

Solar Home Systems in rural sub Saharan Africa – A case of Frugal Innovation? And (why) does it matter?

Citation for published version (APA):

Romijn, H., & Groenewoudt, A. (2021). Solar Home Systems in rural sub Saharan Africa – A case of Frugal Innovation? And (why) does it matter? Presentation in the EADI general conference panel session on Frugal Innovation . Paper presented at EADI General Conference 2021, The Hague, Netherlands.

Document status and date:

Published: 07/07/2021

Document Version:

Accepted manuscript including changes made at the peer-review stage

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

Link to publication

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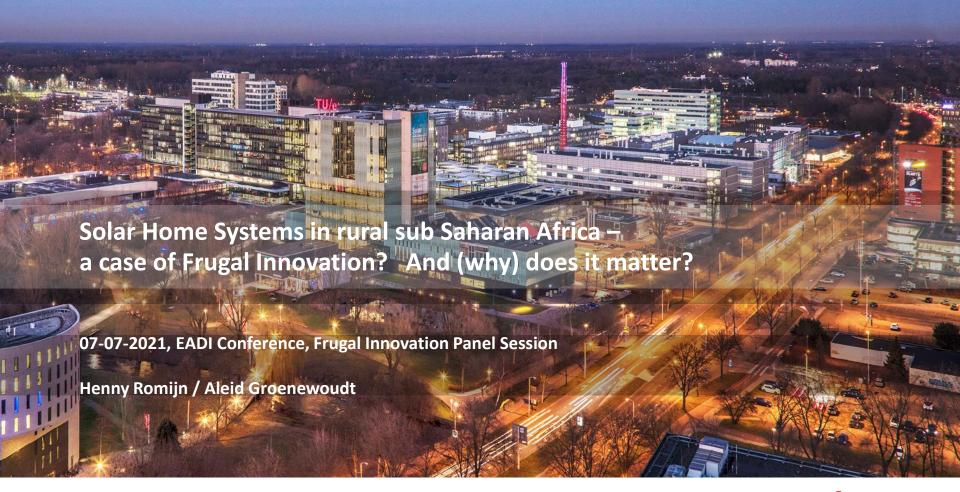
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Frugal innovation: "Doing more, for more, with less" (Bhatti, 2012; Rajou and Prabhu, 2014). But two contrasting perspectives (e.g., Bhaduri and Talat, 2020; Knorringa et al., 2016):

Top down

- TNCs / corporates in the lead
- Local actors as receivers of innovations and in supply-chain roles
- Profit & combating poverty is a win-win
- Professional organization
- Negotiates price-quality trade off for the BoP context
- Impact through venture upscaling

Bottom up

- Domestic SME, communities, etc
- Local initiators, local users
- Livelihood focus
- "Good enough" quality, low price
- Improvisation, jugaad, informality
- Innovation reflects the experienced BoP context
- Dispersed impacts



The rise of small-scale solar in Africa: what does the evidence tell us?

- 117 own face-to-face interviews among SHS actors in Uganda. Focused on market development patterns in sustainability transitions
- Extensive literature review on solar in sub Saharan Africa; scientific and grey policy documents (GOGLA, Lighting Global, etc)

-> Neither source employed an explicit frugal innovation lens



Two distinct market models (based on Groenewoudt et al., 2020)

International private sector-based

Features

- Global-North affiliated firms
- Branded, standardized, closed systems, use of PAYGO
- International quality standards
- Top-down implementation, upscaling required to drive down costs

Local entrepreneurship-driven

- Small local vendors
- Non-affiliated, informal
- Systems assembled from generic parts
- Unregulated quality, but often perceived as "good enough"
- Decentralized distribution







Benefits

- Installation, maintenance, and repair services
- Good jobs for sales force & installers
- 2-year warranties
- Organized waste management (by some firms)

Downsides

- Lower repairability (closed systems, centralised service, non-generic parts)
- Premature waste generation
- Rather pricey, not reaching the poorest, migration to Top of BoP in frantic pursuit of Break Even Point
- Certification still no guarantee to good performance

- Supports basic local livelihoods
- Easy basic repair, but lacking in advanced capabilities
- Low cost
- Fast adoption, esp. across rural and poorer households
- Low quality, 'no quality' and fake solar parts segment
- Unreliable businesses and problems with honoring warranties
- Frequent breakdowns
- Waste and environmental contamination (acid lead)



So, a case of frugal innovation?

Both segments have beneficial frugal features, but neither is ideal. *Scope for complementarity*.

(How) does this matter?

Support directed at the top-down model. Local actors neglected, even suppressed. It breeds continued external technological dependence, and misses opportunities for local livelihood stimulation.

Donors & venture capitalists prefer scalable ventures with quality products and verifiable sales targets, they cannot handle support to many small dispersed players.





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