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BIOENERGY IN NAMIBIA

Towards Establishing Value Chains for Bioenergy
Capacity Building in South Africa, Namibia and Ghana
to Create Sustainable Non-food Bio- Supply Chains

2013

29 April 2013
Swakopmund, Namibia

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Overview

- **Namibia's Energy Policy**
- **Sources and Uses of Energy**
- **Access to Energy**
- **Energy and Poverty**
- **Energy and Affordability**
- **Namibia's Biomass Resource & Potentials**
- **Biofuel Potentials**
- **Bioenergy Initiatives**
- **Bioenergy Opportunities & Constraints**
- **Enabling Namibia's Bioenergy Sector**

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Namibia's Energy Policy

White Paper on Energy Policy (1998)

- Effective energy sector governance
- Security of supply
- Social upliftment
- Investment and growth
- Economic competitiveness and efficiency
- Sustainability

Source: Ministry of Mines and Energy, 1998

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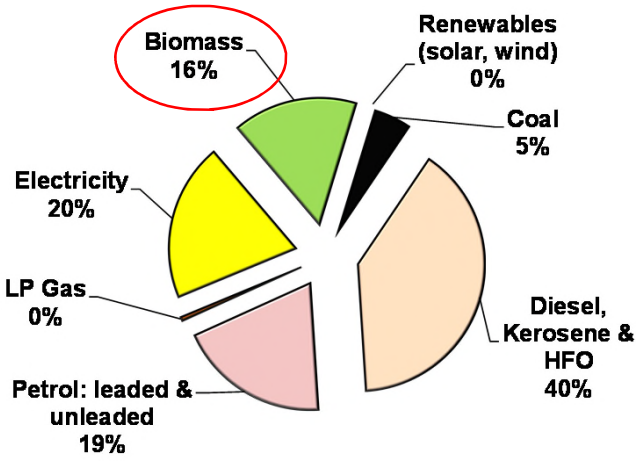
Energy Sources

~ 20 TWh in 2011



Estimate: VO Consulting

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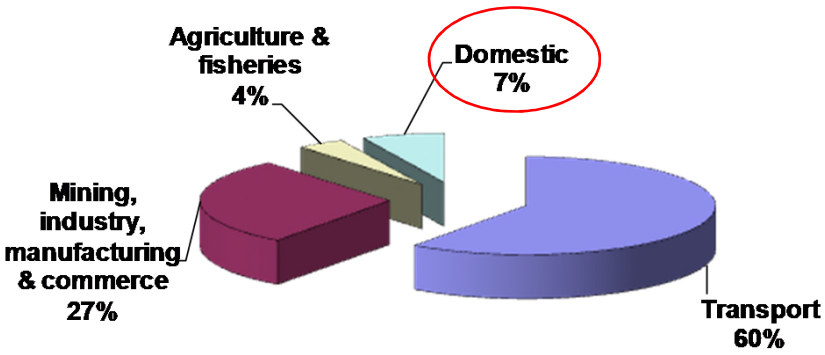
Energy Uses

2011



Estimate excl biomass use: VO Consulting

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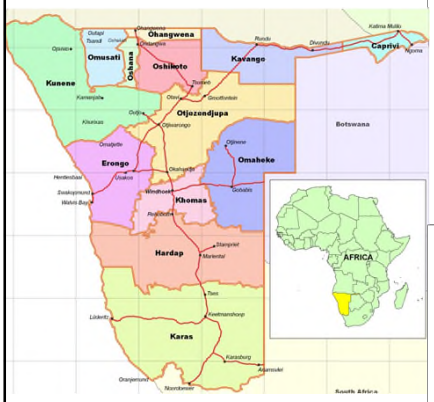
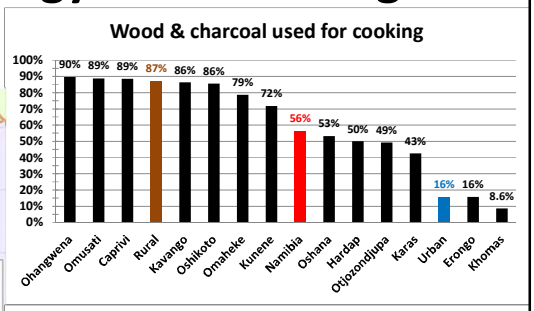
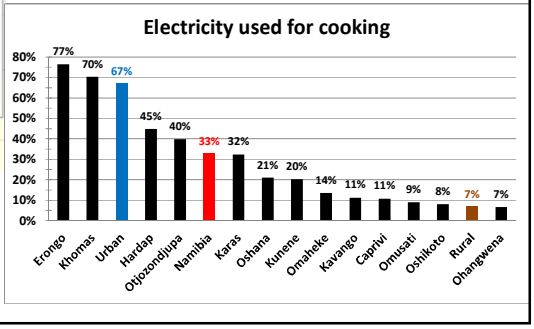
Domestic Energy Use - Cooking







Sources: Namibia Statistics Agency & VO Consulting

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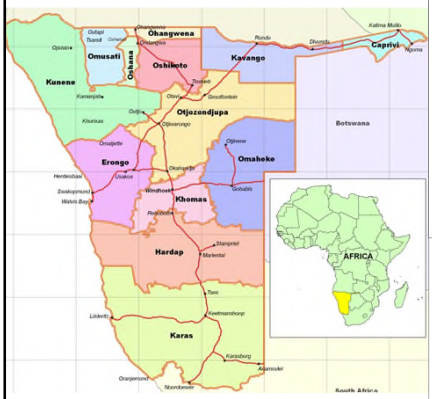
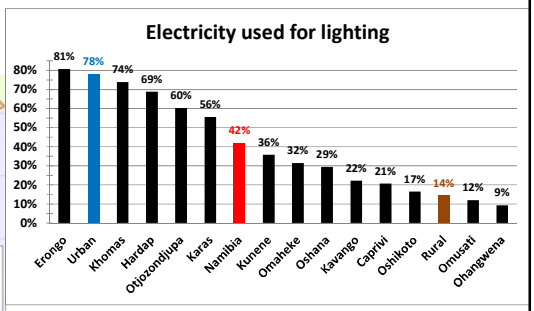
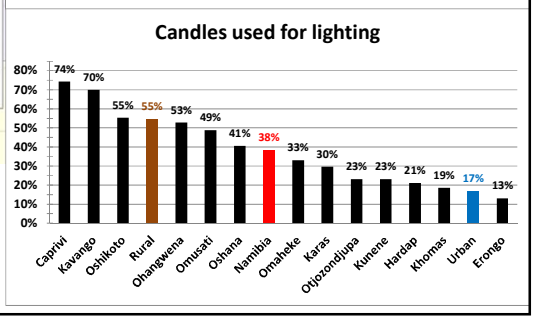
Domestic Energy Use - Lighting







Sources: Namibia Statistics Agency & VO Consulting

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Access to Energy - Electricity

Urban

- ~ 189 000 households
- ~147 000 (78%) use electricity
- ~42 000 remain unelectrified

Rural

- ~276 000 households
- < 45 000 (16%) are electrified
- ~232 000 remain unelectrified

Sources: Namibia Statistics Agency, REDMP 2010 & VO Consulting

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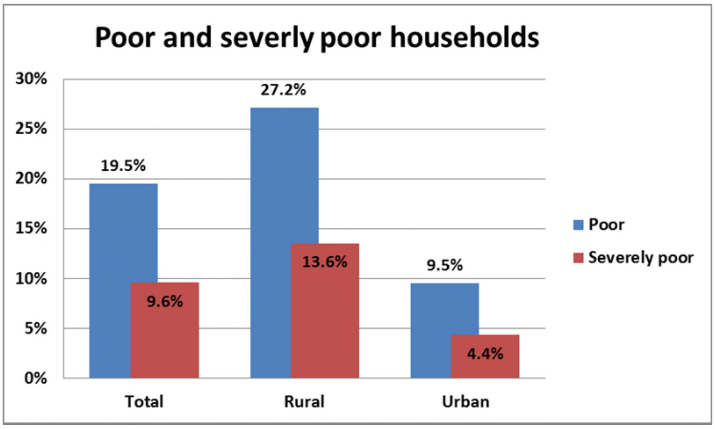
Energy and Poverty



- Upper bound poverty line: N$378/capita/month in 2010
- Lower bound poverty line: N$278/capita/month in 2010
- Food poor: N$205/capita/month in 2010

Sources: Namibia Statistics Agency, VO Consulting

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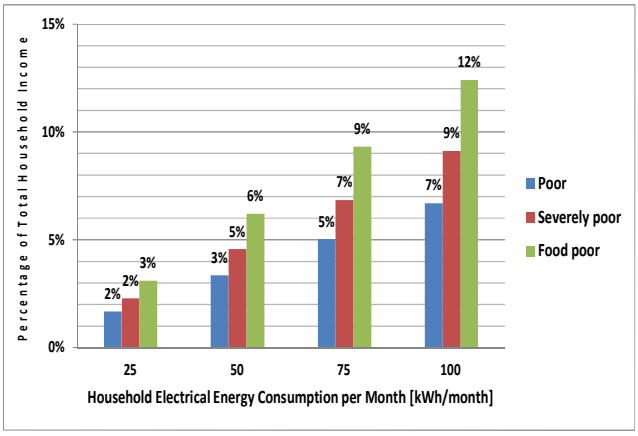
Energy and Affordability



Cooking:
N$164 for wood
vs
N$74 for electricity

Lighting:
N$35 for candles
vs
N$8 for electricity

Source: VO Consulting

- Upper bound poverty line: N$442/capita/month in 2013
- Lower bound poverty line: N$324/capita/month in 2013
- Food poor: N$238/capita/month in 2013

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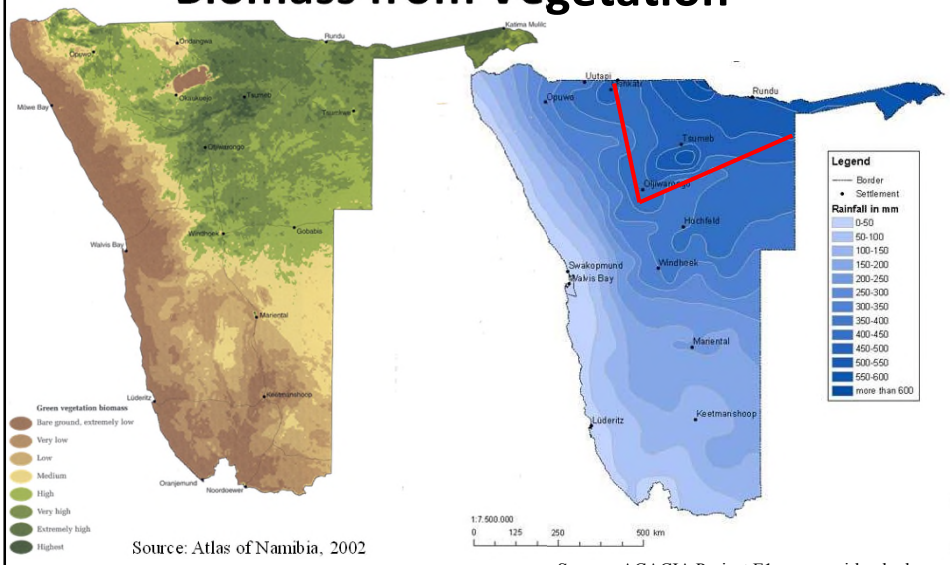
Biomass from Vegetation



Source: Atlas of Namibia, 2002

Source: ACACIA Project E1, www.uni-koeln.de

Ligno-cellulosic – up to 25 t / ha

Cellulosic – up to 1.5 t / ha

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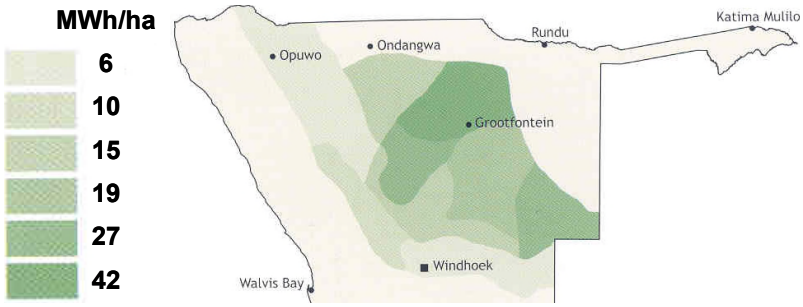
Woody Biomass Potential



Source: VO Consulting, adapted from: Bester (1999), Agricola 10: 1 - 3

Sources: VO Consulting &CBEND Project

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Biomass Potentials

- **Woody Biomass Stock >> 250 Mt**
  - Biomass use: ~ 1 Mt / a (< 0.5% of total)
  - Charcoal: ~60 to 100 kt / a
  - Also: pellets, briquettes, fodder, insulation material…
  - Energy (other): >> 100 MW is possible
- **Jobs:** creating new rural opportunities
- **Land:** restoring rangelands & increasing yields
- **Water:** improving penetration and recharge
- **Biodiversity:** enhancing ecosystem services
- **Forex:** reducing imports, creating exports (?)

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Biofuel Potentials

- **Jatropha**
  - survival rainfall << production rainfall
  - regulations, value chain elements & market non-existent
  - limited experience & few successes
  - est potential: ~150,000 ha
    ~ 15% of exp diesel requirements
- **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**
  - hope to learn at this workshop…

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Current & Recent Bioenergy Projects

- Becowood (pellets)
- Caparo Investment (Jatropha & food)
- CBEND (bush to electricity)
- CCF Bushblok (briquettes)
- Green Coal Namibia (torrefied pellets)
- Green Energy Namibia (pellets & 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)
- Ohorongo / Energy for Future (wood chips)
- Prime Investment (Jatropha)
- STEAG & Transworld Cargo (pellets) … *and others.*

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Bioenergy Opportunities & Constraints

Opportunities

- job creation
- development – esp rural
- local value creation & value addition
- carbon-neutral energy
- income diversification
- CDM revenues

Constraints

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

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Enabling Namibia's Bioenergy Sector

- Vision
- Policy & Regulation - energy / RE policy / bioenergy policy
- National targets
- R&D support
- Funding – project development
- Land use planning
- Risk sharing (private & public, PPPs)
- Institutional anchoring
- Standards (fuel)
- Market scale & potential scope

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Thank you!

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