Rural electrification through private models: the case of solar-powered mini-grid development in Kenya: Exploring the hybrid nature of private business models and the interplay between new players and existing structures in the Kenyan rural electrification regime

In Sub-Saharan Africa more than 630 million people live without access to electricity. Access to modern energy services like phone-charging, electric lighting, cooling, heating, etc. is an important enabler of social and economic development and human well-being. Renewable energy-based electrification solutions that deliver power through a decentralised mini-grid to village communities have gained in prominence as a supplementary path to achieving universal access in the realisation that, in many developing countries, traditional utility-led grid-electrification efforts will not succeed in bringing electricity to everyone in the near future. In East Africa, mini-grid development has primarily been driven by NGOs or faith-based organisations. However, recent technological advances like mobile phone payment solutions and drops in solar PV prices are making solar-powered mini-grids a cost-effective alternative to traditional fossil fuel-based solutions like diesel generators in off-grid areas in many countries. This has made rural electrification through mini-grids an interesting area for private-sector firms looking to do mission-driven business in the growing African economies. This, in combination with the broader turn in international development cooperation towards supporting private sector- and market-based solutions to facilitate development goals, makes private sector-driven rural electrification an interesting area for investigation. Against this background, the aim of the research presented in this thesis is to explore the processes behind the emergence of such private-sector engagement, as well as the functioning and effects of specific private-sector models. This research topic is explored through a qualitative multi-case study design to provide context-specific insights into the particularities of the Kenyan mini-grid niche. Dynamics of change in the Kenyan rural electrification regime is investigated through the lens of the multilevel perspective to explore how niche-level actors conduct institutional entrepreneurship to influence existing structures in the rural electrification regime. Furthermore, mini-grid firms’ practices are explored to understand how they respond to competing institutional logics made available to them due to their dual social and economic mission.

The research finds that mini-grid firms operating in Kenya contribute to system building in the sense of making private mini-grid development a viable and sustainable alternative to grid-extension in various ways by following different strategies. While some actors are seeking to strengthen the private mini-grid niche by actively seeking to change the ‘rules of the game’ in the broader rural electrification regime through negotiations, advocacy and other forms of institutional work, other actors are following a strategy of increasing cohesion within the niche by building partnerships and generating knowledge and learning. This shows how niches build and grow not only through niche-internal processes, but also through purposeful actor-driven work with the aim to create conditions that allows the niche and the regime to co-exist.

At the firm level, the research finds that mini-grid firms respond differently to the competing demands of the social welfare and economic viability logics available to them. While some firms enact the logic of economic viability as the predominant logic guiding their work, other firms combine and blend the two logics. Each of the two strategies of prioritising or blending is pursued with the conviction that the underlying practices and decisions made manifest in such strategies will benefit these firms. While it is too early to draw conclusions regarding the prospects for the long-term sustainability of these firms, the existence of these various strategies is significant in two ways. First, it suggests that mission-driven enterprises can be differentiated based on the way they enact logics in their work. Secondly, it opens up a path to further research into how each of these strategies may influence the long-term sustainability of these firms.