CenSES

Centre for Sustainable Energy Studies

FME FORSKNINGS-SENTER FOR MILJØVENNLIG ENERGI

Fact sheet

Shaping nascent renewable energy markets in developing countries – the role of entrepreneurs and their business models

Introduction
Entrepreneurs have a key role in introducing renewable energy technologies where they are most needed – rural areas of developing countries. Entrepreneurs devise innovative business models and under conditions of uncertainty, use these business models to influence market conditions (characteristics of demand, supply and institutions) in order to achieve sustainability.

Background and objectives
Most of the energy poor in the world live in rural areas of developing countries. The scale of the problem of universal access to energy and the complexities of matching renewable energy technologies to the uncertain nature of demand in rural areas of developing countries requires innovative solutions both technologically and from the perspective of commercializing this technology. Entrepreneurs have a key role to play in this market. The project studies how entrepreneurs strategize to meet the challenges of commercializing renewable energy technologies for the rural electricity market in developing countries. The process by which entrepreneurs develop scalable and sustainable business models is examined.

Results
Our study is focused on the renewable energy based rural decentralized electricity market in India. We perform an in-depth case study of an exemplary new venture based in eastern India which has set up over 80 biomass based power plants supplying electricity to households in over 250 villages. We find that under conditions of uncertainty about the demand and supply characteristics, as is typical in the rural renewable energy market, entrepreneurs use a process of purposeful experimentation to develop innovative business models that match the technology to the unpredictable conditions of the market. Further, we find that entrepreneurs use these business models to influence and shape the conditions of this nascent market. Different configurations of the business models and the sequence of their launch, is key to enabling this process and is oriented towards achieving two key objectives: first reducing uncertainty about market conditions and then developing the best fit between their business model/s and market conditions, so as to achieve sustainability and scale.

>>

>> Shaping nascent renewable energy markets in developing countries – the role of entrepreneurs and their business models

Usefulness and application
Our results have two keys implications that relate to financiers and policy makers in the rural renewable energy market in developing countries. Given that entrepreneurs need to experiment in order to develop a sustainable business model, financiers may need to provide more patient capital to ventures in this market. In order to meet the target of universal energy access by 2030, policy makers may need to orient themselves to go beyond subsidies and focus more on institutional development that help shape market conditions for the effective participation of entrepreneurs in this market.

Other relevant information
According to the International Energy Agency (IEA) more than 1.4 billion people worldwide have no access to electricity, and 1 billion more only have intermittent access.
• Over 80% of these people live in sub-Saharan Africa and India.
• The year 2030 has been set as the target year for universal access to modern energy services by the United Nations.
• The International Energy Agency estimated that the annual cost of achieving universal energy access would be $48 billion. The gap between expected costs and available funding is estimated at $34 billion annually. It is unlikely that public monies alone can close this gap, so the private sector is increasingly being seen as part of the solution. ■

Institution: Department of Industrial Economics and Technology Management, NTNU www.ntnu.no/iot
Project Period: 2011-2015
Supervisor: Lars Øystein Widding
Contact person:
Vivek Sinha
Institution and address : Department of Industrial Economics and Technology Management, NTNU,
Alfred Getz Vei 3. Gløshaugen
7491 Trondheim
Phone: +47 73593123
Email: vivek.sinha@iot.ntnu.no