

TRANSFORMING SEED TO OIL – THE MUNGWU STORY

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Country: Zambia

Sector: Oil Seed & Jatropha Value Chains

"I still can't believe that my children and I can now sleep soundly at night without the constant buzzing and biting of mosquitoes all over our bodies!" says Chibwe Bwalya. The mother of eight proudly shows off her makeshift lantern filled with jatropha oil.

CHALLENGE

Mosquito repellent is just one of the many uses of Jatropha, a plant that grows wild where Chibwe lives, in Mungwi District, in Zambia's Northern Province. Jatropha produces many black beans that contain 60% oil – oil that is used as fuel for cooking and lighting, mosquito repellent, and even soap. In some countries, Jatropha oil is mixed with ethanol as biofuel to replace diesel.

Jatropha live fencing around Chibwe's homestead



Chibwe first heard about the many uses of Jatropha at a meeting organised by SNV and the Zambian Ministry of Science and Technology in early 2006 in Kasama. She was sceptical at first: she did not believe the meeting facilitators when they said that this plant that grew wild in the area actually had so many uses. However, she accepted and signed an outgrower contract to cultivate the crop on behalf of Bio-fuel companies that were present.

Jatropha seed being sun dried



Two years later, the Jatropha bushes started bearing pods. Chibwe harvested them, dried them in the sun, and then took them to the newly registered enterprise, Chipalila Industries and sold them at K 5,000 per 5kgs. About 5 kg of the seed produces a litre of orange-brown oil. At Chipalila the oil is mixed with some methanol and packaged into 500ml and sold at Kwacha 4,000 per litre. This oil is used in the lanterns to provide lighting in the home. Other households will use the oil for cooking in their stoves.

The Government of the Republic of Zambia has articulated its vision for the energy sector: to ensure availability and accessibility to adequate and reliable supply of energy from various sources at the lowest total economic, social and environmental cost consistent with national development goals of sustained growth, employment generation and poverty reduction.

The Zambia Electricity Supply Cooperation, an electricity generating monopoly, currently only has the capacity to power 1.5% of the rural households and is still

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undertaking negotiations with the International Monetary Fund to finance future expansion programmes.

In 2006, SNV Zambia linked small farmers across 5 Districts in Northern Province to Bio-fuel companies including BP Fuels-D1Oils and Marli Investments hitherto known as "seed suppliers". Misanfu Research Station, an affiliate to ZARI (Zambia Agricultural Research Institute), based in Kasama, trained the farmers in nursery establishment, Jatropha growing, disease and pest control. In 2008, SNV facilitated the establishment of a rural based enterprise called Chipalila Industries that processes Jatropha seed purchased from the farmers. Through its structured rural enterprise development approach, SNV, together with local capacity builder JL Mutale Enterprises trained this company in processing lantern oil and soap from the seed. The farmers sell the seed to the company that in turn processes and sells the finished products back to the communities at a profit.

Chipalila Industries; processing of seed into oil



Community sensitisation has resulted in increased cultivation of the Jatropha trees from 1,000,000 planted in 2006 to 2,000,000 trees in 2008. The adoption of good farming practices by the communities has resulted in increased productivity from the Jatropha trees. Trees currently yield an average of 4 kilograms per tree. An estimated 1,200 households are benefiting through the seed sales.

Processing of bio-oils and soap by Chipalila Industries has improved the livelihoods and incomes of community members.

Chipalila Soap and Lantern Oil ready for packaging



Chibwe is now able to access clean fuel for use in her cooking and lighting, and her children can enjoy higher levels of hygiene with the available soap. In addition, 200 other households are now able to access affordable bio-oil and soaps for their everyday use, without walking long distances, while enjoying the benefits of a safe, smoke free, cooking environment.

In line with the national biofuels programme spearheaded by the Biofuels Association of Zambia, SNV's Country Strategy is targeting 30,000 households to access clean renewable energy mainly for domestic purposes cooking, heating and lighting by 2010. In addition, the programme aims to establish three community owned energy enterprises across three provinces to provide electricity needs for use by 3,000 households. From the sale of Jatropha seeds, each farmer will raise \$150 per annum. It is envisaged that members of the community owned energy enterprises would each realise \$800 per annum by 2010. The programme targets 30% women participation.

As Jatropha is grown and produced throughout the country, this approach is applicable in the many rural communities that have no access to conventional energy sources, as it is clear that these areas are unlikely to receive commercial electricity services in the near future.

OUTCOME

SNV Zambia's Jatropha value chain is still in its infancy but, already, results are being achieved. In the future, more Zambians will be empowered through improved access to rural energy and business opportunities based on Jatropha production. More local entrepreneurs will emerge to serve the rural economy. Business linkages will undoubtedly improve as the Jatropha value chain matures and SNV Zambia will have many more success stories to share. So far, a number of lessons have been learned:

- Producer group strengthening has encouraged communities to organise themselves along enterprise lines, for example into Jatropha producer cooperatives, in order to produce and into private companies to process Jatropha. This stimulates enterprise development and empowers communities to access clean, affordable, renewable alternative sources of energy for domestic (cooking, lighting and heating) and productive purposes.
- SNV, in partnership with relevant organisations, should continue to link farmers to agricultural extension service providers, in order to ensure the quality and volumes of Jatropha cultivated. Training on good practices (in production, pre and post harvest handling) processing techniques, as well as general farm management is well received and already producing results.
- Working with Local Capacity Builders increases the outreach of the programme and the sustainability of the interventions at the community level.
- SNV, together with Jatropha based producer or processing associations, should boost collection, analysis and dissemination of information on the Jatropha market. Sharing market trends and opportunities will enable the associations to drive and lead the development of the local Jatropha bio-fuels and other bi-products markets.
- Work with multi-stakeholders at various levels from producers through to small-scale processors and the bio-fuels industry triggers stimuli for local economic development, encourages local entrepreneurship and promotes local solutions to local problems.

LESSONS LEARNED

As can be seen, the opportunities available in the non-edible and first generation technology bio-fuels market are still enormous. If communities take the initiative and organise accordingly, incomes of more than 4,000 households in Zambia's Northern Province could double within a two to three year period. The community benefit from Jatropha will not only result in higher incomes, but also increased access to reliable and sustainable cleaner and renewable energy sources. The availability cheap of energy is often a driver of change in its own right.