

CONFERENCE PROGRAMME

EMPOWERING DEVELOPMENT

**3rd INTERNATIONAL OFF-GRID
RENEWABLE ENERGY CONFERENCE
& EXHIBITION**

In partnership with



REPUBLIC OF KENYA
MINISTRY OF ENERGY AND PETROLEUM



Alliance for
Rural
Electrification
Shining a Light for Progress

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- Joint UNIDO & REN21: Market Intelligence: How it can drive the uptake of renewables and energy efficiency in the East African Community

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1. Conference agenda

DAY 1 – 30 SEPTEMBER 2016	
08:00-09:30	Registration
09:30-10:00	<p>Opening Remarks:</p> <ol style="list-style-type: none"> 1. Adnan Z. Amin, Director-General, IRENA 2. H.E. Charles Keter, Cabinet Secretary, Ministry of Energy and Petroleum, Kenya
OFF-GRID RENEWABLE ENERGY SOLUTIONS IN THE NATIONAL ELECTRIFICATION STRATEGIES	
SESSION 1 10:00-11:15	<p>Integrating stand-alone and mini-grid solutions in electrification strategies</p> <p>Moderator: Adnan Z. Amin, Director-General, IRENA</p> <p>Panelists:</p> <ol style="list-style-type: none"> 1. H. E. Charles Keter, Cabinet Secretary, Ministry of Energy and Petroleum, Kenya 2. Michael Opam, Executive Secretary, Energy Commission, Ghana 3. Andrew M. Herscowitz, Coordinator, Power Africa 4. Jane Oyugi, Co-Founder and CEO, Sustenersol 5. Jesse Moore, CEO and Co-Founder, M-KOPA 6. Harish Hande, Co-Founder, SELCO India
Coffee Break	Exhibition
STAND-ALONE SYSTEMS FOR RAPID EXPANSION OF ELECTRICITY ACCESS	
SESSION 2 11:30-13:00	<p>Getting the business model right: Identifying scalable approaches for stand-alone deployment</p> <p>Moderator: Christine Eibs Singer, Director of Global Advocacy, Power for All</p> <p>Panelists:</p> <ol style="list-style-type: none"> 1. Harish Hande, Co-founder, SELCO India 2. Jesse Moore, CEO and Co-Founder, M-KOPA 3. Martijn Veen, Sector Leader Renewable Energy, SNV Tanzania 4. Peter Kinuthia, Senior Energy Officer, East African Community 5. Wim Jonker Klunne, Programme Director, Energy and Environment Partnership (EEP)

DAY 1 – 30 SEPTEMBER 2016

13:00-14:30	<p>Joint IRENA & IEC Side event: Reliable clean energy solutions for energy access: the role of standards and quality assurance</p> <p>Joint IRENA & GIZ Side event: Off-grid Renewables in the Agri-food Chain: Supporting Measures and Benefits</p> <p>Side event: IRENA’s Country Support on the Deployment of Decentralised Renewable Energy Applications</p>	Lunch Exhibition
<p>SESSION 3 14:30-16:00</p>	<p style="text-align: center;">Unlocking capital for energy access: Innovation in consumer and enterprise financing</p> <p>Moderator: Andrew M. Herscovitz, Coordinator, Power Africa</p> <p>Panelists:</p> <ol style="list-style-type: none"> 1. Dipal Barua, Founder & Chairman, Bright Green Energy Foundation, Bangladesh 2. Duncan Onyango, East Africa Director, Acumen Fund 3. Graham Smith, Senior Director of New Markets, Off Grid Electric 4. Habiba Ali, Managing Director and CEO, Sosai Renewable Energies 5. Willem Nolens, Founder & CEO, SolarNow 	
TECHNOLOGY INNOVATION TO UNLOCK NEW OPPORTUNITIES		
<p>SESSION 4 16:30-18:00</p>	<p style="text-align: center;">Emerging technology solutions for off-grid renewable energy systems</p> <p>Moderator: Roland Roesch, Senior Programme Officer, IRENA</p> <p>Panelists:</p> <ol style="list-style-type: none"> 1. Francisco Boshell, Analyst – RE Technology, Standards and Markets, IRENA 2. Molly Ward, Clean Energy Advisor, US Department of State 3. Pablo Astorga, Global Sales Manager Microgrids, ABB 4. Rose Mutiso, Senior Fellow, US Department of Energy 5. Snehar Shah, General Manager, Azuri East Africa 6. Tom Price, Director of Strategic Initiatives, All Power Labs 	
18:00-19:30	SIDE EVENT: IRENA’S PROJECT NAVIGATOR & IRENA’S SUSTAINABLE ENERGY MARKETPLACE	

MINI-GRID DEVELOPMENT TO MEET GROWING DEMAND

09:15-09:30

Presentation: Key findings from the IRENA report *'Policies and Regulations for Private Sector Renewable Energy Mini-grids'*, by Salvatore Vinci, Deputy Head – Policy Unit, IRENA

SESSION 5
09:30-10:45

Scaling-up mini-grid deployment:
Providing an ecosystem for market development

Moderator: Daniel Schroth, SE4All Africa Hub Coordinator, African Development Bank

Panelists:

1. António Osvaldo Saíde, CEO, FUNAE, Mozambique
2. Lois Gicheru, Founder and CEO, Solafrique Limited
3. Marcus Wiemann, Executive Director, Alliance for Rural Electrification (ARE)
4. Nicola Bugatti, Renewable Energy and Energy Efficiency Technical Advisor, ECREEE
5. Vivian Vendeirinho, Founder and Managing Director, RVE.SOL

Coffee Break

Exhibition

SESSION 6
11:00-12:15

Enabling policy and regulatory frameworks for mini-grid solutions:
Creating the conditions for catalyzing investments

Moderator: Michael Franz, Team Leader, Africa-EU Renewable Energy Cooperation Programme (RECP)

Panelists:

1. Debajit Palit, Associate Director & Senior Fellow, The Energy and Research Institute (TERI), India
2. Felix Ngamlagosi, Director General, EWURA, Tanzania
3. Miguel Juan Revolo Acevedo, Manager Tariff Regulation, OSINERGMIN, Peru
4. Rana Adib, Research Coordinator, REN 21
5. Steven Hunt, Senior Energy Innovation Advisor, UK DFID
6. Xavier Vallve, International Consultant and Partner, Trama TecnoAmbiental (TTA)

SESSION 7
12.15-13:30

Getting the business model right:
Identifying scalable approaches for mini-grids deployment

Moderator: Nico Peterschmidt, Managing Director, INENSUS

Panelists:

1. AbuBakr S Bahaj, Head, Energy and Climate Change Division, University of Southampton
2. Guilherme Collares Pereira, Director of International Relations - Access to Energy, EDP Portugal - World Business Council for Sustainable Development
3. Nicolas Fouassier, CEO, Pamoja Cleantech
4. Pierre-Antoine Berthold, CEO, Akuo Energy Africa
5. Rainer Agster, Director Operations, SEED

DAY 2 – 01 OCTOBER 2016

13:30-14:45	<p>Side event: Economics of solar and solar-hybrid mini-grids Joint IRENA & GIZ Side event: Solar pumping for irrigation: Developing the ecosystem for scale-up Joint UNIDO & REN21 Side event: Market Intelligence: How it can drive the uptake of renewables and energy efficiency in the East African Community</p>	Lunch Exhibition
<p>SESSION 8 14:45-16:00</p>	<p style="text-align: center;">Unlocking capital for energy access: Innovative financing instruments to meet the mini-grid sector needs</p> <p>Moderator: Suman Sureshbabu, Associate Director, Rockefeller Foundation Panelists:</p> <ol style="list-style-type: none"> 1. Andy Schroeter, Co-Founder and CEO, Sunlabob Renewable Energy Ltd 2. Jane Oyugi, Co-Founder and CEO, Sustenersol Company 3. Katrina Pielli, Senior Energy Advisor and Lead, Beyond the Grid, Power Africa 4. Peter Weston, Director of Investment Advisory, Energy 4 Impact 5. Sunkanmi Olowo, Head SME / Value Chain Banking, Ecobank Nigeria Limited 	
<p>Coffee Break Exhibition</p>		
<p>SOCIO-ECONOMIC BENEFITS OF OFF-GRID RENEWABLE ENERGY SYSTEM DEPLOYMENT</p>		
<p>SESSION 9 16:15-17:45</p>	<p style="text-align: center;">Maximizing socio-economic benefits through off-grid renewable energy solutions</p> <p>Moderator: Rabia Ferroukhi, Deputy Director - Knowledge, Policy and Finance Centre, IRENA Panelists:</p> <ol style="list-style-type: none"> 1. H.R.H Princess Abze Djigma, CEO, AbzeSolar, Mali 2. Aaron Leopold, Global Energy Representative, Practical Action 3. Arunabha Ghosh, CEO, Council on Energy, Environment and Water, India 4. Caspar Priesemann, Energy Access Advisor, GIZ 5. Divyam Nagpal, Associate Programme Officer, IRENA 6. Michaela Pfeiffer, Technical Officer, World Health Organization 	
<p>CLOSING REMARKS</p>		
17:50-18:00	Adnan Z. Amin, Director-General, IRENA	
<p>Exhibition</p>		

2. Session background

DAY: 30 Sep 2016

TIME: 10:00-11:15

Session 1: Integrating stand-alone and mini-grid solutions in electrification strategies

Moderator: Adnan Z. Amin, Director-General, IRENA

Panelists:

1. H.E. Charles Keter, Cabinet Secretary, Ministry of Energy and Petroleum, Kenya
2. Michael Opam, Executive Secretary, Energy Commission, Ghana
3. Andrew M. Herscovitz, Coordinator, Power Africa
4. Jane Oyugi, Co-Founder and CEO, Sustenersol
5. Jesse Moore, CEO and Co-Founder, M-KOPA
6. Harish Hande, Co-Founder, SELCO India

Access to electricity is a central building block for socio-economic development. It empowers people and communities to increase income and productivity, gain access to healthcare and education services, enhance water and food security, and improve general well-being. The cross-sector development potential is so immense that meeting the Sustainable Development Goals would be near impossible without ensuring universal access to modern energy services.

The good news is that the technology solutions needed to extend electricity access to the over 1.1 billion people already exists. The business case to deploy off-grid renewable energy solutions (stand-alone and mini-grid systems) in rural areas has never been stronger. Costs have fallen dramatically – over 80% since 2010 for PV panels, with substantial improvements in technology efficiency and reliability. The modularity of renewable energy technologies mean that they can be rapidly deployed and customised to meet energy demand using locally available resources and capacities.

Recognising the immense opportunity at hand, rural communities and the private sector are now increasingly deploying off-grid solutions without having to wait for the national grid to arrive.

From local entrepreneurs and SMEs, to large international utilities, there is now a growing track record of private sector-led off-grid renewable energy development. Challenges associated with capital costs and management of decentralised assets are being tackled head-on with technology advancements and business and financing model innovation. Across East Africa, more than 350 000 households are powering homes and devices with solar panels and using mobile money to pay for it.

The pace of development in the off-grid renewable energy sector is a key opportunity for governments as well as development agencies. The sector is now mature enough to transition from a project-by-project approach to a market-driven approach. By creating the enabling conditions for deployment the pace of electricity access expansion can be substantially accelerated. An important starting point is mainstreaming off-grid solutions (both stand alone and mini-grids) into national electrification strategies and sectoral development plans. There is ample evidence to suggest that a bottom-up, decentralised electrification approach offers the opportunity to complement the traditional grid extension, with transformative socio-economic benefits on offer.

This session brings together high-level decision makers from government, international development agencies and the private sector, to discuss how important a role stand-alone and mini-grid solutions can play in national rural electrification strategies, and what measures are needed to scale-up their deployment.

Session 2: Getting the business model right: Identifying scalable approaches for stand-alone systems deployment

Moderator: Christine Eibs Singer, Director of Global Advocacy, Power for All

Panelists:

1. Harish Hande, Co-founder, SELCO India
2. Jesse Moore, CEO and Co-Founder, M-KOPA
3. Martijn Veen, Sector Leader Renewable Energy, SNV Tanzania
4. Peter Kinuthia, Senior Energy Officer, East African Community
5. Wim Jonker Klunne, Programme Director, Energy and Environment Partnership (EEP)

The market for stand-alone systems is experiencing a rapid transformation. Systems ranging from watt-scale solar lighting solutions to home systems of several hundred watts are being installed at a pace faster than ever before. This accelerated growth is a result of technology advancements, as well as decades of calibration on the business and financing model to make stand-alone solutions accessible and affordable for rural consumers.

Different models for delivering stand-alone solutions have been adopted globally, focusing largely on direct sale, rent-to-own and service models. Each model has pros and cons, and the most appropriate approach depends greatly on the local conditions, including the consumers' willingness/ability to pay, access to enterprise and end-user finance, market demand and availability of local capacity to deliver technical and financial services.

A well-known example of the direct sale approach is Bangladesh's IDCOL Solar Home System programme. It is based on a wide network of local institutions (Partner Organisations or POs) that deliver both technology and finance. POs offer a mix of grant and debt financing products that allow households to own the systems and payback the debt component through monthly instalments. Decentralised management structures and stringent quality control requirements are in place for monitoring, payment collection, and operation and maintenance (O&M) services. Although as deployment has risen (over 4 million as of July 2016), cash handling and maintaining collection efficiency is becoming a challenge.

The Pay-as-you-go (PAYG) model is increasingly the preferred option for collection, especially among private sector players engaged in deployment and distribution. It mitigates the risks and costs of payment collection, while providing the technology platform to integrate remote monitoring and payment features, enabling companies to have a rich pool of data on customer usage and demand characteristics. The PAYG model is quite widespread in Africa, available in at least 14 countries, with a smaller number of players elsewhere (e.g. Simpa Networks in India and Kamworks in Cambodia). There is also a trend of companies engaged in PAYG becoming specialist service providers. M-KOPA and d.light, for instance, offer licenses for their PAYG platforms. While PAYG involves some level of customer relationship and management, much more is needed service models (e.g. Off-grid Electric's ten-year lease). With greater penetration of high efficiency DC appliances, stand-alone solutions are able to provide a much wider range of services to consumers.

The market for stand-alone solutions is highly dynamic with a great deal of innovation occurring on product development and appliances, as well as on distribution models that keep costs low, achieve scale faster and unlock new avenues for revenue generation. The policy and regulatory environment also strongly influences the trajectory of the sector, especially through regulations related to standards and import taxation.

This session brings together diverse stakeholders to take stock of recent developments in the sector and discuss the way forward to ensure that a greater number of consumers are able to access the stand-alone solutions.

Session 3: Unlocking capital for energy access: Innovation in consumer and enterprise financing

Moderator: Andrew M. Herscowitz, Coordinator, Power Africa

Panelists

1. Dipal Barua, Founder & Chairman, Bright Green Energy Foundation, Bangladesh
2. Duncan Onyango, East Africa Director, Acumen Fund
3. Graham Smith, Senior Director of New Markets, Off Grid Electric
4. Habiba Ali, Managing Director and CEO, Sosai Renewable Energies
5. Willem Nolens, Founder & CEO, SolarNow

On a life cycle basis, stand-alone renewable energy solutions, such as Solar Home Systems, are cost-competitive options for expanding electricity access in many rural areas. However, the relatively high upfront capital cost of these solutions, compared to other options, poses a challenge for end-users/consumers and for enterprises/rural electrification programmes.

To tackle the challenge of end user/consumer finance, a wide range of measures are being adopted across markets by different actors. Governments or development agencies, for instance, have put in place measures to buy-down the capital cost for end-users through grants and micro-credit channeled through local intermediaries (e.g. Bangladesh's IDCOL Solar Home System Programme). Enterprises, on the other hand, are addressing the consumer finance challenge through innovations on the business model side. Pay As You Go, rent-to-own, and service models are examples of approaches that allow end-users to afford the systems. In this case the financing requirements for the enterprises retailing and distributing these systems also arise.

For enterprises operating in the sector, financing requirements change dramatically as they mature, both in terms of scale and type. Beginning with seed stage capital usually in the form of equity and grants, to scale-up stage where debt and working capital requirements dominate, the financing needs of the sector vary greatly. Mismatches between the nature of funding needed and the investment mandates of financiers remains a key barrier to growth. Some encouraging signs are emerging with specialised fund providers with a pure off-grid mandate coming to the fore. Scaling-up deployment of stand-alone solutions through a larger number of private sector actors will require greater efforts to facilitate access to finance, both at international and local level.

The session will bring together key actors from the sector to discuss how the access to finance challenge can be tackled for both end-users and enterprises.

Session 4: Emerging technology solutions for off-grid renewable energy systems

Moderator: Roland Roesch, Senior Programme Officer Renewable Energy Markets and Technology Dialogue, IRENA

Speakers

1. Francisco Boshell, Analyst – RE Technology, Standards and Markets, IRENA
2. Molly Ward, Clean Energy Advisor, US Department of State
3. Pablo Astorga, Global Sales Manager Microgrids, ABB
4. Rose Mutiso, Senior Fellow, US Department of Energy
5. Snehar Shah, General Manager, Azuri East Africa
6. Tom Price, Director of Strategic Initiatives, All Power Labs

Renewable mini-grids continue to gain momentum as a sustainable energy solution in areas where energy demand is not fulfilled, and where grid extension is not a cost effective alternative. Existing diesel mini-grids have been progressively retrofitted with renewable energy due to their lower susceptibility to oil price volatility, reduced environmental impact and sustained cost reductions. Mini-grids integrating variable renewable energy, as solar photovoltaic (PV) and small scale wind, with storage solutions to supply the base-load for community and commercial energy demand are starting to reach maturity.

To achieve the needed scale of deployment for renewable mini-grids, they must become more competitive, respond to social needs and protect environmental resources. The renewable mini-grids of the future require technology advancements in the planning and design phases, as well as in each and every functionality of mini-grids: from generation to consumption, and across electricity storage, power conversion and control technologies.

Ground-breaking technology developments are under way: Lithium-ion, organic flow and other chemistries in batteries will drive down the cost of batteries. The Internet of Things technologies will continue to enable more intelligent use and control of electricity by allowing interconnection and intercommunication among conventional appliances. Power conversion technologies are foreseen to utilize nanomaterial semiconductors, as carbon nanotubes and have dual mode inverters that can operate even when the rest of the grid is down.

The materialization of these technology innovations will reduce the electricity production cost from renewable mini-grids by more than 60% in the next two decades. However, none of these innovations are possible without the adequate support of policy makers, the private and non-profit sectors, and academia.

This session brings together innovators to discuss the exciting technology development that will boost the deployment of renewable mini-grids in the next two decades, delivering modern, clean and affordable energy to millions of people around the globe.

Session 5: Scaling-up mini-grid deployment: Providing an ecosystem for market development

Moderator: Daniel-Alexander Schroth, SE4All Africa Hub Coordinator, African Development Bank

Panelists:

1. António Osvaldo Saíde, CEO, FUNAE, Mozambique
2. Lois Gicheru, Founder and CEO, Solafrique Limited
3. Marcus Wiemann, Executive Director, Alliance for Rural Electrification (ARE)
4. Nicola Bugatti, Renewable Energy and Energy Efficiency Technical Advisor, ECREEE
5. Vivian Vendeirinho, Founder and Managing Director, RVE.SOL

Mini grids will be key to achieving universal access to electricity. Several regional and national programs have included mini-grids development as key pillar of their energy strategies. For example, the ECOWAS Programme on Access to Sustainable Electricity Services envisages the implementation of 60,000 mini-grids by 2020, with an estimated 350,000 mini-grids needed to achieve universal electricity access in Africa. Utilizing locally available energy sources, mini-grids offer the opportunity to provide a wide range of electricity services to rural communities. To tap into this opportunity, market development efforts are needed that address market barriers and strengthen the ecosystem to support growth.

In emerging markets, barriers are often associated with policy, regulation, financing and institutional capacity. Lack of market data and limited ties between key actors, such as local/national businesses, communities, international developers, technology providers and financiers, also inhibit market development. High perceived risk and the lack of track record of successful and proven deployment models in new markets keep financiers at bay, further contributing to the financing gap that exists in the sector.

Market development efforts generally focus on mini-grid policy and regulation design, pilot projects, incubation and advisory support for private sector, dedicated funding facilities for early-stage and scale-up capital, market intelligence and quality assurance. African Development Bank's Green Mini-Grid Market Development Program is an example of mini-grid market development initiatives aiming at contributing towards creating a pipeline of sustainable and bankable mini-grid projects.

This session brings together key stakeholders to discuss measures to develop an ecosystem for renewable energy-based mini-grid market development.

Session 6: Enabling policy and regulatory frameworks for mini-grid solutions: Creating the conditions for catalyzing investments

Moderator: Michael Franz, Team Leader, Africa-EU Renewable Energy Cooperation Programme (RECP)

Panelists:

1. Debajit Palit, Associate Director & Senior Fellow, The Energy and Research Institute (TERI), India
2. Felix Ngamlagosi, Director General, EWURA, Tanzania
3. Miguel Juan Revolo Acevedo, Manager Tariff Regulation, OSINERGMIN, Peru
4. Rana Adib, Research Coordinator, REN 21
5. Steven Hunt, Senior Energy Innovation Advisor, UK DFID
6. Xavier Vallve, International Consultant and Partner, Trama TecnoAmbiental (TTA)

Governments and regulatory authorities have an important role to play in facilitating mini-grid deployment. Supporting mini-grids requires an adaptation of the traditional policy and regulatory framework which typically caters to a centralised power system approach. Mini-grid solutions are diverse, ranging from small-scale solar DC to small-hydro, and so are the accompanying business and financing models. In recognition of this, a number of countries have turned to dedicated policies and regulations for mini-grids.

There is a growing consensus on some general policy and regulatory conditions needed to support deployment. First, clear guidelines and processes for meeting licensing and other regulatory requirements help reduce risks and transactions costs. Second, regulations governing tariff setting is a key determinant of how sustainable a mini-grid can be, affecting project cash flows, the ability to undertake operation and maintenance, and finally cost recovery. Third, unexpected arrival of the main grid represents a key risk for the long-term sustainability of projects. Mechanisms for interconnection and compensation are now available in some countries to mitigate those risks. Finally, attracting investments into the mini-grid sector requires measures to develop a pipeline of sustainable projects as well as instruments to address specific financing gaps.

Developing an enabling policy and regulatory framework for mini-grid development requires measures that pertain to energy sector policies, laws and other legal frameworks, as well as to other non-energy sectors (e.g., financial, data and statistics, rural development). Increasingly, a tailored approach is being adopted with policies and regulations being defined for different scales and types of mini-grids. It is not uncommon to see different regulatory requirements for mini-grids under, say, 100 kW than those over 500 kW. In this manner, governments are able to support sector growth through a mix of policies and regulatory approaches depending on the characteristics of the projects.

The policy and regulatory landscape for mini-grids is a highly dynamic one as governments introduce dedicated measures, gain experience and incorporate learning towards a more effective framework for mini-grid development. There is no 'one-size-fits-all' solution, but there is great potential for cross-regional exchange of best practices and lessons learnt, as an increasing number of countries introduce measures to tap into the potential of mini-grids.

This session brings together key stakeholders to discuss measures to develop an enabling policy and regulatory environment for mini-grid development.

Session 7: Getting the business model right: Identifying scalable approaches for mini-grids deployment

Moderator: Nico Peterschmidt, Managing Director, INENSUS

Panelists:

1. AbuBakr S Bahaj, Head, Energy and Climate Change Division, University of Southampton
2. Guilherme Collares Pereira, Director of International Relations - Access to Energy, EDP Portugal - World Business Council for Sustainable Development
3. Nicolas Fouassier, CEO, Pamoja Cleantech
4. Pierre-Antoine Berthold, CEO, Akuo Energy Africa
5. Rainer Agster, Director Operations, SEED

Mini-grids development has historically been driven by government agencies, state-owned utilities, community groups, nongovernmental organizations, and, in some cases, local private firms. Interest from the private sector has grown recently. From local entrepreneurs to large international utilities, private sector actors are increasingly engaged in the development, financing, operation and management of mini-grids. A great deal of thinking goes into defining the right business model for mini-grid deployment. Variables are aplenty, including local socio-economic conditions, nature of electricity demand, technology solutions, ownership and financing structures, local capacities, tariff determination, risk mitigation, among others. Exogenous factors, such as the policy and regulatory frameworks, also play into this decision making process. In short, the preferred choice and success of model depends on the national, social and political context as well as on the size and structure of the mini-grids.

The end objective of a sound business model is to ensure sustainability of the project. For community-owned projects, this entails ensuring that the system delivers reliable electricity services and generates sufficient cash-flows to cover management, operation and maintenance (O&M) costs, and the capital cost (if not grant financed). For private operators, cost-recovery is important which also covers capital costs and risk-equivalent margins. Given the site specific nature of mini-grids, there is no single ideal business model. Many approaches can be relevant involving one or more stakeholders (e.g., government, communities, private sector, NGOs). Some models include Energy Service Company (also referred to as ESCO), leasing, public-private, private-community and public-private-community. Different revenue models are also being utilized, such as pre-paid, pay-as-you-go and fixed costs for services, to better manage generation, reduce O&M costs and reduce non-payment risks.

Mini-grid business models will continue to evolve as new approaches emerge and cutting-edge technology (e.g., metering, load management) are increasingly combined with operational elements (e.g., tariff collection) to reduce costs and enhance viability. The policy and regulatory framework has to provide an environment for this evolution to take place or be accelerated through targeted incentives. Importantly, local capacity building has to be fostered across the value chain to improve adaptability of mini-grid solutions and maximize socio-economic impacts.

The session brings together diverse stakeholders to discuss mini-grid business model design and implementation to mitigate risks and scale-up deployment.

DAY: 1 Oct 2016

TIME: 14:45-16:00

Session 8: Unlocking capital for energy access: Innovative financing instruments to meet the mini-grid sector needs

Moderator: Suman Sureshbabu, Associate Director, Rockefeller Foundation

Panelists:

1. Andy Schroeter, Co-Founder and CEO, Sunlabob Renewable Energy, Ltd
2. Jane Oyugi, Co-Founder and CEO, Sustenersol Company
3. Katrina Pielli, Senior Energy Advisor and Lead, Beyond the Grid, Power Africa
4. Peter Weston, Director of Investment Advisory, Energy 4 Impact
5. Sunkanmi Olowo, Head SME / Value Chain Banking, Ecobank Nigeria Limited

Scaling-up mini-grid deployment would require efforts to catalyse investments into the sector. Mini-grids are expected to provide 40% of the generation needed to reach universal electricity access. This would require up to USD 20 billion annual investments in the sector. Grants alone cannot meet this funding requirement and commercial models of financing will be needed.

Mini-grids pass through different phases with varying financing needs. Ranging from early stage grants and equity to requirements of debt during project development, the nature and magnitude of financing requirements change depending on the technology, size and location. There are several barriers faced by the sector, including high perceived risk, low investment sizes leading to high transaction costs for financiers, high interest rates and short tenors, as well as prohibitive collateral requirements. There is increasing commitment of capital on the upstream side by multilateral development banks, development agencies and governments, among others. However, further downstream challenges associated with accessing much of that capital exists for the developers.

Financing schemes tailored to local and investors' conditions are vital for the development of the mini-grid sector. There is a need to address the barriers, and spur private investment into the sector. This can be done through a range of financing instruments, such as dedicated debt funds, guarantee tools and third-party collateralization, appropriately tailored to the sector. Traditional infrastructure development models, such as public-private partnerships, can also be applied to reduce risks and enhance project bankability. Innovative solutions, such as crowdlending, are also emerging.

Financial support remains a key element of how mini-grids are financed. Their efficient design and delivery therefore influences the ability of projects to raise traditional financing. Financial support should be carefully designed to ensure project sustainability over the lifetime. Ongoing support is perceived as risky, given unforeseeable changes in policy and underfunded budgets, and support towards capital expenditures is often preferred. A large part of the solution to unlock low-cost, local currency debt is to engage domestic commercial banks that are well-suited to assess and deliver the scale of financing for local mini-grid projects. Guarantee or on-lending instruments could be used to increase the exposure of domestic banks to the mini-grid sector and enhance the understanding of the business models.

This session will take stock of the current financing landscape for mini-grids and discuss different measures and tools that could be adopted to catalyze investments in the sector.

Session 9: Maximizing socio-economic benefits through off-grid renewable energy solutions

Moderator: Rabia Ferroukhi, Deputy Director - Knowledge, Policy and Finance, IRENA

Panelists:

1. H.R.H Princess Abze Djigma, CEO, AbzeSolar, Mali
2. Aaron Leopold, Global Energy Representative, Practical Action
3. Arunabha Ghosh, CEO, Council on Energy, Environment and Water, India
4. Caspar Priesemann, Energy Access Advisor, GIZ
5. Divyam Nagpal, Associate Programme Officer, IRENA
6. Michaela Pfeiffer, Technical Officer, World Health Organization

Clean and affordable energy access is essential for basic human needs and to accelerate local economic development. In recognition of this, universal access to modern energy services has been included as one of the targets of the recently adopted Sustainable Development Goals (SDGs).

The benefits that can be achieved from providing off-grid renewable energy to rural areas that lack access to electricity are numerous and have been well documented in different studies and reports. Energy access in this context can impact development at the consumptive level, in terms of improved quality of life and living standards through lighting, communications and access to information and entertainment. In the presence of an enabling environment, energy can drive economic growth through productive uses that can lead to job creation, increased productivity and income generation, thereby improving rural livelihoods and reducing migration to urban areas. Moreover, increasing access to cost-effective and environmentally sustainable energy services can have a broader development impact through better education, gender equality, improved health and enhanced access to clean water.

The cross-sector development potential for off-grid renewables is immense. For instance, an estimated 1 billion people globally are served by health facilities without electricity. In sub-Saharan Africa more than 30 per cent of health facilities are unelectrified serving an estimated 255 million people. Expanding access to modern energy for healthcare can help meet 2030 targets for reducing maternal mortality. Similarly, off-grid renewables are increasingly being used to supply water to meet household and agriculture needs. An integrated approach to off-grid renewable energy development could maximise the development impact of deployment.

This session brings together high-level experts in international agencies and the private sector, to discuss the socio-economic dimension of off-grid renewable energy deployment. Panelists will highlight specific country experiences in designing policies that help maximizing the broader benefits to local communities and the synergies between providing electricity access and other basic needs and services.

Side-events:

DAY: 30 Sep 2016

TIME: 13:00-14:15

VENUE: Bougainvillea Lounge

Joint IRENA – GIZ Side-event: Off-grid Renewables in the Agri-food Chain: Supporting Measures and Benefits

The agriculture sector is the largest employer in the world sustaining the livelihood of nearly 2.5 billion people, many of whom live in poverty. Increasing productivity and incomes in the agriculture sector is one of the most effective ways to fight poverty, stimulate socio-economic development and meet the sustainable development goals. Growth in the agriculture sector is estimated to be at least twice as effective in reducing poverty compared to other sectors. Energy is a vital input, with the agri-food sector already accounting for around 30 percent of the world's total energy consumption.

Decentralised renewable energy can deliver energy for agricultural activities in rural areas in an affordable, secure and environmentally-sustainable way along different steps of the agri-food chain. In the pre-harvesting stage, renewable energy-based water pumping can increase yields, displace existing fossil-fuel based systems and expand irrigation in a manner that is cost-effective and environmentally sustainable. Renewable energy can also be used in post-harvesting activities for food processing and preservation, thus maximising the productivity and profitability of activities, including crop drying, milling, pressing, cooking and refrigeration. IRENA and GIZ are jointly organising the side-event to disseminate findings from recent analysis on the topic and convene key stakeholders to discuss measures needed to scale-up the deployment of decentralised solutions in the agri-food chain.

Opening remarks: Rabia Ferroukhi, Deputy Director, KPFC, IRENA

Presentations:

1. Key findings from IRENA's report on *Renewable Energy Benefits: Decentralized Solutions in the Agri-food Chain* by Diala Hawila (IRENA) (10 minutes)
2. Key findings from PAEGC's and FAO's joint report on *Opportunities for Agri-Food Chains to become Energy-smart* (10 minutes)

Panel discussion

Moderator: Prof. Izael Da Silva, Strathmore University

Panelists:

- Habiba Ali, Managing Director and CEO, Sosai Renewable Energies
- Charles Ahenda-Bengo, General Manager, Futurepump
- Ochieng Mbeo, Director, Lake View Fisheries
- Eric Angadia, Government Relations Specialist, One Acre Fund

Closing Remarks: Katharina Meder, Hub Manager East Africa, GIZ

DAY: 30 Sep 2016
TIME: 13:00-14:15
VENUE: Ivory Lounge

Joint IRENA & IEC Side-event: Reliable clean energy solutions for energy access: the role of standards and quality assurance

Within the process of developing projects to address energy access in rural and remote areas, one important aspect to consider is to assure the quality of the clean energy systems deployed. Expectations from communities and governments must be met in terms of safety, performance and durability of the energy service provided. Use of standards in quality assurance measures, including testing and certification, is a powerful tool to address this issue. In the last two years, IRENA has developed detailed guidelines for countries on how to develop and implement quality control measures for renewables as well as an interactive web-based tool to access information on international standards for RET. The International Electrotechnical Commission (IEC) is the main international standardisation body for the power sector, and has developed a comprehensive set of technical standards aiming rural electrification applications.

Opening remarks: Evah Oduor, IEC

Presentations:

1. Developing quality infrastructure for off-grid systems by Francisco Boshell, IRENA
2. International standards and conformity assessment for rural electrification by François Ahoti, IEC

Oral interventions from stakeholders:

- Cyrus Khalusi, Schneider Electric, Kenya
- Pablo Astorga, ABB
- Ian Baring-Gould, NREL

Q&A

DAY: 30 Sep 2016
TIME: 13:00-14:15
VENUE: Mt. Elgon

IRENA's COUNTRY SUPPORT ON THE DEPLOYMENT OF DECENTRALISED RENEWABLE ENERGY APPLICATIONS

IRENA focuses on strengthening capacities of energy entrepreneurs and rural energy providers in Africa and Asia in order to increase energy access and open up new economic opportunities. Through the Renewable Energy Entrepreneurship Support Facility, mentorship, technical support and advisory expertise are provided upon request to entrepreneurs thereby strengthening their innovative ideas and supporting them to scale up their businesses. Support is also provided for the deployment of clean energy mini-grids through the assessment of local capacities of policymakers,

Presentations:

- IRENA's Support for the Deployment of Decentralised Renewable Energy Applications by Safiatou Alzouma NOUHOU / Mr. Nopenyo Dabla (IRENA) (15 minutes)

Moderator: Ms. Safiatou Alzouma Nouhou

Interventions:

- Habiba Ali, Managing Director and CEO, Sosai Renewable Energies (5 minutes)
- Malick Seck, General Manager, Touba Solar Rama (5 minutes)
- Nicola Bugatti, Renewable Energy and Energy Efficiency Technical Advisor, ECREEE (5 minutes)

Q&A

DAY: 30 Sep 2016

TIME: 18:00-19:30

VENUE: Bougainvillea Lounge

IRENA's Project Navigator and IRENA's Sustainable Energy Marketplace

The side-event will be focussed on showcasing two of the main tools developed by IRENA to facilitate renewable energy project development and financing. The IRENA Project Navigator is a free online tool that provides project owners with templates, case studies and best practices to develop bankable renewable energy project proposals and supports the successful completion of their projects. During the side-event, IRENA will present the new Technical Concept Guidelines for Mini-grid project development and highlight the relevance of renewable energy and mini-grids as a means to achieve higher electrification rates.

The Sustainable Energy Marketplace is a free, actively operated and facilitated, online platform where projects and relevant stakeholders are made visible, easily identifiable and approachable through efficient search functions. It also connects off-grid project developers, financiers, services and technology providers. In this side-event, IRENA will showcase the Marketplace by demonstrating the different functionalities of the platform, the registration process, the role of the Marketplace in improving the visibility of the market players, enhancing the development and financing of renewable energy projects, and the benefits of registering on the platform for different users.

Opening remarks: Roland Roesch, IRENA

Presentations:

1. Introduction to the Project Navigator (15 min)
2. Introduction to the Sustainable Energy Marketplace (15 min)

Panel discussion:

Moderator: Roland Roesch, IRENA

Panelists:

- Daniel-Alexander Schroth, SE4ALL Africa Hub Coordinator, AfDB
- Sunkanmi Olowo, Head SME / Value Chain Banking, Ecobank
- Katrina Pielli, Senior Energy Advisor and Lead, Beyond the Grid, Power Africa

Q&A

DAY: 1 Oct 2016
TIME: 13:30-14:45
VENUE: Ivory Lounge

Side event: Economics of Solar and solar-hybrid mini-grids

Solar and solar-hybrid mini-grids have fixed and variable costs. Fixed costs entail the cost of generation and distribution assets and variable costs are composed of costs of operation, maintenance and management. The operational sustainability is ensured through revenue streams such as connection fees, electricity sales and subsidies. Each of these components influence the economics of solar mini-grids differently, and a better understanding of the cost and revenue structures can help calibrate design policies and promotion programmes. This side-event will begin with presentations on real projects and will provide the opportunity to discuss the economic aspects of solar and solar-hybrid mini grid systems.

Moderator: Dean Cooper, Chair of the Steering Committee, SE4All Clean Energy Mini-Grids High Impact Opportunity

Presenters

- Nico Peterschmidt, Managing Director, Inensus
- Andy Schroeter, Co-Founder and CEO, Sunlabob
- Xavier Vallvé, International Consultant and Partner, Trama TecnoAmbiental

Q&A

DAY: 1 Oct 2016
TIME: 13:30-14:45
VENUE: Bougainvillea Lounge

Joint IRENA – GIZ Side-event: Solar pumping for irrigation: Developing the ecosystem to maximize benefits

IRENA and GIZ have both conducted in-depth research projects on the potential of solar pumping for irrigation. IRENA's Policy Brief "Solar Pumping for Irrigation: Improving Livelihoods and Sustainability" and GIZ's study "Solar Powered Irrigation Systems - Technology, Economy, Impacts" provide a global overview of the opportunity for solar-based irrigation. They analyse specific case studies to improve the understanding of deployment approaches, financing models and the socio-economic benefits.

The findings will be presented in order to stimulate discussions at IOREC on scaling-up solar-irrigation solutions. There is evidence of growing private sector interest in the solar irrigation space with several local companies providing systems at costs that are within reach of smallholder farmers using innovation in business and financing models (e.g. pay-as-you-go). The side-event will discuss opportunities and challenges for deploying solar irrigation solutions and identify measures to scale-up deployment.

Opening remarks: Rabia Ferroukhi, Deputy Director, IRENA

Presentations:

1. Key findings from IRENA's report on *Solar pumping for irrigation: Improving livelihoods and sustainability* by Divyam Nagpal (IRENA) (10 minutes)

2. Key findings from GIZ's report on *Solar Powered Irrigation Systems – Technology, Economy, Impacts* and introduction to SPIS Manual by Caspar Priesemann (GIZ) (10 minutes)

Panel discussion:

Moderator: Martin Hiller, Director General, REEEP

Panelists:

- Charles Ahenda-Bengo, General Manager, Futurepump, Kenya
- Charlie Nichols, CTO and Co-founder, Sunculture, Kenya
- Eric Angadia, Government Relations Specialist, One Acre Fund
- Raghav Agarwal, Former Member of Governing Council, International Horticulture Innovation and Training Centre (A Govt. of Rajasthan Enterprise) and Director, Rotomag

Closing remarks: Caspar Priesemann, Energy Access Advisor, GIZ

DAY: 1 Oct 2016

TIME: 13:30-14:45

VENUE: Mt. Elgon

Joint UNIDO - REN21 Side-event: Market Intelligence: How it can drive the uptake of renewables and energy efficiency in the East African Community

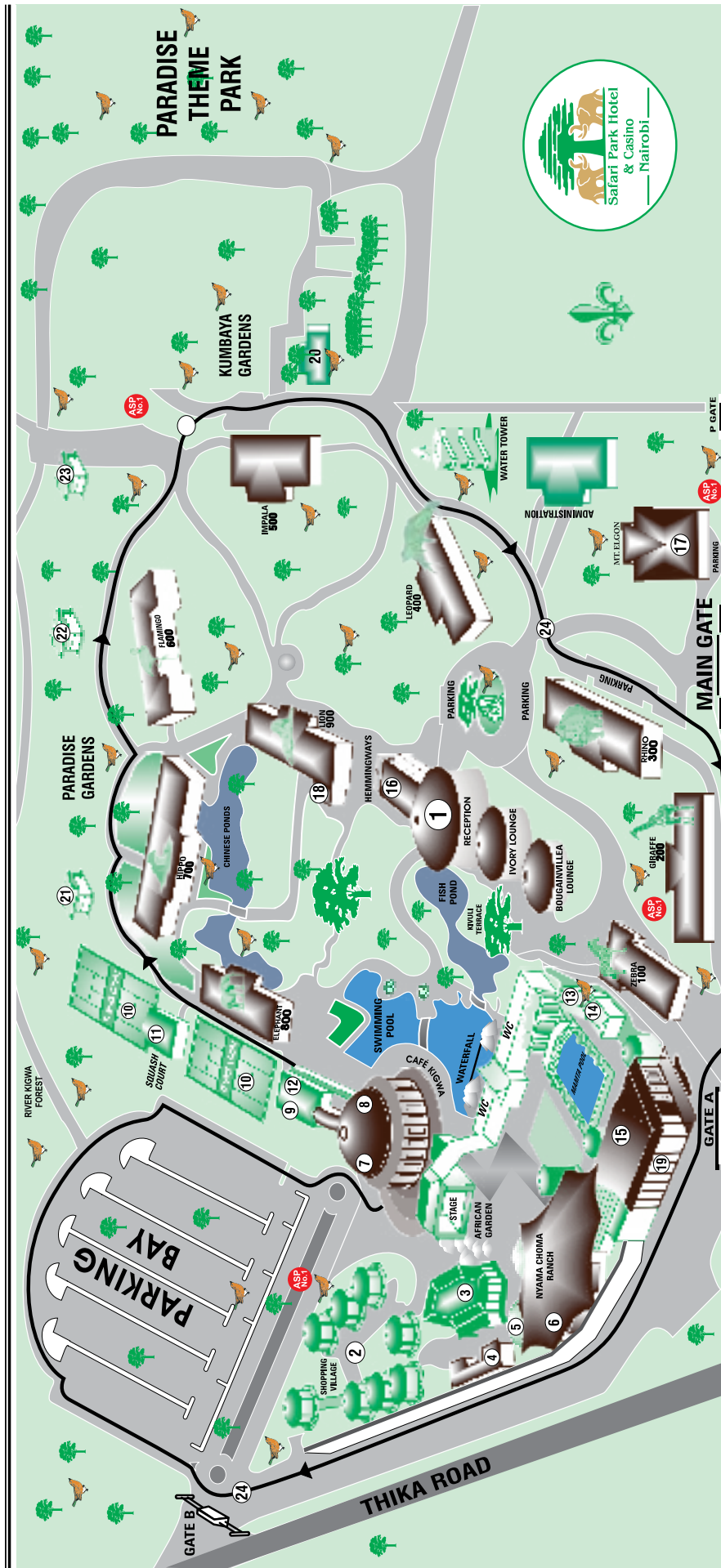
Market intelligence helps businesses and investors make better decisions. It is also the basis for informing policy processes and for defining policy/regulatory frameworks. Strengthening market intelligence is crucial to attracting the investment that the industry needs to grow. This side event will showcase the achievements of regional cooperation in promoting market-based uptake of renewable energy and energy efficient technologies and services. In particular, it will highlight how an innovative partnership between UNIDO-supported regional renewable energy and energy efficiency centres and REN21 has led to the timely tracking of national and regional renewable energy and energy efficiency developments. Speakers from policy, industry and finance sectors will discuss how market intelligence initiatives form a central part of their day-to-day work. Participants will share their views on the challenges and opportunities for improving market intelligence in the eastern African region. The newly-developed EAC Renewable Energy and Energy Efficiency Status Report will also be launched.

Opening remarks: Mr. Jossy Thomas, UNIDO

Presentations:

1. The Status of Renewable Energy and Energy Efficiency in the EAC by Rana Adib, REN21
2. Private Industry Development in the EAC: What are the challenges to fully develop the regional potential? by Mark Hankins, African Solar Designs
3. How can Regional Institutions and Collaboration between Multi-stakeholders Foster Clean Energy development? by Peter Kinuthia, EAC
4. The role of market intelligence in catalysing investment

Q&A



- KEY (LOCATION)**
- 🦋 BIRD WATCHING
 - 🔥 FIRE ASSEMBLY POINT
- KEY (LOCATION)**
- ① MAIN RECEPTION/LOBBY CAFE/LOBBY SHOP
 - ② SHOPPING VILLAGE
 - ③ KING SOLOMON'S MINE SLOT MACHINES
 - ④ LA PIAZZETTA
 - ⑤ PALM GARDEN
 - ⑥ CATS CLUB / PIANO BAR
 - ⑦ PAVILION BALLROOM
 - ⑧ WINNERS PAVILION
 - ⑨ CHIYO RESTAURANT
 - ⑩ TENNIS COURTS
 - ⑪ SQUASH COURT
 - ⑫ SAFARI FITNESS CENTRE
 - ⑬ BOGORIA
 - ⑭ BUSINESS CENTER
 - ⑮ JAMBO CONFERENCE CENTER
 - ⑯ HEMMINGWAYS
 - ⑰ MOUNT ELGON
 - ⑱ MOUNT KENYA (A,B,C,D)
 - ⑲ BARINGO ROOM
 - ⑳ KUMBAYA HALL
 - ㉑ PARADISE A
 - ㉒ PARADISE B
 - ㉓ APARTMENTS
 - ㉔ JOGGING TRACK



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