



Implementing a Quality Assurance Framework for Microgrid Performance Monitoring in Africa: Examples, Lessons, and Opportunities

13 February 2019

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MINISTERIAL

About TFE Energy

- Headquartered in Munich, Germany;
- Offices in Cape Town, South Africa

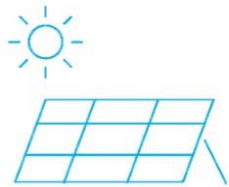


Our focus areas

TFE Energy supports clients on accelerating the global energy transformation

We are an international, values-led advisory business supporting companies, investors, international lenders, organizations and governments. In our work we focus on the creation of scalable business models and on the role of emergent technologies such as digital currencies, smart grids, storage and big data.

Our team creates value based on considerable on-ground experience in Europe, South Asia and Africa, initiating and building successful companies, delivering bankable projects and applying proven methods. Our four areas of focus are Energy, Digitalization, Mobility and Buildings.



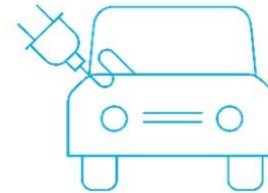
Energy

We believe that the future energy system will be fundamentally different from today's. This creates great opportunity for more efficient, more renewable, as well as more distributed and smarter sector.



Buildings

New building construction methods offer the opportunity to achieve urban development whilst reducing costs and improving resource efficiency, we develop new business models, quantify the market and prepare business cases.



Mobility

As mobility becomes smarter, cheaper and greener, we assess the potential for new technologies, chart new market trajectories and prepare roadmaps for transition and growth.



Digitalization

Digital technologies drive global transformations in the resource and energy sector. We forecast trends, demystify new technologies and assess the impact and potentials of digital technologies and reshape industrial processes.

Our team

- Raised an investment fund for distributed renewable energy in India;
- Founded an award-winning IOT energy access company in Kenya;
- Created a technology-driven social business;
- Set up an online solar platform;
- Designed smart-meters for frontier markets;
- Work across Asia and Africa;
- Developed locally appropriate energy access business models;
- Guided national renewable energy policy;
- Provide consulting services to the energy, construction and mobility industries in many countries.
- Work with the energy industry from utility scale to pico scale
- Built mini-grids in very remote places;



TFE Energy sample projects

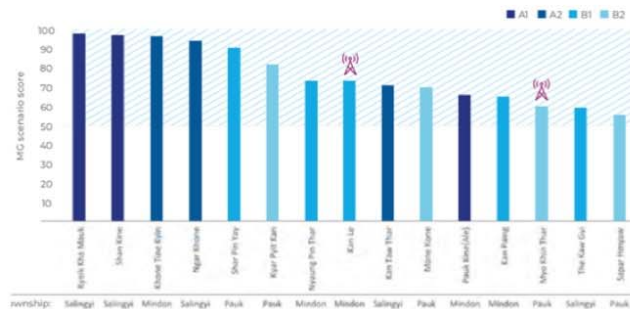
ViDA -Village Data Analytics

The goal of Village Data Analytics (ViDA) is to combine satellite imagery and household survey data with machine learning to **gain unique insights into rural communities** in developing

countries. This leads to improved planning of development and intervention strategies, and a reduced need for time consuming and resource expensive on-ground surveys.

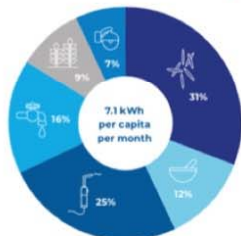
- Gain insights about rural communities from afar:
- Demographics;
- Agriculture and productive uses of electricity;

- Socio-economic factors (e.g. education levels);
- Track socio-economic development of a community over time
- Risk assessment;



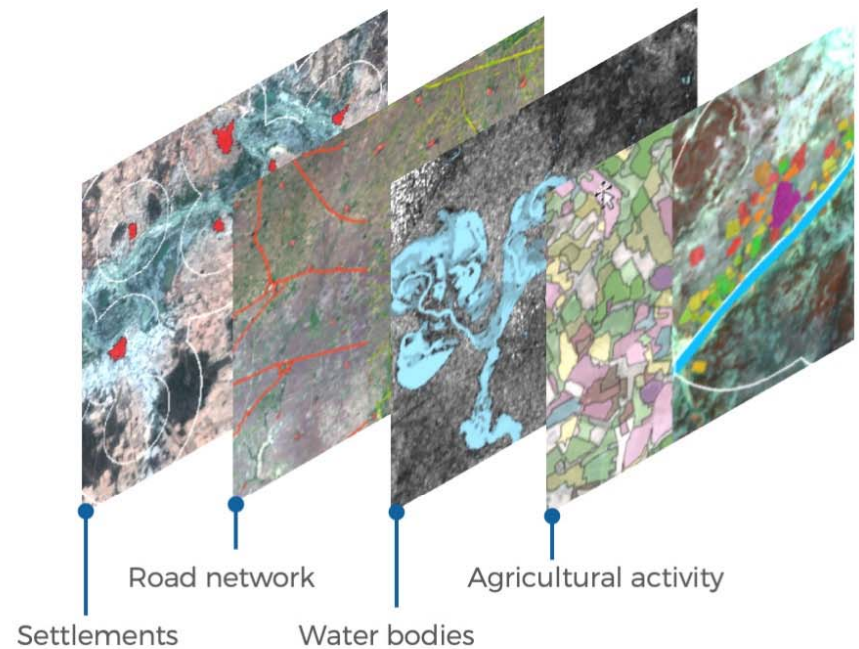
villages: Selingyi, Selingyi, Minton, Selingyi, Pauk, Pauk, Minton, Minton, Selingyi, Pauk, Minton, Minton, Pauk, Selingyi, Pauk

Villages with telecom tower nearby, well suited for an anchor load



- Productive load**
- Oil milling
 - Grinder
 - Rice milling
 - Water pumping
 - Carpenter
 - Welding

Source: Survey data and TFE Consulting analysis



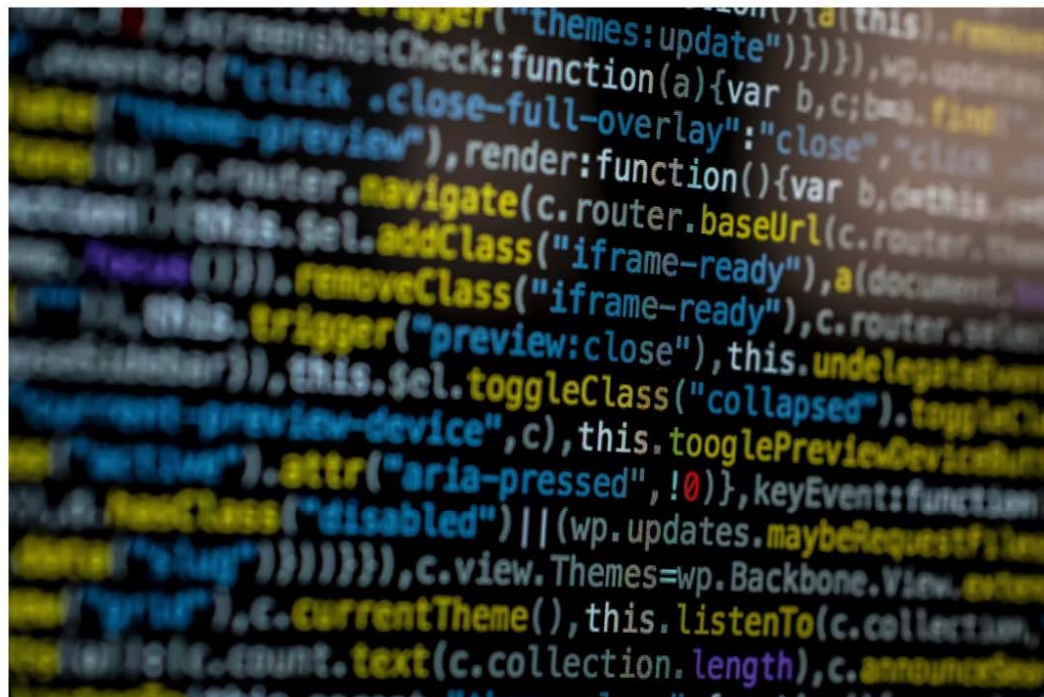
TFE Energy sample projects

BMW

In partnership with the German Government, we have launched a study to understand how digital technologies drive **decentralized energy access** in emerging markets.

Over the course of 2019 we will assess the most innovative companies and technologies working on energy access solutions in developing countries. Through desk based research and interviews with market experts and highly innovative companies, we will identify the ways in which digital technologies have a transformative role in energy access and can help us actually meet global electrification goals

We also try to understand which investment and support ecosystems are best suited to help digital solutions unfold.



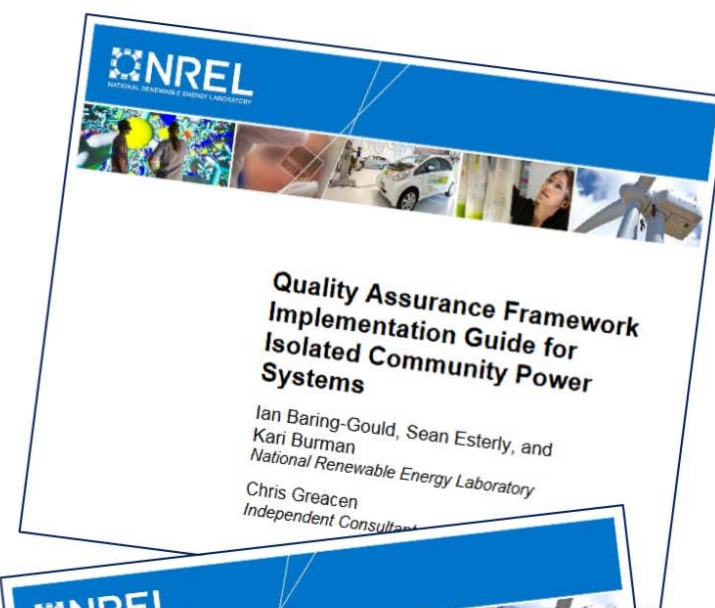
QAF Stakeholders

- Nigerian Stakeholders

- NERC -Nigerian Electricity Regulatory Commission;
- REA -Rural Electrification Agency;
- Local mini-grid developers;

- International Stakeholders

- AfDB –African Development Bank;
- AMDA –African Minigrid Developers Association;
- Investors –Corporate, impact and crowd;
- International private developers;
- Multilateral donors and foundations;
- Other organizations driving the development of standards (National Renewable Energy Laboratory, Rocky Mountain Institute etc);
- ...and of course the rural end-user.

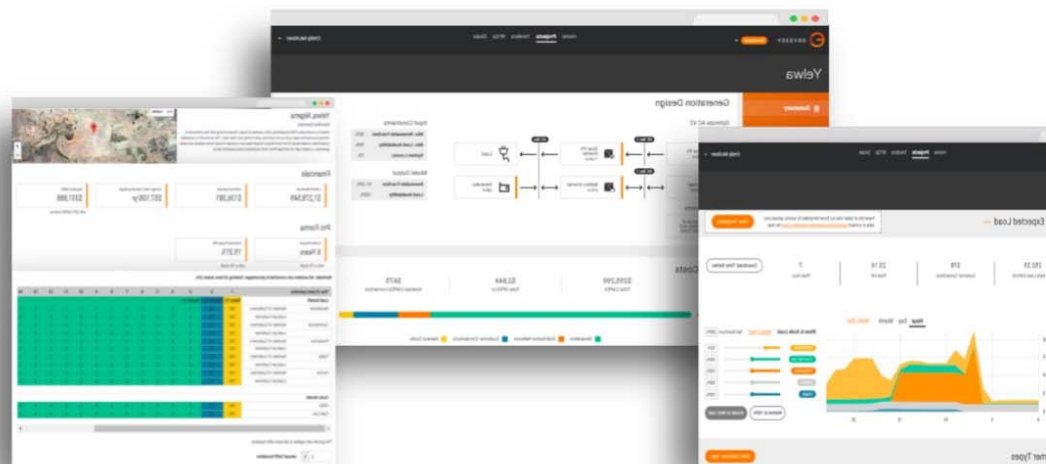


The Quality Assurance Framework for mini-grids

The fundamental purpose of the QAF program is to support and catalyze the mini-grid industry.

To achieve this it needs to:

- Be accessible and useful to small local developers;
- Integrate and obviate existing parallel reporting protocols;
- Provide incentives for participation;
- Add value to as many stakeholders as possible;
- Avoid burdensome reporting protocols;
- Provide adequate security for sensitive data;
- Allow wide sharing of data where appropriate;
- Allow very specific data permissions where appropriate;
- Be transferable and relevant across geographies;
- Enable international sector-level performance intelligence;
- Support advocacy for the industry;
- Increase standardization and reduce investor risk;
- Evolve as appropriate and as required;



QAF implementation results

- Local institutional buy-in is key, e.g. from national regulator and the rural electrification agency;
- This ensures legitimacy and helps gain access to the smaller, less mature developers;
- It helps to have a financial incentive. For example the Rural Electrification Fund (REF) support;
- The on-the-ground view is that 'business best practice' support is a key value add;
- No amount of detailed written introduction is any match for face-to-face explanations of the details;
- There is skittishness around who sees the data;
- Strong desire from developers to communicate some of the wider, positive impacts of green minigrid;
- As such there are calls to include more social and environmental metrics.



QAF next steps

- Development of Community Training Curriculum;
- Community engagement trainings with Nigerian developers;
- Feedback from developers and further development and refining of the reporting protocols;
- Minigrid Monitoring and Evaluation Meeting next week in Nairobi with AMDA, Rocky Mountain Institute and other key stakeholders;
- Ongoing consultation with Cross Boundary, Odyssey, NREL, Power Africa, GiZ, Shell Foundation, Rockefeller Foundation, World Bank ESMAP and others;
- Integration of QAF metrics and Results Based Financing (RBF);
- Application of QAF in other African markets.





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Thank you

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