The Nairobi Work Program- Methods and tools used in Botswana

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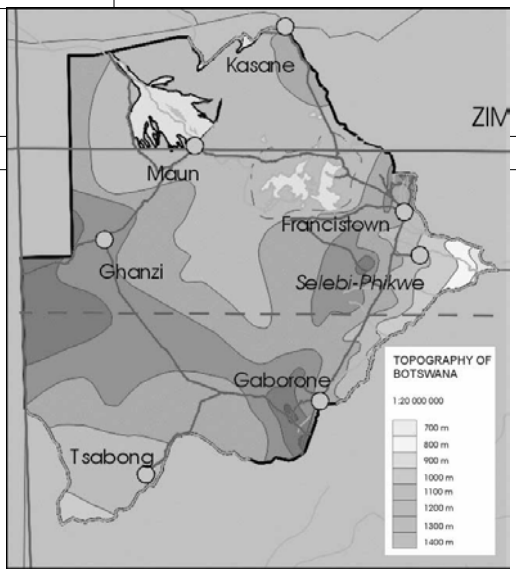
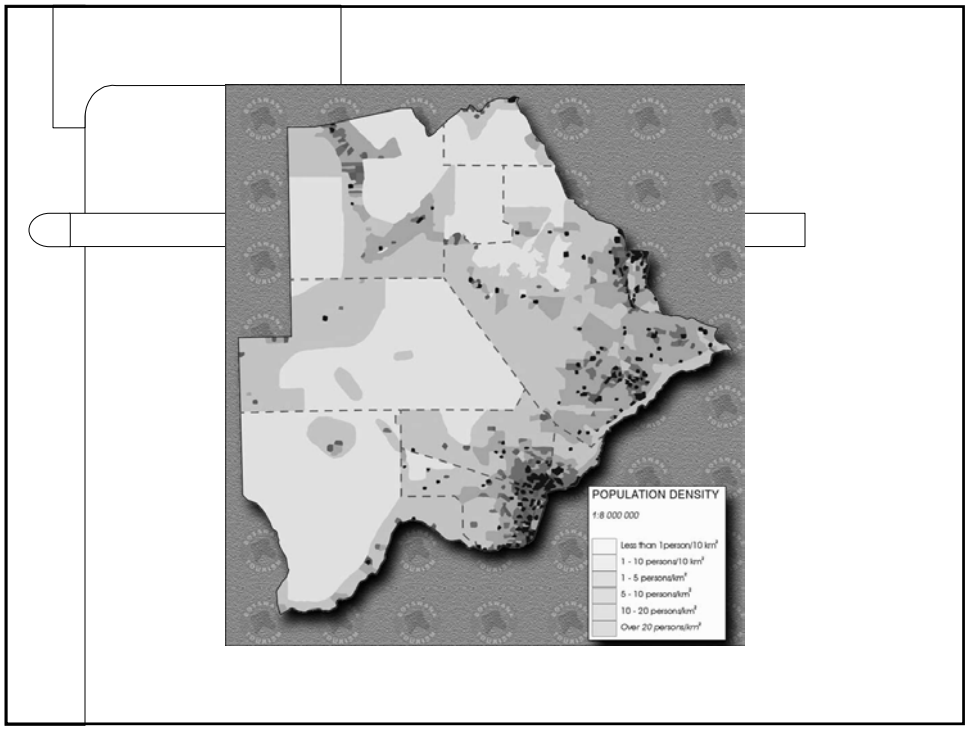
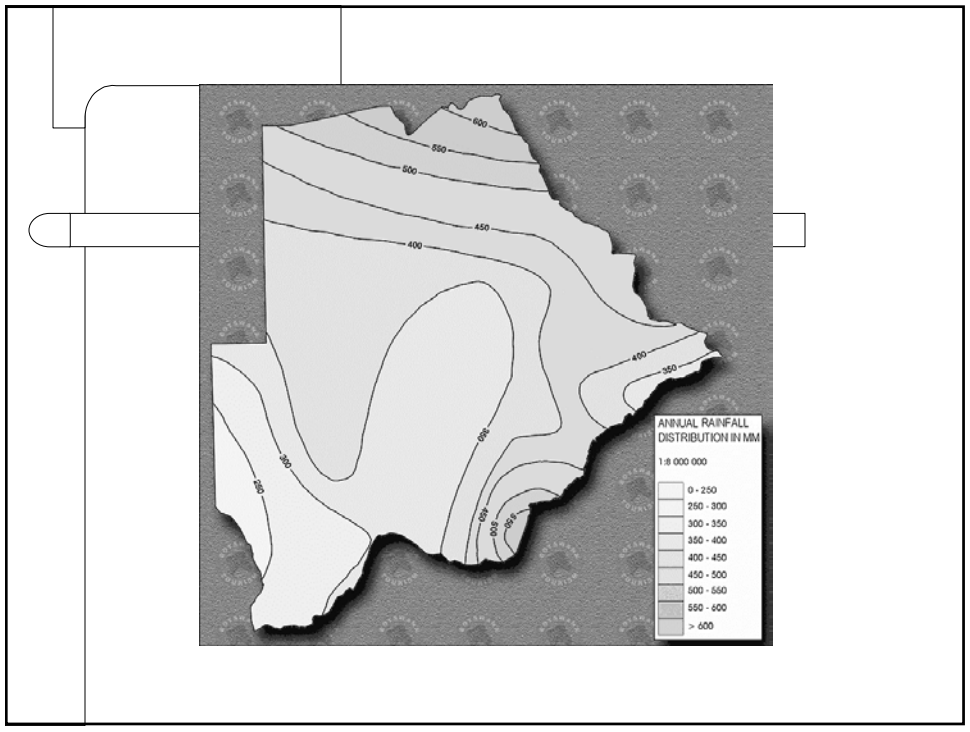
Botswana's National Circumstances

- Botswana is a land-locked country situated in Southern Africa
- total area of 582, 000 km2, nearly the size of France, Texas or Kenya
- It shares borders with Namibia, South Africa, Zambia and Zimbabwe
- average altitude of 914 meters above mean sea level.
- The country is semi-arid with generally low rainfall and high temperatures.
- This is as a result of its location in the sub-tropical high-pressure belt of the southern hemisphere, away from the influence of the oceanic winds.
- Annual rainfall distribution is about 650mm in the North to about 250mm in the South west.
- The 2001 Population and Housing Census estimated the population at 1.7 million (CSO, 2001).
- About 80% of the population resides to the east
- Much of the country is covered with Savannah woodland with many species of acacia and mophane in the North and East.


Democratic Republic of Congo
Tanzania
Angola
Zambia
Mozambique
Zimbabwe
Namibia
Botswana
South Africa
Madagascar


Kasane
ZIM
Maun
Francistown
Ghanzi
Selebi-Phikwe
Gaborone
Tsabong
TOPOGRAPHY OF BOTSWANA
1:20 000 000
700 m
800 m
900 m
1000 m
1100 m
1200 m
1300 m
1400 m


POPULATION DENSITY
1:8 000 000
Less than 1person/10 km²
1 - 10 persons/10 km²
1 - 5 persons/km²
5 - 10 persons/km²
10 - 20 persons/km²
Over 20 persons/km²


600
550
500
450
400
400
350
350
300
250
ANNUAL RAINFALL DISTRIBUTION IN MM
1:8 000 000
0 - 250
250 - 300
300 - 350
350 - 400
400 - 450
450 - 500
500 - 550
550 - 600
> 600

The Okavango Delta

What methods were used to generate scenarios ;

- UK Meteorological Office Model (UKTR)
- Canadian Climate Centre Model (CCC)
- Oregon State Models (OSU)
- MAGIC SCENGEN
- Findings were that;

i. Botswana will on average be 1-3deg C warmer by around 2050 than at present.

ii. Rainfall will be 10-25% less by the same time.

V & As undertaken

- Grasslands and Livestock sectors
- Crops sector
- Health sector
- Forestry sector
- Water sector

Sectors not done

- Tourism
- Settlements
- Cross cutting issues

Water Sector

- Ground water account for 64%.
- Current reserves inadequate.
- Vulnerability assessment undertaken using a water balance model.
- Pitman's Water Resources Simulation Model (WRSM90) used to simulate basin discharge.

Woodlands and Forests

- 81% of surface has significant tree or shrub.
- Fuel wood account for a good fraction of rural energy sources.
- Vulnerability assessment were done using BIOME model as reported by Hulme (1996)

Livestock and Grasslands

- Livestock sector very important in the lives of Batswana.
- Contributes to GDP
- Simulation Model (APSBRAM) assessed the rangeland and livestock production system

Crops Sector

- Botswana has harsh and poor climate.
- Most Farming is rain fed.
- Crops grown by area are sorghum and maize.
- Crop Estimation Through Resource and Environmental System (CERES) for Crop yield under present and future climate Scenarios model was used.

Health Sector

- Adopted a desk top approach.
- Disease likely to be affected by climate change were identified.
- For Future studies models such as TARGET and MIASMA will be used.

What are the gaps and problems in the application of the methods and tools;

- Resolution coarse hence the need to Down scale.
- Observation are only of Met Parameters.
- Capacity to: Transfer technology to relating to predictive modeling.
- Biome has limitations in the failure to represent some vegetation types such as wetland and salt pans
- Only one GCOS station in Botswana.

Emerging issues on adaptation

- Model coarse hence not helpful for regional adaptation level.
- Because we are not a Least Developed Country we do not qualify for NAPA but we need to undertake NAPA.
- We want to move from Assessment (V&A) to Action Plan (NAPA).

Towards Implementing NWP

- Climate Modelling, Scenarios and downscaling.
- Data and Observations.
- Climate related risk and extreme events.
- Adaptation planning and practices.
- Socio-economic information

NWP cont..

- Avail fellowships for modelling and downscaling models across the sectors of the economy at national level.
- Satellite and data need to be available as their observation can help plan ahead and minimize the risk.
- Knowledge of Wx risk helps interpret and link data and observations to socio economics.

Role of the UNFCCC

- Assist institutions of excellence such as Universities develop capacity in developing and running climate models.
- Create fellowships for Model developers.
- Encourage cooperation of experts north south and south south.
- Keep a data base of experts and fund research initiatives.

Thank you

Gracious