Clean Energy Mini-grids High Impact Opportunity

Strategic Action Plan (Jun 15)

Introduction

The SE4All High Impact Opportunity (HIO) for Clean Energy Mini-Grids (CEMG) was launched at the first SE4All Annual Meeting in June 2014. The "mini-grids" considered by the HIO are village, town or district scale electrical distribution networks either unconnected to, or able to operate autonomously from, the main electrical grid. The HIO uses an inclusive definition which simply differentiates the sector from stand-alone household systems and grid-extension approaches.

As part of the HIO, five key objectives have been defined:

1) Support the integration of CEMG in national and international policy
2) Increase interaction and co-ordination between relevant stakeholders
3) Agreement and knowledge of key concepts, techniques, technologies and approaches
4) Develop and test business models, with effective monitoring and evaluation of outcomes
5) Increase visibility and recognition amongst financiers

The Clean Energy Mini-grids HIO convenes stakeholders from the private sector, public sector, and civil society to work together to enable, enhance and promote existing and upcoming efforts in the mini-grids sector, to increase the rate of deployment and support market transformation in developing countries.

Following a successful first 9 months to establish the HIO and attract relevant members, it was recognised that a strategic action plan for the development of this sector was required. In March 2015, a meeting was convened in Bellagio to focus on key policy and finance issues related to the deployment of mini-grids. It served to bring together key stakeholders with the aim to develop the longer term vision and a strategic action plan for the work on clean energy mini-grids within the SE4All initiative. In particular, to further the goal of universal energy access by 2030, participants aimed to reach tangible outputs regarding:

- opportunities to integrate clean energy mini-grids into the national planning of target countries;
- development of a 3-5 year strategic action plan; and
- identification of tactical partnership development opportunities.

This document has been prepared using the five objectives above as a framework, with the following highlights:

Objective 1: the HIO's role is that of a facilitator and catalyst to ensure that mini-grids are fully integrated into national energy policy and regulatory frameworks. There are two broad segments:

- Thematic: what needs to be done; assistance must focus at the national level in order to enable public or private investment
- Support: how it is done and by whom; key requirements are knowledge and information dissemination, information exchange and co-ordination of activities

Several members have ongoing activities in this area, so an urgent requirement is an understanding of the actor landscape. Co-ordination by the HIO Secretariat, with relevant partnerships, should be considered.

Objective 2 aims to increase co-ordination and interaction, drawing in new partners and enabling an increased number of partnerships/joint ventures. This involves collecting information on sources of funding, technical and other support, thereby helping to co-ordinate ongoing. It is expected that the mapping project will lead to increased CEMG investments and operations in developing countries. Related activities include the recent completion of a mini-grid policy toolkit and mini-grid risk mitigation study. Future priorities are new mapping projects, tracking and sharing details of partners' High Impact Initiatives (HIIs) and partnership building through related CEMG events.

Objective 3 aims to provide of up-to date knowledge, quality assurance and targeted capacity development in order to improve performance across the sector. The five work streams are a one-stop information shop, training, quality assurance, expert exchange and R&D. A mini-grid web-portal will be managed by the Secretariat, a QA framework and training materials will be developed, regular webinars will be scheduled, a global conference will be arranged and support will be mobilised to address identified research gaps.

Objective 4 aims to test and demonstrate the potential for commercially-viable CEMG operation. Activities focus on a bottom-up approach to provide the energy service required by customers, including the integration of CEMG with stand-alone systems, with consideration of both public funding and private sector investment. Successful demonstration aims to offset the uncertainty (hence risk) perceived by investors. Business models are being considered in a range of countries, with the aim to prepare business plans, identify partners, build local capacity, link to national policy development and match local resources to relevant CEMG technologies.

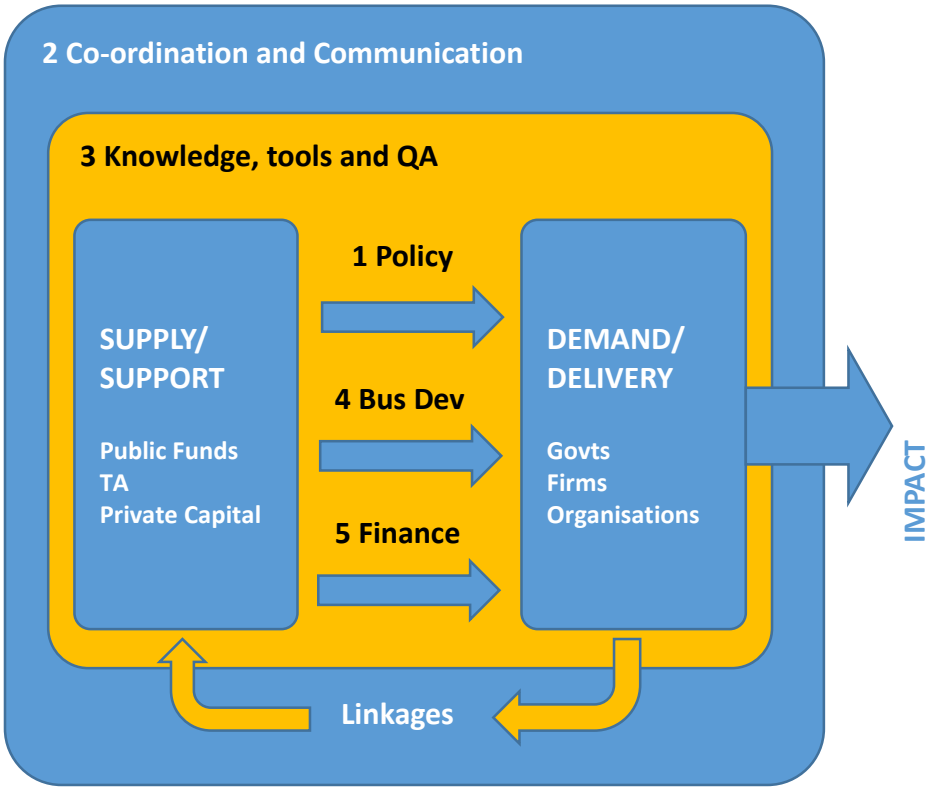
Objective 5 seeks to addresses the lack of access to affordable longer term CEMG finance, a core barrier, by raising awareness amongst public and private sector financiers regarding the challenges and opportunities. This involves raising CEMG visibility at high-level SE4All events involving financiers, improving data and benchmarks on funding requirements, and supporting the creation of HIIs providing CEMG finance. This will involve market development programmes, sector research, visibility events and the creation of relevant funds.

The need to integrate these five principle Objectives of the HIO is recognized as a crucial issue to ensure the co-ordination, complementarity and maximum cost-effectiveness of HIO activities. Following the discussions in Bellagio, the links were summarized in the diagram below.

For all Objectives, resources/budget will be a critical factor and the approach to potential supporters will need to be very well co-ordinated (rather than being undertaken independently by the separate objective support teams). Another common need will be 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.

In addition to the Secretariat, additional staff resources at SE4All for the development of this and related HIOs will be essential 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.



Diag 1: Integration of CEMG HIO Objectives

Objective 1
Support the integration of CEMGs within national and international energy plans and regulations

I. Broad Vision for Objective 1

The HIO will seek to ensure that mini-grids are fully integrated into national energy policy and regulatory frameworks, and in the national approaches for rural electrification.

The *specific objective* is therefore to support the "support to the formulation[1] and implementation[2] of enabling policy and regulatory environments for mini-grids".

The HIO's role is that of a facilitator and catalyst in support of framework development for mini-grids. The ultimate beneficiaries are the market actors, i.e. energy consumers, stakeholders, project developers, investors, policymakers and regulators as well as financiers. The direct beneficiaries and stakeholders are those involved in formulating and implementing policy frameworks for mini-grids.

Crucially, the HIO should contribute to improved coherence in policy framework support – i.e. improved coherence and coordination among actors providing support related to policy and regulatory frameworks for mini-grids – and to the standardization – as much as country-specific aspects allow – of framework elements.

II. Key Issues and Goals in the Objective Area

The objective are can be clustered into two broad segments: the "thematic realm" on the one hand, and the "support realm" on the other. The thematic realm comprises all the actual policy requirements and all action to be taken in order to meet them, i.e. the "what needs to be done". The "support realm" comprises all the actors involved in taking action on shaping up policy frameworks for mini-grids, their working modalities, and the relationship between them, i.e. the "how it is done, and by whom".

In terms of the **thematic dimension**, the key issues in terms of framework requirements for mini-grids are relatively well documented in general terms, due to existing experience and literature[3]:

- Appropriate role of mini-grids in energy sector planning
- Public procurement and tender procedures
- Provisions for private involvement in mini-grid deployment
- Grid connection procedures for mini-grids
- Mini-grid tariffs (differentiated vs. nationally uniform tariffs)

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[1] i.e. the design of policy instruments at all relevant levels, including policies, strategies, laws, plans, regulations and standards (overlaps in terminology are possible).

[2] i.e. the application of policy instruments at all relevant levels, including and requiring appropriate processes, institutional capacity, etc.

[3] For a succinct overview, see OFID (2014). Tenenbaum et al. (2014) and EUEI PDF et al. (2014) illuminate the topic in greater detail, with a particular view on the situation in Sub-Sahara Africa.

These issues are addressed at national level, in the respective country's specific policy and regulatory framework. They manifest not only through policies, but also through an appropriate institutional framework with coherent and efficient procedures and processes to implement the policies and regulations, and to provide efficient interfaces for public or private market actors. Through cross-country analysis and knowledge exchange, complemented with global analyses, it is possible to derive general statements about the above issues. Such kind of exchange can take place at global or regional level, incl. through the respective actors and institutions (e.g. at regional level there may be a role for the Regional Economic Communities, or through regional centres of excellence, such as ECREEE in Western Africa). This may in turn again support the development of appropriate frameworks at national level.

However, in the end, policies and regulations are set and implemented at national level. It is thus at this level where – if required – specific support must focus in order to achieve actual results in terms of enabling public or private investment.

The **support dimension** is currently characterized by several trends: while many governments have begun and in some cases make substantial progress in appreciating the role of mini-grids in rural electrification, there are many other countries where there is still very limited commitment and preparedness to take action. Governments' efforts in shaping up the policy and regulatory frameworks for mini-grids are supported by wide range of actors, including development banks and agencies providing technical assistance, research and academia, and at times also industry representatives, incl. individual companies. Despite the numerous ongoing activities, more policy support is still needed. At the same time, coordination and information exchange between support initiatives are severely lacking. Against this background, the key issues in the support dimension are:

- **Knowledge and information dissemination on mini-grids**
    - Increase the availability of information and the level of understanding on mini-grids;
        - ➔ Activity: stock-taking (literature list with links) of existing publications and outputs on the topic, and dissemination of the same
        - ➔ Activity: analysis of prevailing information gaps, i.e. what are the gaps that remain to be filled in terms of policies and regulations for mini-grids *[my personal opinion and experience suggests that the key open questions relate to a) tariffs and b) grid connection of mini-grids]*
    - Create awareness about the role and benefits of mini-grids among policymakers
        - ➔ Activity: disseminate suitable information, incl. through publications (e.g. the available resources/publications, or new publications to the target audience), or through events / presentations

- **Information exchange and coordination of support activities**
    - Improve exchange of information and experience exchange between all actors
        - ➔ Activity: mapping exercise and dissemination of results
    - Enhance coordination and facilitate cooperation between support providers
        - ➔ Activity: targeted outreach to the key actors and dissemination of the aforementioned outputs
        - ➔ Activity: convening said key actors, e.g. through side-events at key occasions, e.g. milestone events in the energy development community

The position and role of the HIO focuses on the support dimension in the short term.

III. Resources (including Partnerships) Needed to Achieve the Goals

- Currently, there are a limited number of actors with significant experience and previous / ongoing / planned activities in providing support on mini-grid policy frameworks. AfDB / SEFA: as part of the DFID Green Mini-Grid (GMG) programme, the AfDB's Sustainable Energy Fund for Africa (SEFA) has been endowed with substantial resources to provide policy advisory to African countries.
- ESMAP: Established in 1983, the Energy Sector Management Assistance Program (ESMAP) is a global, multidonor technical assistance trust fund administered by the World Bank and cosponsored by 13 official bilateral donors.
- EUEI PDF: as an instrument of the EU Energy Initiative, the Partnership Dialogue Facilitiy – hosted by GIZ – is a multilateral European instrument for energy in development cooperation. Technical assistance to mini-grids has been provided in particular at regional and global level.
- GIZ: as service provider for international sustainable development, GIZ is providing policy advisory services related to mini-grids for different clients in a number of countries.
- EU Technical Assistance Facilitiy (TAF): launched as part of the EU's commitment launched under President Barroso's to SE4All, the TAF is a pool of experts, managed by the EU Commission DG DEVCO, providing technical assistance in particular in EU focus cooperation countries.

In addition, there is a range of other initiatives that address individual aspects of the policy and regulatory framework for mini-grids, or that operate in individual countries. Furthermore, there is a great many individual experts, organizations, consulting companies or energy firms as well as regional bodies (e.g. ECREEE) that have very substantial know-how and that have compiled a mass of relevant publications.

A key starting point in terms of knowledge and information would be a literature / resource list, as a living document, compiling and by way of hyperlinks making available the wealth of existing publications and documents (listed under activities above).

The starting point and key resource required in terms of experience exchange and coordination is an understanding of the actor landscape, i.e. the completion of the above list by way of a thorough mapping exercise. This exercise must capture all relevant actors providing substantial support in the policy and regulatory realm.

The activities above can be delivered in two modalities, i.e. either by actors (organizations, experts, companies, etc.) active in the field, or by the Secretariat of the HIO.

The HIO should establish whether the Secretariat should undertake the activity. If it cannot or should not be undertaken by the Secretariat, the HIO could approach actors in the community and propose to have the issue addressed through a suitable intervention. The HIO should in such cases, i.e. where the activity was triggered through the HIO, ensure to have appropriate visibility.

In order to deliver on the thematic dimension, i.e. in order to achieve results at outcome and impact level, partnerships could and should form as a result of enhanced cooperation.

IV. Metrics for Reporting Success

For the time being, it is suggested that the HIO performance against the above objectives and activities takes place at output / activity level. This is the simplest form of monitoring, and requires merely a yes / no with a minimal narrative in terms of what was achieved, how, and by whom.

Ultimately, the HIO should strive to report success against outcomes, i.e. improved coordination, and impacts, i.e. enhanced policy / regulatory frameworks. However, it is suggested that this is not prioritized, since it is a very substantial task to establish a specific and functional M&E framework. In addition, it will take time for outputs to translate into outcomes and impacts.

The second step, i.e. outcome / impact measurement, could thus be undertaken once activities have taken place, and success at output level has been registered.

V. Priority Activities

OBJECTIVE 1 - Policy Actions	**Short Term**	**Medium Term**	**Lead**
Regional Hubs and GFT to ensure awareness of CEMGs HIO in AA and IP processes.	Highlight CEMGs HIO to AA and IP Focal Points and support consultants - R Hubs and GFT (in kind)	Continue in further AA and IP processes in second batch of countries.	GFT and R Hubs
Countries which prioritise CEMGs by XXX 2015 to be included in an ESMAP/WB-led review of the policy environments for CEMGs (generating a baseline - focus on tariffs, grid connection and licensing , leveraging RISE/Cscope)	Study/review of the policy environments for CEMGs in countries prioritising CEMGs - WB/ESMAP TBC (funded)	TBC	ESMAP
Countries prioritising CEMGs apply for support via Regional Hubs for a package of market development support (including policy process support as needed)	Launch a call for EoIs by Govs in Africa for packages of support to Mini-grid enabling environments - SEFA/AfDB (funded) R Hubs providing support to Govs on MG policy in Asia and L America	Delivery of package of support to 5-6 African Govs on policy environment for CEMGs. - SEFA (funded)	SEFA

	- TBC ADB and IADB		
Regional Hubs to work with the regional bodies and member states (including SIDS) to ensure that CEMGs are recognised at the highest political level	AfDB and ECREEE to raise CEMG issue with national and regional bodies in Africa. - AfDB and ECREEE (in kind) TBC in Asia and L America	Adoption of a resolution on the role of CEMG in regional frameworks	AfDB R Hubs

Objective 2

Increase co-ordination and interaction in the mini-grids sector, drawing in new partners, enabling increased partnerships/joint ventures.

I. Broad Vision for Objective 2

The second objective of this HIO is to increase co-ordination and interaction in the mini-grids sector, drawing in new partners, enabling increased partnerships/joint ventures. The leaders on this objective are the two organisations making up the HIO's Secretariat, namely the UN Foundation (UNF) and the Alliance for Rural Electrification (ARE).

To achieve this objective, there is a strong need to better understand the initiatives aimed at facilitating mini-grid deployment. Indeed, a proliferation of activities by public donors, private investors and their implementing partners focusing on mini-grids is resulting in confusion among actors about who is doing what in the sector. There is evidence of duplication of effort and limited use of existing knowledge.

Furthermore, the lack of a platform for information exchange and effective coordination is resulting in high transaction costs for mini-grid developers on the ground.

Therefore, the HIO – through ARE - will collect information on public, philanthropic and commercial sources of funding, technical support and other support available for the implementation of clean energy mini-grids.

This crucial mapping activity is complemented by a considerable number of additional efforts, such as the preparation of mini-grid related material, as well as the facilitation of knowledge-sharing and the dissemination of best practices.

Finally, and in order to further facilitate dialogue, outreach, partnerships and joint ventures, the HIO also contributes to and takes part in the organisation of events and workshops.

II. Key Issues and Goals in the Objective Area

See I. Broad Vision for Objective 2.

III. Implementation Strategy

The current cornerstone of the implementation strategy to reach this objective is the **mapping of sources of funding, technical support, and other resources allocated and currently available for the implementation of mini-grids**.

Indeed, greater awareness of present and upcoming initiatives supporting the development of mini-grids is widely recognised as key to ensuring cost-effective additional investment in the mini-grid sector.

The mapping will help co-ordinate ongoing funding activities, avoid conflict or duplication, and so maximize the value of funds committed. Given the very limited scope of ready-for-purpose databases in

the sector, the mapping will considerably increase market transparency and will reduce entry barriers for actors wishing to engage seriously in this promising but still highly fragmented and early stage market segment. New information and business linkages will enable increased interaction and cooperation amongst existing and new incoming HIO partners in the mini-grid sector.

The mapping will be conducted in a phased approach. The **first stage of the mapping, for which funding has been awarded by the GIZ and Rockefeller Foundation, has started** and focuses on collecting information on public, philanthropic and commercial sources of funding, technical and other support available for the implementation of clean energy mini-grids. The mapping exercise will be led by the ARE Secretariat. A working group formed by EUEI PDF, GIZ, Rockefeller Foundation, UNEP and supported by Christine Eibs-Singer (SE4ALL Senior Finance Advisor) will provide guidance and input during the process to safeguard close alignment amongst HIO members and good governance of activities.

Future stages of the mapping, which are yet to be specified and funded, are to focus on activities of practitioners who are involved in the implementation of mini-grid projects on the ground as well as the mapping of existing and planned mini-grids around the world.

Concrete **activities in the context of the current mapping project include**:

1. **Identification of public, philanthropic and commercial sources of funding and technical support currently available for the implementation of mini-grids**: Based on input from HIO members, ARE will prepare a list of organisations and instruments to be mapped. Examples for organisations mapped in this stage are development finance institutions, implementing agencies of donor countries, national funds for rural electrification, philanthropic foundations, commercial investors, asset managers or civil society organisations implementing support facilities.

2. **Collection of information**: The information that will be collected during the mapping includes the name of the available instrument / product, implementing organization, scope and volume, short description of support available, countries and inside regions of operation, type of mini-grid, status (operational/planned), links to website, contacts. The information will be collected via a questionnaire which will be sent to a contact person at the respective organisation. If necessary an interview with the respective organization will be carried out in order to obtain the necessary information for the mapping. HIO members and non-members will be requested to also inform about planned support schemes and financing instruments. The information collected will be stored in a spreadsheet/data base in order to facilitate analysis.

3. **Development of a catalogue publication and a web-tool to present the collected information**: For promotional purposes a publication with explanations about the key findings of the analysis together with a catalogue with a short profile for each organization or instrument will be prepared. In addition, the collected information will be integrated in a user-friendly and publicly accessible web-tool, which can be used to filter for specific aspects such as type of technical and/or financial assistance or countries / regions within a country targeted by an instrument.

4. **Presentation and promotion of final output to relevant stakeholders**: The catalogue and the web-tool will be made available online through the HIO as well as UNF and ARE website. Alternative channels for informing practitioners and organisations working on mini-grids like newsletters, private distribution lists and conference contributions of individual HIO members, will be also leveraged in order to reach others who would benefit from the information

It is expected that this mapping project will have a high positive impact on future implementations of clean energy mini-grids as private companies, practitioners and civil society will immensely benefit from the increased access to information on what donors and funders are doing and where. These actors will be able to adapt their business strategies and priorities accordingly, and better understand who can assist them to fill the technical or financial gaps in their projects. Moreover, they will be able to get in touch with the respective organisations, as contact information is to be listed per instrument. All of this will increase their ability to implement projects and provide a solid basis for scaling up.

In addition to the benefits for mini-grid developers on the ground, international and national public institutions and donors will be able to utilise the mapping in their ongoing preparation and development of country level support programmes. They will be able to better assess what their peers are doing and where, thus enabling them to better tailor and focus their instruments in order to achieve maximum leverage. The mapping will also help them in aligning activities to SE4All priorities, e.g. by targeting areas where mini-grids are identified as part of the intended solution for increasing energy access, as well as help to improve coordination in the sector.

Overall, it is expected that the mapping project will lead to increased investments and operations in clean energy mini-grids in developing countries, resulting in an increased and accelerated access to clean energy services for local communities. This will not only improve their overall living conditions, but also enable these communities to establish more sustainable businesses, thereby significantly contributing to poverty alleviation and sustainable development.

In the longer term, it is planned to update the mapping data on a half-year or yearly basis in order to keep the web-tool relevant and the information accurate. With this atlas of mini-grid funding sources and support instruments, donors and financiers as well as practitioners will be able to engage more effectively – both in terms of time and of cost - in clean energy mini-grid project implementations.

Other activities to reach this objective since June 2014:

- 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
- 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 AEEP Private and Development Sector Dialogue Forum in Nairobi on 28.11.2014 and at the Africa Mini Grids Summit in Nairobi on 18-19.11.2014
- Events and other activities:
  - ARE Mini-grids Newsletter online on 27.8.2014
  - Monthly webinars for UNF Mini-grids Working Group members
  - ARE Mini-Grid Campaign
  - Microgrid Deployment Workshop (HOMER) in Barcelona on 22-23.09.2014

- European Commission-EuropeAid workshop "EMPowering Rural Electrification - the EU Framework for Access to Sustainable Energy" in Brussels on 29-30.09.2014
- ARE Energy Access Seminar: Meet the Experts in Brussels on 30.9.2014
- SE4ALL - Energy Access Meeting on 1.10.2014
- Workshop "Mini-grids: Experience from Commercially Viable Systems" in Washington on 16-17.10.2014
- 2nd International Conference and Exhibition On Energy Storage & Microgrids In India in --- on 4-5.12.2014
- International ARE Energy Access Workshop in Madrid on 5.3.2015

Future activities to reach this objective:

- Carrying out the existing mapping of **sources of funding, technical support, and other resources allocated and currently available for the implementation of mini-grids**. (see above).
- Develop new mapping projects, which could focus on activities of practitioners who are involved in the implementation of mini-grid projects on the ground as well as the mapping of existing and planned mini-grids around the world.
- Further preparation of mini-grid related material, facilitation of knowledge-sharing and dissemination of best practices.
- Encouraging sector stakeholders to input their High Impact Initiatives (HIIs), activities and commitments.
- Track key initiatives (HIIs) that are being undertaken within the mini-grids HIO and provide a platform for visibility for these HIIs.
- Regional and international partnership building meetings and workshops amongst interested parties as well as webinars and other matchmaking events, including at country levels.

IV. Resources / Budget

In order to achieve this objective, the GIZ and Rockefeller Foundation have kindly awarded funding for the project to map sources of funding, technical support, and other resources allocated and currently available for the implementation of mini-grids (see above).

The HIO is currently looking for additional funding to continue this mapping project, so that the data can be updated on a half-year or yearly basis in order to keep the web-tool relevant and the information accurate. Moreover, the HIO also welcomes funding for other mapping projects, which could e.g. focus on activities of practitioners who are involved in the implementation of mini-grid projects on the ground as well as the mapping of existing and planned mini-grids around the world.

The other activities are undertaken by HIO members on their own initiative and funding.

V. Priority Activities

OBJECTIVE 2 – Co-ord & Comms Actions	**Short Term**	**Medium Term**	**Lead**
Complete mapping of supply of funds and support to the CEMGs Sector (by May Forum)	Questionnaire and presentation in catalogue and web by May - ARE (funded by GIZ €15k and RF $50k)	TBC	ARE
Analyse the demand for support amongst Govs (via AA follow up) and Firms/Orgs (starting with HIO/EAPN membership, developing an investment catalogue and improving member management)	Feed into and review the AAs/IPs on CEMGs - R Hubs and GFT (in kind) Review existing Membership and analyse - UNF, DoE (in kind) Develop CEMG investment catalogue - UNF Leading ($25-30k – unfunded)	Follow-up packages of support - R Hubs (see Obj B) Larger scale Mini-Grids Market Assessment - TBC (ESMAP) Client Relationship Management like Salesforce – UNF (in kind, if needed)	R Hubs and GFT ESMAP UNF
Develop improved linkages between supply and demand via events, a newsletter/bulletin, a web interface (linked to Yammer) and SE4ALL co-ord channels	Focal point Role - TBC (secondment, unfunded) Events – All (piggyback on existing, and/or with sponsorship) Newsletter – UNF (ESMAP?) Web Interface/Forum linked with Yammer – GFT (in kind) SE4ALL Co-ord Channels – R Hubs (in kind)	CEMGs-specific events	

Objective 3

Agreement and knowledge of key concepts, techniques, technologies and approaches, supporting improved performance across the clean energy mini-grids sector

I. Broad Vision for Objective 3

The main goal of Objective 3 is to support the sustainable development of the mini-grid sector through the creation of knowledge and consensus of key concepts, techniques, technologies, and approaches on clean energy mini-grids, including through provision of up-to date knowledge, quality assurance and targeted capacity development. The main goal will be achieved through five initial work streams:

1) The establishment of a one stop shop for information, knowledge exchange and best practices around mini-grid development and implementation;
2) The development and implementation of training programmes for practitioners and stakeholders;
3) Establishment and roll out of a quality assurance framework for mini-grids;
4) Facilitation of expert exchange among stakeholders as well as dissemination of information on existing tools and resources to enable better coordination and decision-making among stakeholders;
5) Support for research and development.

II. Key Issues and Goals in the Objective Area + Implementation Strategy

1) Mini-grid Portal / Website

The mini-grid portal is a resource and knowledge base that allows practitioners to obtain and share relevant information on mini-grids. The portal will be managed by the HIO secretariat and can contain information under the following headings: Mini-grid Basics / FAQ; Mini-grid Topics; Country / Market Information; Tools and Documents; Contact Database / Business Directory; Mini-grid Project Factsheets / Map; Mini-grid Help desk / Forum; News and events; Blog; Social Media (e.g. Flickr, Twitter, Youtube, Facebook), etc. The information on the platform will be made available in several languages (English, French, Portuguese, and Arabic). The portal can be hosted on an external server and will be eventually integrated into the SE4All knowledge platform. There may also be opportunities to leverage existing resources for the mini-grids portal through collaborations with partners such as those listed below.

Activities include:

- Design and development of IT solution
- Identification of available contents
- Production of contents
- Content management and regular content upload
- Platform promotion and update

Potential partners: GIZ, UNF, Clean Energy Solutions Centre, Energypedia, Reegle, Openei, IRENA, etc.

2) Quality Assurance and Standards

Objective 3 will develop and pilot a quality assurance framework for mini-grids. The quality assurance framework is based on input from various mini-grid experts and standardisation authorities. The framework will be designed in accordance to international standards and be incorporated into relevant International Electroctechnical Commission (IEC) rural electrification normative documents. The

framework will help public authorities in the tendering of mini-grid systems as well as financiers in determining the bankability of mini-grid projects. Once developed the quality assurance framework will be piloted in several countries.

Activities include:

- Development of quality assurance framework
- Consultations with practitioners
- Consultations with agencies in charge of standardisation
- Consultations with relevant international bodies
- Selection of pilot countries – process TBD
- Capacity building for relevant stakeholders
- Implementation of quality assurance framework

Potential partners: US DOE, NREL, AFSEC, IEC, National Standards Bureaus and Agencies, Regional bodies, GIZ

3) Capacity development and training

Objective 3 will facilitate the development of training materials on mini-grid topics for relevant audiences. The training materials will be tailored to the needs of policy makers, financiers, technicians and electricity users. Some of the training materials will be available online and offered by a credible institution in the form of an online course at least once a year. Selected academic institutions will be encouraged to adopt the training materials and incorporate them into their own curricula. In-person intensive 5- / 10-day training courses will be implemented by reputable experts at least twice a year targeting practitioners at national or regional level. A series of regular webinars will complement the training programmes and enable individual practitioners to share their experiences, products and services with a wider audience. Based on needs additional trainings on specific topics may be developed and implemented.

- Identification of partner institutions and trainers
- Identification of beneficiaries
- Development / Adaptation of training materials
- Integration of trainings into academic curricula
- Implementation and launch of online training courses
- Implementation of in-person trainings
- Implementation of webinars

Potential partners: Clean Energy Solutions Center, GSES, RENAC, NREL, Pan African University, TERI, Southampton University, De Monfort University, SMA

4) Convening and Outreach Global mini-grid conference / series of workshops

Objective 3 will identify and implement mechanisms to facilitate stakeholder discussions and exchange, information dissemination to practitioners, and other outreach activities to strengthen coordination and collaboration in the sector. This will include the creation of an annual or semi-annual Global Mini-Grids Conference. The global mini-grid conference will take place every two years and provide a key platform for exchange in the mini-grid sector. The conference will build upon experiences from past events and distinguish itself with its interactive sessions and targeted discussions between specific groups of experts. The conference will feature trainings for expert audiences as well as matchmaking events which can

enable financiers and companies to pursue business opportunities. The conference will be organised with a wide range of partners.

Activities include:

- Identification of ongoing conferences on mini-grid topics
- Selection of partners
- Consultation of partners
- Organisation of conference
- Promotion
- Documentation

Potential partners: IRENA, ARE, ADB, OTTI, Intersolar, Homer, Magenta Global, Microenergy International

5) Mobilisation of support for Research and Development

Objective 3 will engage with researchers and research funding providers to facilitate technical and analytical work on mini-grids. The Objective will identify relevant research and technology gaps and mobilise support to close them.

Activities include:

- Identification of research and technology gaps
- Identification of available research funding
- Mobilisation of additional research funding
- Raising awareness of researchers about mini-grids among researchers
- Accompanying of individual research projects
- Facilitation of peer-review

Potential partners: Microenergy International, Berkley Rural Energy Group, CORDIS, Foundations, US DOE, NREL, Fraunhofer ISE

III. Resources / Budget

Activity	**Costs (€)**
Mini-grid Portal	
Design and development of IT solution	20,000
Production of contents	50,000 - 200,000
Content management	10,000
Maintenance	5000 per year
Promotion and update	5000 per year
Quality Assurance	

TBD	
Capacity Development and Training	
Design and development of IT solution	20,000
Production of contents	50,000 - 200,000
Content management	10,000
Maintenance	5000 per year
Promotion and update	5000 per year
Global Mini-grid Conference	
Planning and organisation	150,000
Facilitation of participants	50,000
Support to research and development	
Identification of R&D funding sources	10,000
Identification of research gaps	30,000
Raising awareness of researchers about mini-grids	TBD
Facilitation of peer-review	TBD

IV. Metrics for Reporting Success

The level of achievement of the goals of Objective 3 will be monitored throughout the implementation of activities coordinated by the Objective.

At the output level the metrics could include:

- The mini-grid portal is in place and operational
- XX Trainings on mini-grids are implemented by HIO members
- 1 annual conference on mini-grids is held under the auspices of the HIO
- A framework for quality assurance is adopted by a relevant international standards institution (IEC, AFSEC, etc.)
- Research gaps in the area are documented in a publicly available report
- Results from XX research projects with more than 1 partners participating have been presented to expert audiences

At the outcome level the metrics could include:

- A survey among users of the mini-grid portal confirms its added value

- A survey among participants in events (trainings, conferences) supported by members of the HIO confirms the added value to participants
- XX countries have adopted the quality assurance at national level
- An assessment of selected mini-grid projects confirms that
    - results from research supported by HIO members have been applied or
    - products developed with support from the HIO are in high demand.

V. Priority Activities

OBJECTIVE 3 – Knowledge, tools and QA Actions	**Short Term**	**Medium Term**	**Lead**
Drawing together of key tools required by the mini-grids sector (e.g. MG design, load profiling, templates, mapping tools)	Compilation of existing articles on aspects of (a) company formation (b) project development and (c) project finance, and related literature reviews and tools on Energypedia after vetting via Yammer group (GIZ $10k)	Add additional information and tools to Energypedia portal, based on identified needs (GIZ TBD) Designate moderator for comments section on Energypedia (TBD)	GIZ
Production of a Quality Assurance Framework describing service and performance levels (by end 2016) with an earlier working paper (2015)	Approx $400-$500k/year (U.S. DOE plus in-kind from pilot project partners)	Approx $400-$500k/year (U.S. DOE plus in-kind from pilot project partners)	U.S. DOE
Set up R&D Oversight Committee, plus first call for research proposals from WB/ESMAP by June 2015	ESMAP, TBD	ESMAP, TBD	ESMAP
Knowledge management, capacity and dissemination strategy including online portal/forum,	Energypedia.info for external sharing, Yammer for intra-HIO communication, ad hoc webinars via UNF Practitioners Network	Consider public-facing, HIO-branded website ($20k-$100K; sponsor needed).	GIZ, SE4ALL GFT, UNF

webinars, Yammer etc	/ Clean Energy Solutions Center Link from SE4ALL.org, energyaccess.org	Consider webinar series ($30K; sponsor needed)	

Objective 4

Support to increased development and testing of business models, and increased visibility of outcomes via transparent evaluation and reporting of sector performance.

I. Broad Vision for Objective 4

The principal aim of this Objective is to test and demonstrate the potential for the commercially-viable operation of hybrid, clean energy mini-grids in isolated areas under different local conditions in developing countries. It intends to support several target countries to make mini-grids bankable (thereby sustainable), and implement models that provide the basis for widespread future replication. This will include the hybridization of existing diesel-powered regional grids with up to 100% renewable energy penetration, and the introduction of new grid structures for currently unserved locations.

Developing and demonstrating effective business models that incorporate the potential financial returns from decentralized clean energy applications will motivate greater private sector investment, reducing the level of greenhouse gas emissions otherwise associated with increased electrification. Commercially viable clean energy mini-grids in remote areas of developing countries will help to address all three of the key SE4All goals: improved energy access via decentralised electricity grids, increased use of renewable energy from local energy sources, and greater energy efficiency through the use of efficient appliances.

II. Key Issues and Goals in the Objective Area

II.I. Issues

Clean energy mini-grids activity around the world to date has focused on finding markets for technology applications. This top-down approach will not establish a sustainable customer base. ***Green energy mini-grids should rather provide the energy service required by customers*****,** the typical business model in developed countries. Issues to highlight include:

- Need to ***understand and address the related market issues*** (demands of local communities, logistics, payment processes, policy framework….)
- Providing a service should be the focus (not driven only by technology targets) – ***a bottom-up approach*** is required
- Need to ***consider the integration of a mini-grid with stand-alone systems*** in order to meet the energy service requirements of the full community
- Need ***public and private sector funding*** in order to offset upfront transaction costs but ensure private sector ownership

The need for some degree of public sector funding (justifiable when providing a basic service for remote communities) is generally accepted for the application of clean energy mini-grids. However, any business model for clean energy mini-grids must demonstrate ***supplier willingness*** to provide the relevant technologies (subject to payback mechanisms that provide sufficient return on investment). On this basis the approach adopted to achieve the goals of Objective 4 will include ***in-kind financing offered by suppliers,*** thereby requiring a much lower proportion of external public funding for the installation of appropriate systems.

The ***selection of technology will be a critical factor*** for any successful business model. The solar resource is good in many developing countries and can provide the focus for clean electricity generation. This can be supplemented by any locally-available wind or hydro resources. But some form of backup will be required to guarantee a continuous supply. The need for electricity to be ***available 24/7 for local customers*** must be determined and, if required, a back-up energy supply identified. ***Bio-energy can then be a cost-effective option***. IRENA and Mali Folkcenter are working on developing a strategy on biomass-based mini-grid applications in Mali and Burkina. A scoping paper on the related needs and opportunities is currently being drafted. An entrepreneur from Burkina Faso has shown strong interest in the technology transfer opportunity and talks are ongoing between companies in India and Burkina Faso to share experience. Further training and monitoring of progress is being planned.

At the World Future Energy Summit (Abu Dhabi) in January this year, an event on '*Mini-Grids Outlook: Policy and Technology Innovation'* was hosted by IRENA. Highlighting advancements in both policy and technology, this workshop emphasised that ***mini-grids are a financially-viable approach*** to creating sustainable energy systems and increasing energy access. The unique challenges of each mini-grid site have led to advancements in business and financing models, management techniques and technology in this field. Participants highlighted that ***social engagement can be a key tool for addressing mini-grid challenges***. For example, community members in Bhutan created a 'grid-share system' to address frequent brown-outs in a mini-grid system. Participants also discussed the need to ***address uncertainty regarding main grid expansion***, which could undermine the use of mini-grids, by developing contingency plans and to reduce perceived risk for investors. Greater transparency and ***comprehensive mini-grid data are needed*** on technology costs, socio-economic impacts and resource availability - addressing these knowledge gaps should be a key part of testing business models under Objective 4.

To achieve the required practical demonstrations will require the ***identification of target locations*** **followed by** ***intensive stakeholder interaction*** at all levels (from customers to system providers and from policy-makers to private financiers). A range of focus countries will be included, though this should not be so broad that available resources are too diluted to achieve any meaningful results. The ***proposed target is for 6-12 countries***. Those countries already considered by UNEP and partners for such business models are:

AFRICA	ASIA	LATIN AMERICA
Benin	Indonesia	Colombia
Gambia	Philippines	Dominican Republic
Kenya		St Vincent & the Grenadines
Mozambique		
Nigeria		
Republic of South Africa		
Tanzania		

To achieve useful results from the testing and demonstration of appropriate business models in the medium term, UNEP and other partners have identified a wide range of other issues that will need to be considered and effectively addressed. These include:

- Scale of installations – what is commercially viable?
- Ownership/ cost of current/new infrastructure & support services
- Most appropriate technology mix (depending upon local resources)
- Required results: Return on Investment (RoI) vs improved quality of life (profit vs energy access)

- Potential for back-up supply from bio-energy (rather than battery/diesel)

Some past international project activities have also highlighted key issues that must also be taken into account, such as:

- Level of supply must be based upon an assessment of the real local needs
- The price must be sufficient for reinvestment; a finance model for long-term payment is required
- Quality of supply is relative - a start for rural areas may be to provide electricity for some hours/day
- Ultimate connection to the main grid (or supply of excess power to the main grid) should be considered during design and installation
- Local ownership (contractual and emotional) from end-users and suppliers will be essential
- it may be useful to introduce combined services; links with telecoms suppliers should be considered
- Support from Government is essential to avoid unnecessary delays

II.II. Goals

The goals for Objective 4 include:

- Identification of target locations within each of the countries considered
- Preparation of business plans for the installation, operation and maintenance of clean energy mini-grids in each of the target locations
- Identification of appropriate partners and agreement of responsibilities/roles for the demonstration projects
- Development by national, regional and local government of the necessary policy framework(s) – including legislation and regulation (particularly with regard to tariffs that will be applied to mini-grid operators) – to encourage clean energy mini-grid installations
- Assessment of technology needs by suppliers in order to identify the most appropriate systems (in terms of cost-efficiency and affordability) to utilize the locally-available renewable energy sources
- Preparation by local banks and other relevant financiers of financing mechanisms to ensure the affordability of clean energy mini-grids to the target customers
- Introduction of a supply chain for energy efficient appliances that will be relevant to the target customer base (particularly residential households)
- Building local capacity to ensure the continued operation (and expansion) of the mini-grids implemented. This will involve efforts to increase consumer awareness of the benefits and the most effective use of the electricity available

III. Resources Needed to Achieve the Goals

The two key areas of resource required to achieve the goals of Objective 4 are financing (from public and private sector sources) and appropriate partnerships (with policy-makers, technology providers, financiers, local experts and customer representatives).

III.I. Financing

The HIO has already responded to the need for greater awareness of present and upcoming funding sources for the development of clean energy mini-grids. The mapping of funding sources that was

initiated in 2015 (to be maintained and expanded in the medium term), will provide a basis for cost-effective public and private sector investment in the mini-grid sector. It will also help to identify the required financing sources (most likely public sector funders or private philanthropists) for the testing of business plans, evaluation and reporting required under this objective. Funding will be required to cover the related support costs (e.g. project management, training, consumer and investor awareness, model development, infrastructure costs, monitoring and impact assessment).

In addition to this public sector funding, following interest from several technology providers in the clean energy mini-grids programme, partnerships will be sought with those suppliers who are willing to offset the upfront costs of their technologies as an in-kind contribution (i.e. covering the initial capital costs subject to an appropriate repayment mechanism). This engagement of private sector suppliers will reduce the external funding requirements and so help to demonstrate the commercial viability of the business models applied in the target locations.

It is estimated that, for any HIO Partner to demonstrate the commercially-viable application of clean energy mini-grids in the target locations of selected developing countries, the required scale of application will be at least 1000 connections (primarily households with an average of 5-6 residents, though possibly including an anchor customer or a small number of productive uses or service providers such as schools/hospitals – a total of over 5000 individual consumers). This will involve equipment and infrastructure costs of around US$1.5m (depending upon site-specifics) and a similar level of support costs. The total public/private sector funding required by Partners for each target location to test an appropriate business model is therefore expected to be approximately US$3m. On this basis, Partners will need to identify funding resources of US$18-36m in order to meet the needs of Objective 4 in the medium term (3-5 years).

III.II. Partnerships

There are five key groups of partners that will be required for each of the business model demonstrations foreseen under Objective 4:

a) Technology providers who are looking to develop new markets and have direct interest in the demonstration of commercially viable business models. Some of the potential partners identified for this work include Vestas, Kingspan, SunEdison, First Solar, Canadian Solar and Siemens
b) International market developers who see longer term potential for their business interests and are therefore willing to support the testing of business models to explore the long-term viability of clean energy mini-grids in developing countries. Some such developers already involved or considering this partnership with SE4All include ABB, Shell, EDP, ENEL
c) National, regional and local Government that must be involved to ensure that the local policy environment is favourable towards private sector investment. Ongoing work in countries such as Mozambique and South Africa has demonstrated the mutual value of establishing and maintaining strong relationships with such policy-makers
d) Public and private sector financiers, including donor funding programmes, local banks, bilateral financing institutions and international development financiers. The corporate social responsibility funds available to some international businesses may also provide a source for the necessary financial support
e) Local experts are a key requirement to ensure that any business model can be effectively tested under local conditions. A good understanding of local conditions and stakeholders at all levels

(from national credit ratings to local clean energy sources available, and from national government to local community leaders) is an essential requirement

In addition, there will be a need for a lead partner to ensure well-co-ordinated project management for testing the business model in each of the selected locations. For Objective 4, this function will be best fulfilled by an independent national or international agency that is a member of the SE4All HIO.

IV. Metrics for Reporting Success

There are some critical success factors that need to be considered in order to achieve the goals of Objective 4. In particular:

i) ***Effective public-private sector partnership*** – it is well-recognised that scaling up the level of finance for clean energy initiatives will require significant investment from the private sector. However, the upfront uncertainty of clean technologies and their application in developing countries will require public sector support to offset the risks associated with any first-mover initiative. Mobilising sufficient finance to meet environmental challenges, including climate change, extends well beyond global mechanisms negotiated under conventions. It will require efforts at local, national and global levels to engage with Governments and the private sector to achieve the necessary additional investment and financial flows.

ii) ***Appropriate geographic focus*** - most of the early investment available for decentralised clean energy technology applications such as mini-grids is currently targeted towards a comparatively limited number of large-scale renewable energy projects and into larger emerging economies such as China, India and Brazil. This is an important starting point, and lessons must be learned from this experience, but understanding conditions in the rest of the developing world provides additional challenges for any proposed business models for the required roll-out of clean energy mini-grids.

iii) ***Dealing with investor uncertainties*** - unstable investment environments, fragmented energy policies, unfamiliar business approaches, inadequate financial instruments, and limited know-how are some of the issues that this Objective must address when testing business models to attract the financial investment required. Without sufficient progress in these areas, there will be no substantial increase in clean-energy investment for mini-grids

iv) ***Combination of measures*** – the Objective must deploy a range of different measures and demonstrate a range of viable business models under differing local conditions in order to stimulate the required scale up of clean energy finance. Such a combination (for example practical demonstration based upon technology needs and local resources, local capacity building, creation of the necessary policy environment and raising the awareness of all key stakeholders) is often more effective than a sequence of isolated interventions. It involves, for instance, measures that create or strengthen effective regulatory frameworks; smarter subsidies with technical know-how transfer and new forms of entrepreneurial finance; innovative projects based upon lessons learned from past experience; end-user financing options to ensure affordability; and improved risk management methods and services.

It will be particularly important for Objective 4 to report on the CSFs indicated above and to assess the level of progress in meeting these needs. As well as this qualitative assessment, specific metrics directly related to the goals in 3.1 should also be considered including:

- The number of appropriate sites selected to test business models
- The number of business plans completed
- The number and relevance of partners associated
- The level of supportive policy available for clean energy mini-grids
- The number and range of clean technologies confirmed to be appropriate for local needs
- The number of innovative financing mechanisms agreed with relevant finance providers
- The number and range of energy efficient appliances available to the target community
- The number of local community members aware of the benefits from clean energy mini-grids and the number of local contacts able to offer guidance.

V. Priority Activities

OBJECTIVE 4 – Business Devt Actions	**Short Term**	**Medium Term**	**Lead**
Mapping of the demand from firms for support to business models and development (linked with objective 1)	Objective 1 HIO demand mapping and investment catalogue - UNF (unfunded)	Possible follow-ups on specific funding needs or issues, eg questionnaires or events - TBC	UNF
Support to HIIs implementing a range of business models, monitoring and reporting back to the HIO via a monitoring framework	Identify partners (esp local). Identify funding sources (public and private). List potential/active HIIs. - UNEP (in kind/partially funded) Prepare reporting template (identify KPIs / monitoring metrics) to standardise reporting e.g. income generation, payback, social/ environmental/ policy/ economic impact - UNEP in co-operation with DoE/GIZ (in kind)	List of criteria for new HIIs registration under the HIO. Assess and modify (learning, experience and adapt). Specify range (number) of HIIs to target?	UNEP
Development of case studies and analysis on emerging CEMG models (2016-17)	Provide template to standardise analysis (parallel to monitoring template); ARE, ECREE	Include policy, technology, finance inter-linkage. Add	UNF/ARE

	to circulate request & to members	case study page to CEMG HIO website	
Provision of business development/trans. advisory support to HIO firms/orgs via range of HIO partner HIIs	R Hubs to co-ordinate support to firms - SEFA/AfDB in Africa (funded), other regions TBC	Bring partner initiatives together under CEMG HIO framework to offer co-ordinated support - UNEP	UNEP R Hubs

Objective 5
Increase visibility and recognition of clean energy mini-grids amongst financiers.

I. Broad Vision for the Objective

The HIO will seek to increase visibility and recognition of clean energy mini-grids as a viable electrification approach amongst financiers – with a view to increasing the availability of private and public financing for clean energy mini-grids.

This objective addresses the core barrier to mini-grids expansion of **lack of access to affordable longer term finance.**

Private banks and investors perceive a greater risk in a mini-grid than a grid-connected generation project, while also often having little sector experience/exposure. However, Development Finance Institutions are showing increasing interest and recognition of the opportunity, with the development benefits of mini-grids creating a justification for public intervention (in the same way as is the case with rural electrification). It is likely that in the short to medium term that a blend of public and private financing will be needed to scale the mini-grids sector, and so recognition and understanding of the challenges and opportunities of the mini-grids sector will have to grow amongst public and private financial bodies.

II. Key Issues and Goals in the Objective Area

- **Visibility of clean energy mini-grids experience and results amongst financiers**

Although mini-grids have an increasing profile amongst the development and technical community, there remains a gap in terms of the visibility and awareness of the sector in the financial community. The HIO has a role to play in raising the profile of the sector, including at high level events in the SE4ALL calendar involving private and public financiers, including Advisory Board meetings.

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

Key to increasing financial flows to the sector will be emergence of proven revenue models and a track record of data on investment costs, returns and impacts. This links strongly to the business models Objective 4, as well as Objective 3 on standards. Improved information regarding the delivery costs as compared with the possible revenues will be key for private investors, while impact and public investors will also need improved information about the impacts achieved in terms of connections as well as higher level impacts.

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

Linking strongly with Objective 2 on addressing disconnects in the market, a key need is to bring developers and technology firms together with financiers to align expectations and requirements, and promote collaboration and investments.

III. Resources Needed to Achieve the Goals

- **Market Development Programmes** such as that proposed by the African Development Bank for Africa should seek to address the barriers to access to finance by increasing visibility and making connections between developers and financiers.

- **Sector research programmes**, such as that being managed by World Bank ESMAP, can commission and generate analysis of the financials of mini-grids programmes and support modelling and communication to financiers.

- **Visibility events and platforms** such as the SE4ALL Forum, and BNEF Investor Summit would be very valuable in generating visibility of mini-grids amongst the public and private financial community.

- **Creation of funds and programmes** with the objective of financing mini-grids, either at the project/community, developer/company or fund level.

IV. Metrics for Reporting Success

At the outcome level the Objective aims for:

- Total and disaggregated financial flows into the GMGs sector at the level of programmes, funds and implementation
- Number of funds and mini-grids projects and developers reaching financial close/receiving non-grant financing

At the output level, metrics could be:

- Number and attendance at visibility events
- Number of information and communications documents and tools produced

V. Priority Activities

OBJECTIVE 5 – Financing Actions	**Short Term**	**Medium Term**	**Lead**
Collation of a figure on financial commitments to CEMGs (from supply side mapping) for May	Extract from Support Mapping Activity - ARE, plus DFID	Updating of figure annually (TBC)	ARE
Characterisation of financing demand from HIO members (link to Objective 1)	Objective 1 HIO demand mapping and investment catalogue - UNF (unfunded)	Obj 1 Market Study by WB (ESMAP)	UNF

Cost of electricity study, putting CEMG types in context, assessing viability gap and costs/revenues	Commission study on financials and returns of mini-grids - ESMAP (TBC funded)	TBC	ESMAP
Visibility events in Asia and Africa with investors and banks, and B-NEF/Climatescope	Link with Obj. 1 Events List Asia Clean Energy Forum, 17 June - ADB (in kind) National Investor Forums – Bangladesh, Cambodia, - ADB (in kind) Africa CEMGs Forum - AfDB/DFID to followup Ke and Tz consultations with national banks - AFD, SIDA, DFID	WFES, Abu Dhabi, Jan 16 B-NEF Investor Forum, NY, April 16	
Establishment of a range of funds targeting the CEMGs Sector	SREP ADB financing includes sub-debt, G'ees, equity, senior debt - Don Purka ADB (SREP funded) DFID CEMGs Africa Programme - AFD, SIDA, WB, AfDB (DFID) Smart Power for Rural Development (SPRD) - Rockefeller Innovative CEMG financing instruments event considering DIBs, RBF, G'ees, Aggregation etc - IFC to convene a meeting (TBC?)	Possible CEMG Innovative financing Group Established Incubation of a CEMG financing instrument – commercial vehicle - AfDB (SEFA)	

REMAINING COMMENTS TO BE ADDRESSED

Objective 1, Strategic Plan: the strategic plan needs a separate section on activities for each objective

Objective 1, “thematic dimension”: In a logframe-approach, put this at the “outcome” and “impact” level of HIO results

Objective 1, “support dimension”: This seems to be the output level of HIO results, i.e. activities to be undertaken directly in the context of the HIO, with measureable output-results

Objective 1, “the role and benefits of mini-grids among policymakers ”: Are country-specific conditions considered or is this more general? I.e. is the added value of this to create a general awareness or target it more – i.e by applying the available information to specific audience/events/countries/etc..?

Objective 3, Resources/Budget: Budget may be underfunded with the numbers provided here.