Upscaling Waste-based Biogas and Charcoal Briquettes Energy Sources in Uganda

Scaling up and replicating successful SAG interventions

Promoting Sustainable Consumption and Production Practices and Eco-entrepreneurship

By: Mr. Kimani Muturi
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Presentation outline

- About AFRIBANANA Products Ltd
- SAG project interventions
- SAG intervention results
- Scaling up and replicating successful SAG interventions
- What next after Switch Africa Green?
Afribanana Products Ltd (ABP) is an agribusiness banana value chain incubator based in Uganda. ABP supports incubatees (MSMEs and start-ups) and stakeholder farmers to commercialize and upscale innovations along the banana value chain.

The project:
Up-scaling Generation, Commercialization and Utilization of Biomass Waste-based Green Energy Technologies in Uganda

SAG Project partner
The Centre for Research in Energy and Energy Conservation (CREEC) is a non-profit organization for applied research, training and consultancy in renewable energy and energy conservation.
Post harvest waste
Post harvest waste
ABP business Model

THE AFRIBANANA BUSINESS MODEL

Objective 1
Link and provide employment to young graduates

UNIVERSITIES
- Research
- Product Development
- Curriculum Review
- Industrial Training
- Internship
- Business Development

Graduates

SMEs

Farmer groups

Objective 2
Develop and support gender sensitive entrepreneurs

PRIVATE SECTOR

Business Incubation programs
- SEEDLINGS
  - Tissue culture Bananas
- FOOD
  - Fresh Vacuum sealed bananas
  - Banana Flour
- DRINKS
  - Banana juice
  - Banana wine
- BI-PRODUCTS
  - Charcoal
  - Banana flowers

Objective 3
Commercialise innovation
in banana value chain

RESEARCH INSTITUTIONS
- Research Development
- Access to Facilities
- Product Development
- Linkages and partnerships
- Access to Finance

Objective 4
Mobilize SME’s to participate in
Banana value chain development and trade

FINANCIAL INSTITUTIONS

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Innovations development for commercialisation

1. Banana fiber Sanitary pads
2. Banana fiber fabrics
3. Banana fiber biodegradable shoes
4. Banana fiber leather products
5. Banana fiber car interior parts
6. Banana fiber biodegradable mosquito nets
7. Banana fiber particle boards
8. Banana jam
9. Banana flakes
10. Banana fiber based hair extensions
11. Banana flavored yoghurt
12. Banana fragmented seedlings
13. Banana flour
14. Banana fiber coffin
Commercialized Banana based innovations

- Tissue culture seedlings
- Fresh Vacuum sealed bananas
- Banana juice
- Banana Wine
- Biodegradable paper products
- Textile and crafts
- Charcoal briquettes
Banana value addition through Agribusiness incubation

- Banana TC seedlings: $1 per seedling
- Banana fruit: $5
- Vinegar: $5
- Banana Juice: $16
- Banana wine: $150
- Fresh vacuum sealed bananas: $23
- Biodegradable bags: $30
- Banana fiber based products: $17
- Animal feeds: $1.5
- Charcoal briquettes: $1

Products from banana waste
Banana fiber value chain

Banana stems

Fiber extraction

Dyed fibers

spinning

Banana fiber products
Innovative products
Innovative products cont:
SAG project interventions

Intervention strategies;

- Awareness creation with regard to biomass based green energy technologies Capacity building on Green energy
- Capacity building on green energy generation, commercialization and utilization,
- Green energy business development and up-scaling
- Propose policy guidelines favourable to up-scaling and sustainability of the project activities
## SCP practices adopted

<table>
<thead>
<tr>
<th>Clean energy area of focus</th>
<th>SCP practice</th>
<th>Intervention strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Generation</strong></td>
<td>Resource efficiency</td>
<td>- Awareness creation</td>
</tr>
<tr>
<td></td>
<td>Technology change</td>
<td>- Technology improvement</td>
</tr>
<tr>
<td></td>
<td>Innovative product design</td>
<td>- Hands-on Technical training</td>
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<tr>
<td></td>
<td>Technology innovation</td>
<td>- Technology transfer</td>
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<td></td>
<td>Cleaner production</td>
<td>- Technical support</td>
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<tr>
<td></td>
<td>Water efficiency</td>
<td>- Capacity building</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Partnerships and benchmarking</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Technical support</td>
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<tr>
<td><strong>Commercialization</strong></td>
<td>Benchmarking</td>
<td>- SCP tools adoption</td>
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<tr>
<td></td>
<td></td>
<td>- Tool kit creation</td>
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<tr>
<td></td>
<td></td>
<td>- business incubation</td>
</tr>
<tr>
<td><strong>Utilization</strong></td>
<td>Energy efficiency,</td>
<td>- Capacity building</td>
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<tr>
<td></td>
<td></td>
<td>- Technology transfer</td>
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</table>
## SAG intervention results

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Result</th>
</tr>
</thead>
</table>
| 1. Awareness creation with regard to biomass based green energy technologies | • 33 MSMES organizations recruited, sensitized and supported  
• Over 3,400,200 people sensitized through “Fumbalive” clean energy campaigns, live talk shows, radio adverts and public lectures.  
• 800 international participants sensitized through WAITRO conference  
• 1 Global Award (WAITRO) won on waste value addition  
• 1 national platform of clean energy established  
• 15 Visibility signs developed |
| 2. Capacity building on green energy generation, commercialization and utilization | • 33 MSMEs and community imparted with business skills  
• 1 training curriculum developed  
• 1 training manual developed  
• 1 University skilled and now drafting short courses in clean energy  
• 1 special needs vocational institution skilled and using clean energy  
• 1 Rehabilitation center skilled adopted and using clean energy as a business opportunity for resettling victims of substance abuse  
• 9 famers skilled and now using biogas  
• 18 MSMEs admitted for business incubation support |
## Results cont.

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Actual results</th>
</tr>
</thead>
</table>
| 3. Clean energy business development and up-scaling | • 33 recruited MSMEs skilled in business development.  
• 1 SAG implementation model Developed  
• 6 Cottage industries using charcoal briquettes  
• 3 metal fabricators producing and supplying machines  
• 9 recruited MSMEs fabricating briquetting machines  
• 18 MSMEs reaching over 200 community members  
• 2 recruited MSMEs organisations merged for upscaling  
• 2 MSMEs constructed solar driers  
• 1 Upscaling MSMEs built a bigger production facility  
• 1 farmer adding value to sisal waste  
• Merged MSMEs signed supply contracts with UNCHR |
| 4. Development of policy guidelines favourable to green energy technologies | • 1 policy guideline for biomass clean energy developed                                                                                     |
## Integration with other SWITCH actions

<table>
<thead>
<tr>
<th>Grantee</th>
<th>Type of collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCPC</td>
<td>ABP partnered with Uganda Clearer Production Centre (UCPC) in supporting stakeholders in greening production spaces.</td>
</tr>
<tr>
<td>EMPRETEC</td>
<td>ABP supported its MSMEs to benefit from multi grantee EMPRETEC in business training development.</td>
</tr>
<tr>
<td>USSIA</td>
<td>ABP linked MSMEs to USSIA for further skills training in business development.</td>
</tr>
<tr>
<td>TER MER Rodrigues (Mauritius)</td>
<td>ABP through its incubation support partner TEXFAD is supporting TER MER in fabrication of light machinery for; banana fiber extraction, briquette making, glass bottle crusher and paper making as well conducting and hands on skills training in transforming waste materials into usable products.</td>
</tr>
<tr>
<td>SEED</td>
<td>ABP SAG supported MSME (Masupa) receiving SEED support after emerging the winner of SEED awards 2017</td>
</tr>
</tbody>
</table>
## Integration with other stakeholders

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Contribution to the project</th>
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</thead>
<tbody>
<tr>
<td>CREEC</td>
<td>ABP SAG implementing partner</td>
</tr>
<tr>
<td>Green heat Ltd</td>
<td>Clean energy development company in partnership with CREEC</td>
</tr>
<tr>
<td>T&amp;M Engineering and contractors</td>
<td>Metal fabrication company that deals in fabrication of various machines</td>
</tr>
<tr>
<td>Excel hort Ltd</td>
<td>Agribusiness development and consultancy.</td>
</tr>
<tr>
<td>GoBig hub Ltd</td>
<td>Business development initiative that links small scale enterprises to access small finances.</td>
</tr>
<tr>
<td>Kyambogo contractors Ltd</td>
<td>A metal fabrication company that deals in fabrication of various machines</td>
</tr>
<tr>
<td>Ankole Western University (AWU)</td>
<td>Developing a curriculum for clean energy. The university also works with MSMEs in charcoal briquette capacity building.</td>
</tr>
<tr>
<td>Kyambogo University</td>
<td>Afribanana Products lead institution in product design and SAG curriculum development</td>
</tr>
<tr>
<td>UIRI</td>
<td>UIRI is a leading business incubator in Uganda</td>
</tr>
<tr>
<td>Makerere University</td>
<td>Makerere University hosts CREEC under a long-standing partnership agreement.</td>
</tr>
<tr>
<td>Ministry of Energy and Mineral Development</td>
<td>Supported two SAG MSMEs through “FUMBALIVE” clean energy campaigns</td>
</tr>
<tr>
<td>Local Government</td>
<td>Local Mobilization and awareness creation in local communities</td>
</tr>
<tr>
<td>African Development Bank and AAIN</td>
<td>Sponsored ABP MSME to the African Youth Networking and experience sharing in Nigeria (MAAMA HEAT)</td>
</tr>
<tr>
<td>WITRO</td>
<td>ABP won a competitive Global Waste Management Award organized by WITRO in the category of clean energy.</td>
</tr>
</tbody>
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## Scaling up and replicating successful SAG interventions

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Upscaling strategy</th>
</tr>
</thead>
</table>
| 1. Awareness creation with regard to biomass based green energy technologies | - Sensitize more farmers on use of biogas  
- Sensitize more institutions of learning  
- Conduct household clean energy campaigns  
- Initiate a clean energy annual event |
| 2. Capacity building on green energy generation, commercialization and utilization | - Use of motorized equipment  
- More focus on solar driers  
- Support short courses in universities and vocational institutions  
- Create a revolving fund for Association  
- Commercialize innovations from Universities and research organisations |
| 3. Clean energy business development                                          | - Employ a full business incubation model in business development  
- Partner with municipalities for value addition of garbage. |
What next after Switch Africa Green?

- Hope for full switch opportunity by EU
- Offer MSMEs opportunity for a full business incubation support
- Seek more partnerships with development partners
- Strengthen Association of Clean energy producers
- Utilize established local partnerships
- Establish a SAG country chapter. (Switch Uganda Green)
Proposed model for SAG scaling up and replication

- Start ups:
  - Innovative product design
  - Mentoring and Couching
  - Business planning

- MSMEs:
  - Technology innovation
  - Technology Change
  - Resource efficiency

- Established firms:
  - Cleaner production
  - Energy efficiency
  - Water efficiency

- Diversifying firms:
  - Technology transfer
  - Energy efficiency
  - Cleaner production

- Expanding firms:
  - Partnerships networking
  - Benchmarking

- Firms conducting research:
  - SCP tool kits
  - SCP policies

- Development partners

- Implementing partners
Supporting MSMEs and startups through Business incubation model

- Technology transfer services
- Business mentorship support
- Access to shared facilities and equipment
- Product certification support
- Access to markets
- Networking and partnerships

Grantee

MSMEs and start-ups

Partners

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• Thank you