Key takeaways and highlights from Green Power for Mobile "Africa Regional" Working Group, held in Dar es Salaam, Tanzania during 12-13 August 2014.

The Green Power for Mobile (GPM) has successfully convened its Africa Regional Working Group in Dar es Salaam, Tanzania during 12th and 13th August 2014.

The working group was co-hosted by AIRTEL Africa and was attended by 45 people across 30 organizations including MNOs, Tower Cos, ESCOs, vendors, solution integrators, infrastructure partners, government, regulators and development organizations. The working group was followed by GPM technical training on design and business case analysis, which was attended by 16 people.

Key discussions and takeaways:

The working group hosted speakers and discussions around MNO/TowerCo strategies and approaches towards addressing the energy challenges across Africa. MNOs and TowerCos presented case studies around their current green power deployments and OPEX saving initiatives and highlighted some of the learning experiences and challenges. The working group also introduced new technologies and their feasibility for the region including Vanadium Redox Batteries, Hybrid energy systems, and Fuel Cell opportunities and their benefits to MNOs and Tower Cos.

Speakers were invited to present on business models and associated strategic elements around energy outsourcing in telecoms. A focused panel discussion around energy outsourcing business models and the readiness of the industry towards adopting new business models in energy provision is facilitated through inviting both supply side players and MNO/Tower Cos to share their views and concerns around the topic.

Some of the key takeaways from the working group sessions are highlighted below.

- MNOs have been consistently deploying OPEX saving green energy alternatives and energy efficiency initiatives have been taken as a priority to reduce energy consumption of telecom networks.
- There is an increasing shift towards Tower Outsourcing model in the region. Tower Cos are aggressively building their portfolio by constant acquisitions of tower assets from MNOs in the region. Green energy and energy efficiency will become a top priority over the next two years as the asset transfer and operations become stabilized.
- MNOs and Tower Cos expressed concerns about scarcity of local technical resources and local on-the-ground presence of technology vendors and solution providers. This has been impacting the failure resolution times and spare parts availability, and thereby increasing the cost of corrective maintenance.
- MNOs and Tower Cos are positive about continuing investments in green power given the feasibility within the local operating context and strong committed partners. However, Tower Cos will need a strong incentive to reduce OPEX and share the benefits with the MNOs, depending on the pricing and contractual terms between the MNOs and Tower Cos.
- Energy outsourcing is still at a nascent stage in Africa. A proven case study and a win-win business model in energy outsourcing is a must. Committed partners with technical and operational expertise are essential to drive the off-take of energy outsourcing models.
- In order to drive energy outsourcing business models with strengthened credibility, ESCOs need to build strong partnerships in conjunction MNOs/Tower Cos and with other stakeholders including technology providers, operations partners and financial institutions.
- In order to achieve universal access to communications, the regulators and government ministries need to put across encouraging policy framework and guidelines to support the growth of green telecoms in respective countries. There was a strong consensus amongst the industry about the essential regulatory support with fiscal and tax incentives on green power equipment for telecom.

The detailed session-wise discussions and highlights are presented below.

Day one – 12th Aug:

Opening Session:

The opening session hosted key personnel from AIRTEL Tanzania (the local co-host of the working group) and the Ministry of Communication, Science and Technology, Government of Tanzania. Areef Kassam, programme director of GPM started the session with a welcome note and agenda walkthrough and invited key guests to deliver a welcome note.

Sunil Colaso, Managing Director of AIRTEL Tanzania, welcomed the participants and briefed about AIRTEL's commitment and initiatives towards addressing the energy challenges using energy efficiency and green power alternatives. He then welcomed the Minister of Communication, Science and Technology of Tanzania to deliver a key note addressing the participants.

Prof. Makama Mnyaa Mbarawa, Minister of Communication, Science and Technology, Govt. of Tanzania, delivered the opening key note welcoming the participants for productive discussions throughout the working group. He acknowledged the key role that energy infrastructure plays in increasing access to telecommunications especially in the rural regions and urged mobile operators to adopt cost effective alternatives for powering rural off-grid and unreliable-grid base station sites. Prof. Makama ensured a key support in terms of incentives and support for green power deployments using USO funds to improve rural telecommunications access and bring economic impact to the communities and the country overall.

The opening session concluded with a presentation from Satish Kumar, Africa Project Manager - GPM, looking at the opportunities and prospects for green telecoms in across Africa. Satish highlighted the size of the telecom tower market, the energy challenges – especially the slow progress in grid expansion and cost of diesel power, the current progress in green power adoption, and the potential opportunity for green power and associated business models in driving the adoption of green alternatives in powering telecoms across Africa. He also emphasized the need for strong support including regulations, technology, financing and business models.

The second session of the day started with MNO/Tower Co presentations on key initiatives and deployment experiences and then followed by a panel discussion.

MNO/Tower Co Session and Panel Discussion:

The session started with a presentation from Ernest Banda, Head of Networks Rollout, Econet Wireless Group, briefing about their networks across Zimbabwe, Lesotho and Burundi, and their progress on green deployments and challenges. He emphasized key challenges for energy provision for off-grid and remote locations, and highlighted their strategies and approach around deploying green power alternatives. Their key initiatives include low power technologies, solar power for remote off-grid sites, reduce OPEX through energy efficiency and hybrid power systems. He also emphasized the need for government support in terms of duty exemption for key renewable energy system components and knowledge sharing on new technology feasibility for Econet's operating context and new business model developments to help them address their energy challenges.

Prakash Ranjalkar, Group CEO, Africa Towers, briefed on AIRTEL's group operations across Asia and Africa highlighting their move towards infrastructure sharing to effectively utilise the resources on site. AIRTEL is geared towards outsourcing nearly 15,000 of their tower assets in Africa and drive tower sharing model to accelerate site rollouts in a cost-effective manner.

Prakash also presented on their green initiatives including – one, reduction of power consumption through optimizing site operating environment, low power outdoor equipment deployment, and monitoring for optimum performance, two, reduction in dependence diesel power by deploying battery hybrid and solar power sites as well as maximizing grid connections to their sites, and three, improving generation efficiency of diesel generators to reduce overall diesel consumption and generator life. Through their initiatives, AIRTEL has achieved a reduction in fuel consumption by 28% in 2 years across their networks and reduced 150,000 tonnes of CO_2 emissions. A notable achievement includes solar deployment of 1200 sites across their African operations.

MNO/Tower Co Panel discussion:

The presentations were followed by a panel discussion. The MNO/Tower Co panel session had two panellists – Ernest Banda, from Econet Wireless Group and Prakash Ranjalkar, from AIRTEL/Africa Towers Group. The

panel discussion, moderated by Areef Kassam of GPM, touched upon various aspects of energy provisioning and scaling of green power deployments across Africa. The discussions were focused around outsourcing – tower and energy, deployment challenges including technical resources, unfavourable tax regulations and their impact on scaling the adoption of green power alternatives for powering the network.

Technology Session: Deployment Cases and Supply-side Innovations

We invited two speakers during the technology session to present on their products and solutions, deployment cases and innovations in their products and services offerings for MNOs and Tower Cos.

The first speaker was Zhang Jianqiang (Tobby), Overseas Business Manager, Xintong Intelligent Technology Ltd, from China. Tobby presented in detail on their integrated power system offering for MNOs and Tower Cos. He provided key highlights on their integrated control system, integrated green power and hybrid systems, and mentioned case studies about their strong deployment experience of over 20,000 solar, wind, and hybrid power systems across China and Asia. He also presented on CAPEX-OPEX analysis and emphasized on their key interest in the African market in coming years.

After the lunch break, the second speaker, representing INALA Technologies was invited to present on their product and service innovations.

Louw Cilliers, Group Executive – Telecoms at INALA, presented on their Integrated Energy Monitoring offering to the industry and provided an insight on shifting from “product driven” to a “service driven” energy monitoring and management to integrate into the overall energy monitoring and operations management. He also presented a comparative analysis including the pros and cons of both approaches and emphasised the need to move towards service driven model in order to pave the way for a holistic energy outsourcing business model. Through this presentation, he emphasised the importance availability of accurate data and information analytics to enable key decisions on green power investments.

Xintong and INALA were our kind sponsors contributing to a part of the event costs.

ESCO Session and Panel Discussion:

Later in the afternoon, we invited speakers to present on energy outsourcing business models and strategies to drive scaled adoption of green power and associated business models.

Chris Luckurst, Managing Director of Clean Power Systems, started the session presenting on CPS Energy Management as a Service model focusing on OPEX based energy provision to MNOs and Tower Cos. Following a brief on CPS, Chris presented a comparative look at CAPEX vs. OPEX business model in energy provision and highlighted the evolution of energy provision models with incentives for predictability and savings in energy OPEX. He provided key highlights of their EMaaS^{TM} business model offering and mentioned a key benefit of up to 25% discount that they could offer with zero CAPEX compared existing OPEX business case. He also provided their key strengths to support off-take of energy outsourcing model and their capability to provide reliable energy as a service model for MNOs and Tower Cos.

Judah Levine, CEO of HIP Consult, provided a strategic perspective to establish energy outsourcing model as a way for cost cutting and greener telecom operations. He highlighted that though the business case for green power for telecoms has been established, the challenges still exist to make it a main stream powering option. He emphasized on the need for a strategic planning process to come up with an internal Energy Program Roadmap to enable various phases of green power adoption including the energy outsourcing phase.

The last presentation in the session focused on community power models and learnings from GSMA’s initiatives in supporting the broader eco-system. Areef Kassam, of GPM, presented on Mobile Enabled Community Service (MECS), a GSMA programme initiative, working towards increasing access to energy and utility services using mobile infrastructure as an enabler. He highlighted the key opportunity and experience from case studies across Africa and Asia.

The presentations were followed by a detailed panel discussion session on energy outsourcing and ESCO business model adoption. The panel consisted of 7 members from MNO, Tower Co, ESCO players and was moderated by Ferdous Mottakin of GPM.

ESCO Panel discussion:

The ESCO session focused the discussions around the key building blocks of an ESCO, key stakeholder priorities, and various contractual and legal considerations including asset ownership/transfer, regulations to enable selling power by an ESCO, and investment.

The panel observed that technology expertise and operational reliability as key ingredients for an ESCO to establish trust with MNOs and Tower Cos. Formation of an ESCO with key stakeholder partners will require a leading role from the ESCO to take ownership and accountability for investment, technology, operations and reliability of energy as a service for MNOs and Tower Cos. Asset ownership and transfer has to clearly defined and agreed upon along with win-win contractual terms. The ESCO players also highlighted the need for a larger numbers of sites to be committed by MNOs and Tower Cos, in order for them to make a larger investment case with long term objectives and focus.

The panel also observed that, a clear roadmap across phases of pilots, initial commercial and scaled deployments, is needed to bring commitment from ESCO and stakeholder partners especially the investment partners. However, it is understood that, though the ESCO model is still at the nascent stage of adoption, there is clear direction for future growth in numbers for ESCO model. With the changing industry structure owing to tower outsourcing, it is very important for MNOs and Tower Cos to have enabling pricing and contractual agreements to provide incentives for investments in OPEX savings which will in turn drive towards energy outsourcing as the sizes of tower portfolios of Tower Cos grow over the years.

The first day concluded post ESCO session, and was followed by a traditional cultural evening and networking dinner arranged by the co-host AIRTEL.

Day two – 13th Aug:

The second day of the working group was focused on technology, deployment case studies and key feasibility approaches.

Satish Kumar, of GPM, presented on an approach to feasibility analysis looking at various design parameters to come up with an optimum green power design suitable for various operating and site scenarios. The key parameters including site load, tenancy, renewable resources, design calibrations was discussed in detailed along with the impact overall system efficiency, performance, payback and TCO.

Carita Costa, Sales Director – Flexenclosure, presented on their compact eSite and eCenter solution and related offerings to match the requirements of the industry. She presented few case studies and results achieved with their deployments across Africa. Carita also highlighted on their support for securing lease funding through their collaboration with export financing partner EKN Switzerland.

Later in the session, we had IMERGY providing detailed presentation on their new storage technology product – Vanadium Redox batteries. Tom Tipple, Regional VP at IMERGY, introduced the flow battery technology and their Vanadium based flow battery product range for telecom industry. He highlighted some of the key benefits of their storage product including the unlimited cycle life, modular technology, 100% charge-discharge performance, and their cost competitiveness. He also showcased a comparative analysis of Vanadium Redox flow battery with traditional Lead-Acid battery technology and demonstrated key performance and cost benefits. Tom expressed interest in working with customized financing options to enable operators to deploy their new battery technology.

Etienne Gerber, Technical Head at Mitochondria Energy, presented a perspective on hydrogen economy to move towards low carbon future and highlighted their efforts to enable the mobile industry and other energy consumers to move towards low carbon future. Taking a context of the various operational and business challenges, and the cost drivers for energy OPEX in Telecoms, Etienne presented how the energy dynamics in Africa could exploit fuel cell and low carbon energy sources to meet the regions energy demand. He then provided key highlights of

Mitochondria's value proposition for MNOs and Tower Cos, stressing on their outsourced energy model to provide reliable power at predictable costs and help operators address the current existing energy challenges.

The presentation of the working group was delivered by Ferdous Mottakin of GPM, detailing the green deployment progress in Africa and around the world. Ferdous highlighted the need for more growth given that there are only less than 3% of the potential sites in Africa being currently deployed with cost saving green power alternatives.

In the last session of the day, GPM conducted a moderated open discussion session around the industry needs, eco-system challenges and ESCO business model viability for addressing the energy challenges of the telecom industry in Africa. The MNOs and TowerCos stressed that reliability, security, presence of local technical support as key requirements for any green power solution deployment and management. Besides the technical and operational challenges, the group discussed and highlighted that the industry requires a strong support from government implementing favourable regulations and tax incentives.

The second part of the day was dedicated to GPM's training on Green Power design using the HOMER software. The training focused on a step-by-step approach to green power design and analysis for better understanding of technical and financial feasibility. New examples around solar, wind, fuel cell design were considered to demonstrate the design and feasibility analysis.

With that the two days of working group sessions including the technical training session were concluded. Areef Kassam, Programme Director of GPM delivered the closing remarks and thanked the co-host AIRTEL and sponsors Xintong and INALA for their support in organizing the working group.