ENERGY CATALYST

INSIGHT: How are digital technologies impacting energy access markets?

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Energy Catalyst accelerates the innovation needed to end energy poverty. Through financial and advisory support, and by building strategic partnerships and uncovering new insights, Energy Catalyst supports the development of technologies and business models that can improve lives in Africa and Asia. One feature of the support provided in the accelerator is centred on helping innovators to understand their product-market fit. Energy Catalyst is an Innovate UK programme with co-funding from the Foreign, Commonwealth and Development Office, Global Challenges Research Fund, the Department of Business, Energy and Industrial Strategy and the Engineering and Physical Sciences Research Council. This material has been funded by UK aid from the UK government; however, the views expressed do not necessarily reflect the UK government's official policies.

This insight piece explores how innovations in digital technology are transforming energy access markets, highlighting the key trends and their relevance for the future of the sector. It provides a snapshot of research undertaken with the co-operation and input of Energy Catalyst portfolio companies, as well as a range of interviews with other key market players.

The Four Pillars

Digital technologies underpin almost every energy system in the sector today. These enabling technologies have increased scale, efficiency, and investment in ways that, in some cases, were not possible even three-to-five years ago. Our research has found four distinct groups which we have called the four pillars:
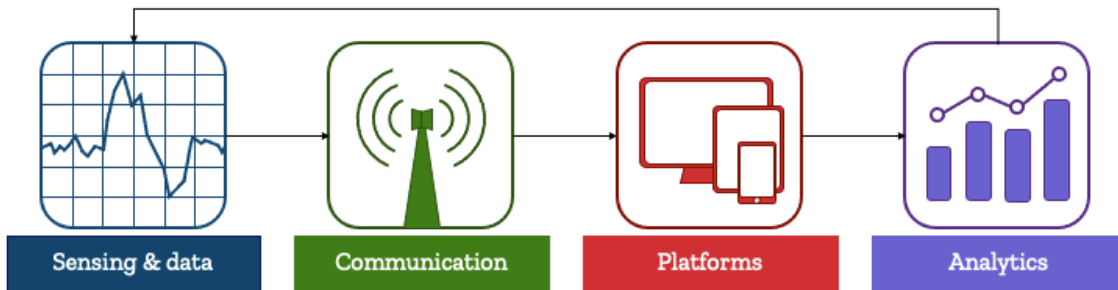
The arrows indicate the interplay between these pillars. In real-world applications, technologies from some or all of the pillars are combined to form a huge range of systems, used at all levels – governments, to developers, to the customers themselves.

Our research uncovers 6 key trends, explored below:

Interconnectedness

Application programming interfaces (APIs) are used by every major digital system in the world today. They are a set of commands that allow platforms to exchange information without the need for human intervention. Through the wide use of such APIs, digital platforms in the energy access sector are being interconnected more than ever, and this trend is set to continue. An excellent example is the automatic flow of data from onsite devices, through mobile or satellite internet to remote monitoring services, like Nortech and Ferntech, and then, along with data from many other sources, into project & portfolio management platforms like Odyssey.

Cloud computing

This is the backbone of many of the new digital innovations explored in this research, and was widely cited by our interviewees as the biggest enabling technology for their products. Cloud computing services have democratised access to vast data storage and computing power, and revolutionised what technology providers can deliver at a relatively low cost. Shifting computing to the cloud reduces the need for companies to buy and maintain computing infrastructure, centralises their operations, and shrinks the footprint of technology that is required onsite.

Flexible systems

Historically, technology businesses in energy access have been forced to vertically integrate. Provision of off-the-shelf digital platforms that are flexible to a range of companies needs has reduced the burden of in-house technology development. This is best seen in the PAYG sector where

platforms like Angaza have made it viable for companies to have a lighter structure, with resources focussed on developing their model, reaching customers, and profiling risk.

More data

Following the trend in the rest of the world, more and more data are being collected. Once collected, they are aggregated at a scale not seen before giving the industry huge opportunities for learning. Data sets are being provided as a service, by Fraym and Nithio, or open-source, by e-GUIDE & ViDA, enabling organisations at every level to make informed decisions about their strategy.

Simplicity in the 'front end'

Digital technologies have become vast and complex, but it cannot be forgotten that the infrastructure and computer literacy of many of the sector's customers does not grow at the same rate. Successful technologies remain simple on the 'front-end'. This is a trend that will continue for years to come.

Facilitating the human element

While digital technologies have revolutionised our sector in many ways, this research has also highlighted the inescapable fact that they are not the whole story. Many projects still need human-to-human contact to be successful. In Bangladesh, for example, some micro-finance institutions found that digitising loan repayments meant the loss of face-to-face contact which actually lead to a rise in defaulters. In some contexts, instead of entirely replacing humans, digital tech can work in parallel to facilitate our interactions. ENACT's ComET platform is an excellent example – facilitating a community's learning while feeding information back to the developer.

Further Reading

TFE Energy (2020). *Energy Access, Data and Digital Solutions.*

NREL (2019). *Survey Use In Micro-Grid Load Prediction, Project Development, And Operations.*

Energy 4 Impact (2020). *Crowdfunding Energy Access – State Of The Market Report 2019-2020*.

ARE Technology & Innovation Forum (2021).

Green Mini-grid Helpdesk (2020).

AMMP (2018). *The Impact of Remote Monitoring*.