SWITCH Africa Green

Sustainable Energy Consumption & Production in Agriculture and Integrated Waste Management

Promoting Sustainable Consumption and Production & Supporting the transition to the Inclusive Green Economy

18 January 2018
Klein Kaap Hotel, Pretoria
Project Close Out Event
SWITCH Africa Green Programme Objectives

• Supports the development of green agro-businesses and eco-entrepreneurship to equip MSMEs across the key priority sectors to seize green business opportunities.

• Provide an opportunity for Resource Efficient and Cleaner Production implementation and alignment with the 10-year framework of programmes on Sustainable Consumption and Production (SCP) patterns

• Sectors:
  • Agriculture
  • Integrated Waste Management
  • Manufacturing
Project Overview

• **Sustainable Energy Consumption and Production**
  • Increase awareness & up-take & successful implementation of SCP practices of energy in **agriculture and agri waste**
  • Sustainable energy opportunities for MSMEs to contribute to green economic development

**Aims:**
• Establish a national Stakeholder Platform
• Create Sectoral Inventory
• Capacity Building and Training: SCP and value chain optimization (energy)
• Policy Recommendations Lessons Learned: disseminated information to stakeholders and networks on a National & international level
Sustainability and agriculture go hand-in-hand

“More than any other sector, agriculture is the common thread which holds the 17 SDGs together”
Energy in Agriculture

Agriculture is heavily reliant on energy as a production factor, which makes it highly susceptible to energy prices and energy availability.

- Clean energy in Agriculture as a sector is still untapped
- Significant benefits to adapting EE and RE
- Need to understand the nature of the sector:
  - Data is limited and aggregated to the entire sector incl. fisheries and forestry
  - No data for agricultural subsectors or value chains
  - Formal vs informal businesses
  - Urban vs peri-urban vs rural
  - Energy is an input and therefore adaptable

- Higher and unstable energy prices can hinder the profitability of agriculture
- Need for the sector to find ways to become more energy independent
The importance of Energy In Agriculture

• Small contribution GDP relative to the other industries (3%-5%)
• Significant role in providing employment, especially in rural areas, as well as foreign exchange earnings
• Retention of agricultural activities in the country integral towards achieving SA socio-economic priorities of alleviating poverty, reducing unemployment, and ensuring food security
• Although agriculture accounts for just about 2-3% of energy consumption, its reliance on energy inputs is significant economically
• Electricity accounts for about a third of energy usage in agriculture
• Security of supply and price – “cheap and accessible”
Benefits of implementing clean energy schemes in Agriculture

• Reduced costs and increased profitability
• Improved crop quality (and yield)
• Increased sales from customers encouraged to purchase ‘green’ produce
• Enhanced business credentials through addressing environmental issues
• Having a more energy efficient technology replacing a conventional lesser energy efficient technology – resilience!
• Incorporating additional energy saving technologies in order to realize some energy savings
• A change in behavioral practices
Benchmarking and Gap Analysis

• Understanding the landscape: **Baseline report** for agricultural and agri waste management in SA
• Benchmarking through desktop research, analysis and inventory development (current policy, financial tools & stakeholder mapping)
• Information used towards creating a user-friendly guide/training
• Gap Analysis
• Food-Water-Energy Nexus

https://www.reeep.org/sites/default/files/4470%20SWITCH%20AFRICA%20SANEDI%20REEEP%20RESEARCH%20REPORT%20FINAL%202016.pdf
Energy Value Chains

- Direct:
  - Transporting intermediate inputs to the farm
  - Tractors and farm machinery
  - Irrigation and fertilization
  - Heating
  - Storage
  - Ventilation
  - Drying
  - Curing and fermenting
  - Transporting produce
  - Processing and packaging machinery
  - Transporting processed products
  - Storage and warehousing
  - Storage
  - Transportation

- Indirect:
  - Fertiliser production
  - Seed production
  - Chemicals production (pesticides)

Input Supply → Farming/Production → Post-harvest handling → Processing and packaging → Retail and Distribution
Capacity Building

- Training events held in Gauteng, Free State and Western Cape
- 2 full day sessions per province (theory and practical)
- Training manuals developed in English, Afrikaans and Zulu
- Training materials designed with awareness of local needs, conditions and language; not a one size fits all
- Manuals are freely available: Agriculture can eradicate poverty and create energy access: training and awareness needs to be much larger than SWITCH and must be an ongoing process
- Workshops and events: SWITCH is popular; especially the training element
Challenges

• No accredited training exists for energy in agriculture training (SCP)
• In some communities there have been ill pre-conceived notions that clean energy solutions are of a substandard quality to grid connected electricity
• Initial beneficiary scope was too wide (commercial, emerging, subsistence)
• Farmers have different knowledge levels- training has to be tailor made according to farming size, type, language & local conditions/ cultures
• Training needs to be ongoing
• Engagement should be undertaken through community leaders
Outcomes & Results

• **Demographic Profile**
  - Commercial, emerging and subsistence farmers
  - Majority of beneficiaries were female
  - Beneficiaries tend to have large and extended families
  - Majority of beneficiaries are self-employed (subsistence and/or emerging farmers)
  - Majority of beneficiaries operate from home
  - Most beneficiaries have access to the grid
  - Beneficiaries not connected to the grid rely on generators, liquid fuels and PV
  - Number of people per household/farm does not correlate to energy usage

| 30% Employed | 60% Self-employed | 10% Unemployed |
Outcomes & Results

• **Energy Usage**
  - The most common energy usage among subsistence farmers is the energy that is consumed at their dwellings: cooking, lighting, refrigeration, television, ironing, and cell phone charging; Water pumping was the second most common energy use application
  - Farmers understand the amount on their utility but do not have knowledge of energy consumed consumption (i.e. kWh consumed or saved)- only tract the money spent on the electricity
  - Water pumping significantly increases the need for electricity and cost
Outcomes & Results

• Impact Analysis
  • Beneficiaries = Early adopters, potential adopters, converted
  • EE is more common to implement than RE
  • Solar most popular and affordable RE tech
  • 38% have implemented EE and/or RE tech and practices after training
  • 44% are considering implementing EE/RE
  • 18% were already exposed to EE/RE technologies prior to training
  • Knowledge and adaptation is shared in the community
  • Training has had a positive impact on behaviour
  • GHG savings calculated on a per annum savings basis: between 1-16 tonnes CO2
  • For the period of SWITCH project:
    • 40 tonnes CO2 equivalent saved
    • 41MWh annual energy savings
    • R57,000 annual cost savings
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• **Impact Analysis**
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Project Beneficiaries & Champions

• 150 project beneficiaries
• Project champions/ambassadors for each region where SCP practices were adopted
  • Abraham Metsing
  • Patrick Sekwatlakwatla
  • Nomasonto Mosia
  • Lengau Mothiane
  • Deidre Eigelaar
• Practices include adoption of behaviour change, EE and RE
Policy


Policy

Opportunities:
• Acknowledgement of RE and EE as key drivers for sustainability
• Policies raise awareness on RE and EE
• 12L and the 12B of the Income Tax Act: financial incentive for farmers
• Toolkits: Practices and principles on investment into EE
• Direct socio-economic spin-off’s of implementing EE
• Incentives, funds and support programs

Challenges
• lack of enforcement
• Goal & interventions are long-term and fall short on short to medium-term solutions such as assistance in implementation or incentivized mechanisms serving as transitioning tools
https://www.facebook.com/SWITCHSECP/
Energy in Agriculture Platform

- Established in 2016; takes place quarterly & nationally
- Housed and hosted by SANEDI in partnership with Green Cape
  - Knowledge sharing and improving networks
  - Technical assistance
  - Input into Policy & Regulation
  - Enabling funding for SMEs (revolving fund)
  - Focus on Technology applications
  - Initiatives and Projects
Lessons Learnt & Recommendations

• Continue the training but engage with the Department of Rural Development and Land Affairs (and others) and respective provincial departments to coordinate

• Create accredited, official training diplomas for energy and water in agriculture (SCP)

• Continue the platform to engage stakeholders

• Drive policy to support farmers especially micro and small

• Solar PV applications and biodigester technologies were considered to be the most insightful by the beneficiaries who have not had exposure to these technologies before. Commercial farmers found information on EE practices to be more useful.

• More practical training and more focused advice on how to access funds were requested
Thank you!

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