

ECONOMIC AND SOCIAL IMPACTS OF CLIMATE CHANGE: CASE FOR BOTSWANA

**Climate Change and Trade:
The Challenges for Southern
Africa**

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BIDPA

Overview

- Botswana has a variable climate that is characterized by high temperatures, variable rainfall, reoccurring droughts and floods
- With a pop. of 1.7 million development challenges include:
 - Poverty (31% p.d.l)
 - Unemployment (17%)
 - HIV/AIDS (23% adult pop)
 - Economic diversification



Botswana's GHG Emissions

- Bots GHG emissions account for 0.02% of world emissions and 0.54% of African emissions
- Bots emissions per GDP are well below the world average while emissions per capita are relatively high as a result of small population
- CO₂ (52%), methane (33%), nitrous oxide (16%)
- Net sink of CO₂ = land use and forestry sector
- CO₂ – coal powered electricity (53%) & transport (24%)
- Methane and nitrous oxide –Agriculture sector



Sectoral impact of CC

- Major sectors affected by CC agri and tourism
- Agri contributes 2% to GDP; tourism 11%
- 28% of rural population derive livelihood & income
- 20% national cereal requirements
- Beef exports
- Reduction in crop and livestock production
 - Food security
 - Export earnings
 - Undermine poverty alleviation and employment creation efforts



Adaptation Strategies in Agri Sector

- National early warning systems
- Drought monitoring systems
- Promotion of drought tolerant breeds and crop varieties
- Soil management
- Drought relief programs



Potential options for Agric Sector

- Nationally appropriate mitigation actions (NAMA)
- REDD
- Carbon market instruments
- South-South cooperation



Electricity Sub-Sector

- Dominated by coal powered electricity
- National access rate 66.5%
- Rural access rate 53.4%
- Mining sector major consumer
- Electricity supply priority for sustainable development



Current Demand and Supply

- 80% from SAPP (61% SA)
- Locally Morupule Power Station
- Regional shortage in electricity that is expected to continue up to 2013
- Botswana moving towards internal generation and exporting to the regional market
- Short term – two diesel powered generators (160MW)
- Medium term – expansion of Morupule B Phase 1 (600MW)



Current Demand and Supply

- Mmamabula (300MW)
- Guaranteed SAPP contracts (90MW)
- An additional 900MW to be exported to SA
- Delays in the completion of projects threatens Botswana's energy security



Future Supply

- Expansion and new coal powered electricity stations will increase Bots GHG emissions but will not significantly change Bots emissions compared to other developing countries
- Risk – advance developing countries (SA) fast track their emission targets or Botswana as a middle income country expected to do the same
- Options for green technologies, carbon capture & storage to reduce emissions



Use of renewable energy sources

- Coal bed methane
- Solar thermal
- Open cycle gas turbines
- Western Corridor (hydro power)
- Success will depend in part on availability and opportunities for investment, access to finance, PPP, technology transfer etc



Options for the Energy Sector

- Carbon levy, emission trade schemes, carbon accounting (carbon offsets), renewable energy feed-in-tariffs etc
- Development of technical regulations and standards coal and solar energy sectors
- Market based incentives (CDM)
- South-south cooperation



Key Issues for Botswana

- Opportunities
 - Financial and technical support for national adaptation programmes of action (NAPA)
 - Expansion of CDM projects to include: land use, land change and forestry, carbon capture and storage, sectoral and NAMA crediting
 - Extended timeline for developing countries to start implementing mitigation actions – after 2030



Challenges and threats

- Enabling environment to attract finance, technology development and transfer
- Need to address regulatory, institutional and market inefficiencies
- Carbon strategy that promotes and regulates green technologies and clean energy
- Main threat – annex 1 policies and measures that can negatively impact Botswana's exports (produced from coal energy)



Thank you