievements since June 2014

2.1a) Preparation of Mini-Grid related material

- Mini Grid Policy Toolkit, prepared in collaboration by EUEI PDF, REN21 and ARE
- Mini-Grid Risk Mitigation Study, prepared in collaboration by ARE, GIZ and HNU

2.1b) Facilitating Knowledge-sharing and Dissemination of Best Practices:

- Europe launch of Mini-Grid Policy Toolkit at rural electrification workshop in Rome on 13.10.2014
- HIO clean energy presentation at OFID Symposium on 03-04.10.2014 (including signature of MoU between OFID and ARE to implement mini-grid projects in developing countries)

- Africa launch of Mini Grid Policy Toolkit at Africa Mini Grids Summit in Nairobi on 18.-19.11.2014
- AEEP Private and Development Sector Dialogue in Nairobi on 28.11.2014

2.1c) *Mini Grid Mapping*

- Concept note (prepared together with ad-hoc HIO clean mini-grid mapping exercise) on the planned mapping exercise to focus on donor mini-grid activities in the first phase (decision by Rockefeller Foundation to sponsor this activity still pending)

2.2 Plans for the next six months

- Carry out of mini-grid mapping exercise on donor/investor activities and support available to the sector
- Supporting role for events and activities focusing on mini-grids
- Assessment of existing electronictools and resources for mini-grids to determine if/how a common platform can be developed to share relevant information, improve collaboration and build capacity

2.3 Offers and asks to the members

- To timely answer request on donors and funders mapping exercise questionnaire (planned deadline: 31.01.2015).

2.4. Objective workplan

- Presentation of interim-results of donor and support mapping exercise in spring 2015
- Presentation of final results of donor mapping exercise at 2nd SE4ALL Forum in May 2015

OBJECTIVE 3: Knowledge Management and Quality Assurance

Coordinators: UN Foundation, GIZ, and US Department of Energy

3.1 Actions and achievements since June 2014

3.1a) Quality Assurance of Mini-grid Systems

- US Department of Energy (US DOE), in collaboration with the National Renewable Energy Lab (NREL), is developing a Quality Assurance (QA) Framework for mini-grids, which is designed to address root challenges of providing quality power to remote consumers through financially viable mini-grids. The QA framework has two main elements:

- Defines different levels of service, ranging from basic to "grid-parity", including standard technical thresholds for power quality, reliability, and availability for each level of service. This will provide a formalized, common standard for classifying mini-grids, as well as strengthening business models by providing developers with tools to tailor system design to meet different tiers of customer needs and ability to pay.
- Defines a standard accountability and performance reporting framework that provides customers, funding organizations and regulators access to trusted information verifying power delivery. This will enable greater investment and scale-up in the mini-grids sector by increasing confidence and facilitating potential aggregation of projects. The performance reporting protocol can also serve as a robust monitoring and evaluation tool for developers and funding organizations.

- US DOE, in partnership with the Indian Ministry of New and Renewable Energy (MNRE) held a public-private stakeholder engagement workshop on the mini-grids QA framework in August, and hosted two well attended webinars on the QA framework in December, 2014, in partnership with the Clean Energy Solutions Center. US DOE briefed the International Electrotechnical Commission (IEC) on the QA framework in December, 2014 and have initiated the process to incorporate the QA framework into the IEC's rural electrification standard upon completion.
- GIZ's EnDev Indonesia programme completed a **technical review and baseline data survey** for over one hundred (100) 15kW solar mini-grid installations (photovoltaic village power/PV-VP) across Indonesia, installed by local suppliers under contract with Directorate General for New and Renewable Energy and Energy Conservation (DGNREEC) during 2013. The review consisted mainly of component compliance, performance verification and workmanship checks as well as a key performance indicators survey. The technical review is based on inspection guidelines and checklists which were developed by GIZ in 2013 and available in the public domain. The results of the technical review demonstrate an improvement in the quality of installations between 2013 and 2014. The improvement can be largely attributed to the regular feedback given to installers.

3.1b) Facilitating Knowledge-sharing and Dissemination of Best Practices:

- The UN Foundation co-hosted a conference on ***Commercially Operating Mini-Grid Systems*** in partnership with the World Bank, the US State Department and the US Agency for International Development on October 16-17 in Washington, DC.

  The first day of the conference, held at the World Bank, featured a series of panel presentations on business models, financing, emerging technologies and strategies

for scaling, and regulatory frameworks and policy for commercially operating mini-grids. The day also featured presentations from a number of HIO coordinating partners, including the DFID/ESMAP/AFDB Mini-grid Facility by DFID, and Quality Assurance Framework for Mini-grids by the U.S. Department of Energy. The conference attracted over 120 attendees, and ended with a successful evening reception and one-on-one networking event with practitioners and companies.

The second day, held at the UN Foundation, featured an invitation-only workshop, where close to 50 attendees participated in break-out sessions delving deeper into the panel discussion topics from the previous day, as well as a matchmaking session held with different types of investors and businesses at various stages of growth represented at the event. A final report containing the outcomes of the conference as well as the key points of discussion will be published is being put together by USAID and will be published by the end of the year for wider dissemination.

A number of recommendations emerging from the conference have already been taken into account by HIO members as part of their activities and integrated into the work plans for each of the objectives by its coordinators as relevant.

- The UN Foundation, in partnership with the Clean Energy Solutions Center, organized a webinar on *Best Practices around Technology Challenges* that featured presenters representing social enterprises, private sector companies and mini-grid project developers. The presentation discussed the respective organizations' experience around various technology challenges and solutions pertaining to micro-grids, needs related to specific geographic contexts, and best practices around technologies, standards and policies. The webinar generated a lot of interest and more than 350 participants registered to attend the session. A copy of the presentations from the webinar session is available on the Clean Energy Solutions Center website.
- GIZ carried out comprehensive **technical trainings on PV-hybrid systems and mini-grids in Kenya and Mozambique**. In Kenya, the training took place at the Strathmore Business School in Nairobi, from 27th to 30th October where more than eighty solar technicians, financiers and representatives from various industries interested to invest in PV captive solutions were trained. In Mozambique, a solar training programme was organized at the Travessia Beach Lodge in November. The “Travessia Solar Technical Training” took place on four consecutive days using a newly installed hybrid system. More than 50 participants from local solar companies, local lodges and hotels and Mozambican rural electrification authority took part. The trainings served the current interests of the renewable energy sector in the two countries and included sessions system components, system design, installation, maintenance and operation. Participants

were also acquainted with software solutions like HOMER and SMA Off-grid Configurator.

- GIZ developed a **practical guide for rural electrification trainers and facilitators** to support the capacity development of village management teams of community operated mini-grids in Indonesia. The manual consists of user-friendly tools that provide all the necessary information for the team in charge of management of mini-grids to understand its responsibilities and be able to fulfil them. The materials provide guidance among others on basics of village power systems, institutional forms and legal registration, institutional development, administration, financial management, cost calculations, electricity tariff setting, business development, productive use of energy, cooperative establishment, environmental safeguards, monitoring and evaluation. The manual also helps to improve the facilitation skills of trainers in rural areas by featuring materials on village dynamics, customer needs, community empowerment and basic facilitation. The materials will be made available in Q1 of 2015.
- In collaboration with the Ministry of Energy and Petroleum, the Rural Electrification Authority and Kenya Power, GIZ developed a **solar mini-grid site selection handbook**. The handbook describes the procedures for site selection and outlines in detail criteria and parameters that can be considered during the process. Five categories of parameters including location, productive use potential, number of customers, payment options and security were identified to be the most important for the mini-grid site selection in Kenya. The handbook is available online.
- GIZ collaborated with Dalberg to analyze the **financing barriers for micro, small and medium enterprises (MSME) working on energy access** in India. Enterprises working on mini-grid development and deployment were a central part of the analysis. The analysis focused on the barriers for individual segments of MSMEs and proposed solutions to tackle them. Specific solutions in the areas financial products, knowledge and information gaps and policy frameworks were identified. Detailed profiles of enterprise finance and consumer finance instruments were proposed. The final report of the study will be made available in Q1 of 2015.
- In collaboration with the Department of Energy (DOE) and the Climate Change Commission (CCC) of the Philippines, GIZ supported a **study on the integration of renewable energies into the local grid** of San Vicente, Palawan. The study identifies the specific renewable energy options and potentials for hybridization of the existing generation capacities and the potential for mini-grids. Based upon demand forecast scenarios by DOE and Joint Energy Development Advisory Group (JEDAG), it provides a detailed technical and economic assessment for the effective use of solar and hydro power in San Vicente. Furthermore, the study

evaluates the different market options and business models for renewable energy developers and potential investors.

- In DRC, SNV has demonstrated the technical and financial feasibility of palm oil based biofuel driven mini-grids. In a small rural town in Northern DRC, 4 farmers are technically equipped and have the knowledge to produce quality pure plant oil from palm oil and 5 mini-grids providing electricity to more than 500 people are now in operation. In addition a welding workshop is using PPO.
- The CLUB-ER has organised for its members two experience exchange workshops (one English session and one French session) on renewable energy financing for rural electrification where the off-grid sector (incl. mini-grids) was covered. The first one was held in Khartoum, Sudan in August 2014 and the second in Dakar, Sénégal in October 2014.
- IEA-PVPS Task 9 is elaborating a document on "Trends in PV hybrid systems for Mini-grids, PV hybrid systems from mini-grids to grid-connected support". The trends described in the document are issued from existing literature and studies, lessons learnt from projects and from the results of a survey on "*The future of PV hybrid systems within mini-grids*" carried out among more than 50 international experts involved in Mini-grids and coming from both industrialised and developing countries. It will be published within the next two months.
- A low cost tool for designing least-length minigrid layouts is now available, an example of which can be seen at http://editor.giscloud.com/map/309747/tanna-minigrids-plan and house-mapping services are available at www.developmentmaps.org.

3.2. Plans for the next six months

3.2a) Quality Assurance Framework:

- The draft QA framework will be piloted starting in Spring 2015 to validate the framework by applying it to real world mini-grids systems. Target completion date for the draft QA frameworks is April, 2015.
- Building on the success of the India workshop held in August 2014, US DOE is planning an African stakeholder engagement workshop on the QA framework in Q1 2015. This workshop is part of DOE's engagement on Power Africa's Beyond The Grid Initiative.
- Seek incorporation of the QA framework into appropriate international standards and guidelines, and work with governments and donors to encourage adoption of the final framework.

3.2b) Knowledge-sharing and Dissemination of Best Practices:

- Continue to organize quarterly webinars as well as other opportunities to build consensus on key concepts and to disseminate best practices. Emphasize mini-

grids as an important theme in the events/workshops organized by co-leads as well as at partner events on energy access.

- Set up or utilize existing platforms to disseminate publicly available knowledge on mini-grids. Initial discussions with the Clean Energy Solutions Centre and Energypedia indicate that there is willingness of both partners to feature additional mini-grid information.
- Facilitate the planning for the upcoming meeting on Scaling Clean Mini-Grid Development and Finance at the Rockefeller Foundation's Bellagio Center in March 2015 to convene a small cross section of stakeholders from a across global, regional and country level efforts under the various work streams of the HIO and facilitate strategic and operational discussions to develop the longer term vision, strategy for the mini-grids HIO.
- Work with objective co-leads and other partners to propose an approach to typologies of Mini-Grids in order to create sub-classifications which would be useful also for both companies and investors.
- The Alliance for Rural Electrification, Hochschule Neu-Ulm and GIZ will complete a study on risk management in mini-grids. The study is based on empirical evidence from mini-grid operations in several countries. The study aims to provide recommendations to mini-grid developers and operators on how to tackle certain risks and proposes options for how to support the mini-grid sector by reducing the risks to developers and operators. Further activities beyond the study may include the development of a standardized risk management framework for mini-grids.

3.3 Offers and asks to the members

- Invite partners for the pilot phase of the QA framework project. Development partners who plan to support mini-grids deployments starting mid- to- late 2015 will be ideal collaborators as they can adopt the QA framework as a project implementation principle, requiring compliance of supported projects with the QA framework. Share information about related projects and relevant events to facilitate collaborations and provide opportunities for increased visibility of the work on QA.
- Encourage networks and members to participate in the activities of Objective 3 so that the HIO can benefit from coordination with others working in the sector and build on synergies where applicable.

OBJECTIVE 4 - Support to increased development and testing of business models and increased visibility of outcomes via transparent evaluation and reporting of sector performance

Coordinators: UNEP, IRENA

The activities of members during the past 6 months has focused on the first two streams of Objective 4 related to the support and testing of business models. Greater attention will be paid to the required link with the SE4ALL Accountability Framework during 2015. It is expected that status reports on progress will also become more apparent in the next year as activity programmes commence their implementation.

4.1 Providing advice and linking experience in the development of HIIs testing new business models.

4.1a) Actions and achievements since June 2014

- Biennial International Off-grid Renewable Energy Conference (IOREC) was a platform for sharing experiences and best practice. The IOREC 2014 key findings and recommendations of a draft report are available at: http://iorec.org/conference.php?page=Conference-Proceedings
- Preparations for a joint UNEP-BTC event scheduled in Mozambique in February 2015 to present business cases for clean energy mini-grids. Discussion intended to identify potential business partners and investors
- A series of clean energy mini-grids workshops on different continents has been planned, led by Micro Energy International, aimed at *Enabling low-income markets through clean mini-grid solutions.* These will discuss experience and intentions regarding business models. The first event is planned for Bangalore, India in April 2015
- Renewable energy mini-grids and off-grid applications status report 2014 and methodological issues has been prepared
- A concept has been prepared by ECREEE and UNEP to develop business models for implementation in the ECOWAS region. Advice and experience from Rural Energy Agencies in the target countries is being requested with a view to attracting GEF funding
- A paper is under preparation from the University of California – Berkeley College, UNEP and CrossBoundary to present the concept of "Increasing Private Capital Investment into Energy Access: A Case for Minigrid Pooling Facilities", which presents a new business model for scaling up mini-grid applications to attract commercial investment

4.1b) Plans for the next 6 months

- Discussion of business model options and experience at the first low-income market workshop in Bangalore.
- The investigation into biomass gasification for decentralized power generation knowledge and capacity transfer was planned in 2014 between India (Husk Power) and Mali/Burkina Faso. However, because of the Ebola outbreak in Mali, the activity has been put on hold until 2015. SNV has successfully run a gasification project in Burkina Faso. A next stage of gasification scheme will investigate a demo/test of mini-grid.
- Completion of the Berkeley/UNEP/CrossBoundary report on the Pooling Facilities business model, and widespread dissemination/consultation.
- Integration of feedback from ECOWAS Rural Energy Agencies in a proposal to GEF for the testing of new business models in the region.
- Formulation of a proposal from SNV/ECOWAS/UNIDO to GEF out of the last call for mini-grid by ECREEE.
- Preparations for follow-up workshops in Africa and Latin America on *Enabling low-income markets through clean mini-grid solutions.*
- Four analytical country case studies – 2 in Africa, 2 in Asia – are scheduled to assess the issues related to the sustainability of practical mini-grids applications.
- Two training workshops are planned, focused on enabling frameworks and business model delivery.
- A study on related policy and regulatory measures will be prepared to support renewable energy mini-grid deployment.

4.2 Commissioning case studies and evaluations of business models and supporting exchange visits.

4.2a) Actions and achievements since June 2014

- Completion of a draft business case for the replacement of diesel with PV at Las Terrenas in the Dominican Republic followed by presentation to the local stakeholders. Positively received and discussions underway regarding investment and implementation
- Completion of draft business case for the replacement of diesel with PV at Puerto Leguizamo in Colombia. Presentation to local stakeholders due in December to determine the potential for implementation
- Business models for diesel replacement under development for sites in The Gambia, Kenya, Indonesia and the Philippines. Expected to be completed by the

end of the year, with follow-up local stakeholder discussions to determine the prospects for implementation

- Site visits completed in Mozambique for the installation of a commercially-viable mini-grid. Site selected at Titimane in the north – using solar PV and biomass gasification to power a hybrid system for 4,000 people. Business plan under preparation with input from Homer Energy and PWC Mozambique
- Identification of sites has been completed for mini-grids business development in South Africa and Tanzania. Funding is now required to commence the development of business plans
- The Scottish Government has indicated interest to implement clean energy mini-grids in Malawi; decision pending regarding support for business model development
- A business model has been developed to involve suppliers in the demonstration of affordable financial mechanisms. This is based on suppliers financing the upfront costs, based upon sufficiently guaranteed returns from customers, avoiding the need for external funding of initial capital

4.2b) Plans for the next 6 months

- Formulation of action plans for the demonstration of "brownfield" mini-grid business models in the Dominican Republic and Colombia
- Site visits to brownfield sites in Bequia, The Gambia, Kenya, and Indonesia to win local stakeholder support for the intended demonstration projects
- Completion of the business case for Titimane in Mozambique, preparation of the business model alternatives and commencement of the demonstration phase
- Funding secured from public and private sector financiers to support the demonstration of business models at brownfield sites worldwide and greenfield sites in Southern Africa
- Conclusion of discussions at GDF-Suez for a demonstration of "Power Corner" PV technology in Tanzania, including the development of an appropriate business model

4.3 Ensure that the SE4ALL Accountability Framework is able to properly register and reflect clean energy mini-grid activities, and that a section of the SE4ALL Accountability and tracking reporting is covering clean energy mini-grids, and reflecting relevant statistics gathered.

4.3a) Actions and achievements since June 2014

This area has not been addressed during by the Objective Leads during the past 6 months. Any related input from members is very welcome.

4.3b) Plans for the next 6 months

- Assessment and promotion to members of the requirements of the SE4All Accountability Framework

- Collection from members (via Yammer) of relevant statistics gathered to date, and submission SE4All Accountability for inclusion in relevant tracking reporting

4.4 Over the lifetime of the HIIs, make sure that status reports on progress (what is working, what is not working, etc.) are captured and used in overall reporting for the HIO.

4.4a) Actions and achievements since June 2014

Given the early stage of implementation of the HIIs, few status reports from HIIs have been prepared during the past 6 months so no effort has been devoted to capturing any relevant feedback.

4.4b) Plans for the next 6 months

- Current status of HIIs and the time-schedule for relevant status reports to be recoded

- Any lessons from HII status reports to be channeled to the GFT for inclusion in HIO reporting prior to the June SE4All meeting.

4.5 Offers and Asks to the Members

- Members interested to support the implementation of brownfield mini-grids (in the role of partner and/or financier) are asked to contact IRENA or UNEP or Siemens
- Public and/or private sector members with interest and resources to support the greenfield electrification programmes in southern Africa are asked to contact UNEP for more details
- Members interested to participate and/or present and/or sponsor the low-income markets event in Bangalore in April to contact MEI
- Members are requested to sign up to Objective 4 on the Yammer interface, since this will be used for broad consultation over the next 6 months. The collection of statistics from ongoing or past activities will be one focus for this period.
- Members are requested to report (via Yammer or to UNEP/IRENA by email) any lessons learned, good and bad, from ongoing or past activities related to the development and application of mini-grid business models

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, including at high level events in the SE4ALL calendar involving private and public financiers, including Advisory Board meetings.

HIO member achievements to date:

- Visibility for GMGs amongst financiers at the Asian Development Bank in June and at the World Bank in October.

Plans for next 6 months:

- Roundtable of private investors and fund managers at DFID on 18th December linked with GOGLA/BNEF Investor Event to discuss financing gaps at the funds level, and better understand needs of GMGs developers vs household energy firms
- Potential for a mini-grids session at the Bloomberg NEF Investor Summit in New York in April (TBC)

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

HIO member achievements to date:

- Support approved by DFID, currently in the inception phase, for a package of research co-ordinated by WB/ESMAP including into financing issues around GMG deployment.
- GIZ will complete work on two instruments that are aimed at helping mini-grid developers to secure commercial financing. One of the instruments is a business planning checklist for off-grid solar PV-diesel hybrid systems developed jointly with the Climate Change Commission in the Philippines which aims to provide guidance to mini-grid developers on how to assess and prepare technically sound and commercially viable projects. The other tool currently in development is an investment decision support model which will help developers and promoters of mini-grids in Kenya and beyond to assess the impact of various factors on the cash-flow of mini-grid projects. These factors include among others subsidy levels, tariff levels, incentives, etc.

- The Clean Energy Ministerial's Clean Energy Solutions Center and Global Lighting and Energy Access Partnership initiatives, in coordination with the U.S. Department of Energy and the U.S. National Renewable Energy Laboratory, are preparing a comprehensive report on public sector roles in increasing private finance for clean energy access to be completed in Q2/Q3 2015. Complimentary to this report, we are convening a panel on this topic at the 15th National Conference and Global Forum on Science, Policy and the Environment on January 28th in Washington, D.C., as well as a high-level public-private roundtable at the 6th Clean Energy Ministerial to be held in Mexico City in Q2 of 2015.
- SNV has engaged discussions with mining sector to create sustainable demos of mini-grid use a component of CSR to support communities.

Plans in the next 6 months:

- Call for research by WB/ESMAP into GMGs financing expected in the first half of 2015.
- SNV intends to engage talks with government in Burkina Faso in order to introduce a shift from Diesel-based mini-grids (Electricity Cooperatives-COOPELs) to either hybrid or solar PV-based system.

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

HIO member achievements to date:

- Support approved by DFID, currently in the inception phase, for at-scale financing of mini-grids in Kenya and Tanzania, in co-operation with AFD and the Ministry of Energy in Kenya, and in co-operation with SIDA, World Bank and the Rural Energy Agency in Tanzania.

Plans in the next 6 months:

- Inception Phase ongoing and initial calls for Expressions of Interest in access to financing for Green Mini-Grids development in Kenya and Tanzania.

5.4 Offers and Asks to the members

- Feed in your ideas and initiatives on this Objective through the Yammer Group on Objective 5. Make sure your activities are reflected in the Objective Workplan.
- Fund managers or financiers with an interest in potentially co-leading this Objective with DFID in the first year please make themselves known

ANNEX 1: WORKPLANS AND FUNDING

Objective 1

Workplan[1] (funded sections are in black, grey out sections not yet funded)

Activity	Coordinator	Early 2014	Late 2014	Early 2015	Late 2015	Early 2016	Late 2016	Early 2017
A. Research and Advisory								
A1: Compilation of literature / advisory products	**TBD**							
… e.g. Minigrid Policy Toolkit	**EUEI PDF**	**Finalized**						
… e.g. Tenenbaum et. al. book: "From the Bottom Up (…)"	**World Bank**	**Finalized**						
…								
A2: Set-up and maintain online information (literature, best practices, investor's needs) platform	**TBD (HIO Secretariat?)**							
A3: Outreach and awareness creation (to countries and beneficiaries), feeding into B and C below	**GTF? / HIO Secretariat**							
B. AA and IP *Formulation* Support[2]								
B1.Contact / entry point for requests re. advisory on	**SE4All Regional**							

[1] Note: for the purpose of Objective 1, all the activities listed below will focus on the *Policy and Regulatory Enabling Environment* for mini-grids.

[2] Assumption: AA/ IP formulation concluded by 2015, otherwise to be extended for those countries not ready by that time.

AA / IP formulation	**Hubs? / HIO Secretariat?**							
B2. Support to AA / IP formulation[3]								
… AA / IP formulation advisory	**Africa Hub**							
… AA / IP formulation advisory	**ESMAP**							
…	**Others?**							
C. AA and IP *Implementation* Support								
C1. Technical assistance to AA / IP implementation[4]	**TBD**							
…	**World Bank**	**?**	**?**	**?**	**?**	**?**	**?**	**?**
…	**ESMAP**	**?**	**?**	**?**	**?**	**?**	**?**	**?**
…	**EnDev / GIZ**							
…	**EUEI PDF**							
…	**AfDB / SEFA?**	**?**	**?**	**?**	**?**	**?**	**?**	**?**
…	**DFID programme?**	**?**	**?**	**?**	**?**	**?**	**?**	**?**
…	**EC Technical Assistance Facility?**	**?**	**?**	**?**	**?**	**?**	**?**	**?**

Objective 3

Workplan (funded sections in black, grey out sections not yet funded)

Activity	**Co-ordinator**	Early 2014	Late 2014	Early 2015	Late 2015	Early 2016	Late 2016	Early 2017
Quarterly webinars on mini-grid best practices on:	UNF		◆	◆	◆			

[3] i.e. technical assistance / advisory on identifying needs and gaps in terms of enabling environments for mini-grids, to be listed in the Action Agendas.

[4] i.e. technical assistance / advisory on enabling environment formulation and implementation

- Site selection, project preparation, community involvement - Financial and administrative management of mini-grid operations - Customer relationship management - Productive use - Demand side management								
Organization of an annual peer learning event with private mini-grid operators	UNF/GIZ		◆					
Establish a publicly available knowledge platform on mini-grids including information on - mini-grid definitions - relevant IEC standards - training providers - recurrent events - prepaid and metering solutions - tariff setting guidelines - inspection guidelines - survey forms for demand assessments - compilation of lessons learnt - Donor and project mapping carried out under the Mini-grids HIO.	GIZ and UNF							
Development of mini-grid specific open source cash flow models	GIZ							
Development of a guideline for managing mini-grid risks	GIZ							
Development of a mini-grid quality assurance framework	US DoE		◆	◆				

Objective 4

Workplan (funded sections in black, grey out sections not yet funded)

Activity	**Co-ordinator**	Early 2015	Late 2015	Early 2016	Late 2016	Early 2017	Late 2017	Early 2018

Preparation and demonstration of business models at relevant "brownfield" sites	UNEP/IRENA/ Siemens/SNV?							
Preparation and demonstration of business models for "greenfield" application in Mozambique	UNEP/EDP							
Preparation and demonstration of business models for "greenfield" applications in South Africa, Tanzania and Malawi	UNEP/Helios SE/UK Carbon Trust							
Country case studies – 2 in Africa, 2 in Asia – to assess the sustainability of practical mini-grids applications	IRENA/SNV							
Biomass gasification for decentralized power generation knowledge and capacity transfer	IRENA/SNV							
Study on related policy and regulatory measures will be prepared to support renewable energy mini-grid deployment	IRENA							
Continuous tracking of clean energy mini-grid applications with related database of relevant criteria (locations, capacity, etc)	REN21							
Clean energy mini-grids workshops on different continents aimed at *Enabling low-income markets through clean mini-grid solutions*	Micro-Energy International/SNV?							
Two training workshops focused on enabling frameworks and business model delivery	IRENA							
Study on related policy and regulatory measures to support renewable energy mini-grid deployment	IRENA							
Statistics gathered from members for submission to the SE4All Accountability Framework for reporting	UNEP/IRENA							

Objective 5

Workplan (funded sections in black, grey out sections not yet funded)

Activity	**Co-ordinator**	Early 2014	Late 2014	Early 2015	Late 2015	Early 2016	Late 2016	Early 2017
Initial visibility action at NY launch	HIO Co-ordination Group							
Financier consultations and financing facility design in Kenya and Tanzania	AFD (Ke), WB/REA (Tz) and AfDB regionally							
Consultation with financiers in Africa under GMGs Africa inception and market development activity design	AfDB							
Financier consultation and visibility event at Bloomberg NEF 2014 (TBC)	DFID, BNEF							

Call for proposals and research project on GMGs financing and viability gap (TBC)	ESMAP, DFID							
GMGs financing facility open in Kenya and Tanzania	DFID partners in Ke and Tz							
GMGs Africa Market Development Activity component engaging financiers	AfDB							
Follow up on possible additional GMGs-scale up vehicles – eg. Venture Capital, franchise/lead firms, DESCOs etc	DFID, USAID, IFC , UNEP, others?							
Further financing facilities made available for GMGs internationally and in 2 more countries	TBC							

ANNEX 2: HIO Member Organizations

(represents core founders of the HIO, as well as applications received and processed by the Secretariat through the HIO website by January 23, 2015)

Accenture
Advanced Solar Industries
Advancing Engineering Indonesia
AETS
Africa Enablers
African Development Bank
African Association for Rural Electrification (CLUB-ER)
Alliance for Rural Electrification
ARNERGY SOLAR LIMITED
Cellstrom GmbH
coperson-Hill Ltd
CrossBoundary LLC
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
Devergy
EDP – Energias de Portugal SA
EarthSpark International
East-West Center
EcoEnergyFinance
Ecoprise Bio-solutions PLC
Energy Development Intermediaries (EDI)
Eolicar Srl
FearTheSkunk Consulting
First Solar
General Microgrids

Ghana Capital Partners
Helios Social Enterprise
Horizon Energy Group
IEA-PVPS Task 9 - “Deployment of PV services for regional development”
IED-Invest
International Finance Corporation
Institute for Sustainable Power
IQgrid Ltd.
Kaboni Carbon Consultancy
Karibu Solar
Konserve Consult Limited
Lawrence Berkeley National Laboratory
Limye Pa w
Lumeter Networks
Malmok Vision
Mera Gao Power
MicroEnergy International
National Rural Electric Cooperative Association
Navigant
Nevada Solar Designs
Novozymes/ SE4ALL Sustainable Bioenergy HIO
Partnership International
Persistent Energy Capital LLC
Power: On
Practical Action
Product Health Ltd.
Proximity Designs
PWC
Reiner Lemoine Institut GmbH
Remergy A/S
Rockefeller Foundation
Rural Renewable Energy Alliance
RVE.SOL - Soluçoes de Energia Rural Lda
Schneider Electric
School of Advanced International Studies (SAIS), Johns Hopkins University
SESI
SgurrEnergy Ltd
Sierra Club
Skynotch Energy Africa
SLE Global (Sustainable Energy and Living)

Smart Hydro Power
SMEFUNDS-GosolarAfrica
SNV
Solar Spirals
STG International
Sun Edison
Sustainable Energy Associates
The Turing Trust
The World Bank
Trojan Battery
UK Department for International Development (DFID)
United Nations Environment Programme (UNEP)
United Nations Foundation (UNF)
University of Southampton
UNIAFRICA
USAID
US Department of Energy
VALDAS & CO. LTD
Village Infrastructure
Virunga Power
World Bank
Yiitidi
Youngblood Capital Group, LLC