

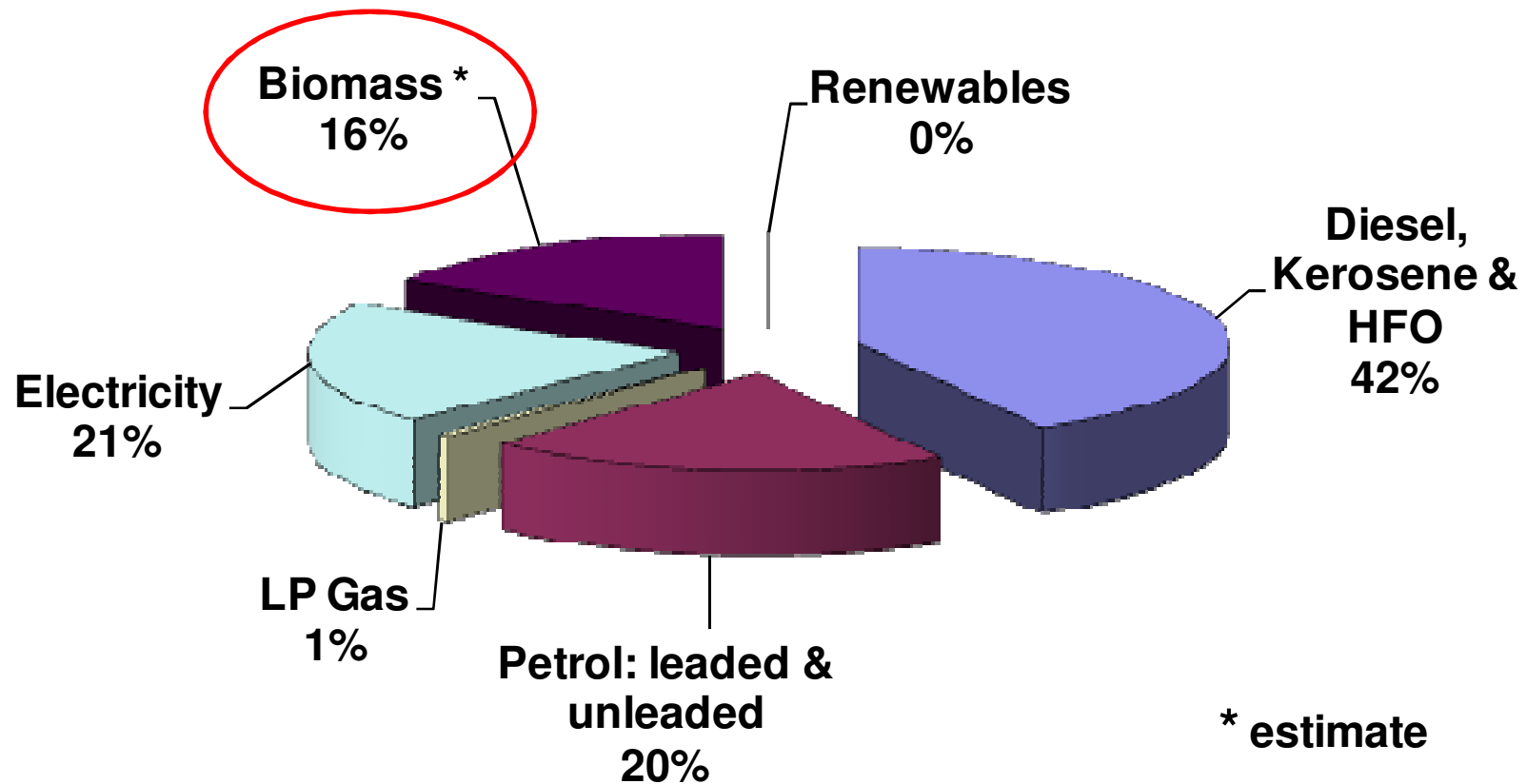
NAMIBIA'S BIOFUEL POTENTIALS

Biofuel Supply Chains and Capacity Building Workshop
ACP S&T Biofuels Workshop, SANUMARC, Namibia
3 & 4 June 2010

Detlof von Oertzen

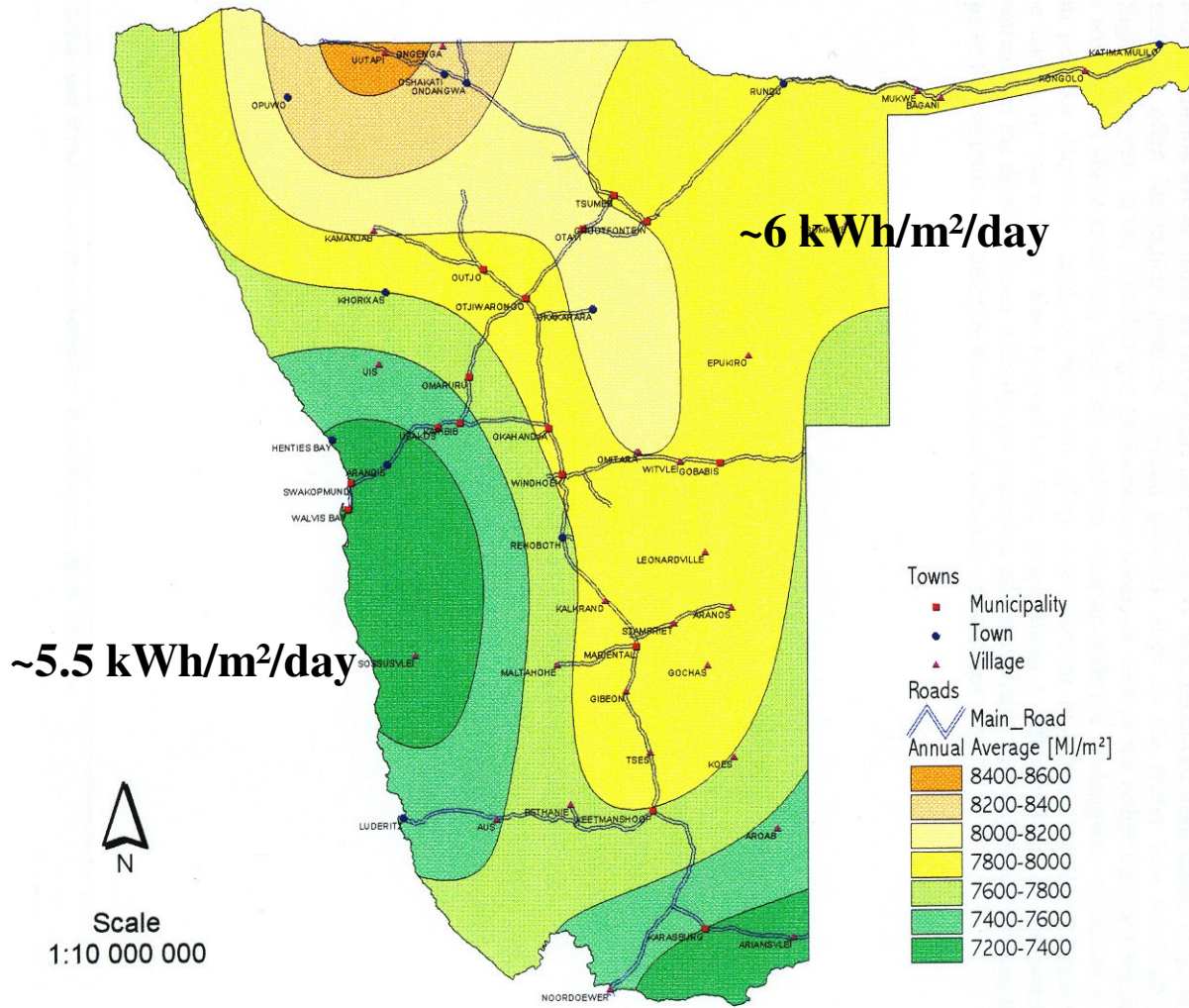
Energy Sources - 2009

Total ~18 TWh



Renewable Energy Potentials - Solar

Electricity potential >>



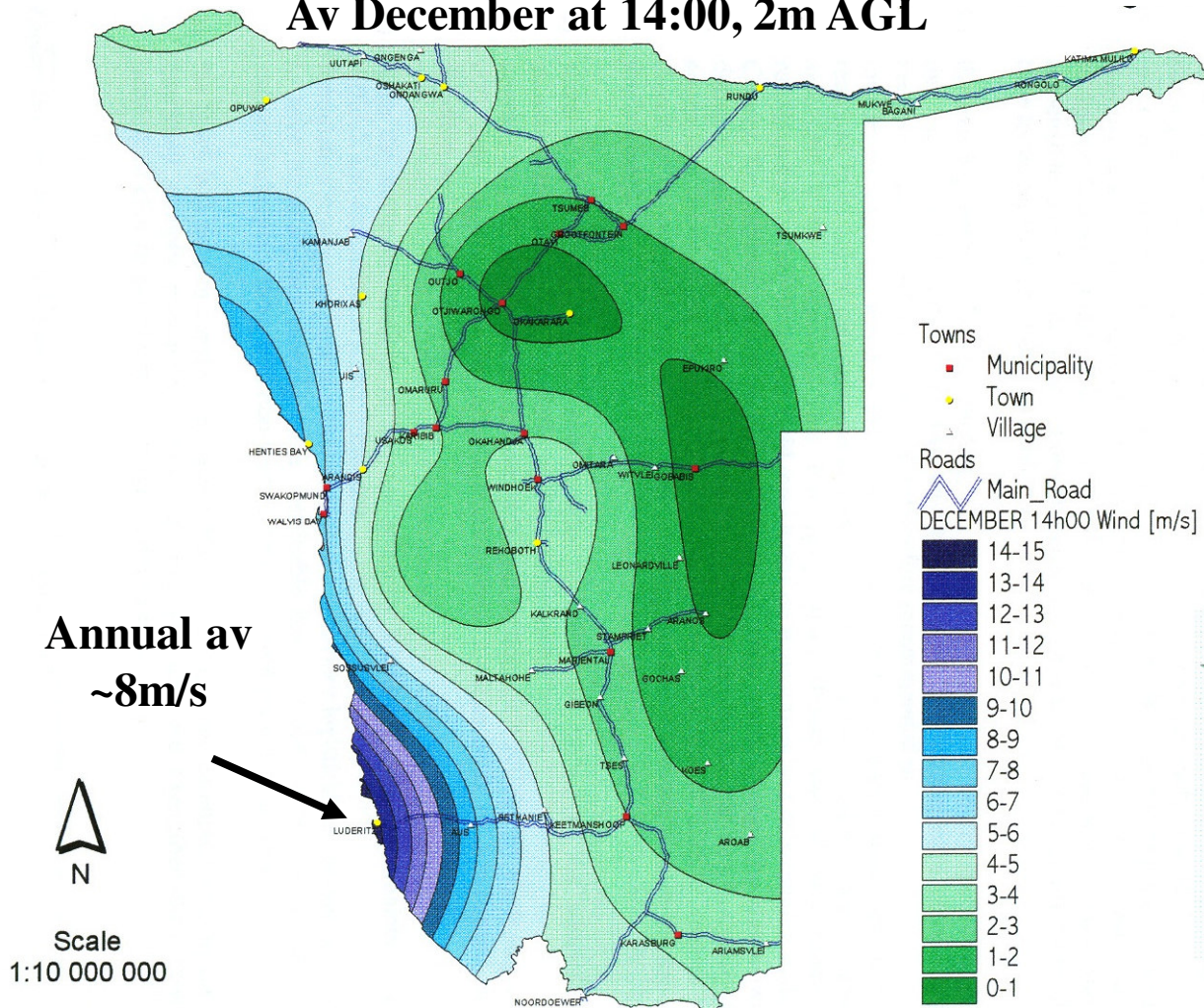
Source: von Oertzen 1999



Renewable Energy Potentials - Wind

Electricity potential > 100 MW

Av December at 14:00, 2m AGL



Other Renewable Energy Sources

Hydro:

e.g. Baynes site



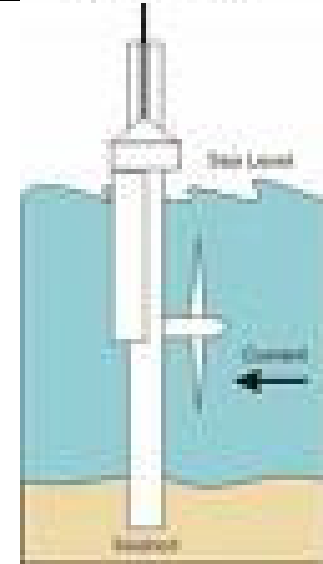
~350 MW

Geothermal:

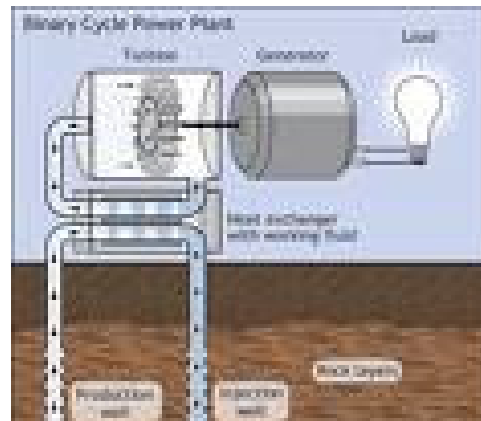


> 100 MW (est)

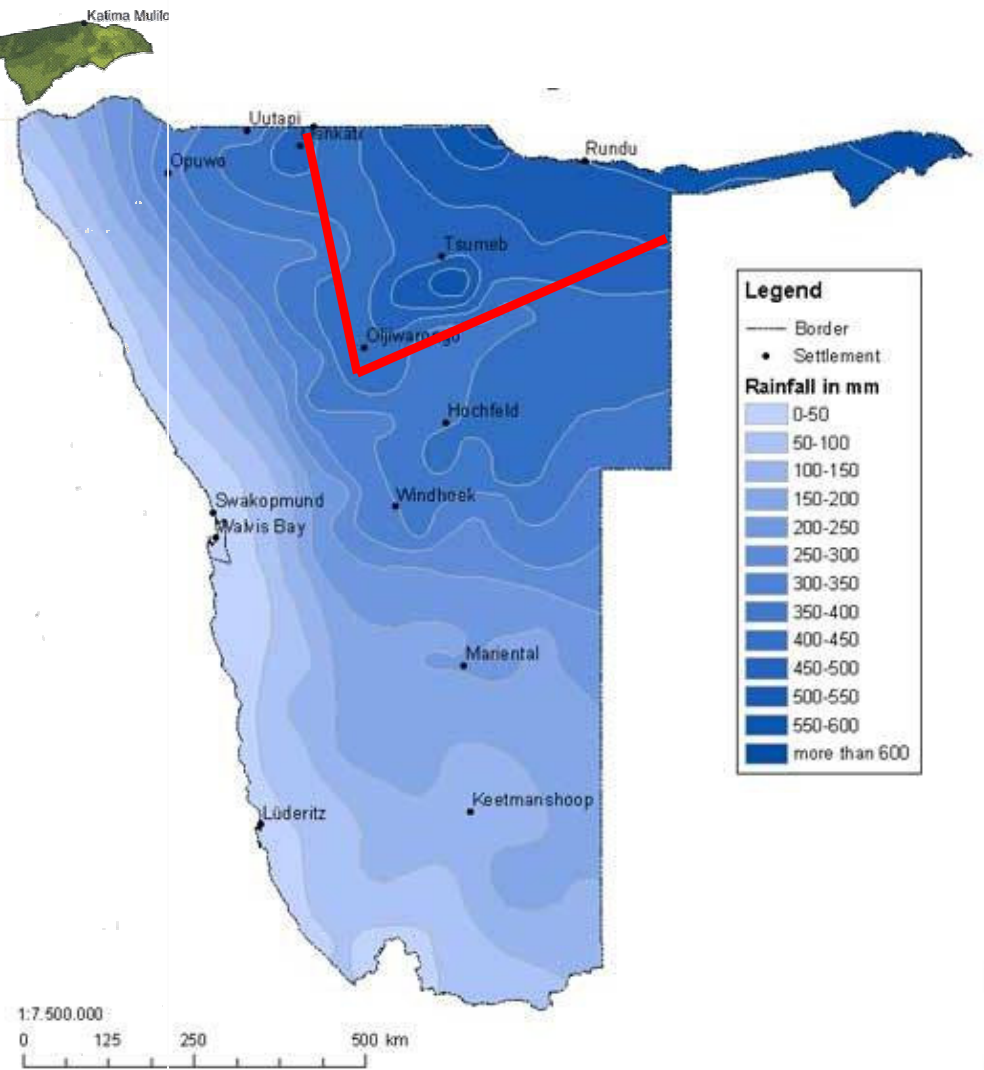
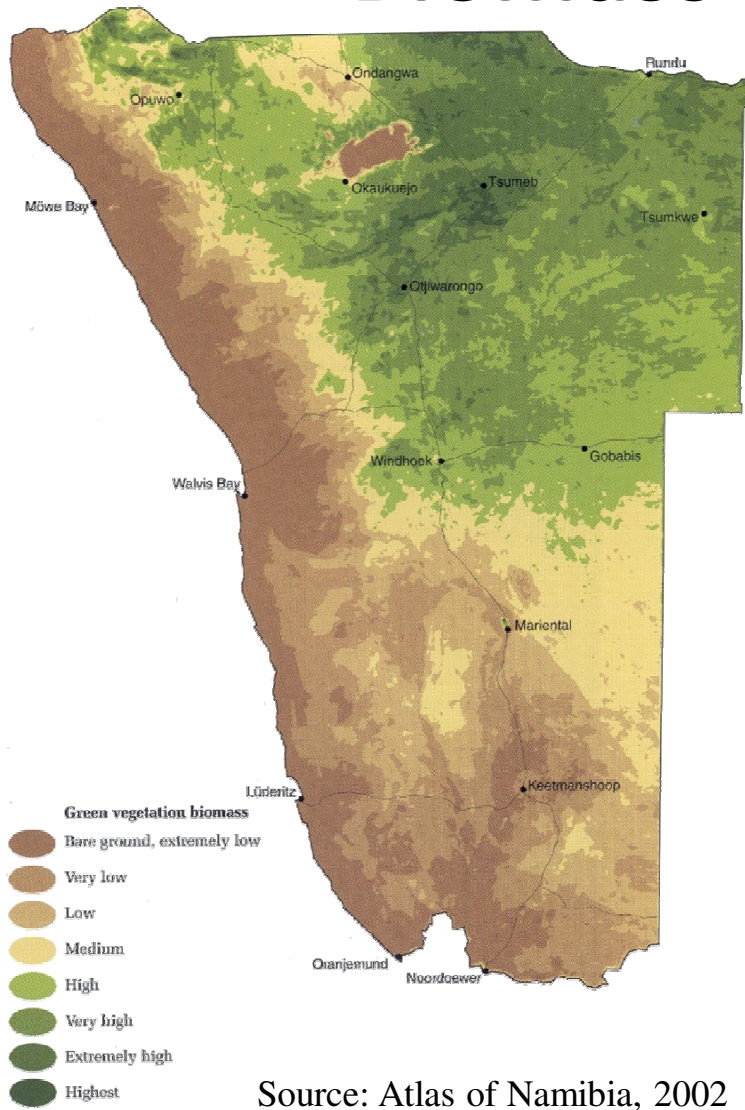
Tidal/Wave:



> 200+ MW (est)



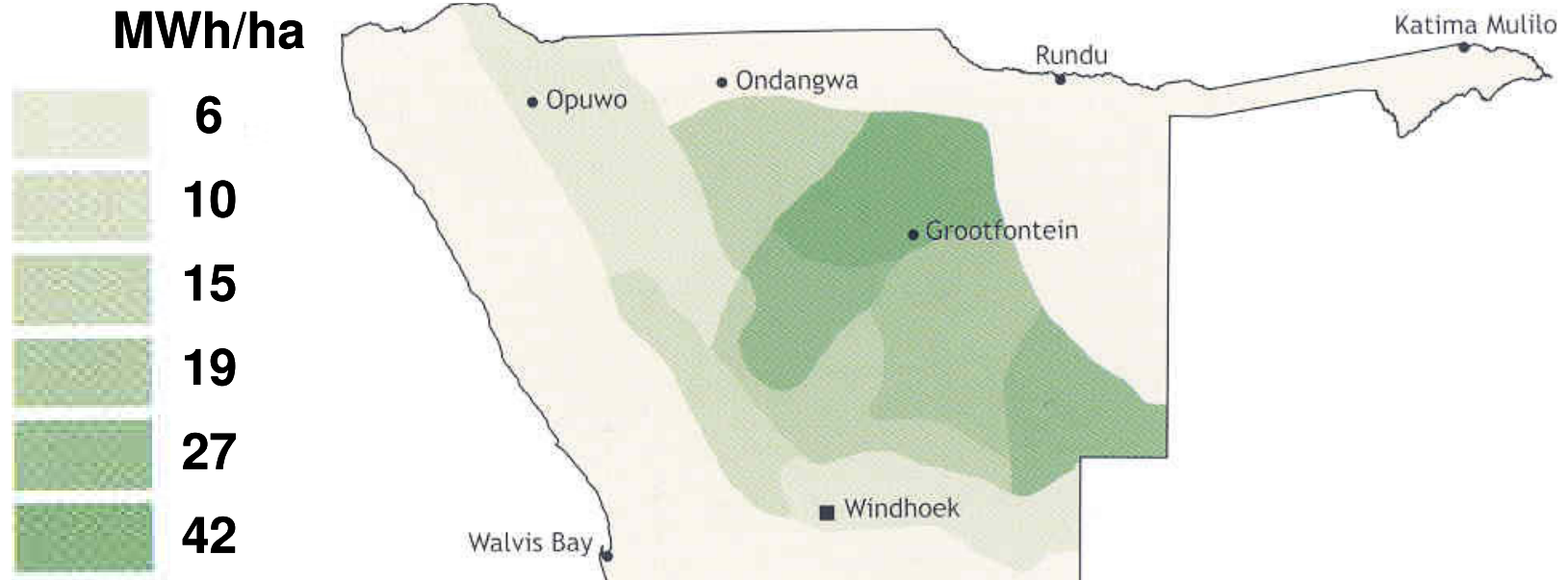
Biomass from vegetation



Ligno-cellulosic – up to 25 t / ha

Cellulosic – up to 1.5 t / ha

Biomass Potential



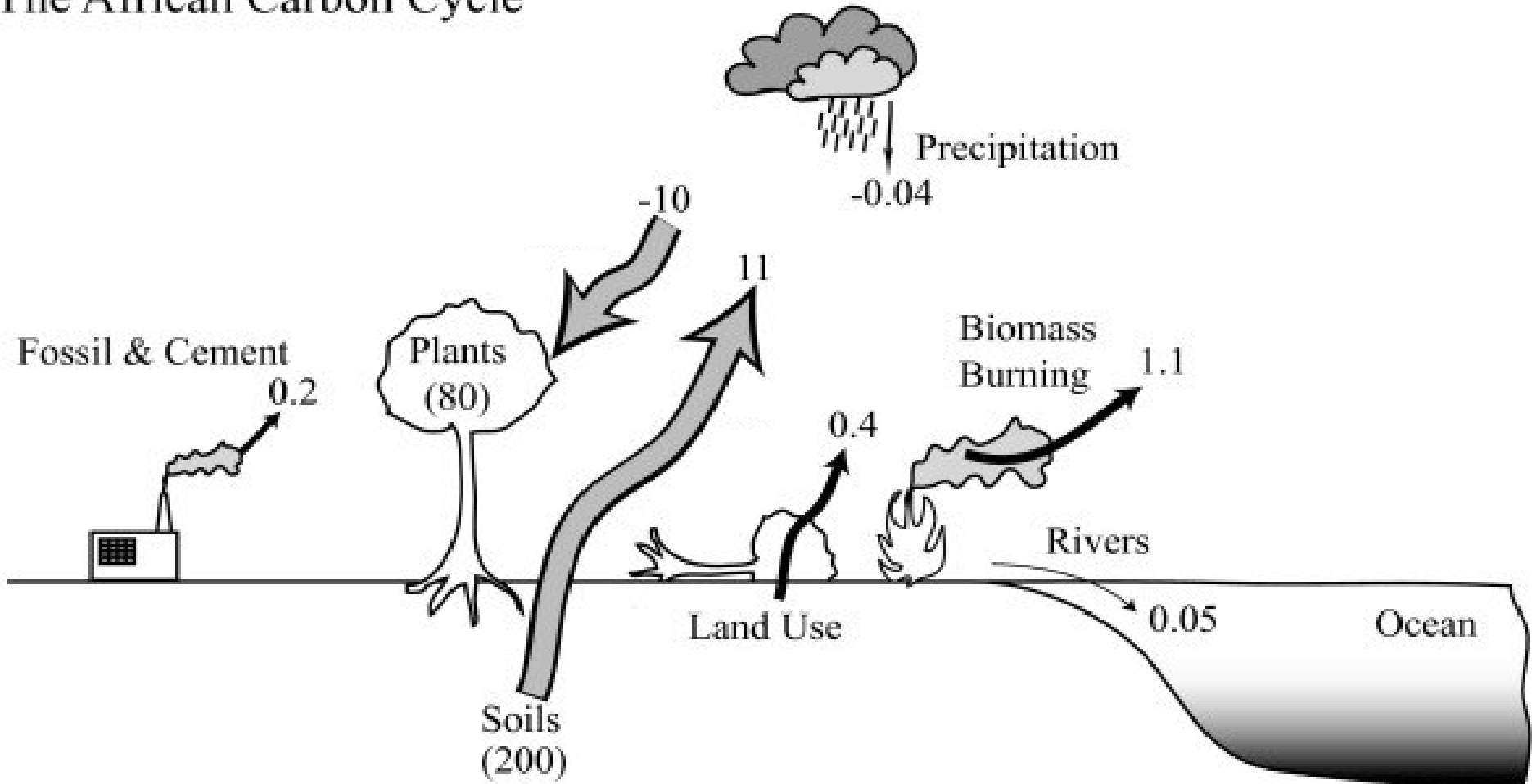
Adapted from: Bester (1999), Agricola 10: 1 - 3



Opportunities for biomass use

- **Wood stock >> 200 Mt**
 - Biomass use: ~ 1,000 kt / a (< 0.5% of total)
 - Charcoal: 60 kt / a
 - Energy (other): >> 100 MW is possible
 - Also: pellets, fodder, furniture, insulation material...
- **Jobs:** creating new rural opportunities
- **Land:** increasing conventional yields
- **Water:** improving penetration and recharge
- **Biodiversity:** enhancing potentials
- **Biochar, LULUCF, CDM...**

The African Carbon Cycle

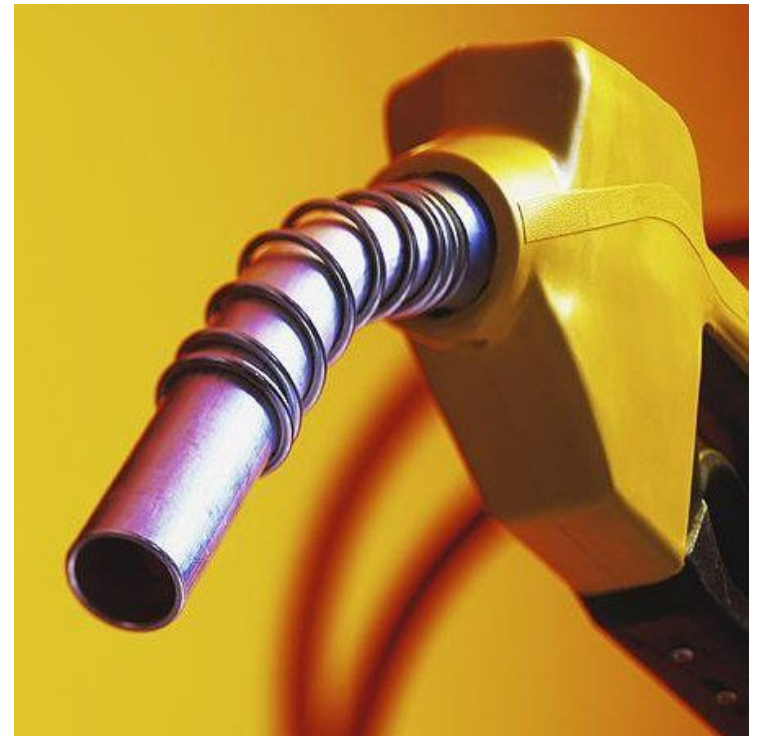


Fluxes and sinks in Gt C per annum

Source: Williams et al., "Africa and the global carbon cycle", *Carbon Balance and Management* 2007, 2:3

Liquid Fuel Requirements

- **2005:** 880 m liters of liquid fuel imported
 - ~55% diesel
 - ~35% petrol
- **2010:** est > 1 bn liters
 - >60% of nat. energy need
- **Vehicle population**
 - **2007:** ~221,000
 - **2010:** est ~ 245,000



Liquid Biofuel Potentials

- **Jatropha**

- survival rainfall << production rainfall
- regulations, value chain elements & market not existent
- limited experience & few successes
- est potential: 100,000 ha in 10 years
 <10% of exp diesel requirements then

- **Castor & soy**

- 350 – 1,600 kg/ha (castor)
- 1,500 kg/ha (soy) for
 190 l diesel & 200 kg plastic

- **2nd generation biofuels**

- 1 ton dry biomass yields ~190 liter biofuel at ~US\$1.60/liter

- **Algae**

- Photo-bioreactors ~30kl/ha but \$\$\$



Some Current/Potential Biofuel Projects

- Becowood (pellets)
- Caparo Investment (Jatropha and food)
- CBEND (bush to electricity)
- CCF Bushblok (briquettes)
- Integrated Renewable Energy Solutions for the Rural Namibia (Jatropha via community)
- Lev Leviev Biofuels (Castor, Jatropha & food)
- Mukwamahlanga Tukondjeni Community Trust
- Namib Bioenergy Investments (Jatropha via CF)
- Ohorongu (wood chips)
- Prime Investment (Jatropha via CF)
- Strategic Environmental Assessment
- ...



Biofuel Opportunities & Constraints

Opportunities

- (rural) job creation
- rural development
- income diversification
- local value creation & value addition
- harmonisation of policies
- CDM revenues
- carbon-neutral energy

Constraints

- vision of rural development
- land tenure
- water use & rights
- impacts on biodiversity
- trade offs (e.g. conservation vs. development)
- opportunity cost(s) uncertain
- institutional capacities, ownership & drive

Enabling Namibia's Biofuels Sector

YES, biofuels can contribute, but

- **Policy & Regulation**

- sustainable land use criteria
- risk sharing, e.g. Private-Public Partnership
- policy harmonisation & institutional anchoring
- equitable access to grid

- **Tariffs**

- **Targets**

- **Taxes**

- **Funding, e.g. seed and R&D**



Thank you!

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