



Flora Ecopower Holding AG in Madagascar

An Independent Report Considering Potential Social and Environmental Impacts of Castor Plantations for the Mandrare Valley, Southern Madagascar.



Figure 1 : Castor Plantation at Elonty (top), Castor Fruits (bottom left) FloraEcopower Local Employee with Castor Bean Harvest (bottom right).

Barry Ferguson

Final Version

30th June 2008

1.0 Executive Summary

1.1 Context : Flora Ecopower AG, a German Biofuel company has conducted a feasibility study for the industrial scale cultivation of castor (*Ricinus minnimus*) in the Mandrare Valley, southern Madagascar. 80 hectares of plantations were established in the communes of Tsivory, Elonty, Mahaly and Sampona between November 2007 and May 2008. This final independent report completed on 30th June 2008.

1.2 Methods : The author accompanied three staff members of Flora Ecopower to visit two field sites in Elonty and Tivory. In addition semi-structured interviews were held with the senior employee present, and the author was a passive participant in a village information meeting. The author was also invited to meet Mr Ayal Hovev who is responsible for business development in FloraEcopower and Mr Maydad Hovev founder of the Hovev Agriculture Group and board member of Flora Ecopower. The draft of the report was made available to the company for comment, correction and clarification prior to being made public. The company kindly made a formal response.

1.3 Feasibility Study Operations: Flora Ecopower was allowed to use the 80 hectares of lands for the 6-8 months of the pilot for free. Lands were not in cultivation prior to their use, and were ploughed using a combination of tractor and ox drawn ploughs. Local managers and daily employees were hired in each field site. Pesticide and fungicides were used, no herbicides were used.

1.4 Plans for Implementation Phase: The company has decided to conduct a second pilot phase over 12 months in 2008-09 with a plantation of 1000 hectares. If, following this second pilot phase the company makes the investment decision to go to full scale in the region it will intend to build to a total of 40,000 hectares. Farms will be a combination of small scale community farms and larger lease farms (which will put currently unused land into production).

1.5 Potential Social Impacts: The significance of the project as a catalyst for regional development is great (stimulating additional investment, creating substantial local employment, infrastructural improvements). However it must be borne in mind that current trends in world food prices and the fact that the district of Amboasary is already far from self sufficient in food production has serious implications for the project in terms of food security at both the participant farmer and regional levels. Of particular concern is the potential of lands which could potentially produce food being contractually 'locked' in castor production. In addition castor plantations would require significantly more labour than is currently available in the area, and so in-migration and the establishment of company villages is likely. The company is encouraged to state a formal position on its role in local and regional food security.

1.6 Potential Environmental and Health Impacts: The company has stated that it will not convert scrub or forest land into plantations. The decreasing availability of new food production land which this project would cause may have the knock on impact of increasing slash and burn maize cultivation in the region. During the pilot the local employees were observed not to be using gloves, masks or purpose hand washing buckets for agrochemical treatment, which has potential health implications. This report does not consider the the actual carbon footprint of biofuels.

1.7 Recommendations: The report concludes by making six recommendations on practical actions which the company should take. These include the preparation of an independent environmental and social impact assessment (ESIA), establishing policies and monitoring protocols for agrochemicals, land use monitoring and regional development support/philanthropy.

2.0 Acknowledgements & Funding of Study

The author thanks Flora Ecopower Holdings AG for the permission to carry out this study. Deserving particular thanks are the three company employees who kindly hosted the visit and graciously facilitated the study: Mr Ofir Dardary, Mr Durlin Fenomana and Mr Christopher Biller. Thanks also to Mr Ayal Hovev and Mr Maydad Hovev for meeting the author in Fort Dauphin following the production of the draft report. Thanks are due to the company for taking time to respond to the report, the author hopes that this fruitful and open dialogue and debate will continue.

The study received no financial support from either the company nor any other third party. It is an independent report and does not represent any institutional/organisational position.

As stated in section 1.5 above, the author sees the potential major investment that Flora Ecopower is considering making in the region as very exciting and positive for rural development in the district of Amboasary. The intention of this report is not in any way to be in opposition to the project, but the author believes that where a new investment of this kind has potential environmental and humanitarian impacts that it is legitimate to ask these questions of the company. In a broader context undertaking this study provided the author with an opportunity to begin to engage in the Biofuels Debate.

This report does not consider the debates around the actual carbon footprint of biofuels, nor does it consider the ethical issues around the private sector control of agricultural value chains as these issues are beyond the scope of the study.

More information on Flora Ecopower can be found on www.floraecopower.com



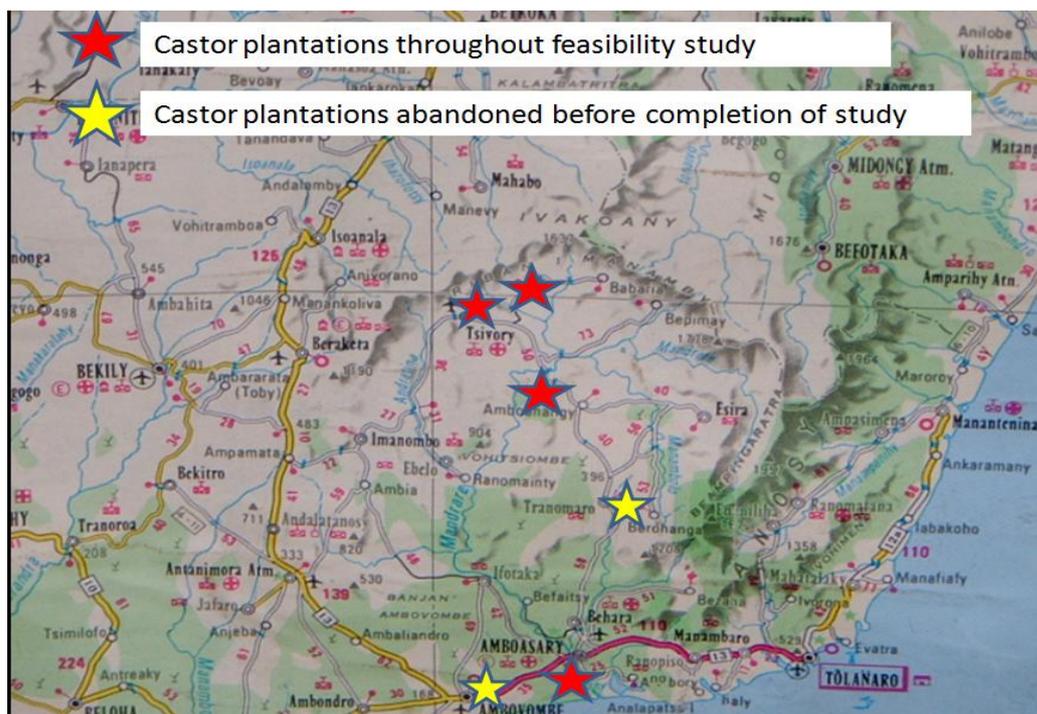
3.0 Background Information

Flora Ecopower Holding AG, a German company established in 2006, produces castor oil, principally for the biofuel industry. With their worldwide operations expanding, a feasibility study was initiated in the Amboasary district in November 2007 to examine the possibility of establishing plantations in the Mandrare Valley. The feasibility study phase consisted of 80 hectares of plantations of Castor plants (*Ricinus communis*) grown from seeds of foreign origin grown on uncultivated lands in four communes of the district of Amboasary-Sud (Elonty, Mahaly, Tsivory, Sampona). Trials had also been initiated in the communes of Tranomaro and Ambovombe but were abandoned due to operational difficulties. The company has decided to proceed to a second feasibility/pilot study in 2008-09 and will establish plantations of 1000 hectares in this period. If following the second pilot the company decides to invest at full scale they will have a target plantation of 40,000 hectares. This area would be attained through two farming models:

- Community farms** operated by landowners, where the Castor bean harvest is purchased by Flora Ecopower. These would typically be relatively small areas of a few hectares.
- Lease Farms**, where community or private lands would be leased by Flora Ecopower and the farms operated by the company. These would be typically on a much larger scale from tens to thousands of hectares per farm.

This independent study of the project was conducted between 5th and 7th May 2008 as the first feasibility study phase of Flora Ecopower approached its conclusion.

Figure 2 : Map of SE Madagascar illustrating the locations of the feasibility study plantations.



4.0 Methods

4.1 Visit to Elonty and Tsivory Plantations : On the 6th of May 2008 the author accompanied employees of Flora Ecopower to visit two of their plantations in the communes of Tsivory and Elonty. During the visits observations of the plantations and working procedures were made. No interviews were held with local farmers so as not to disrupt operations in any way.

Figure 3: Flora Ecopower Castor Plantations in Tsivory (middle ground below forest grove left hand photo) and Elonty (right hand photo).



4.2 Semi-structured Interviews : During the three days of this study a number of semi-structured interviews and discussions were held between the author and Mr Ofir Dardary the senior employee of Flora Ecopower in the Amboasary region.

4.3 Village Information Meeting : A village information meeting to talk about how operations would be conducted should the decision to invest in the region be positive was held in Tsivory by the company on Tuesday 6th May at 3pm. The author was a passive observer at this meeting.

Figure 4 : Flora Ecopower Village Information Meeting in Tsivory, Tuesday 6th May 2008.



4.4 Opportunity for Clarifications, Corrections and Response : Following the completion of the visit to Tsivory and Elonty a draft of this report was submitted to the company who made a formal response, and arranged a meeting between the author and senior company officials Mr Ayal Hovev and Mr Maydad Hovev.

5.0 Operations during the Feasibility Study

The Flora Ecopower feasibility study in the Mandrare Valley began in November 2007, crop harvest began in April 2008 and the investment decision is expected to be made in May 2008.

5.1 LAND USE : Following consultation and discussion with local leaders and community representatives six areas of land were identified to become part of the feasibility study (See Map on Fig 2 Page 3) :

1. *Sampona – Malagasy Military Land.*
2. *Tsivory – Privately Held Land.*
3. *Mahaly – Community Land (Amboahangy).*
4. *Elonty – Community Land (Soavinany).*
5. *Tranomaro – Community Land (feasibility study abandoned due to operational difficulties).*
6. *Ambovombe – Privately held land (feasibility study abandoned due to operational difficulties).*

Sites 1-4 totalled a surface of approximately 80 hectares and were planted with Castor seeds from a foreign source in early 2008 (sites 5 and 6 were abandoned prior to the completion of the study). For the feasibility study the plantations were not based on a lease but a voluntary agreement by the land owner to allow the use of the land for the 6-8 months of the study. All of the lands used for the feasibility study were not in cultivation at the time of the initiation of the study. Plots 2-5 had never been cultivated prior to this project.

5.2 EMPLOYMENT CONDITIONS : For each site one or more managers were recruited and paid a salary to supervise daily employees for the planting, tending and harvest of the crop. Ploughing of the lands was carried out by a combination of tractor and zebu (ox) drawn ploughs. Daily employees were initially paid 2000Ar (US\$1) per day, this was subsequently raised to 3000Ar (US\$1.50), which is comparable (or better than) to wages paid by the sisal companies and other agricultural employers in the Mandrare valley.

5.3 PHYTOSANITARY SUPERVISION : The company worked throughout the project in collaboration with the Malagasy Phytosanitary authorities in Fort Dauphin. They were visited in the field on several occasions and were given detailed advice regarding the likely fungal and insect pests which would be encountered and the appropriate treatments for these.

5.4 CHEMICAL TREATMENTS : The plantations were treated with insecticide and fungicide from knapsack sprayers. Details of the specific products used is not detailed here for commercial reasons. The company emphasised that the grades of chemicals used were the 'most environmentally friendly' (Yellow Banded). No herbicides were used, but manual weeding was carried out as required.

5.5 COMMUNICATION AND LOCAL APPROVAL – The operations of the feasibility study worked closely with the local administrations (Mayors, Chef Fokontanys) to ensure that local communities were aware of the project operations. Information meeting(s) were being held towards the end of the feasibility study to provide information about how the company would work if they did decide to invest in the region.

6.0 Plans for Full Operations

In June 2008 Flora Ecopower decided to continue operations in the Mandrare Valley by establishing a second feasibility phase. Based on the information available to the author the following represents the features of how the project would look if the investment is made:

Size – 1000 hectares for second feasibility phase (2008-09) and if successful expanding to 40,000 hectares

Farm Organisation – Small scale community farms managed by land holders and medium to large scale commercial farms leased from owners, communities and government and managed by company. Small land holders may group together to provide holdings of sufficient size for company leased farms.

Company Investments – Road improvements, oil processing plant (location unknown), community development activities, agricultural training.

Types of lands to be cultivated - currently unused land (abandoned or never used for crop agriculture). The company has no intention to use land which is currently in food production, indeed they were clear with the author that castor oil would not be able compete with food production. No plantations will be established on land which is currently forested, scrubland or on sisal or rice plantations. Lands will be chosen based on attaining lands of maximum fertility, good rainfall and minimal content of stones.

Duration of leases – At the time of this study the company was unable to provide information on the duration of leases that would be offered to farmers.

Purchase Price for Castor Beans – FloraEcopower would be in full control of its large scale lease farms. Community farms would be provided with free seeds, agrochemicals and mechanical support. A fixed price for the harvest of castor oil would be likely to be provided in advance of each season (c6 monthly), this price would take into account the costs of the inputs provided by the company.

Negotiation of leases – Flora Ecopower stated that all negotiations over leasing of lands will be done through the local authorities (Mayors, Chef Fokontany) for the case of de facto community lands. For the case of privately owned land negotiations would be direct with landowners. The Chef de Region and Government will also be part of the negotiations.

Additional activities – Flora Ecopower is engaged in Jatropha plantations in the Mahajanga region of NW Madagascar, and are also considering the potential of planting Jatropha on the lands adjacent to castor plantations in the Mandrare Valley. This could make use of additional land which would not be suitable for castor production.

7.0 Consideration of Social Impacts

7.1 Stimulation of the regional economy : The substantial investment being considered by Flora Ecopower could provide a significant stimulation of the economy of the district of Amboasary. Providing employment, investment in regional infrastructure and the installation of an oil processing factory would be sure to have impacts broader than the direct impacts of the project. In a similar vein an investment by Flora Ecopower would provide something of a replacement for the PHBM¹ project which finishes in September 2008. It is also not inconceivable that the infrastructures of the PHBM project (extensive offices in each commune, storage facilities, staff accommodation and communication equipment) may be made available to the company by the MAEP².

The likely significant positive impact of such an investment is something which cannot be taken lightly. Leverage of additional funds is another important consideration, for example the World Bank is said to be prepared to finance 90% of any road improvements to be part of such a project. The successful implementation of a private sector investment in the region is also likely to encourage other private sector investment and additional NGO activity and donor investment.

7.2 Food Security : Food security is a very significant issue in the district of Amboasary. At present the region does not produce enough food to feed its population and is in regular receipt of various forms of food aid (Food for Work, School Canteens, Emergency Relief) from the World Food Programme and various bilateral donors. The provision of salaried employment on castor plantations would provide a degree of livelihood and food security for employees.

However at the village information meeting in Tsivory (6th May) it was clear from comments by participants that farmers were interested in converting current food producing fields into castor production, if castor was to prove more profitable than their current crops. Currently castor is not more profitable than food production. This situation raises three main issues:

- i) **COMPANY POLICY :** The company website states that the company motto is 'FOOD COMES FIRST'. The company has stated that castor is not more profitable than food production and that it does not intend to put any lands which currently produce food into castor production. It would be worth the company being clearer on this point with all local stakeholders, as any transfer of lands from food to castor would have major impacts on food production.
- ii) **FARMER FOOD SECURITY :** It is unclear whether purchase price guarantee for the castor beans and contracts with community farms will be for the same timescales. In the current world climate of rising food prices it is conceivable that the cost of replacing previous food production on castor plantations could rise within a season, and would certainly be expected to rise between seasons. The company has not yet stated a policy on its role in assuring individual farmer food security within its member farms were such a situation to arise.
- iii) **REGIONAL FOOD SECURITY :** It currently would not make economic sense for an individual farmer to shift land and labour inputs from food production to castor plantations. However

¹ PHBM – Projet de la Mise en Valeur de la Haut Basin de Mandrare, is a 10 year c\$20M agricultural development project of the International Fund for Agricultural Development (IFAD). www.phbm.org

² MAEP – Ministry of Agriculture, Livestock and Fisheries, who will fully take charge of all PHBM infrastructures on completion of the project in September 2008.

Flora Ecopower in Madagascar : Potential Social & Environmental Impacts

were the economics to change in the future this situation may have serious implications for regional food security, particularly if strong mechanisms are not put in place to ensure that plantations are not established on any current food producing lands. Bearing in mind the globally increasing cost of imported food, and a region already in food deficit – will this impact the market costs of locally produced food as well. The impacts on the rural people who would be external to the project, as well as urban consumers in the main towns of the region needs careful consideration.

Response from the company : *'Flora Ecopower not only intends to stop the decline of food producing lands but on the contrary we aim to increase the food producing lands by training farmers to grow vegetables by contributing some of the developed new ploughed lands for the use of the communities for their own food production. For example: if we take from the community a certain area of land a part of it will be left for the community to be used as they want (food crops) as we have ploughs etc....so benefits for the community will not only be schools, health, infrastructure but also an increased availability of land ready for cultivation. Also flora ecopower will introduce low cost, low pressure micro irrigation systems for farmers to enable them to grow vegetables off rain season in lands which are close to water sources.'*

- iv) **LOCKING LAND IN CASTOR PRODUCTION** –Within the region human population is currently growing at around 3%. A proportion of lands currently used for food production suffer from soil impoverishment and lands are abandoned each year. These factors mean that demand for food production land in the region is already increasing, and will most likely continue to do so with or without castor plantations. Large scale castor production would lead to migration into the region for employment, which would further increase demand for food (and therefore food producing land). It is currently not clear what impact the contractual obligations of FloraEcopower castor farms would have in terms of locking land in castor production – this is an issue to be explored in more depth with the company during the second pilot phase. Furthermore, the fact that the company is seeking the most fertile lands with the best rainfall and least rocks for castor plantations is a concern. This poses a risk that the lands remaining for new food crop planting after the company has chosen its lands will be marginal and therefore require more preparation, or will be less productive for food producers.

7.3 Philanthropic Activities of Company : Flora Ecopower were keen to state that were they to invest in the region they would not only make investments in their specific business activities, but would also invest in the community. Several examples of how this worked in their operations in Ethiopia were cited: The company had installed water cisterns in a district with extreme water shortage, and was regularly delivering water to these by tanker; The company was the only actor to provide assistance and clean water to communities during a cholera outbreak.

In the case of their future operations in the district of Amboasary the company will contribute a range of philanthropic support for the local communities. Ideas that were cited include: Provision of use of tractors for cultivating non castor lands at cost price; importation and sale at cost price of treadle foot pumps; support for health and education activities in the region; agricultural training facilities.

It is important that the company takes account of the regional development prioritisation mechanisms when making any philanthropic investments. This will avoid a situation where the company risks disempowering the regional development agencies³ through its sheer economic force. For this reason the Regional MAP⁴, Regional Development Plan (PDR), Commune Development Plans (PCDs) and Commune Development Committees (CCDs) should be the mechanisms through which philanthropic support is provided.

A philanthropic spin off of FloraEcopower operations in Ethiopia is the establishment of FEP Hope, a charitable body which is carrying out health, education and work programmes for HIV/Aids sufferers in the east and west Harar areas of Ethiopia.

7.4 Employment Migration

The company is aware that should its operations expand to the full scale 40,000 hectares that this will require more labour than is currently available in the region. This will lead to in migration, indeed the company stated its intention to establish employee settlements and to take efforts to be socially responsible in this area.

7.4 Social Impact Assessment

At present the company limits its activities in the domain of 'Social Impact Assessment' to the collection of data from PHBM, and their intention is to continue this. It is suggested that an independent environmental and social impact assessment should be conducted and made publicly available to ensure that all stakeholders in the region have an opportunity to comment on the potential social and environmental impacts of the project.

³ See the example of Richards Bay Minerals in South Africa (Kapelus, 2002, Mining, Corporate Social Responsibility and 'the Community': The Case of Rio Tinto, Richards Bay Minerals and Mbonambi, Journal of Business Ethics **39**:275-296).

⁴ Regional MAP – Madagascar Action Plan for the Region of Anosy.

8.0 Consideration of Environmental and Health Impacts

8.1 Impacts on Natural Habitats

The Mandrare Valley contains significant areas of natural forest and scrubland habitats, these areas are estimated to cover more than 385,000 hectares⁵, and are home to many faunal and floral species which are regionally and endemic. These habitats are of great significance for both biodiversity conservation and the maintenance of the livelihoods of local people. There is a proposal in progress to establish a Mandrare Valley Biosphere Reserve to promote the sustainable development of the valley and to ensure conservation of viable and representative areas and populations of endemic habitats and species.

Flora Ecopower has stated that it will not convert any natural habitat in the Mandrare Valley for castor plantations (Ofir Dardary pers comm., Ravelonjatovo⁶ pers comm.), and that as a company it is willing to maintain a relationship with environmental interests in order to ensure its activities minimise any environmental impact. The company deserves credit for this position, however it is suggested that an independent monitoring system is established to monitor compliance as the company has previously received criticism over its land clearance activities (See Ethiopia : Reuters, 2007⁷). In addition, there may be a knock on impact of Flora Ecopower leasing lands which have potential for productive food agriculture. The loss of available new food production land and increase of available cash could lead to an increase of slash and burn agriculture (hatsake) for maize and cassava cultivation. The establishment of an independent monitoring system described already would also allow for this dynamic to be monitored.

Figure 5 : Pesticide and Fungicide Treatment of Castor Crop at Elonty



⁵ Vision for a Mandrare Valley Biosphere Reserve, Project Concept Note, Unpublished Document.

⁶ Ravelonjatovo Slyvia – Head of the Environment Unit of PHBM citing Mr Ayal Hovev.

⁷ Reuters, 2007, Ethiopian Elephants and Lions at Risk as Forests Cut, 31st May 2007, <http://www.alertnet.org/thenews/newsdesk/L31635717.htm>

8.2 Agrochemical Use

The company has stated that it only uses the low environmental impact pesticides and fungicides (Yellow banded), and that herbicides are not used. The company should consider that agrochemical use is currently between 'extremely limited' and 'nil' in this region, and so sensitivity is potentially high. For this reason impacts on the land and water quality should be carefully monitored prior to and during project implementation.

During the field visit it was observed that local employees were neither using gloves nor masks during the preparation or application of chemicals (See Figure 5). In addition it appeared that household buckets were being used for hand washing after chemical application, which poses a risk of subsequent human ingestion. This suggests a need to establish sound chemical storage, preparation, application and monitoring protocols.

The company stated that it is currently investigating the possibility of using biopesticides and biofungicides. They are striving to keep agrochemical use to a minimum.

8.3 Environmental Impact Assessment

At present the company limits its activities in this domain of 'Environmental Impact Assessment' to the collection of data from PHBM, and their intention is to continue this. PHBM is not currently collecting data which would enable the company to appropriately consider its environmental impacts. It is certainly laudable that all information available from PHBM is collated prior to the completion of the project in 2008, however it is suggested that an independent environmental and social impact assessment should be conducted and made publicly available to ensure that all stakeholders in the region have an opportunity to comment on the potential social and environmental impacts of the project.

9.0 Recommendations

Based on the information gathered during the field visit, and that provided by the company for the preparation of this report the following recommendations are made should the company decide to invest in the region:

- i) Flora Ecopower should conduct Independent Environmental and Social Impact Assessment (ESIA) for the project including consultation with environmental, food security and regional development authorities. The preparation of the report should be participatory, so as to include the opinions of local stakeholders. On completion, the report should be made publicly available in the region and used as a model of the company's good practice.
- ii) Flora Ecopower should prepare a company policy on its role in food security, to provide guidance on the company position with regard to participant farmers and broader regional food security.
- iii) Flora Ecopower should establish a land use monitoring system to allow for independent objective evaluation of the types of land used by the company.
- iv) Flora Ecopower should establish formal policies on the use and monitoring of agrochemicals both from human health and safety and environmental impact perspectives.
- v) Flora Ecopower should establish a policy on what mechanisms it will use to provide the suggested additional rural development and philanthropic support for the region.
- vi) Flora Ecopower should consider the feasibility of adopting stony lands, as their conversion into productive agricultural land would be a major contribution to the natural capital of the region.

Figure 6 : The Castor Fruit growing (left), ripe (middle) and the harvested castor bean (right).



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