DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES

FORESTRY BIOMASS – OPPORTUNITIES FOR FORESTRY EXPANSION – A DAFF PERSPECTIVE

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agriculture,
forestry & fisheries
Department:
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REPUBLIC OF SOUTH AFRICA

OUTLINE

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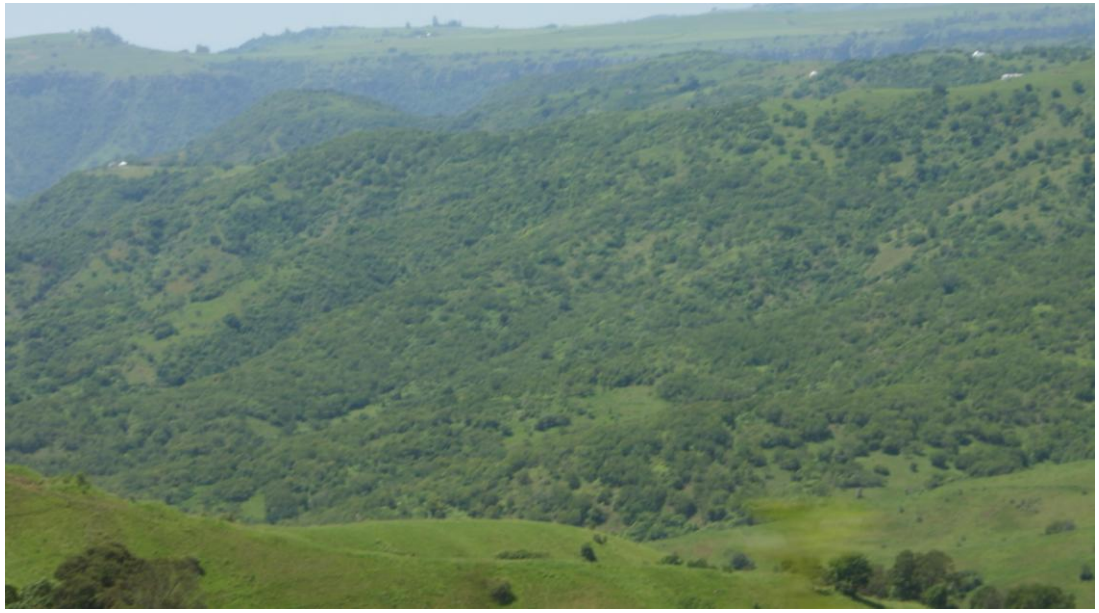
BACKGROUND

The Forestry Resource Base in South Africa includes Indigenous Forests, Plantations and Woodlands

- **Indigenous Forests** cover about 492 700 hectares
- **Plantations** cover approximately 1,29 million ha of SA land area (1.1%)
- **Woodlands** contribute the bulk of wooded land area of South Africa
  - The potential area is in the region of 29 –42 million hectares

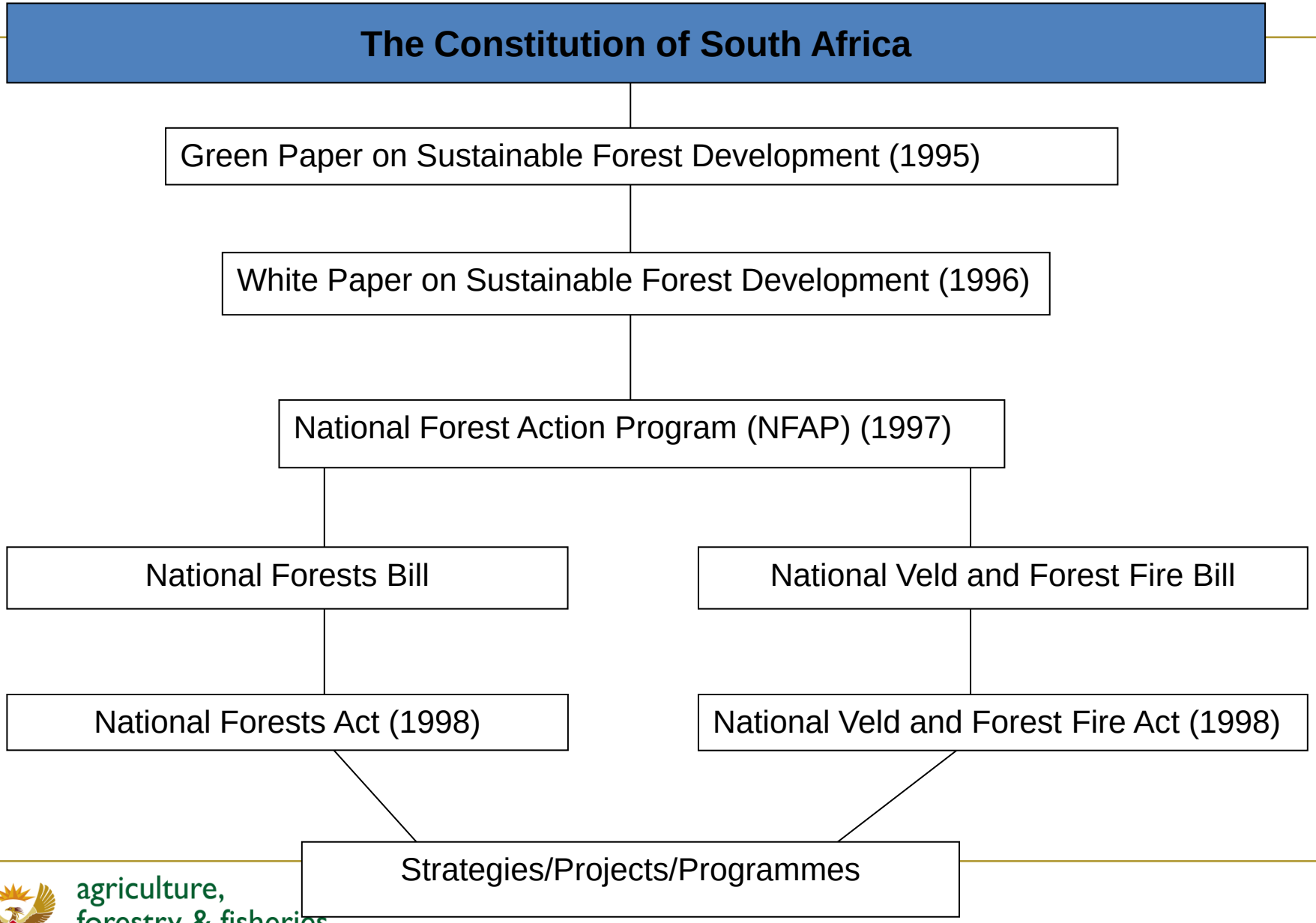
Plantations

Woodland



Natural Forest

The South African Policy Life Cycle and Forestry (adapted from DWAF, 2005)



Mandate

- National Forests Act of 1998 and the National Veld and Forest Fire Act of 1998.
- To ensure that forest resources (i.e. natural forests, woodlands & commercial plantations) are managed sustainably and for the benefit of all. This includes present and future generations.

DEFINITION OF FOREST BIOMASS AND CATEGORIES

- Forestry bio-energy = the use or renewable forestry biomass to produce energy products
- Forestry Biomass = any plant or tree material produced by forest growth.

Categories	Definition
Above- ground biomass	All living biomass above the soil including stem, stump, branches, bark, seeds and foliage
Below – ground biomass	All living biomass of live roots. Fine roots of less than 2 mm diameter are excluded because these often cannot be distinguished empirically from soil organic matter or litter
Dead wood biomass	All non-living woody biomass not contained in the litter, either standing, lying on the ground, or in the soil

CLIMATE CHANGE AND BIO- ENERGY

- Trap Greenhouse Gases (GHG);
- store those gases (carbon capture and storage or sequestration); and
- this only helps to reduce climate change
- Therefore the opportunity is to grow trees to offset carbon emissions and mitigate climate change)
  - To target mining houses, power stations et al to assist government in tree planting and growing the resource base

Forest waste and Bio-Energy

- form of sawdust, chips, cants and sawmill waste.
- This material can be accumulated on the conveyer system and chipped on line to produce a bio-energy product that can be sold at competitive rates to increase the income and thus the recovery rate in Rand value terms.
- The virgin wood chips can be used in different processes to produce various forms of bio-energy.
- Manufacturing of pellets from wood chips and sawdust is just one example of many.
- An average pellet plant needs about 5,000 tons of raw material in the form of wood chips per month.
- The chips can also be used as bio-fuel in a furnace and boilers to either generate heat or steam. This can be used in drying of wood or generating electricity for own consumption or selling it into the grid.

SOCIO- ECONOMIC OPPORTUNITIES

- Commercial forestry employs approx. 170 000 people in the formal and informal sector
- 868 000 South Africans are dependent on the sector for their livelihoods
- Plantations produce 22 million m^3 commercial roundwood and contribute R18,466 billion annually to the GDP (9% of agricultural output) *(2007 contribution)*
- Net foreign exchange earnings of R9 billion (30% of net RSA earnings)
- Forestry also contributes to social development through education, infrastructure and health

NEW POTENTIAL AREAS AFFORESTATION….I / II

Province	Potential Area for New Afforestation (ha)	Comments
Limpopo	6,000	Can be through water trading
Central Provinces	60,000	Tree plantations to be used to control acid mine drainage
Free State	30,000	Can through water trading
KZN	40,000	No conditions mentioned/ potential
Mpumalanga	10,000	Can be through water trading
Eastern Cape	100,000	Target estimate highlighted from SEA (2005) Study WMA 12.
Total	**246,000**	Equal to 20% of the plantation area of 1.257 million ha (2007/8)

NEW POTENTIAL AREAS AFFORESTATION….II /II

- New afforestation has the potential to create 15 600 jobs country wide
- There is a potential of employment opportunities in downstream processing industry
- There is potential to improve yields of the existing Category B and C plantations
- Invaded Areas – WFW Projects – leave biomass on site.
  - Potential to convert
- Temporally Unplated Areas (TUPs): an estimated 30% of the area is temporally unplanted. The plantation resource is greatly underutilized
- Mine Dumps/ Rehabilitated or Degraded Areas

ENVIRONMENT AND BIOMASS

- Reduces Air pollution
  - Like other forms of renewable energy, such as wind or solar, forestry biomass resources produce less emissions than their fossil fuel counterparts.
- Reduces use of Landfills
  - Using woody biomass from construction, lumber mill activities, waste of wooden palettes to create energy means less landfill space is needed
- Reduces risks of Wildfires
  - The risk of catastrophic wildfire can be reduced by removing small diameter trees that act as a fuel for the flames.
- Improve watershed quality
  - Less waste transported to the rivers

SUMMARY ON OPPORTUNITIES

- Forestry is a rural activity and concentrated in some of the very poor areas with high unemployment in South Africa [opportunity to create employment in these areas (KZN and Eastern Cape)].
- Forestry supports a R10 billion downstream value adding industry (opportunity for growing and transforming the sector)
- Forestry and climate change (opportunity for tree growing to offset carbon emissions and mitigate climate change)
  - Opportunity to target mining houses, power stations et al to assist government in tree planting and growing the resource base
- Forest waste and bio-energy (opportunity to use forest waste for energy generation, corporate companies already exploring this avenue)
- Need to leverage use of natural forests and woodlands to benefit communities (CDM mechanism etc, livelihood strategies,)

CHALLENGES…. I/ III

- ***Environmental Aspects:***
  - Deforestation is now one of the most pressing environmental problems faced by most African nations, and one of the primary causes of deforestation is wood utilization for fuel.
  - Deforestation has negative implications for the local environment (increased erosion) and the global environment (acceleration of climate change, threatened biodiversity).
  - Deforestation through development of land for other economic opportunities
- ***Climate Change :***
  - Climate Change will affect current and future initiatives to ensure sustainable forest management
  - Previous policies and strategies did not take into account the implications of climate change on sustainable forest management
  - There is a need of appropriate country and sectoral response mechanisms on climate change

CHALLENGES…. II / III

- ***Socio-Economic aspects:***
  - associated with Biomass production e.g. lack of necessary skills and technologies; cost implications related to transport and production
  - Communities who live adjacent or in forests would depend on these resources for their livelihoods.
  - These include harvesting for firewood, and other household products.
  - To ensure sustainable forest management, the rate of harvesting should not exceed the carrying capacity of forests .
  - The result will be degradation with associated effects such as erosion and desertification

CHALLENGES…. III / III

- Competing Demands on Land
  - The availability of land suitable for afforestation is declining
  - Land that has been identified as being suitable for afforestation is in some instances suitable for other land use types such as agriculture
  - The result will be competition for the same piece of land by different types of land uses

RECOMMENDATIONS AND CONCLUSION…I/II

- Need Research at a National Level e.g. No paper that outlines the expansion opportunities on forestry biomass

- Conduct a national feasibility study

- Need for a holistic and Cooperative governance approach
  - Government departments such as:
    - DAFF;
    - Department of Energy (DE);
    - Department of Cooperate Governance and Traditional Affairs;
    - Department of Water Affairs (DWA);
    - Human Settlements

RECOMMENDATIONS AND CONCLUSION…II/II

- Better cooperation with the Working for Water Programme
  - The very nature of this programme – results in significance volumes of wood that can be made available for biomass

- Need to forge Private-Public Partnership (PPPs)- with forest biomass suppliers and purchasers; energy producers; communities and government

THANK YOU