

Mafikeng Bio-Diesel Initiative North West Province, Republic of South Africa

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Background

Since February 2006 several bilateral business delegations from Free State Saxony, Germany, and North West Province, Republic of South Africa, visited both countries Germany and South Africa. As a result Saxon companies and North West Provincial Government have identified several fields of interest to work and cooperate on.

Mafikeng Bio-Diesel

The use of renewable energies has an outstanding position in the economic development strategy of North West Provincial Government (NWPG). "Mafikeng Bio-Diesel" has been announced as one of the key anchor projects of the Mafikeng Industrial Development Zone "where the NWP is a leading province at implementation".

The objectives of the Mafikeng Bio-Diesel Project are described as followed:

1. "Establishment of a nursery providing 4 million saplings per annum to provide feedstock required for bio-oil plantations (72 million trees)
2. Rollout of 60 000 ha of plantations on communal lands over five years
3. Commissioning of an oil expelling plant and bio-diesel refinery."

The Mafikeng Bio-Diesel Project corresponds with the legal framework of the Republic of South Africa especially the National Biofuel Strategy of South Africa (2007) and gives also contribution to the renewable-energy target of 10 000 GWh which has to be achieved by 2013 stated in the White Paper on Renewable Energy (2003).

Subproject "Assessment of existing business plan"

NWPG and Mafikeng Industrial Development Zone (Pty) Ltd (MIDZ) have appointed Saxon company G.U.B. Ingenieur AG with its partner BioPlanta GmbH as independent consultant to elaborate assessment study. G.U.B. Ingenieur AG invested about R 3,8 m between 2007 and 2009 and mobilised in May 2008 financial assistance by the German Government to conduct the study.



Figure 1: (from left to right) Ms Pusch, Dr Schwarz, Dr Mosime (MIDZ), Mr Moncho (MIDZ), Mr Mduke (nursery), Mr Tlaetsi (DEDT), Ms Matlhoko (nursery) – June 2008

¹ Ms Dipl.-Ing. E. Pusch headed the project in the period from April 2008 to June 2009 and was project manager in charge.

² Dr R. Schwarz developed the project and acted as supervisor over the whole period.

The Board of Mafikeng Industrial Development Zone (Pty) Ltd (MIDZ) decided that *Moringa oleifera* would be the preferred plant for cultivation and oil production due to its quick growth rate, high drought tolerance, high yield and the fact that it is an indigenous crop.

The project has the potential

- to promote agriculture,
- to attract investors into rural areas,
- to create jobs and to reduce poverty (poverty alleviation) by creating sustainable income-earning opportunities,
- to develop local value chains,
- to transfer know-how, Human Resources Development,
- to stimulate rural development.



Figure 2: Experts at work at nursery – October 2008

As a result of comprehensive scientific discussions German companies submitted an Integrated Approach and an Investment Road Map to the North West Provincial Government as well as to the Board of MIDZ in February 2009. The main technical as well as economical facts of the proposed road map are:

For a rollout on 60,000 hectare about 80 million plants are required (Plant spacing 2.5 m x 3.0 m). To produce 80 million plants in the proposed timeframe of ten years different plant production techniques are needed. In vitro mass propagation, ex vitro mass propagation and stem cuttings are most sufficient methods.

The annual yield per 100 hectare are 520 t *Moringa* seeds which would produce 74 t *Moringa* oil and about 72.5 t biodiesel (98 % effectiveness). An international approved capacity of a biodiesel production plant will be 5,000 t per year. This means about 6,000 – 7,000 ha land would be needed to produce that 5,000 t biodiesel. About 10,000 *Moringa* trees already exist in the nursery and are ready to be planted into the field.

The Investment Road Map shows several opportunities for NWPG and MIDZ to raise funds from several national and international donor organisations.

Outlook

The next step necessarily will be the development of a Strategic Business Plan.

References:

1. Schwarz, R. & Pusch, E. 2009: "Evaluation of Mafikeng Bio-Diesel Project". - Internal Report G.U.B. Ingenieur AG, 25 p. and enclosures.
2. Schwarz, R.; Pusch, E.; Gerth, A. 2009: Workshop „Results and Outlook – Mafikeng Bio-Diesel Initiative“. – Mmabatho, South Africa, March 2009, G.U.B. Ingenieur AG & BioPlanta GmbH.