Beyond pure access to energy – Analysing the impact on “productive use” of small-scale energy projects

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WISIONS started in 2004, with the mission to empower individuals and communities in the Global South to transform the production and use of energy so that it effectively enables sustainable development.
A large number of energy projects in developing and emerging economies, only limited evidence exists about the actual contribution to sustainable development.

System evaluation instead of individual projects evaluation ➔ development effectiveness across technologies, energy needs and regions.

Quantitative experimental or quasi-experimental approaches prevailing for impact evaluations in the development sector ➔ “What works”, NOT “HOW”

Systematic evaluations of the outcomes, impacts and mid-term sustainability of small-scale energy projects supported by the WISION initiatives.
**Evaluation Approach**

**Theory-based evaluation:** Contribution Analysis (Mayne 2001)

1. Set out the **cause-effect issue** to be addressed
2. Develop a **theory of change**
3. Gather **evidence on the theory of change**
4. Assemble and assess the **contribution story**
5. **Recommendations** to improve project design

- **Semi-structured in-depth interviews:** Very good overall response rate resulting in an **evaluation sample of 30 projects:** Cross-sectional in terms of renewable technologies, human needs and geographical regions

- **Secondary data:** project documentation, in-depth analysis of relevant scientific and grey literature
Contribution Analysis

**Evaluation Approach**

1. **Contribution challenge:** access to sustainable energy services can improve livelihoods and support sustainable development.

2. Develop **a theory of change**

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<table>
<thead>
<tr>
<th>Impact pathways</th>
<th>Small-scale energy development projects (≤100kW)</th>
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<tbody>
<tr>
<td>Increase of economic activities and employment</td>
<td></td>
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<tr>
<td>Empowerment of disadvantaged groups</td>
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<tr>
<td>Improvement of health situation</td>
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<td>Development of human capacity</td>
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<td>Increased awareness of renewable energy solutions</td>
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<tr>
<th>Impact chain of development intervention</th>
<th>Planning Input</th>
<th>Activities</th>
<th>Output</th>
<th>Outcomes</th>
<th>Impacts</th>
<th>Sustainability</th>
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Productive use of energy ➔ Increase economic activities and employment

Positive Livelihood impacts

Reducing time & labour ➔ Improving existing productive activities ➔ New productive activities

- Increasing economic activities and employment
- Positive Livelihood impacts
  - Increased Income
  - Higher Sales
  - Higher Prices
  - Higher Revenue/Profitability
  - New employment
  - Local production
  - Increased availability
  - Reduction of "imports"
  - Strengthening of local economy

Small-scale energy project

- 27%
- 38%
- 50%

1/3
Productive use of energy ➔ Increase economic activities and employment

**Small-scale energy project**

- Implementing appropriate technical solution
  - Access to energy in sufficient quantity and quality
  - Reliable & affordable source of energy for productive use

- Facilitating access to capital/financial services
  - Financing options for productive use activities

- Capacity-building
  - Technical skills
  - Management skills
  - Business skills

- Information & Awareness-raising
  - Awareness of productive use/business/market/financing opportunities

**Behaviour change**
- Reduction of time and labour/effort

**Outcomes**
- Improvement to/increase in existing productive activities 27%
- New productive activities 50%
- New employment 38%

**Impacts**
- Higher productivity
- Improved quality of products and services
- Local production
- Increased availability
- Reduction of "imports"

**Positive Livelihood impacts**
- Increased income 1/3
- Higher sales
- Higher prices
- Higher revenue/profitability
- Strengthening of local economy
Impact Evaluation - results

Contribution to economic development – What is important?

- **Access to energy does not automatically trigger productive use activities** these need to be integrated in the project
- Beneficiaries need training and **knowledge about business opportunities and skills** – not a one-time training, but continuous capacity building
- **Market value chain analysis** at the beginning of the project necessary & assessment of existing productive use activities & interest of potential beneficiaries
- Physical and social **access to markets**
- Analysis of the **whole value chain** – avoid increase of inequalities & assess type of work created
- **Entrepreneurial spirit** – Fostering entrepreneurial mind-set
- **Financing options** do not only have to be available but *need to be accessible* for small-scale entrepreneurs
Lessons Learned

Methodology insights:
• A theory-based evaluation approach in the form of a contribution analysis ➔ What+ Why and How.

Limitations:
• Only focus on three selected impact pathways and these impact pathways needed to be simplified
• Impossible to gather empirical information on all aspects and links established in the theories of change

Key message: Technological solutions that enable the access to energy along does not necessarily lead to sustainable development.
Thank you very much for your attention!

For further information please visit our websites:

www.wisions.net
www.wupperinst.org
Learning from experiences
Cameroon Sustainable Sun Bakeries Program

Objective
To introduce the environmentally friendly concept of solar baking and provide opportunities for women to gain their own income

Technology applied/ Approach
Implementation of a pilot bakery to bake bread locally and reduce the price for the consumers

Lessons learned
➢ Long time to get a tax exemption (more than 1 year)
➢ Setting up a revolving fund to reinvest into new bakeries was not possible as revenues are too small compared to high initial costs for solar bakeries
➢ Education institutions should be involved for training

SEPS
Project