

## HELP SELF-HELP CENTRE<sup>1</sup>

**Region:** Asia

**Country:** Kenya

**Crop/Feedstock:** Croton seed waste

**Practices:** Provision of improved agricultural inputs and/or equipment; Fair and transparent pricing; Profit sharing; Improved cookstoves; Provision of energy for local and/or domestic use; Training and education programmes; Gender-sensitive corporate conduct;

**Issues:** Local Food Security; Income Generation and Inclusion of Smallholders; Employment, wages, and labour conditions; Energy Security and Local Access to Energy; Community Development; Gender Equity;

### *The implementation of the project is driven by four principles (good practices):*

- market-led conservation (minimum interference on the habitat, forest enrichment and domestication);
- equitable benefit sharing (a business model already exists);
- maximization of returns downstream (by ensuring efficiency, reducing waste and maximizing yield); and
- gender balance (women have an equivalent share in the industry).

The project contributes directly to the Millennium Development Goals of eradicating poverty, promoting gender equality, ensuring environmental sustainability and developing a global partnership for development.

**Issue:** Local Food Security

**Practice:** Provision of improved agricultural inputs and/or equipment (PR)

The project has been able to utilize croton seed waste as organic fertilizers used by smallholder farmers to increase crop yield. In view of its effectiveness and affordability, farmers are beginning to adopt organic farming in their practice. This has enabled farmers not only to increase their yield but also sell the

surplus in the local market. Consequently, farmers have been able to generate additional income and savings. On the other hand seedcake extracted from croton and cape chestnut is sold at subsidized rates to farmers who in turn use it as livestock feed. This has resulted in a sharp rise in dairy and meat production, enabling families to produce surplus milk and meat, in addition to meeting their subsistence needs. In this way the project has been able to contribute towards enhancing food security at both the household and community level.

**Issue:** Income Generation and Inclusion of Smallholders

**Practice:** Fair and transparent pricing (FP); Profit sharing (PS);

The project has not only enabled farmers to form seed collection groups but also to set up seed collection centres, managed and controlled by women, in different locations. The project pays seed collectors for every delivery made on the basis of weight. This is an arrangement made through negotiation and has worked out very well for both parties. The project has a delivery van that goes around to the various collection centres to collect seeds, therefore easing the burden of transportation on the part of farmers. On average, workers are paid, for each kilogram collected, a minimum of KSH 7 for croton and KSH 10 for castor. However, this is then adjusted with the global petroleum diesel price and a premium

<sup>1</sup> The information included in this document is based on information provided directly by the producer, which was not verified by the Food and Agriculture Organization of the United Nations (FAO)

is added based on the current price, e.g. the prices currently being paid are KSH 10 for croton and KSH 15 for castor as the prices of diesel almost doubled. On average an individual is able to collect 40 kg of seeds a day. This translates into daily incomes of KSH 400 (US\$4.5). In comparison, daily wages for casual jobs are KSH 150 (US\$1.5) and this is not always assured. Local jobs were previously scarce and hard to obtain. Seed collection on the other hand ensures a steady household income for four months annually. On average, 2 364 people are employed during the four months of seed collection. Of the total number involved, 60% are women, 25% are youth, and 15% are men.

A business model targeting seed collected from the forest ensures equitable benefit sharing and is shown below:

The project has been able to generate employment and income opportunities for hundreds of individual farmers based on this business model. Labour has been distributed into various functions ranging from seed collection (2 364), staffing of seed collection centres (42) and those employed in the factory to grade and pack seeds, extract the oil, process and sell biodiesel (65).

**Issue:** Energy Security and Local Access to Energy

**Practices:** Provision of energy for local and/or domestic use (PE); Improved cookstoves (IC);

This project has enabled communities adjacent to the forest to shift their dependence away from conventional diesel, by promoting the use of locally produced and environmentally friendly biodiesel for vehicles and generators. The project is gradually replacing paraffin with bio-kerosene for lighting and cooking using newly designed stoves at the household level. There are plans to convert the croton husks, a product of biodiesel processing, into charcoal briquettes for heating purposes at the household level using improved cookstoves. This will affect

thousands of households who are currently struggling with exorbitant costs of energy.

**Issue:** Community development

**Practice:** Training and education programmes (TE)

The project has set up a factory and collection centres in the region to foster employment creation, and has established an information centre where farmers are able to access useful information to support their work. The project has spearheaded the promotion of nature based enterprises (NBEs) and consequent value chain development where the youth and women are able to voice their aspirations. Both youth and farmer organizations have emerged to maximize benefits from the alternative income streams and are accessing business development services at affordable rates. The project utilizes local tree seeds that did not have any previous economic value and have largely been a wasted resource for a long time.

The community is also benefiting from activities such as:

- commercial greenhouses and nursery for the purpose of propagating biodiesel trees;
- sericulture development;
- trout farming; and
- chicken farming made possible by the presence of cheap feed.

**Issue:** Gender equity

**Practice:** Gender-sensitive corporate conduct (GC)

The project has mainly created employment for women and youth. Close to 60% of the individuals involved (in seed collection, commercial nurseries, seed collection centre, factory) are women. Although men are gradually making inroads to this lucrative sector, the biodiesel industry is currently being dominated by women and youth (85%). This is shifting the local income balance, dominated previously by men, and there is strong evidence that women are

starting to build assets and make savings independent of traditional male control. This is having an impact on power relationships at both community and household level.

### *Main challenges encountered in the project overall*

While the technical, social, and economic feasibility of biodiesel and kerosene has already been demonstrated, there are several obstacles that hinder their increased production and utilization:

1. Limited data to predict seed output and seasonality which hampers the production plan;
2. Underutilization of factory due to low production level. The factory has the capacity to produce 800 litres of biodiesel but only manages 400 litres due to an insufficient logistic system;
3. Limitation in expanding seed production on-farm to ensure a stable supply and continuous access to resources;
4. Inadequate capacity to determine quality assurance of the biofuels;
5. Limited storage capacity for seeds at the factory to ensure consistent production throughout the year;
6. Lack of markets for the by-products of the biofuel production process;
7. Currently HSHC can only demonstrate the feasibility of kerosene stove and lamp, but does not have the capacity to fabricate them cheaply for use by the local community;
8. Fluctuations in the prices of conventional diesel; and
9. Lack of a policy that comprehensively addresses biodiesel.

### *Potential replicability in other projects*

The current biodiesel output is 400 litres per day while the capacity of the biodiesel processor is 800 litres per day. HSHC needs to upscale the current output to a larger volume to optimize profitability, enhance competitiveness and make full usage of the current natural resources in the region. A feasibility study conducted in the Mount Kenya region indicated enough feedstock to build a facility with production capacity of 5 000 litres of biodiesel per day.

The most important factor that will determine the replicability of this project is the availability of raw materials. Fortunately the raw materials currently being used by HSHC are found in many mountainous regions of Kenya. This includes Aberdares, Ngare Ndare, Ngong Hills and Karura Forests. The resources are also found on-farm in a wide geographical area especially on the eastern part of Mount Kenya which comprises Embu, Kirinyaga and Meru district. Croton trees are also found in large numbers in Nakuru, Muranga and Kiambu districts. Once the raw material is assured, what is required is to establish a processing facility that includes building a processing shed, an oil extraction and filtering machine, a biofuel processor, storage tanks and a delivery system. A basic 300 litre per day biofuel facility will cost about US\$ 76 000.