



SMITH SCHOOL OF ENTERPRISE
AND THE ENVIRONMENT



Unintended impacts of low-carbon projects in Africa

Research findings

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WHO WE ARE



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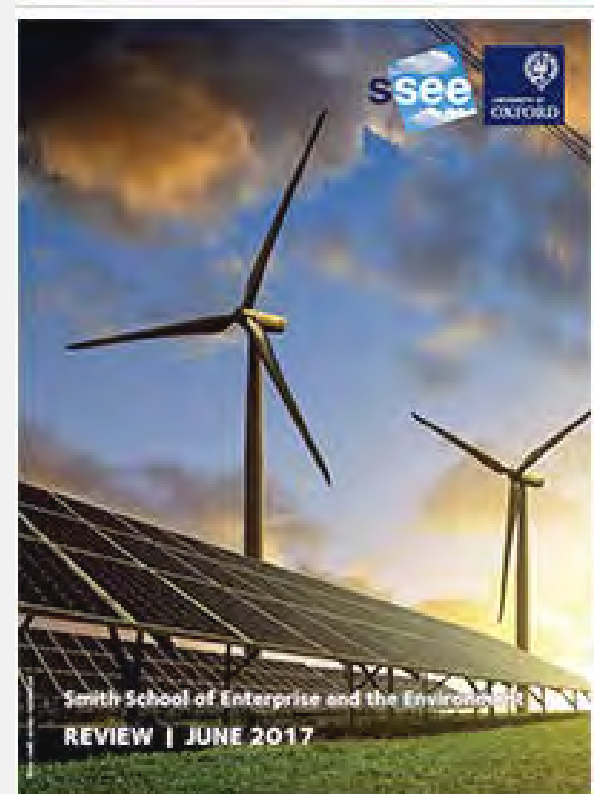


Established in **2008** through the generosity by **Sir Martin Smith** and his family, attached to the School of Geography at the University of Oxford

We believe that to **address climate change and environmental sustainability**, it is essential to bring business into the conversation

We seek to apply **impactful research** to develop **innovative solutions** for the challenges facing humanity and the modern firm

<http://www.smithschool.ox.ac.uk>



I: On-Grid

,Making light Work'

Holistic evaluation of success factors for the implementation of Scaling Solar in Zambia



II: Off-Grid

,Unintended Impacts of Low Carbon Projects'

Empirical analysis of low carbon initiatives with a focus on off-grid projects & their unintended impacts



UNINTENDED IMPACTS PROJECT

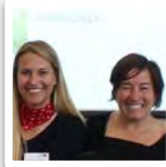


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Financing

- Funded through the UK's Global Challenges Research Fund
- Grant awarded by the British Academy



Team

- Prof Vanesa Castan Broto (PI) – University of Sheffield
- Dr Susann Stritzke – University of Oxford
- Susana Neves Alves - UCL



Project Partners

- International Project developers & RE equipment suppliers from the UK, Switzerland, Germany & Spain

,Unintended Impacts of Low Carbon Projects'



Evaluation of off-grid solar PV projects in rural areas of Chad, Mauretania, Benin & Tanzania based on interviews with project developers

Unintended Impacts = Direct or indirect effects that were not initially included in the objectives of the project & must be distinguished from the primary goal of a project & it's expected co-benefits

13 projects reviewed - size of the projects 8 – 50 kWp

Varying operational models: universal access (subsidized connection fee) vs. selected connections for consumers with expected consumption volume

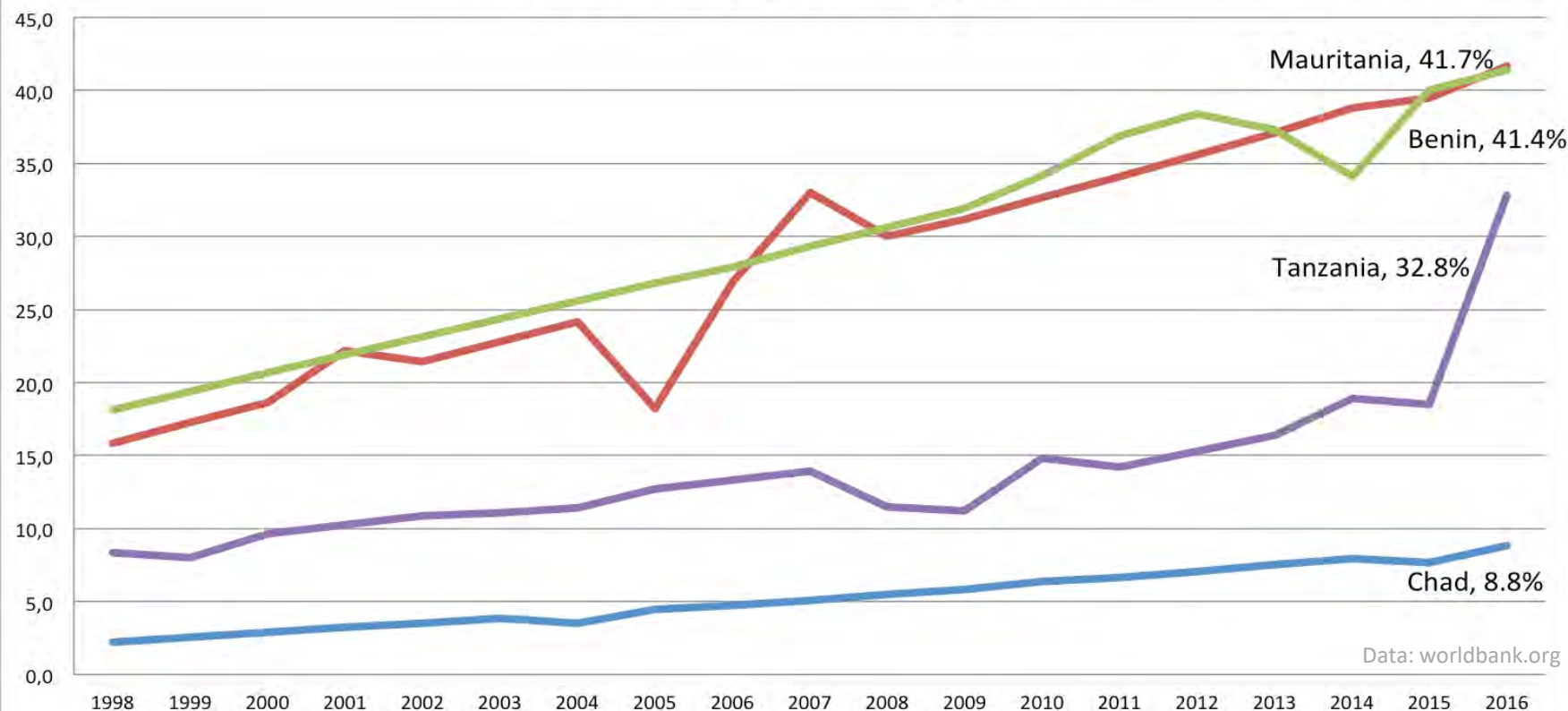
ELECTRIFICATION RATES



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Access to electricity % of the population



Access to electricity in rural areas (% of rural population) 1998 & 2016:

Chad: 0.29% → 2.2% // Mauritania: 2.5% (2001) → 2.3% (2014)

Tanzania: 2% → 16.9% // Benin: 3.2% → 17.9%

5 CENTRAL FINDINGS



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Quality of equipment

- RE solutions = significant investment for rural households
- Danger of 'poverty trap' if quality is low
- Clear warranty/refund schemes required

Town planning

- Electrification of villages/local communities > increase in the population & of housing demands
- Inconsistencies/absence of comprehensive land registries > conflicts potential

Waste management

- An increased access to electricity supply also creates an increased level of wasted (from electric appliances/consumer goods)
- Introduction of waste management system in cooperation with the developer/community

Monitoring & evaluation

- Wide range of people connected per kW installed & installation cost
- Independent monitoring & evaluation system necessary

Capacity building

- Shortage of skilled workforce & technicians
- Capacity building/training programs should be developed in cooperation with developers & educational institutions (training institutes/universities)

STRATEGIC IMPLICATIONS



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Long term strategy that
comprises on-grid & off-
grid electrification

,'Customize' programmes
– national vs. Institutional
interest

Local involvement in
designing RE programmes

Local content & capacity
building measures

Local market
development – long-term
independency

Community benefits

Further information:

- <http://www.smithschool.ox.ac.uk/research/innovative-infrastructure-investment/outputs.html>
- Susann Stritzke, (2018) "'Clean energy for all': the implementation of Scaling Solar in Zambia", World Journal of Science, Technology and Sustainable Development



Thank You!

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