UNITED NATIONS
Office for Outer Space Affairs

Climate change and its challenges
The case of Mozambique

United Nations International Conference on Space-based Technologies
for Disaster Management
"**Risk Assessment in the Context of Global Climate Change**"
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Content

Facts

Key challenges

Initiatives

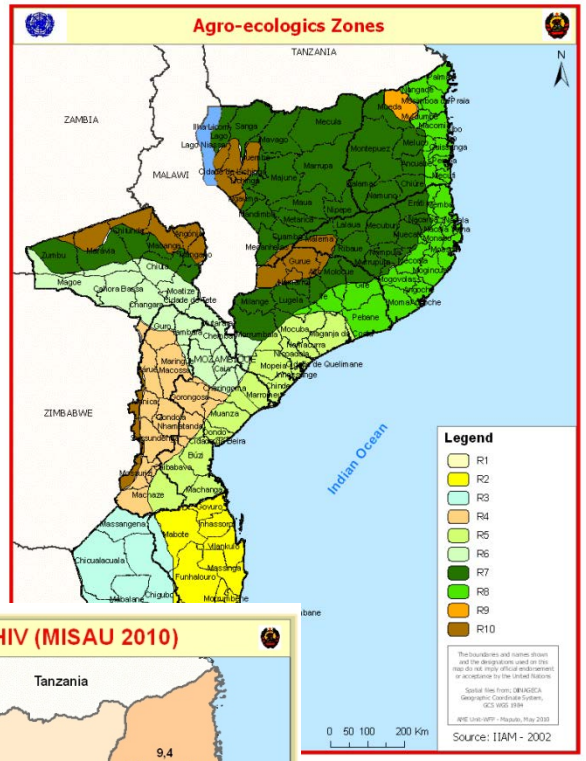
FACTS: Mozambique Context

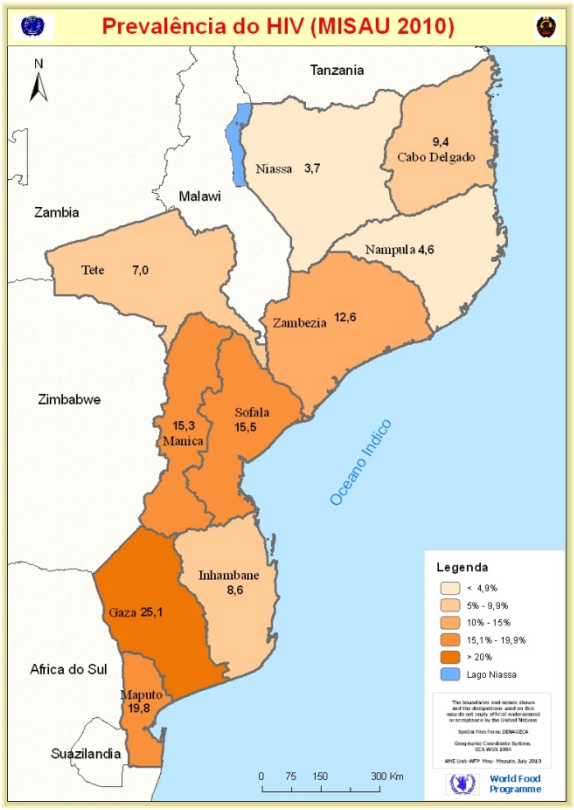
- 54% poverty; 30% food insecure.
- Bottom Human Development Index.
- Life expectancy below 50 years
- Progress towards MDGs uneven
- HIV prevalence: 11.5%

(women/ men 13.1 / 9.2%)

- Agriculture: 24% GDP

  70% of employment
- Geographical socio economic disparities





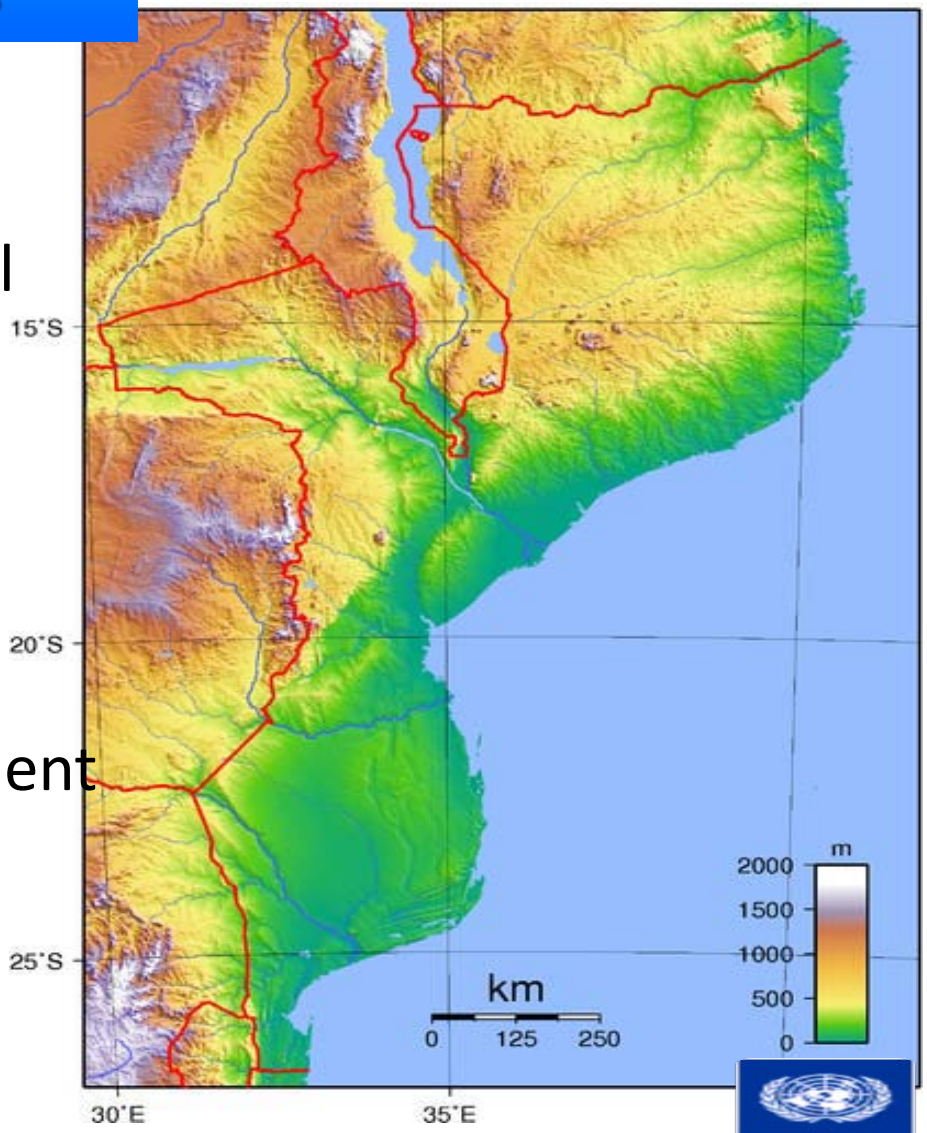
FACTS: Vulnerable

LOCATION:

Coastline 2700 km- flat topography & the Inter-tropical Convergence Zone (ITCZ);

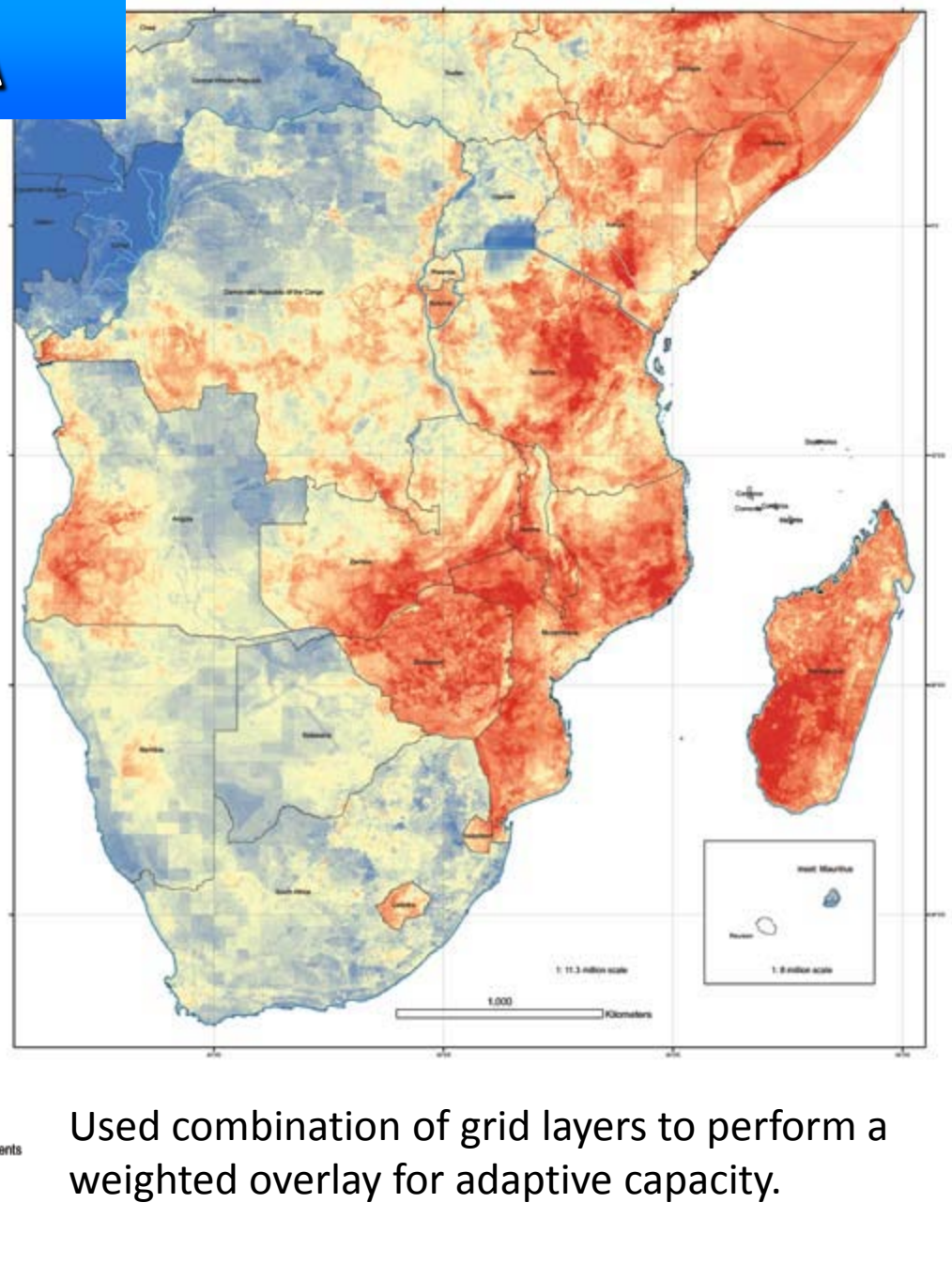
SOCIO ECONOMICS

- More than 60% - 2.5 million people live in coastal areas
- over reliance on natural resources, and rain fed dependent agriculture
- Poor infrastructure
- Undiversified economies



Vulnerability in SA

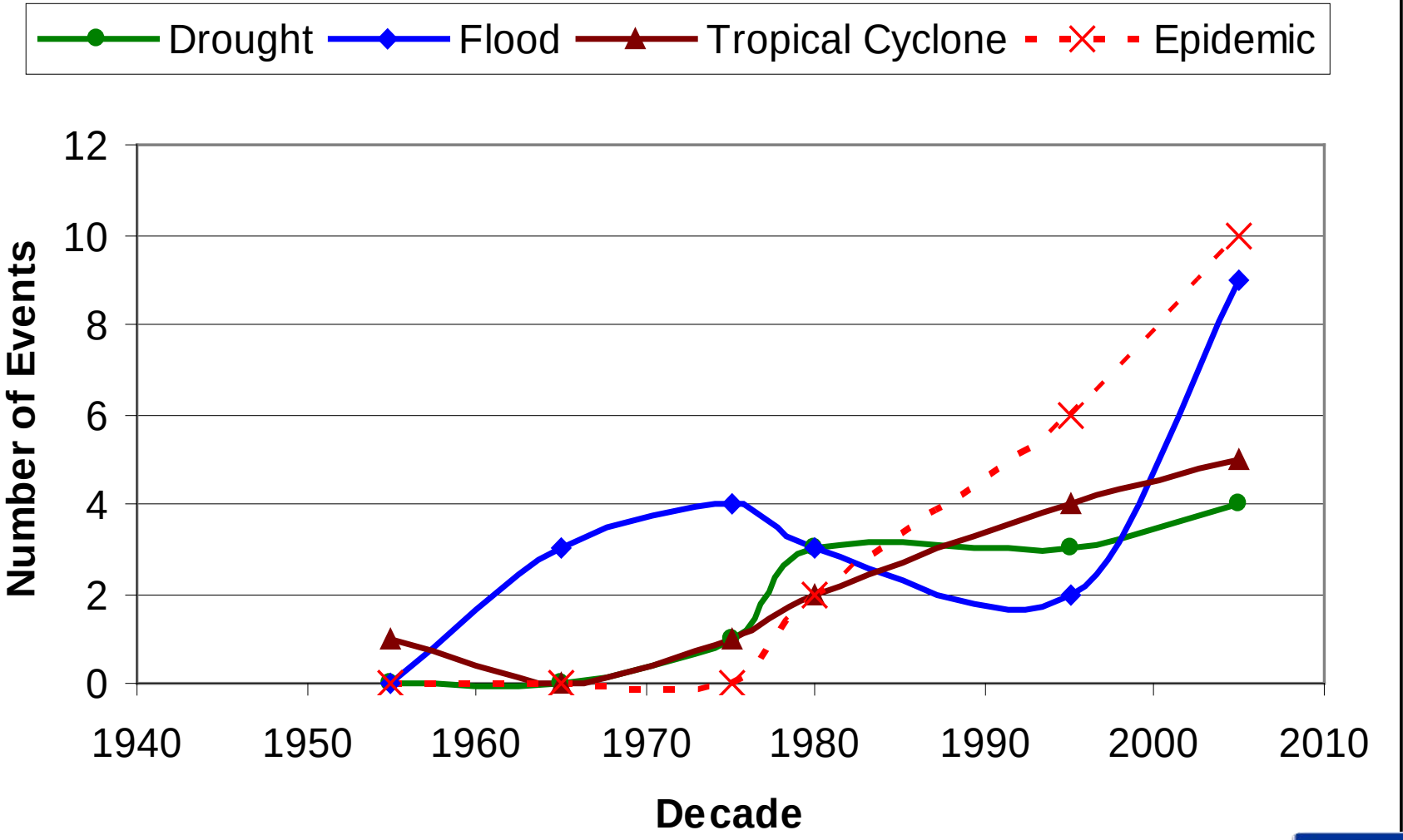
Mozambique, Madagascar, Malawi and Tanzania identified as **'high impact hotspots'** in southern Africa:



Risk and Vulnerability Mapping in Southern Africa, hot spot analysis by R.A.G. Davies and S.J.E. Midgley for regional Climate change Programme

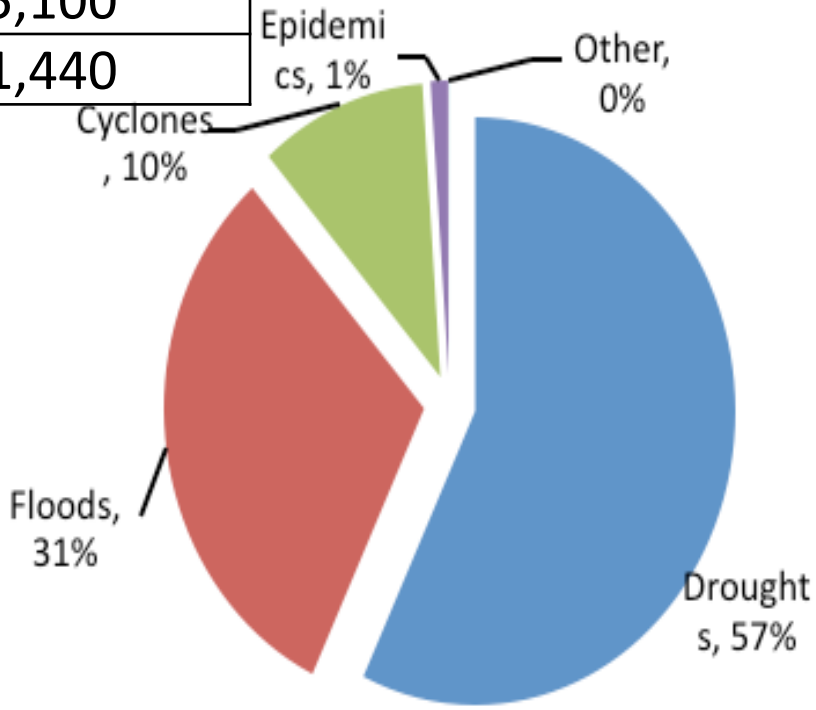
Used combination of grid layers to perform a weighted overlay for adaptive capacity.

Disasters trend in Mozambique (1950 – 2010)



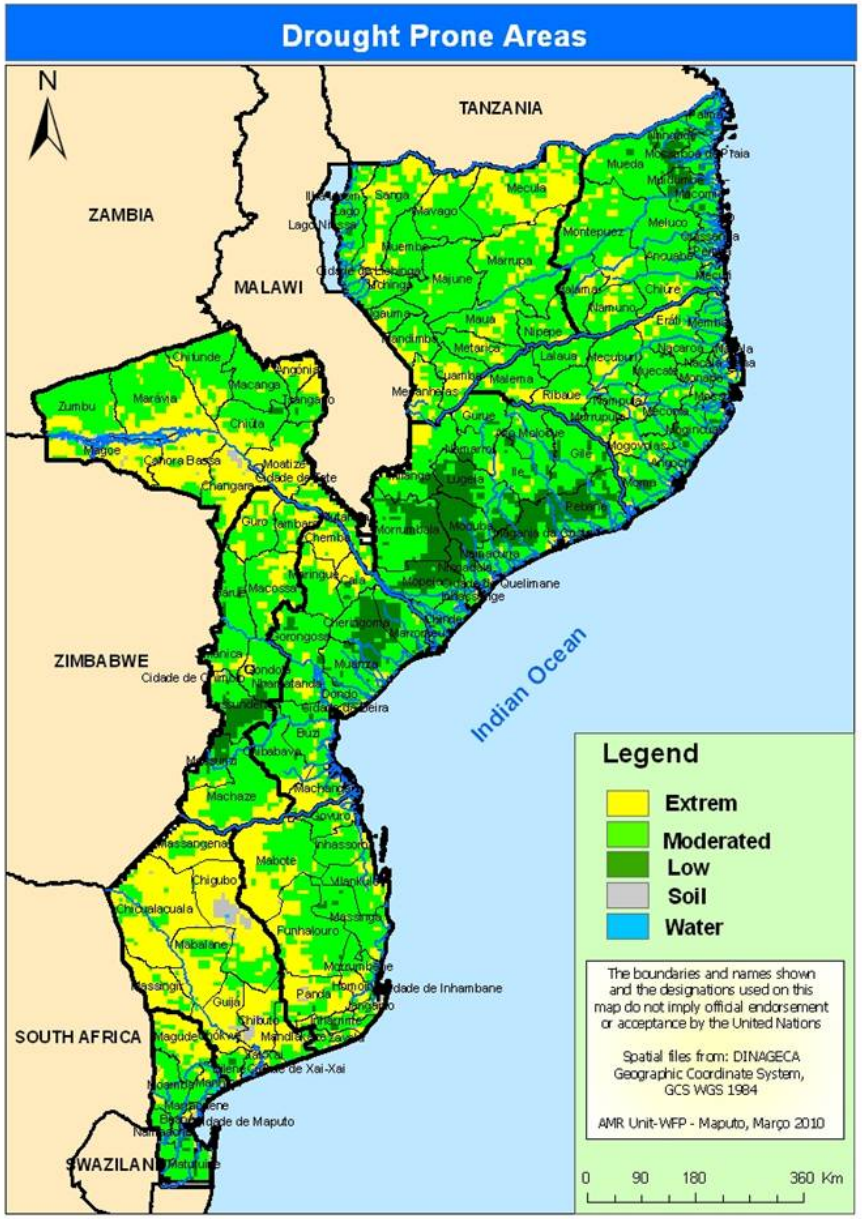
Summary of Disaster Impacts by Type (1956 – 2008)

Disaster	N° Events	Total dead	Affected people
Drought	10	100,200	16,444,000
Flood	20	1,921	9,039,251
Cyclone	13	697	2,997,300
Epidemics	18	2,446	314,056
Strong winds	5	20	5,100
Earthquake	1	4	1,440



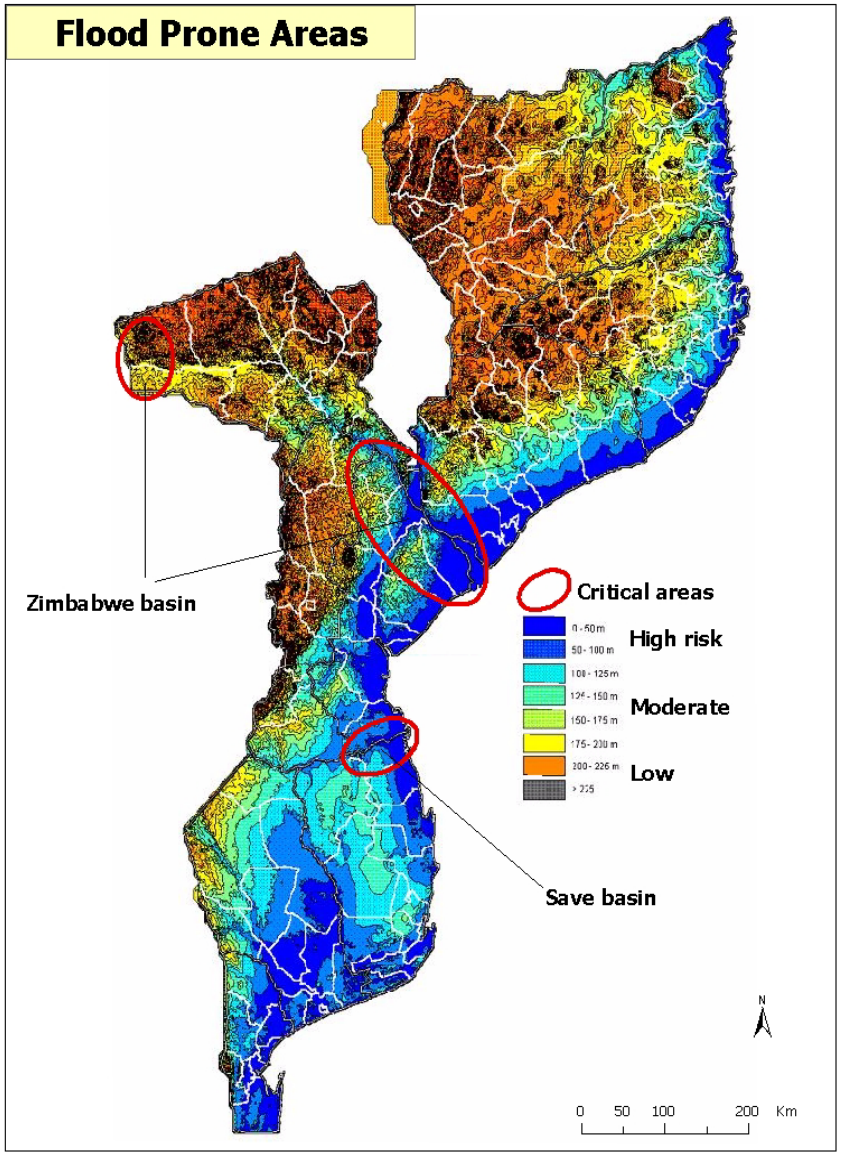
DROUGHT

- Recurrent droughts- “El Niño”.
- North of the Zambezi river, 80% WRSI
- Central region, between the Zambezi and Save rivers 60% WRSI (crop failure in 4/ 10 years)
- South of the Save river, probability below 30% (7 crop failures in ten years)



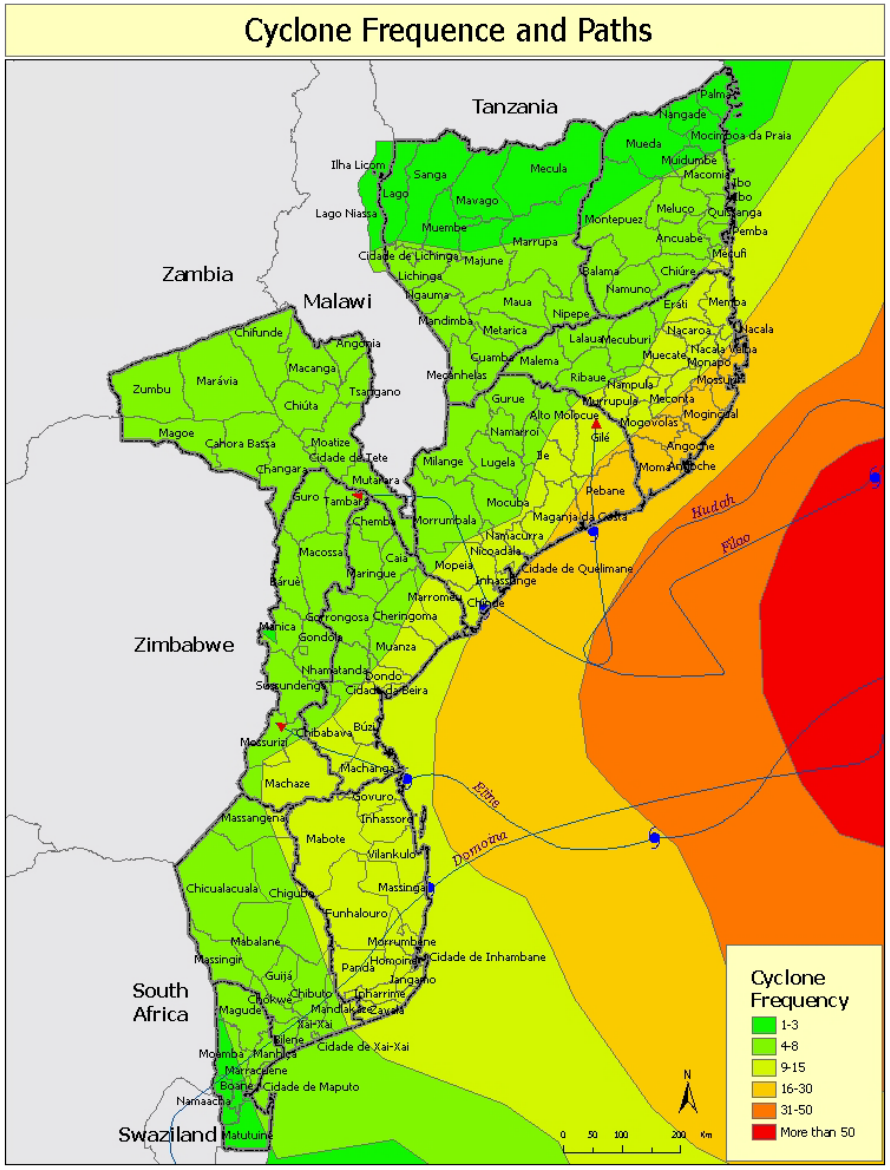
FLOODS

- 103 hydrographic basins, 13 w/drainage area of more than 10,000 km2; 9 shared .
- Total surface runoff 216km3/year, 56% is generated in neighboring countries.
- Vulnerable to changes in water dynamics in neighboring countries.
- 4 dams, for flood control, water- and power supply.



CYCLONES

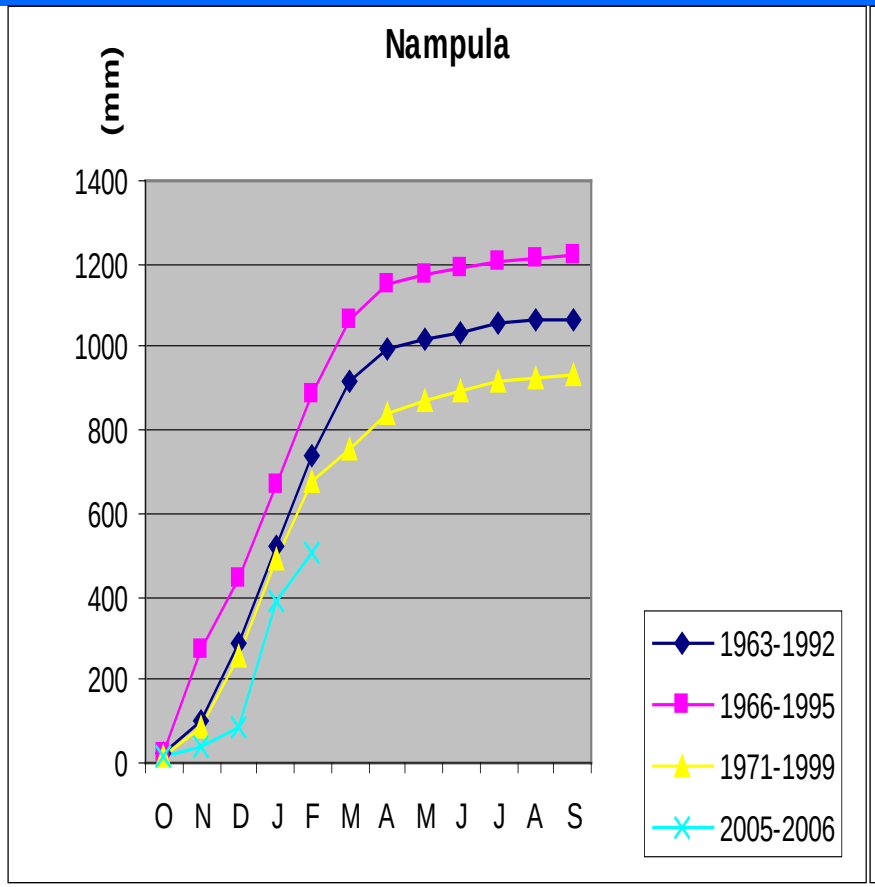
- Of 56 tropical cyclones and tropical storms in the channel, since 1980, 15 (25%) made landfall at moz coast
- Expected to increase in number and strength
- Cyclones becoming more intense, damage to increase
- Higher sea level provides storm surge with a higher “launch point” for the surge.
- High impact- densely populated areas

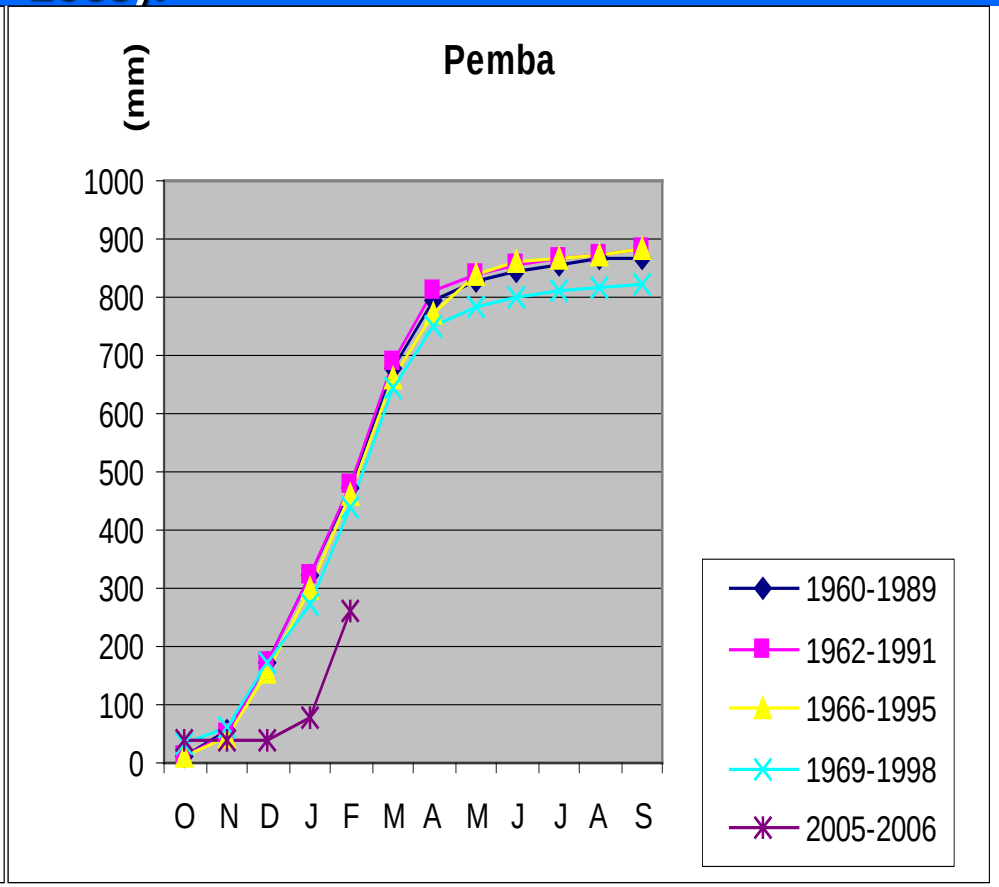


Past trends and future changes in Mozambican climate (1960-2005)

- Significant **positive trends in temperature** over 45 years: up to 1.6°C in annual mean maximum temperature;
- Longest **heat wave** increased approx 9 days
- North **dry spell 7 days** longer in 2005 than in 1960 (likely reflecting a delay in the end of the dry season).
- Nr cold nights and cold days decreased whereas number of hot nights and hot days increased.
- Droughts will be marked by higher mean maximum temperatures induced **increased evaporation**.
- Net average **crop yield will be lower:** Next 40 years: 2–4% decrease, especially in the central region

Observations show a later start of the rainy season in the North (INAM 2009).





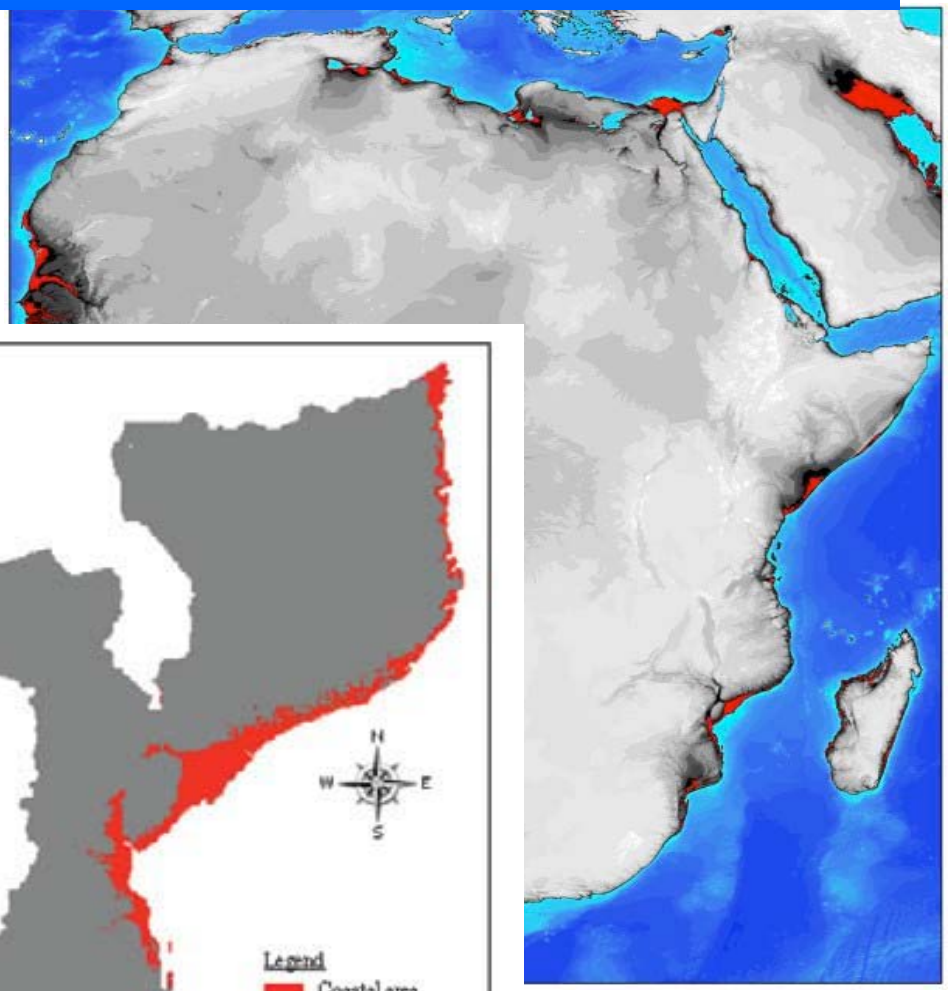
Start rainfall season delayed by up to 45 days at some locations

In South rainfall variability much larger, and no clear picture arises.

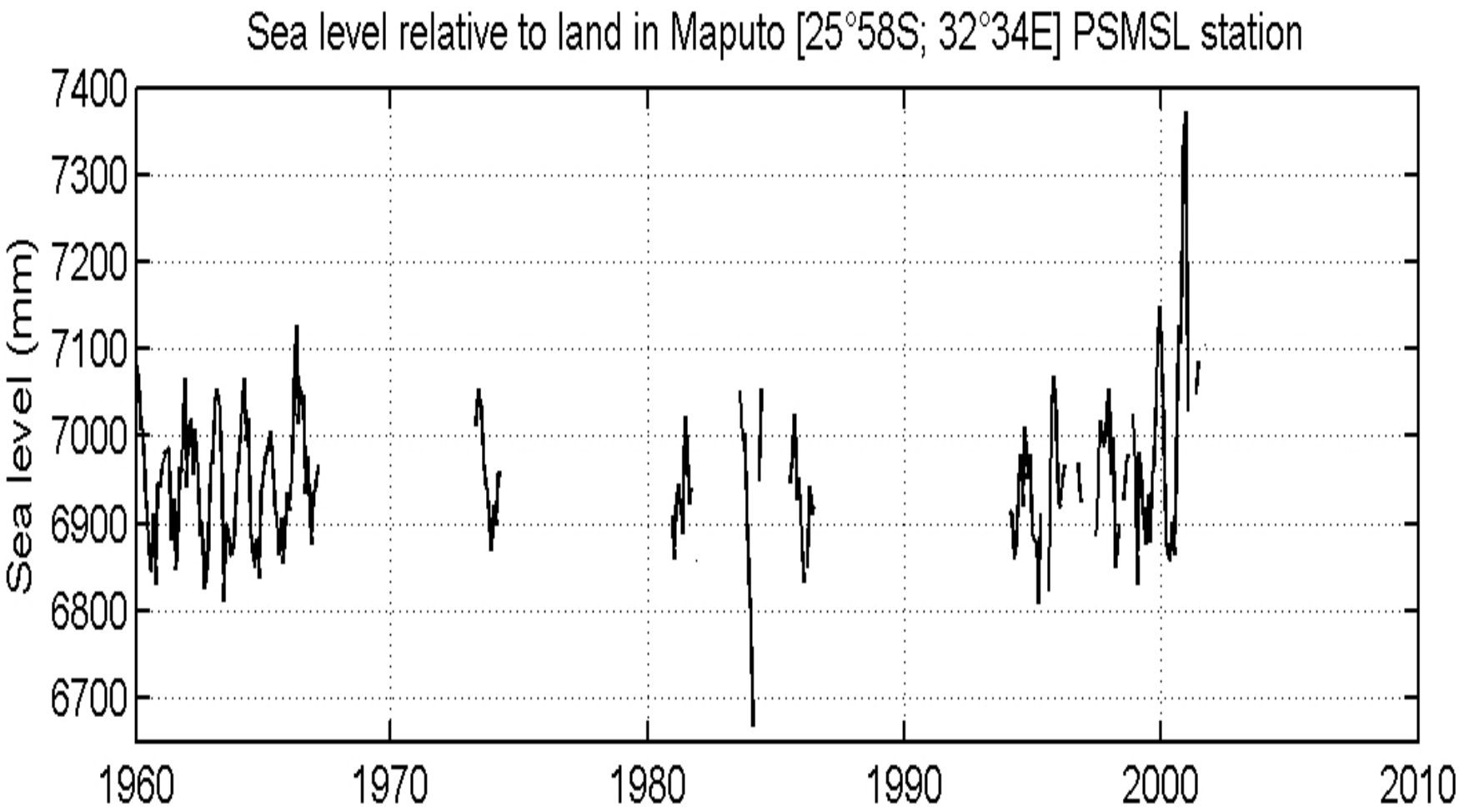
Observed trends in Sea level raise (1960-2005)

average of 1.8 [1.3 to 2.3] mm per year, since 1993 at 3.1 [2.4 to 3.8] mm per year

Could lose 3,268 km2 of land over **40% coastal total**

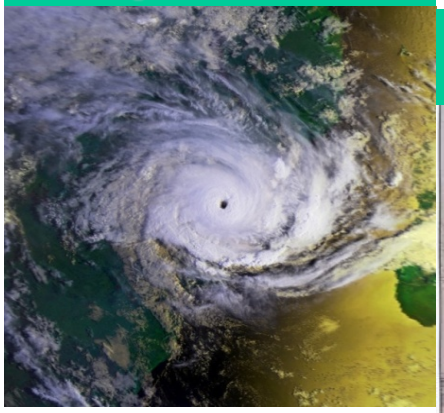


Mean sea level records in Maputo,1960-2002 (INAHINA08)



KEY CHALLENGES- Main Threats

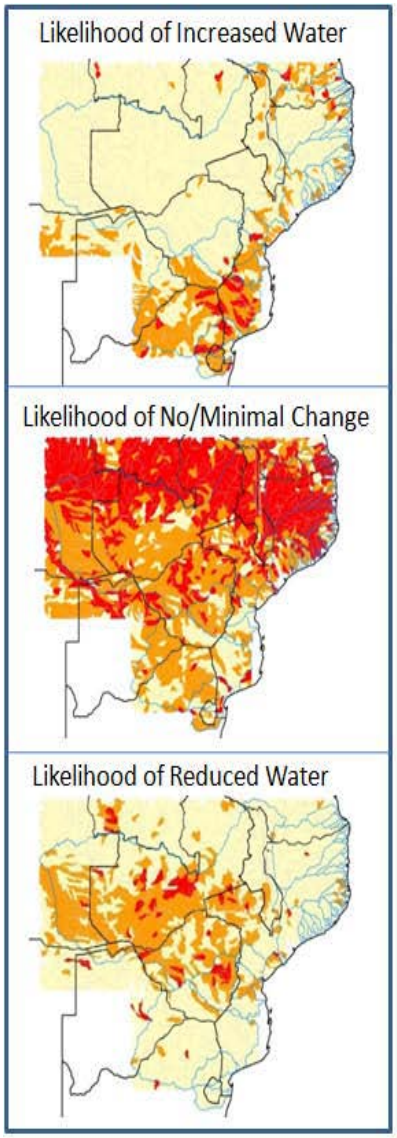
Cyclones

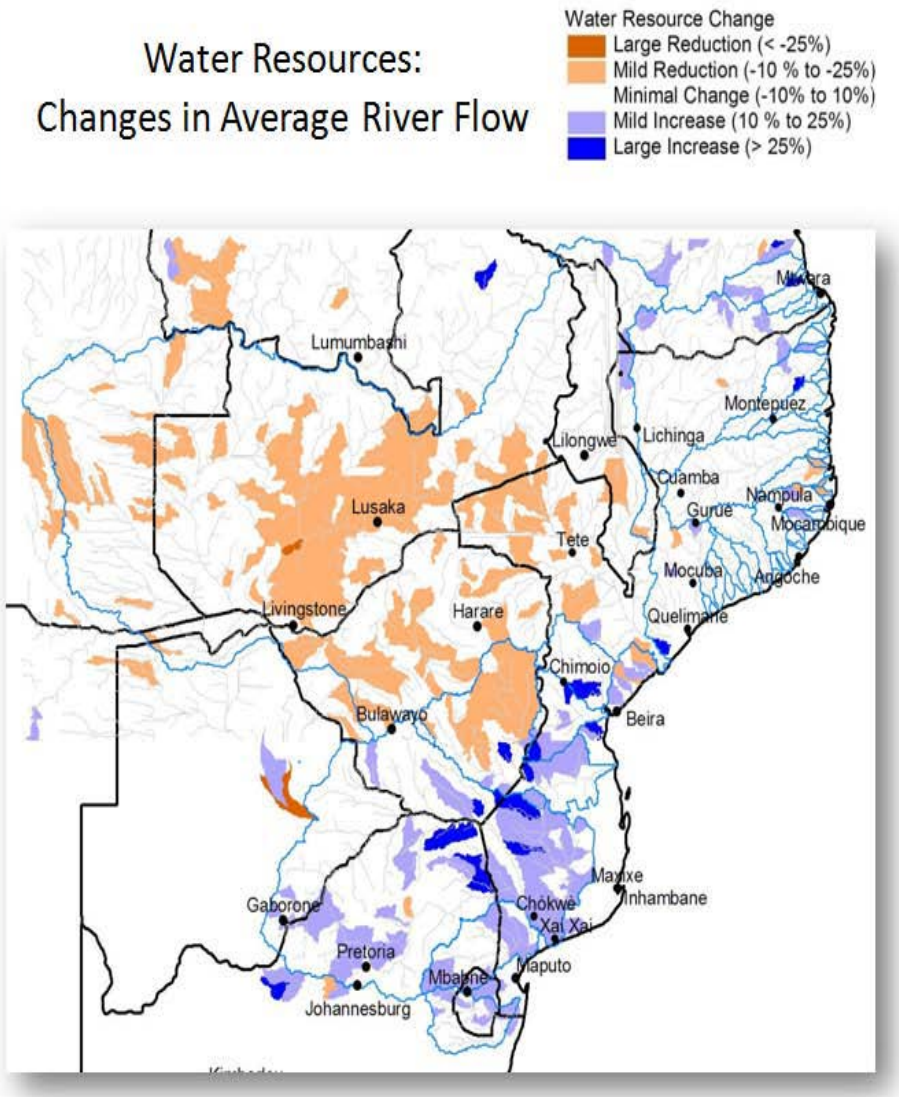


Floods

Droughts

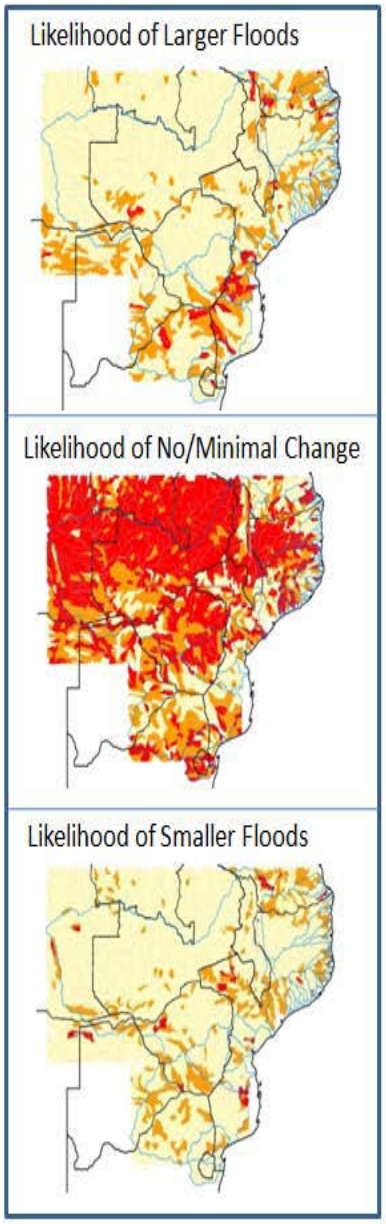
Sea level raise

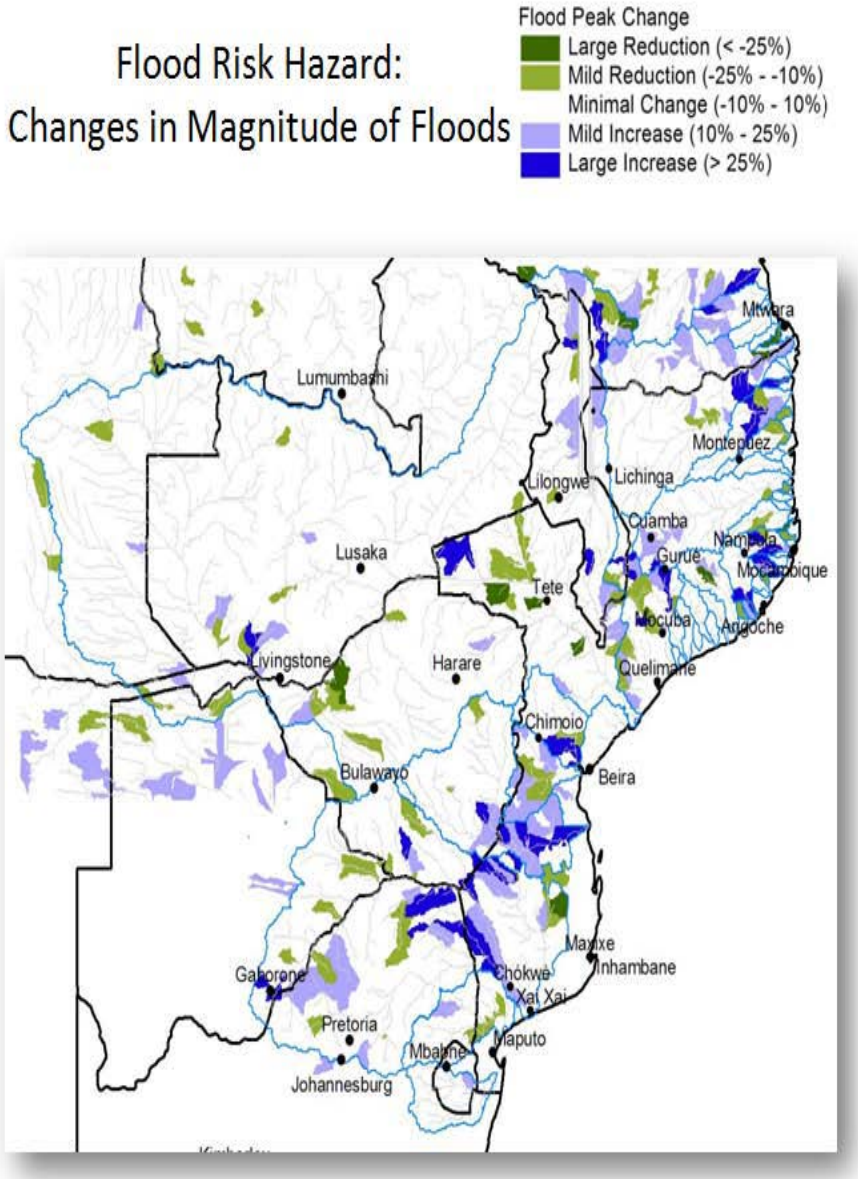




large increase (>25%) in water resources likely in the South

- Likelihood that water flows will increase particularly South, where 5-7 models are projecting increases (top left map).

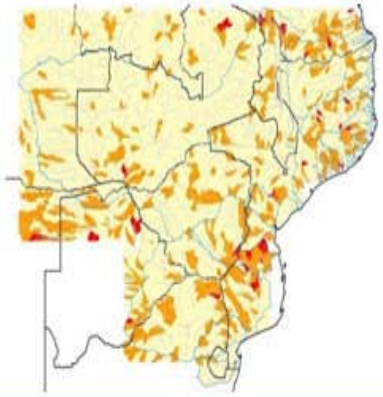




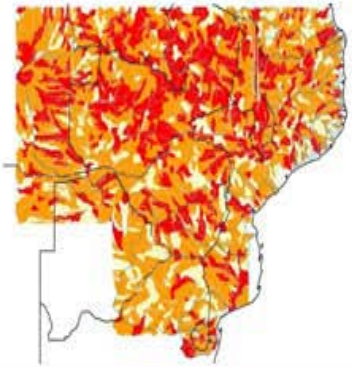
Average changes in the magnitude of floods

The majority of models predict little or no change in flood peak magnitude (left middle), except for the Limpopo which shows high likelihood for higher flood peaks.

Likelihood of More Floods

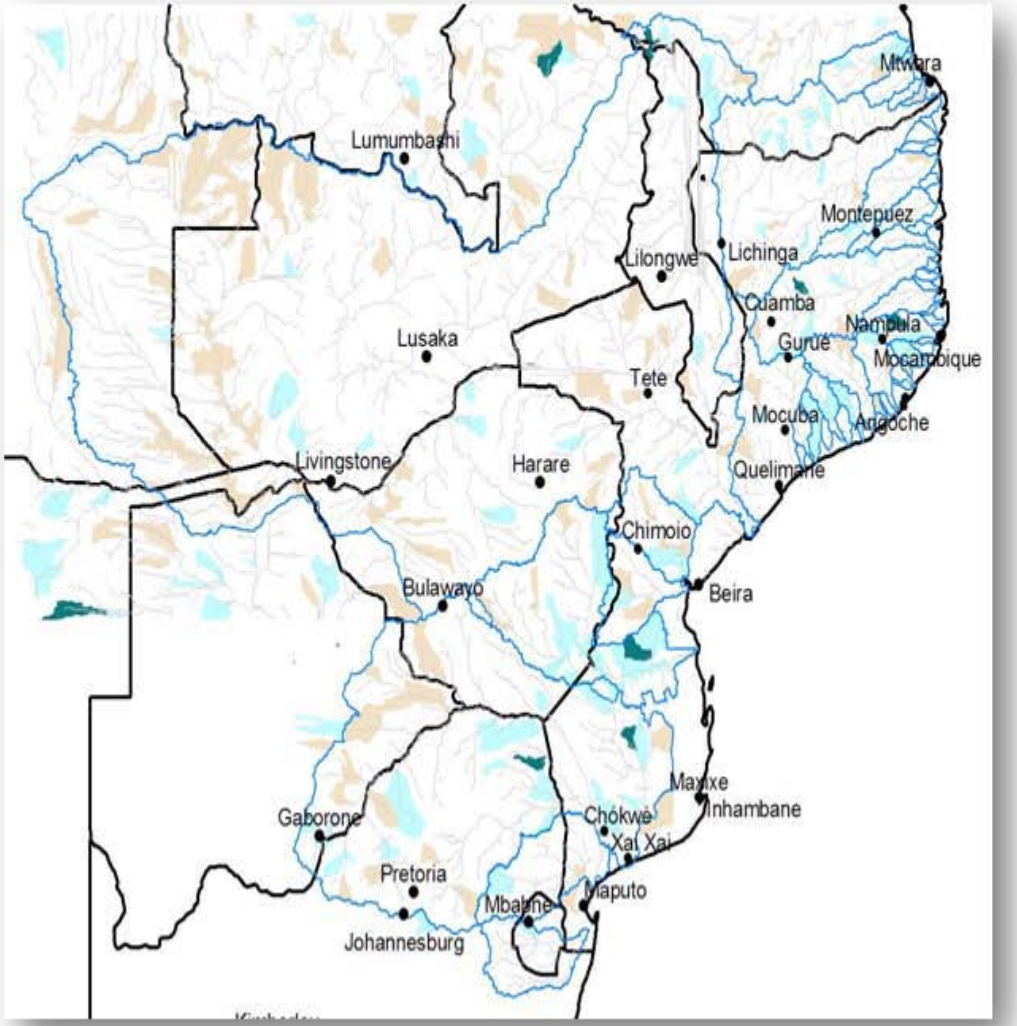


Likelihood of No/Minimal Change



Likelihood of Less Floods

Flood Risk Hazard: Changes in Flood Frequency



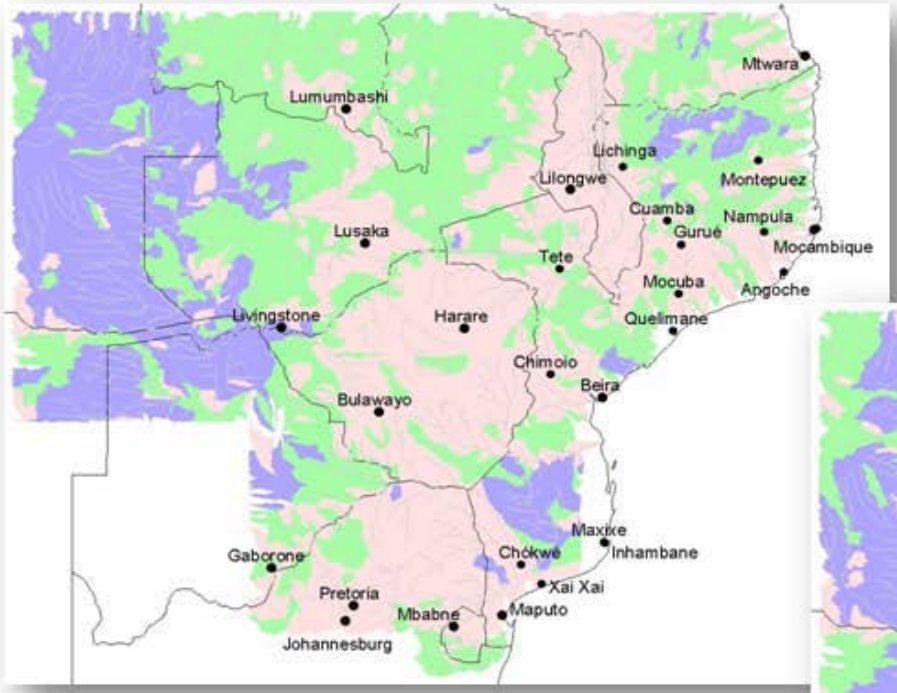
Average changes in flood frequency:

Most models predict minimal change and increased risk in the South and Northern coastal basins

Changes in per capita water availability

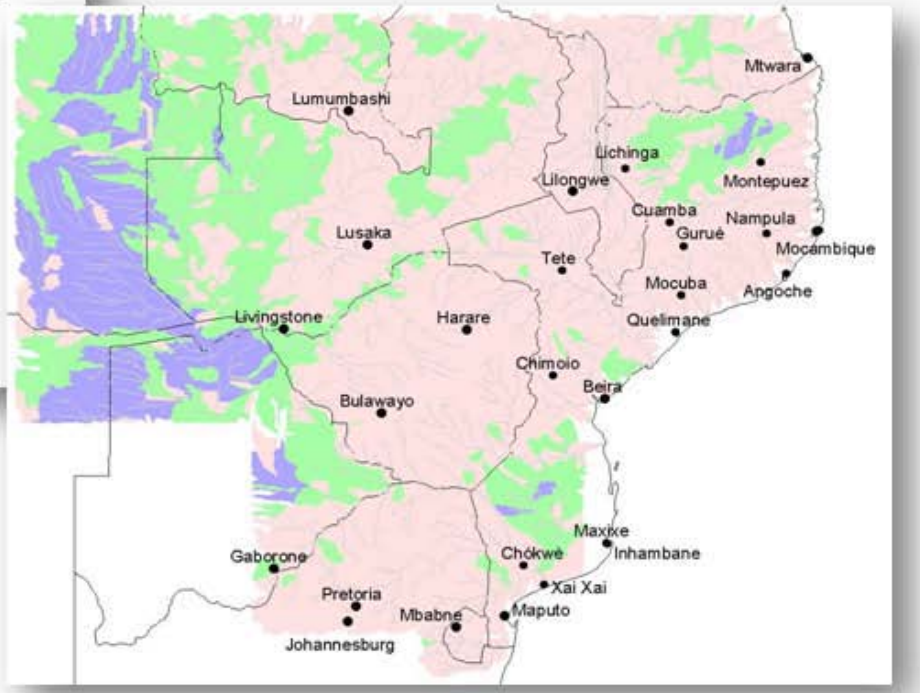
Changes in Per Capita Water Availability

Gross Water Availability per Capita
- < 1000 m3/capita/year
- 1000 - 10000 m3/capita/year
- > 10000 m3/capita/year

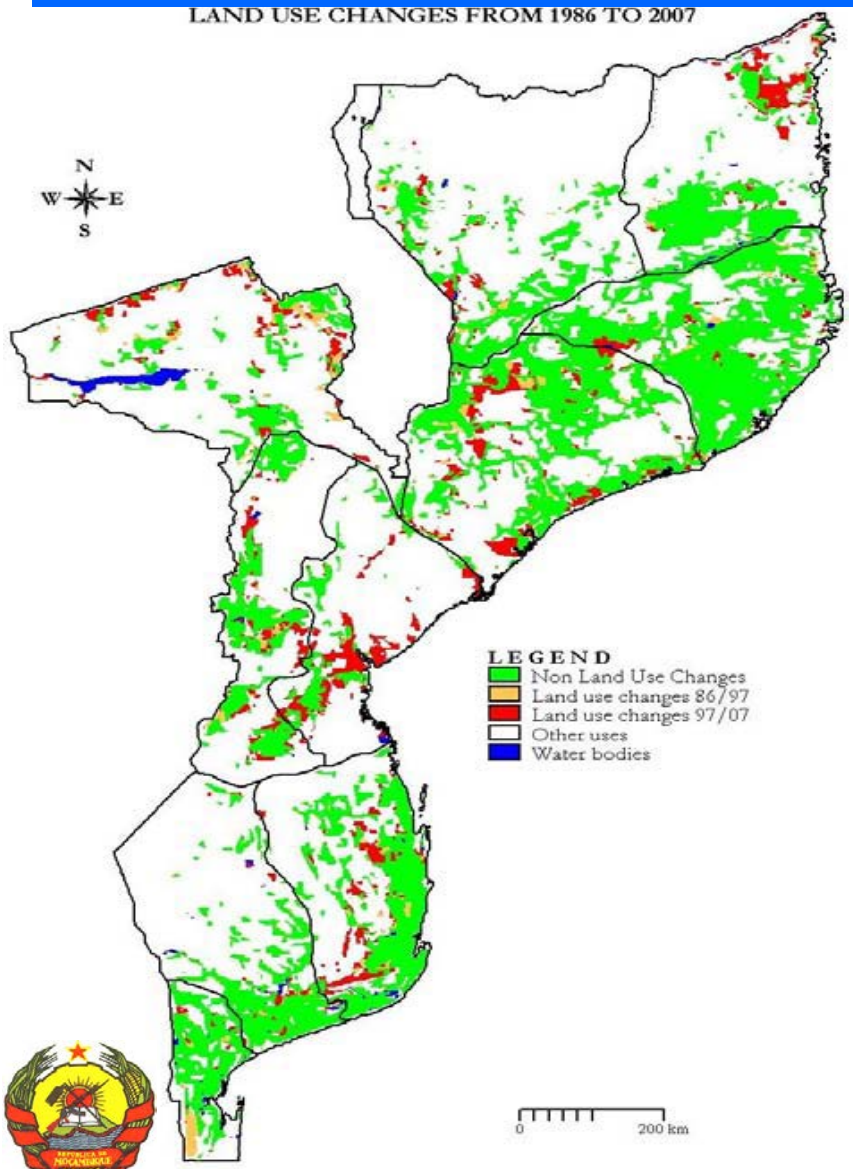


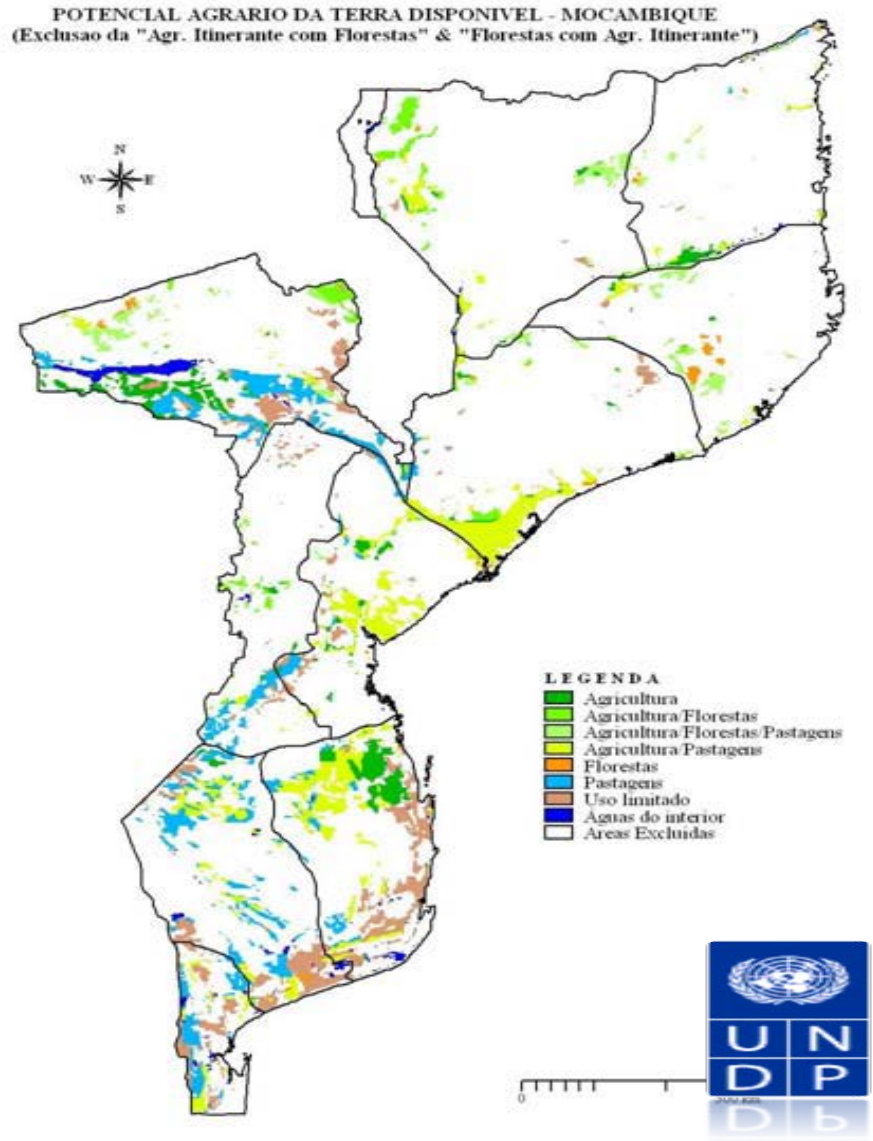
Water Availability in 2000

Water Availability in 2050



Past trends and future changes in agricultural land use and crop suitability

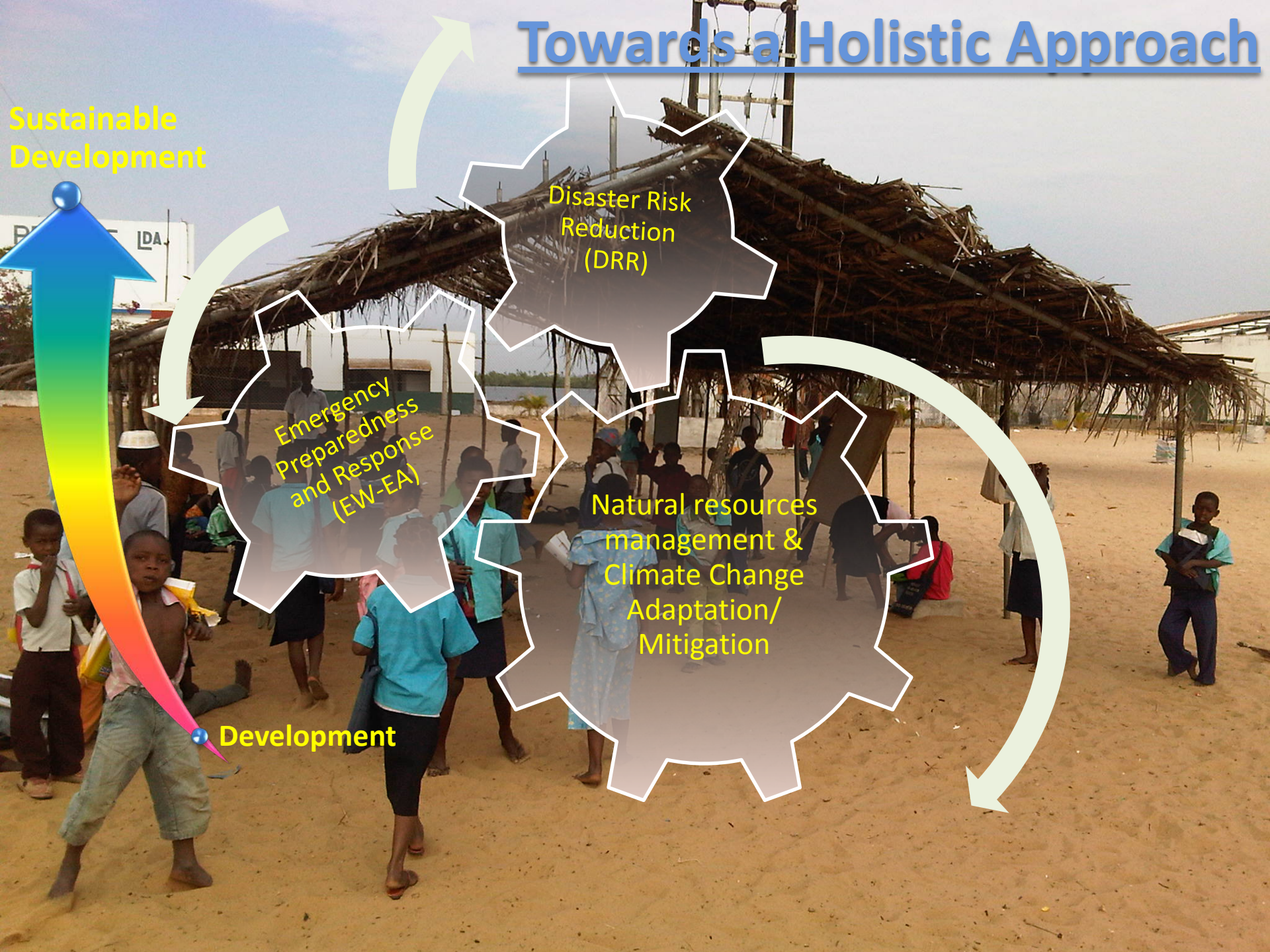




Key Challenges

- Limited adaptation and national adaptive capacity, particularly for communities
- Existing infrastructures susceptible to climate change- including urban settings
- Expansion of extractive industries will bring new and not well known challenges
- Reinforcement of existing laws, strategies and regulations

Towards a Holistic Approach



Initiatives

- Mozambique signatory of major **UN conventions** and treaties
- At **regional level** (SADC) considers addressing CC a key priority
- National **climate change strategy and action plan** under discussion, inclusive at reducing climate risk
- Climate change , as risk reduction, HIV and Food security are currently being mainstreamed in Mozambican laws, policies, strategies, and programs, but integrating in **decentralized planning process** still beginning

Initiatives

- Climate change taken as **cross cutting** issue: under social action, agriculture, health, risk reduction, etc
- **Coordination:**
  - Partners/ donors group include Climate change
  - National coordination: GOM, partners and civil society
- **Institutional development**
  - UNDAF - ONE UN integrates climate change, risk reduction, environment and natural resources
  - Climate change also decentralized
- Mozambique has access to **bilateral and multilateral funds**

OBRIGADO