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***Desktop study_bioenergy for
Mpumalanga***

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Study objectives

- Collate desktop research information on the status of bio energy feedstock availability in Mpumalanga
- Support the provincial strategy implementation
- Focused on biomass, municipality solid waste (MSW), bioethanol and biodiesel
- Scope excluded techno-economic evaluation, infrastructure and capital requirements
- Solar (PV), wind and hydro for power generation were also excluded from the study

Study findings :Biomass

- Biomass definition includes; wood, wood waste, wattle, bagasse
- Applications into household and industrial markets as charcoal for heating or alternatively for power generation via co feeding or as major feedstock
- Wood, paper, brewing and sugar industry use biomass by-product to generate own steam and electricity
- Wood pelletisation is a growing industry for export market or local for coal based power station for co feeding. **Sabie Zebra pellets project**
- 2004 then DME assessed 4 major industries for biomass resources; sugar, forest, sawmilling and pulp & paper
- Estimated at 23 million tons/yr with Mpumalanga accounting 6 million tons/yr and 2nd highest after KZN

Study findings :Biomass cont.....

- Mpumalanga resources dominated by bagasse (sugar) and black liquor (pulp & paper)
- SAFCOL study in 2009 on woody biomass availability in Sabie region within 60 and 100km radius found estimates of 27 228 and 36 496 tons/month respectively
- The indications are that the Mpumalanga province has availability of biomass for projects into bio energy, however the location and ownership of this resource was not part of this desktop study

Study findings: MSW

- MSW is broadly defined to include household and industrial waste that gets dumped on the municipality owned landfill site
- This waste can be converted into energy as technology is readily available
- Current challenge is that landfill sites are reaching full capacity and there is lack of new developments
- Govan Mbeki municipality study on their landfill site; Secunda, Bethal, Kinross and Leandra estimated that 6500 tons/month of wasted is off loaded at these sites
- Currently no data is available for the various Mpumalanga district municipalities in terms of capacity usage ; Ehlanzeni, Nkangala and Gert Sibanda

Study findings: Bioethanol

- In 2007, it was recorded that there are 5 bioethanol producers in SA and neighbouring Swaziland
- This production is based on molasses from sugar production
- Mpumalanga climate is suitable for sugarcane growing and currently has 2 major sugar mills
- Sugar mills have potential to contribute to bio energy sector through bioethanol production and biomass (bagasse) feedstock
- Bioethanol can be produced from the following grains; wheat, barley and sorghum as maize is excluded due to the (food vs fuel debate)
- Only sorghum is an ideal grain for the province as its the 2nd highest producer in the country in 2010/11 production year

Study findings: Bioethanol cont.....

- Technology for production is readily available but lack of off-take opportunities for petrol blending (**regulatory environment**) and intensive capital requirements
- Preliminary indications is that sugarcane and sorghum are potential crops for the province due to its climate
- Land availability and infrastructure could be a challenge

Study findings: Biodiesel

- Industry dominated by small scale manufacturers based on waste vegetable oil as feedstock
- Typical commercial feedstock includes; canola, sunflower seed, soya beans, peanuts, palm oil and copra
- Mpumalanga is the highest commercial producer of soya beans in SA due its favourable climatic conditions
- No producer of commercial scale biodiesel in the province
- Farming land available via land reform program
- Lack of infrastructure and funds to stimulate small scale operation based on soya beans
- Massive opportunity in the value chain especial oil cake off-take with AFMA members and commercial farmers

Closing remarks

- Biomass pelletisation from *Working for Water* initiative
- Biomass value addition projects with dedicated feedstock (technology opportunity)
- Understand the current commercial co generation projects (TSB, Sappi, etc)
- Access to landfill site and off-take agreements for the potential electricity
- Detailed investigation of the landfill sites within the municipality districts and package the information for investment opportunity
- Detailed land and climate feasibility study on planting sugarcane and sorghum for bioethanol production
- Implementation plan for soya based biodiesel production

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Thank you