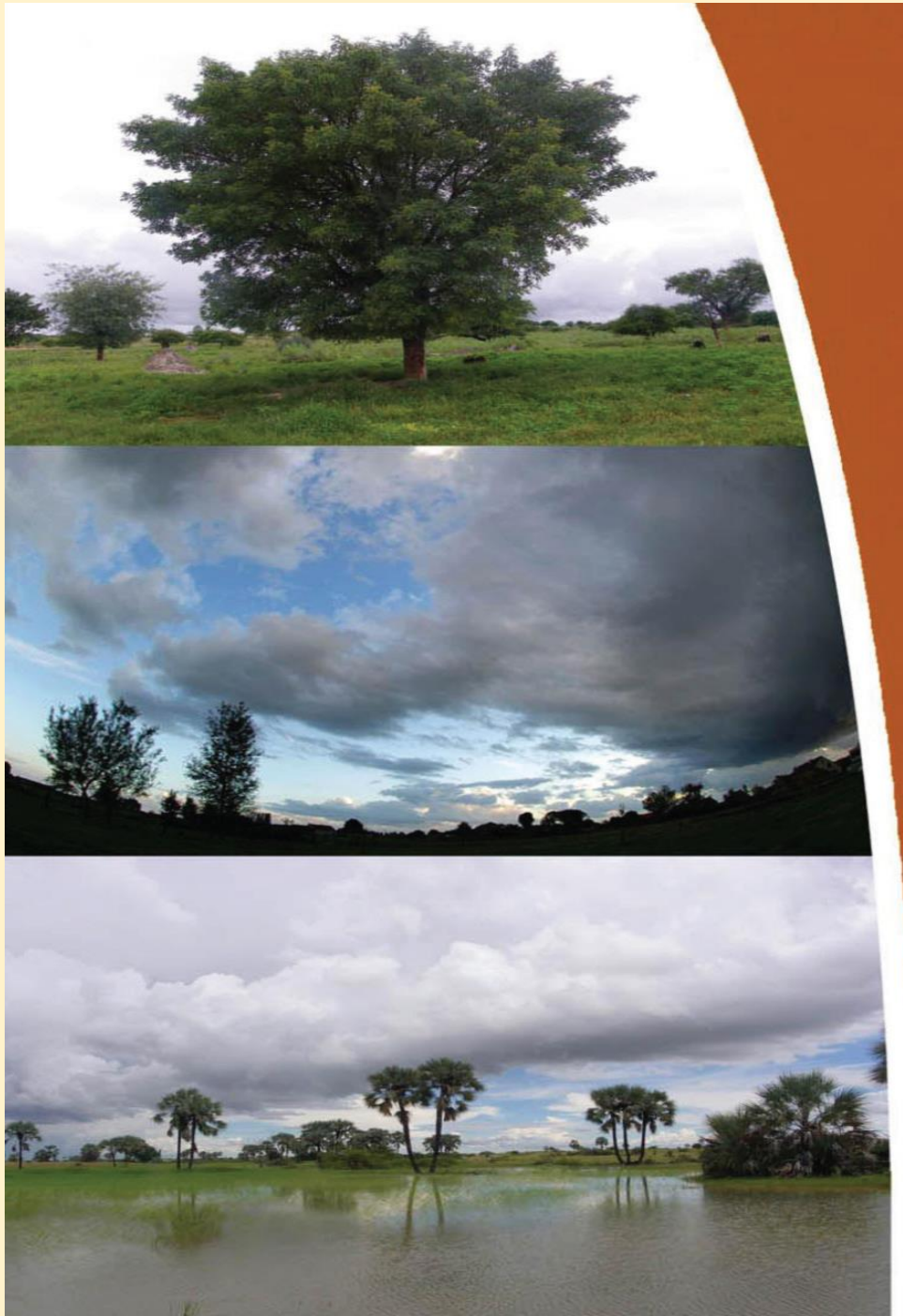


Republic of Namibia
Ministry of Environment & Tourism

Climate change in Namibia

Mr. Reagan Chunga
Ministry Environment, Forestry and tourism
Department of Environmental Affairs & Forestry

- **Presentation outlines**

- GHG Profile for Namibia
- Mitigation options
- Summary of the V&A study

GHG Emissions Profile for Namibia

Sectors and Gases covered

- Agriculture, Forestry and Other Land Use (AFOLU)
- Energy
- Industrial Processes and Product Use (IPPU)
- Waste

Main gases:

- Carbon Dioxide
- Methane
- Nitrous Oxide

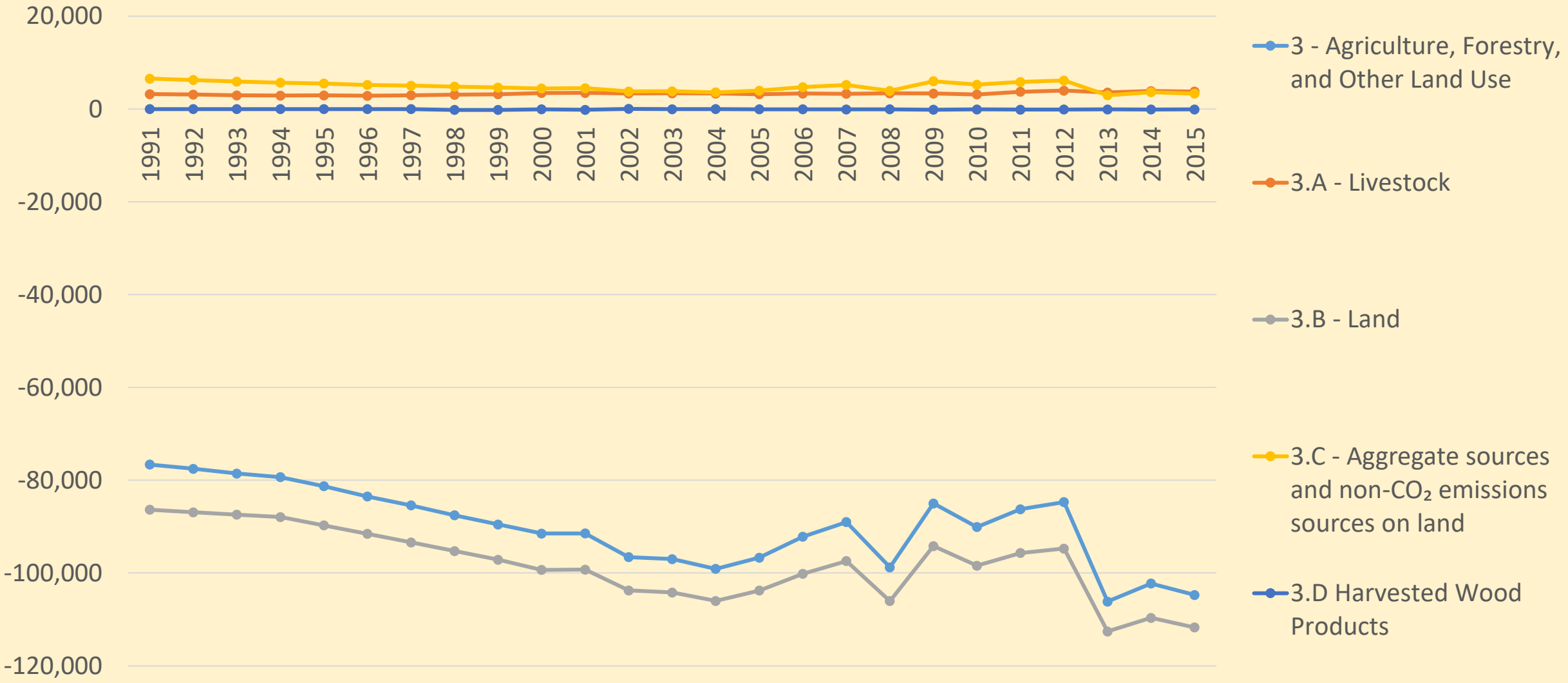
Methodology:

- IPCC 2006 Guidelines and software

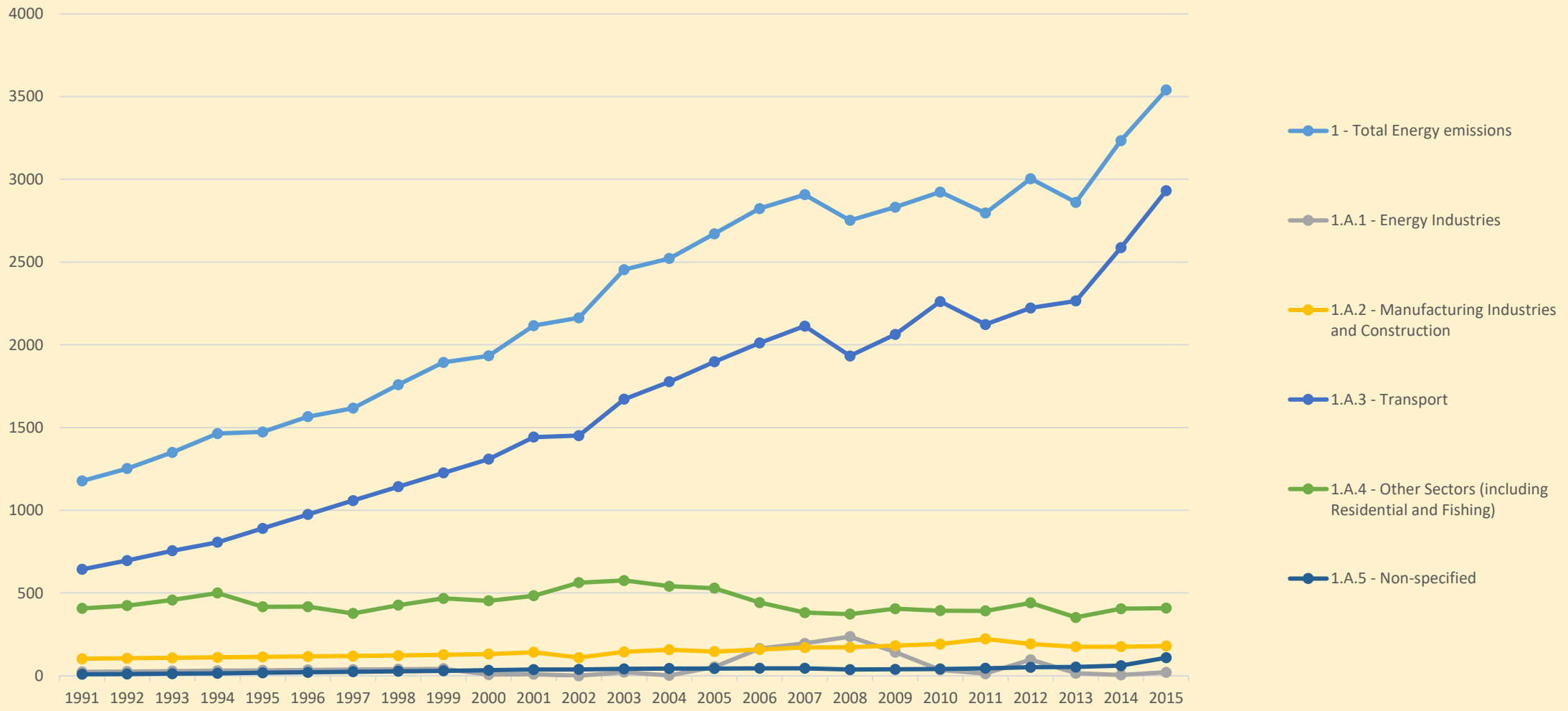
Period covered:

- 1991 - 2015

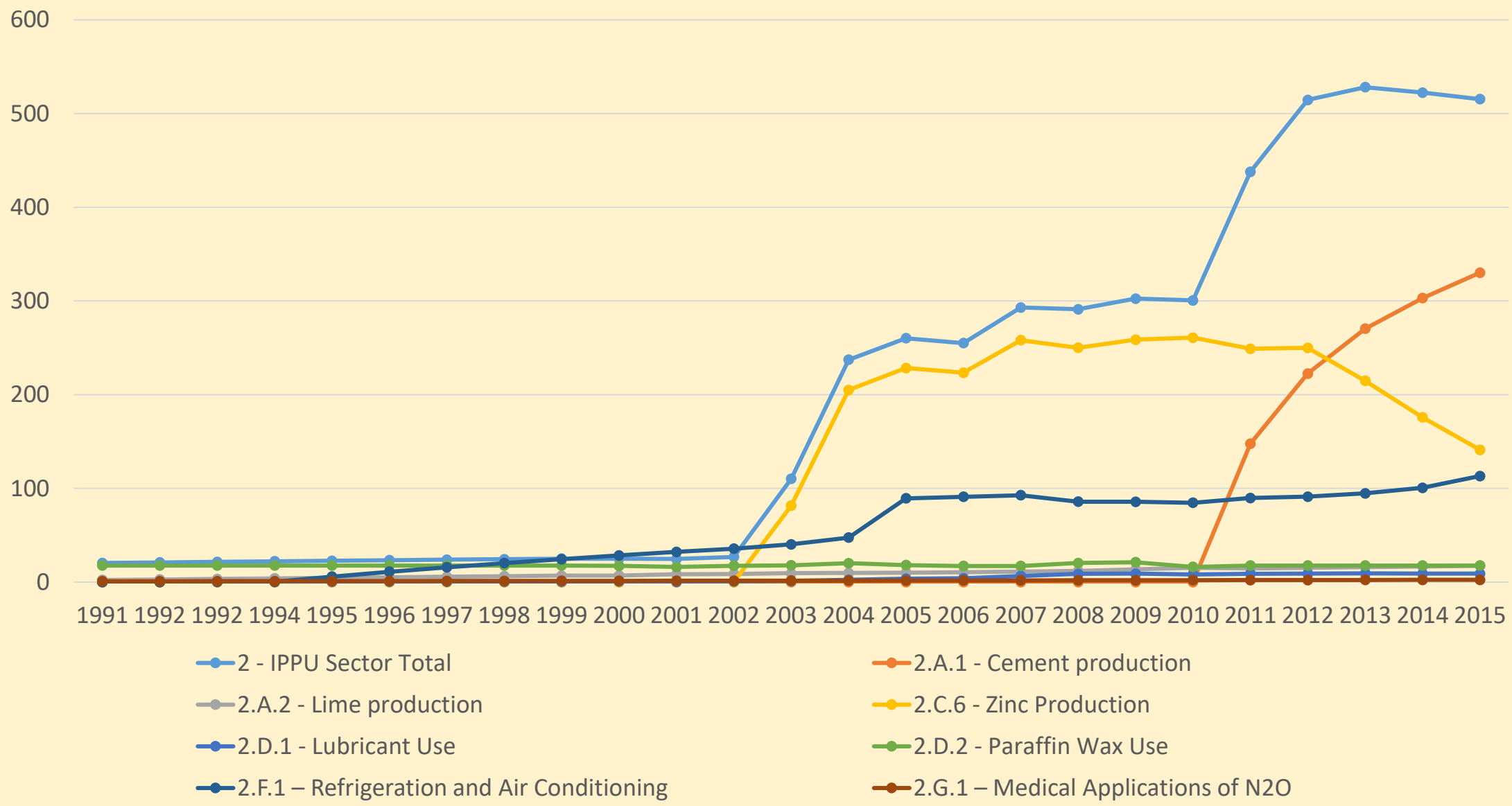
AFOLU emissions and removals by category (Gg CO2-eq)



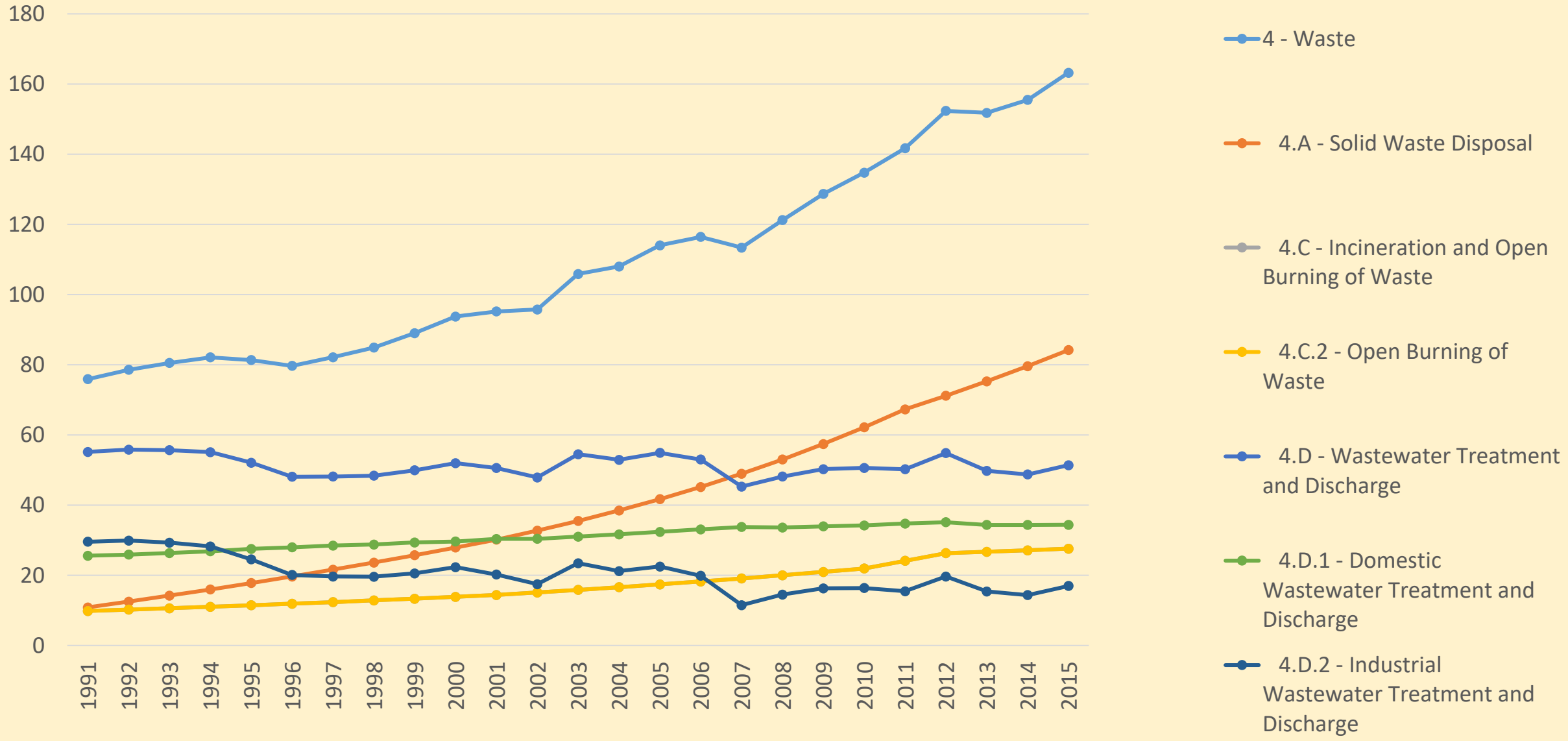
Emissions from Energy (Gg CO2 eq)



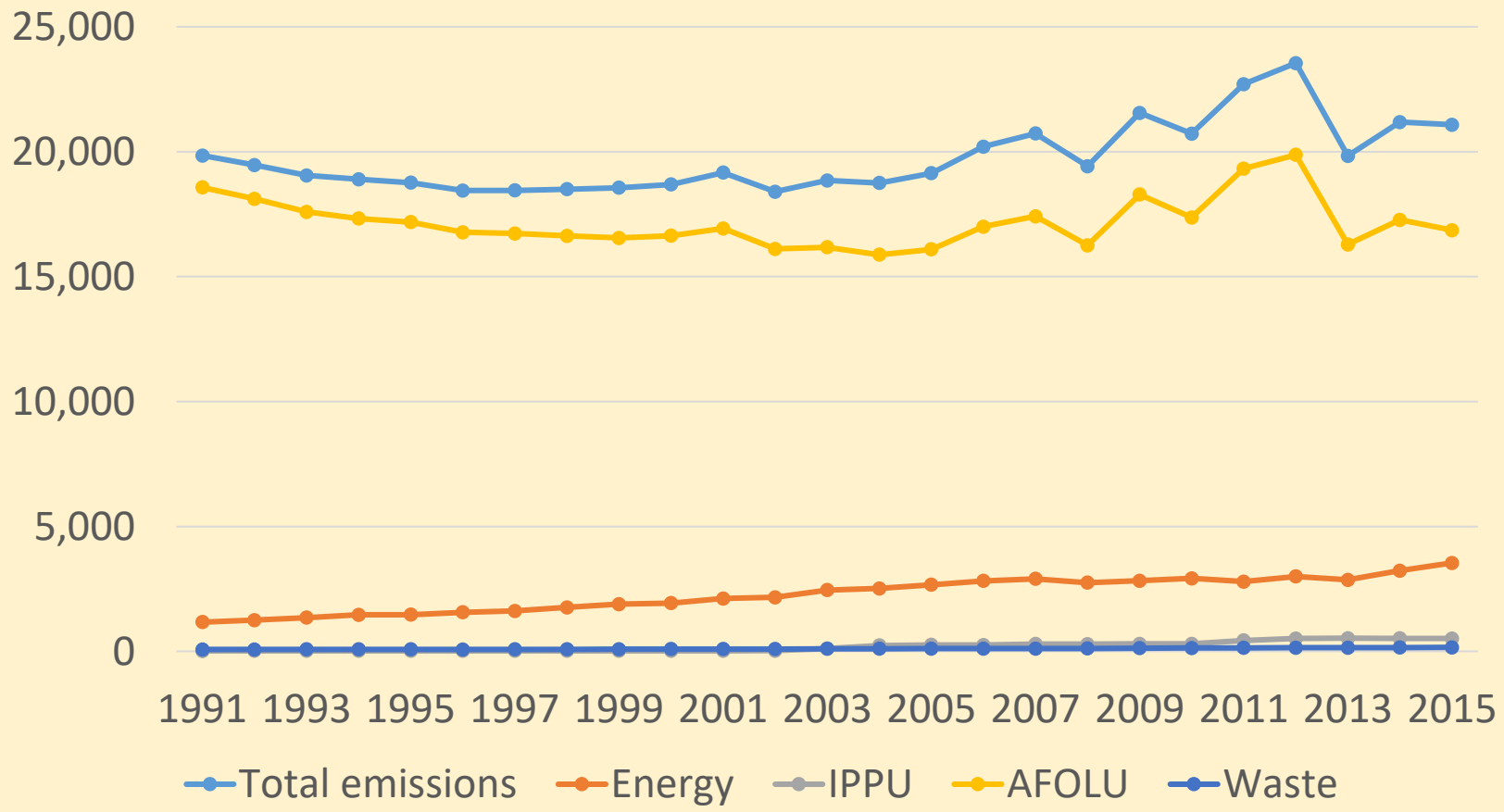
IPPU direct gas emissions by sector (Gg CO2-eq)



Waste emissions by category (Gg CO2-eq)

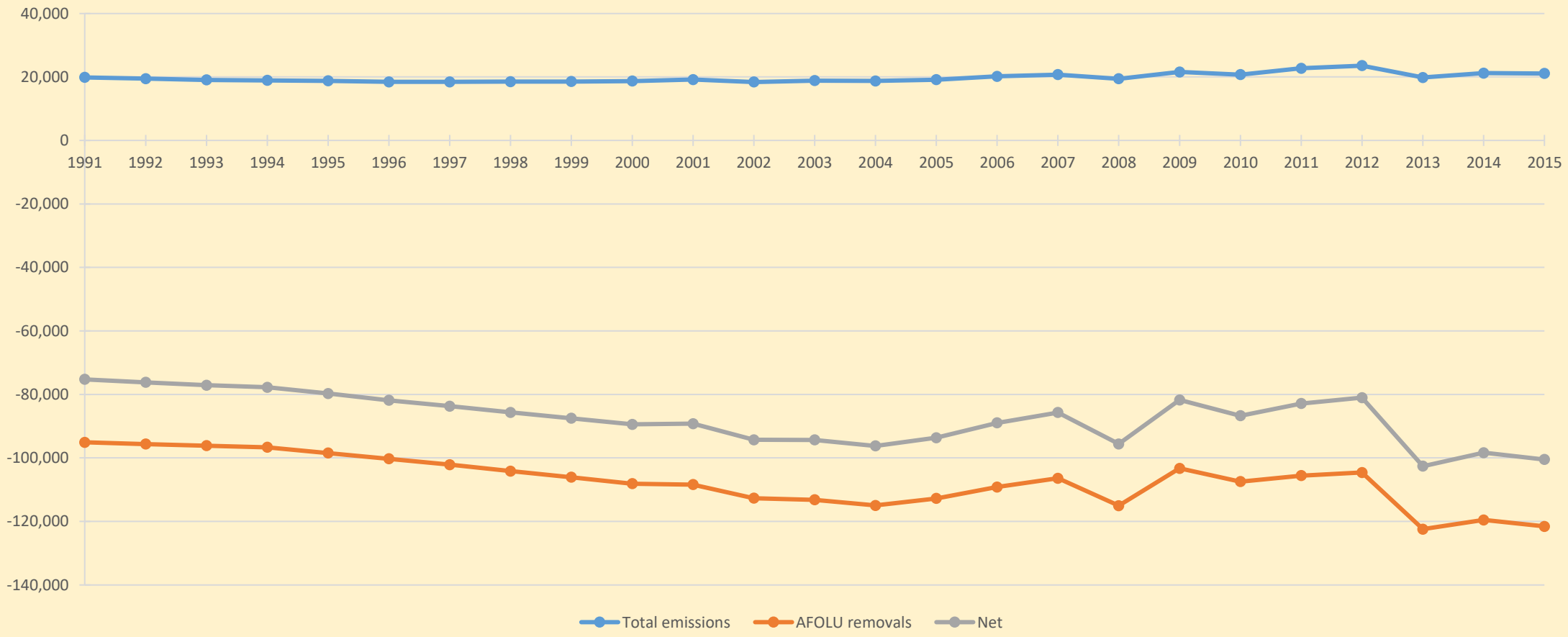


Aggregated National Emissions by sector (Gg CO_2-eq)



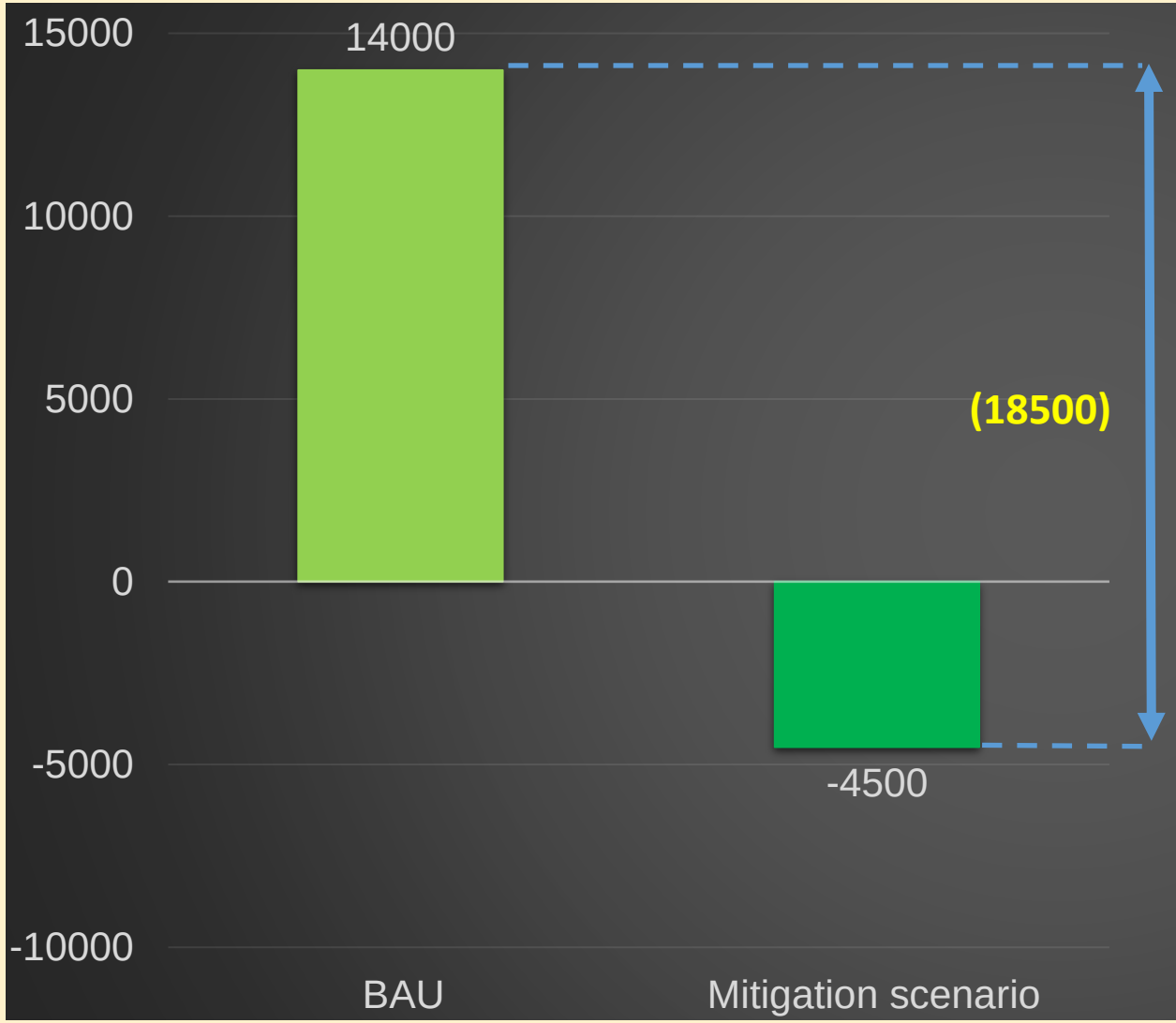
Sector	Share of emissions in 2015 (%)
Energy	16.8
IPPU	2.5
AFOLU	80.0
Waste	0.8

Aggregated emissions and removals (Gg CO_2-eq)



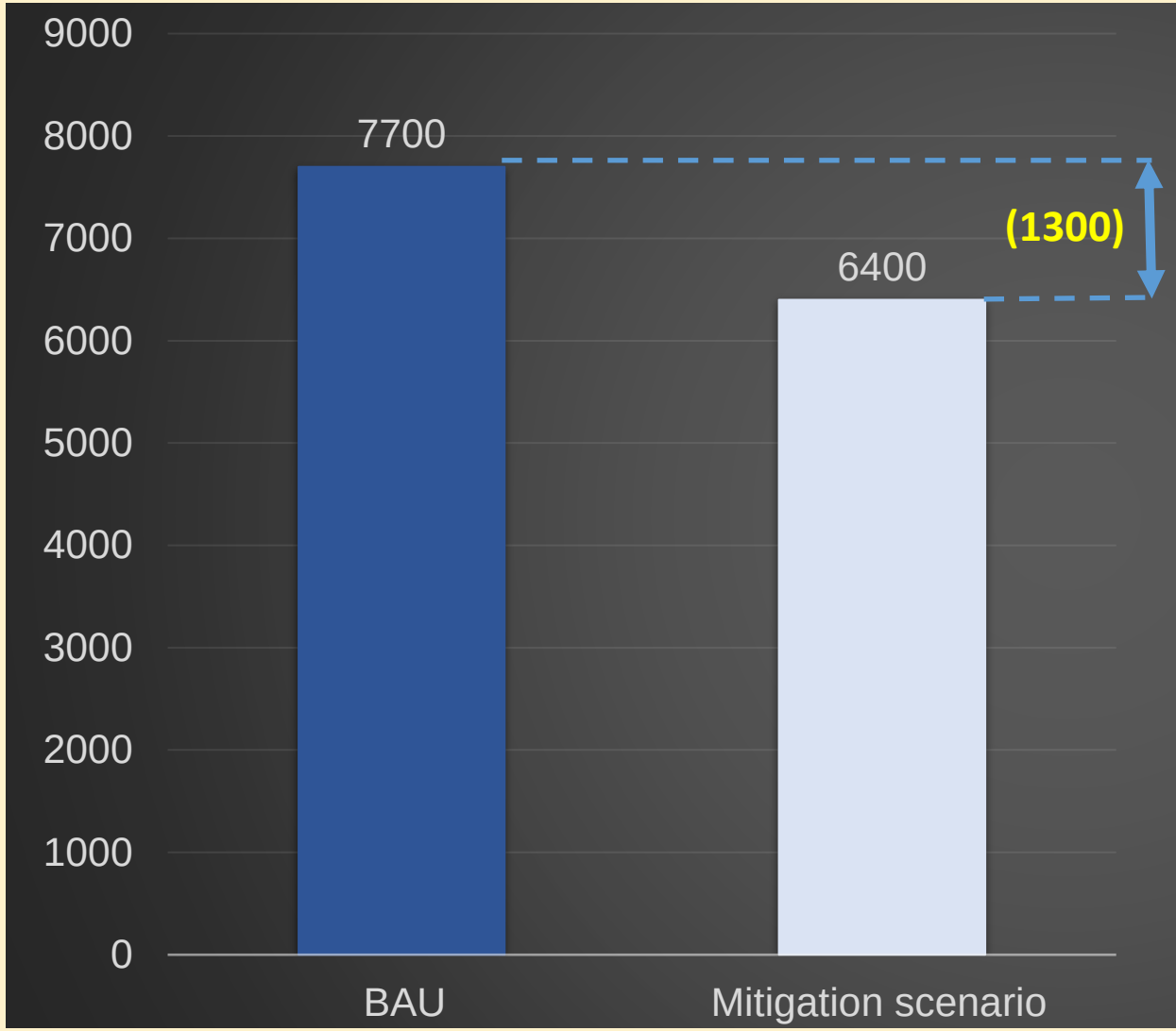
Mitigation per sector

AFOLU sector emissions (Gg CO2 Eq.)
BAU and mitigation scenarios for the year 2030



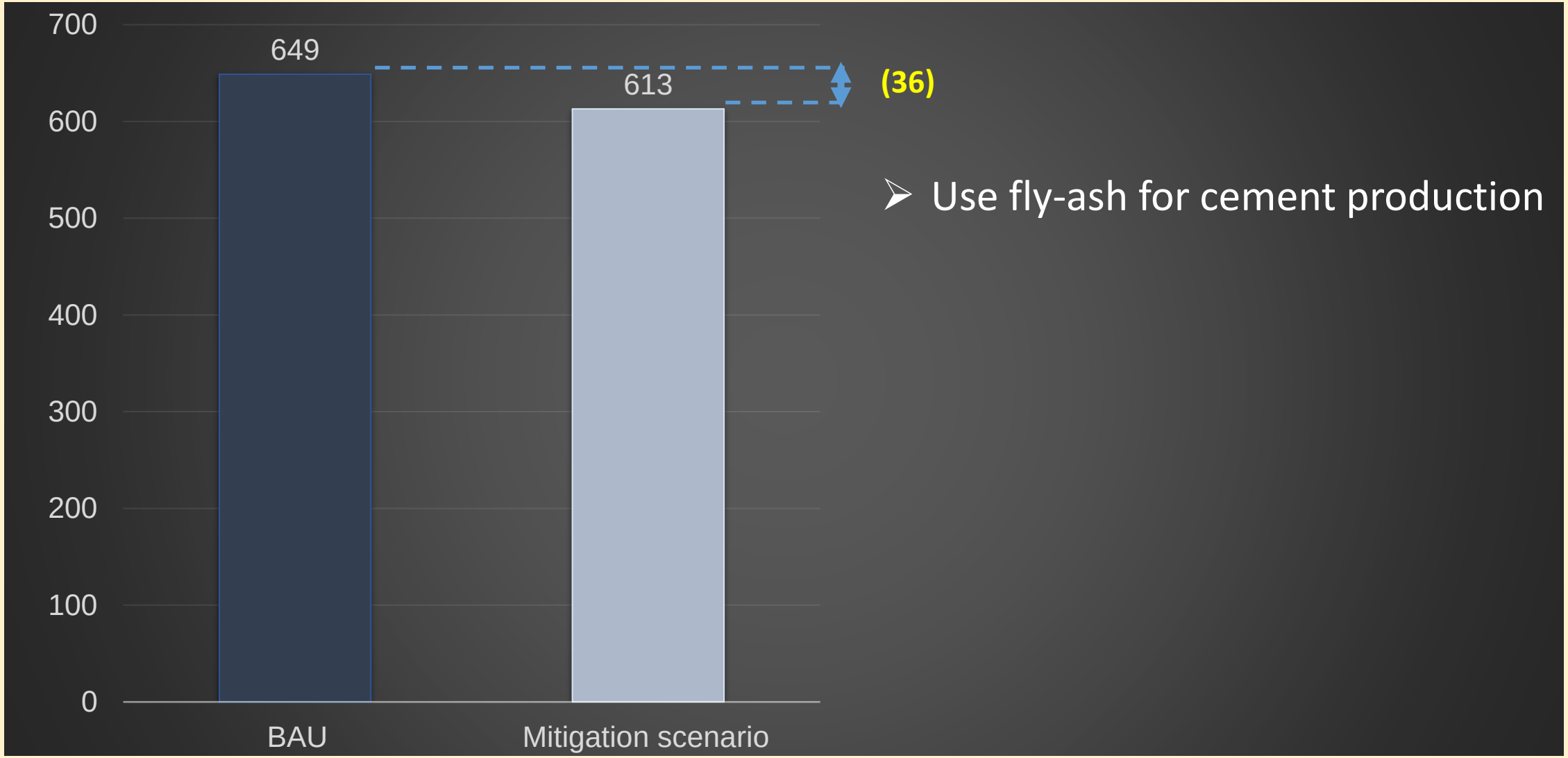
- Reduce removal of poles by 50 %
- Reduce deforestation rate by 75 %
- Reforest 20,000 ha annually
- Restore 15,000,000 ha of grassland
- Plant 5000 ha perennial crop annually
- Plant 5000 ha of managed forest
- Use of feedlots for 100,000 cattle heads

Energy emissions (Gg CO2 Eq.) – BAU and mitigation scenarios for the year 2030



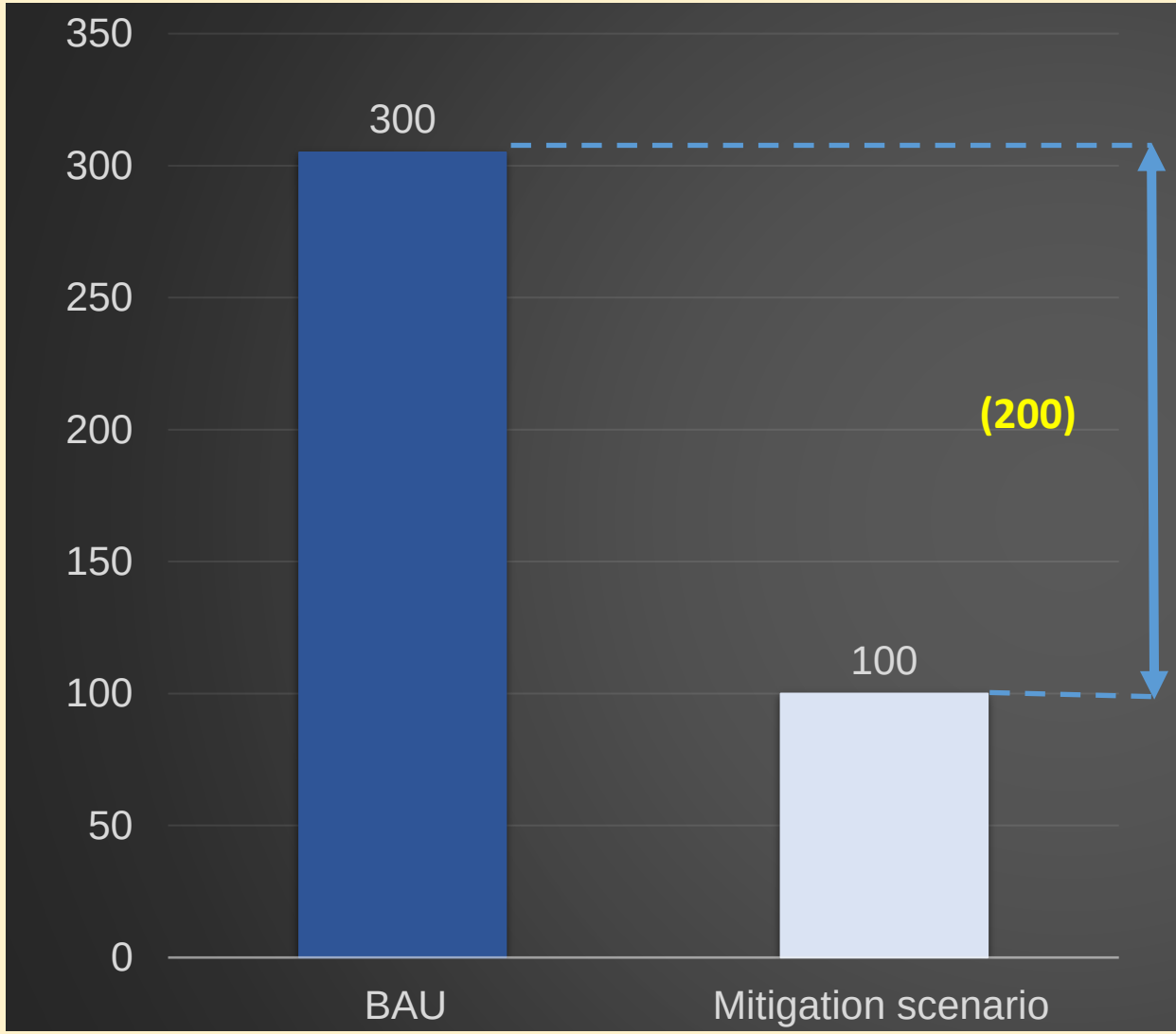
- Increasing share of renewables in electricity production
- Introduction of mass transport system in Windhoek
- Use of fuel efficient cars and new energy source
- Increase electricity efficiency

IPPU sector emissions (Gg CO2 Eq.)
BAU and mitigation scenarios for the year 2030



- Use fly-ash for cement production

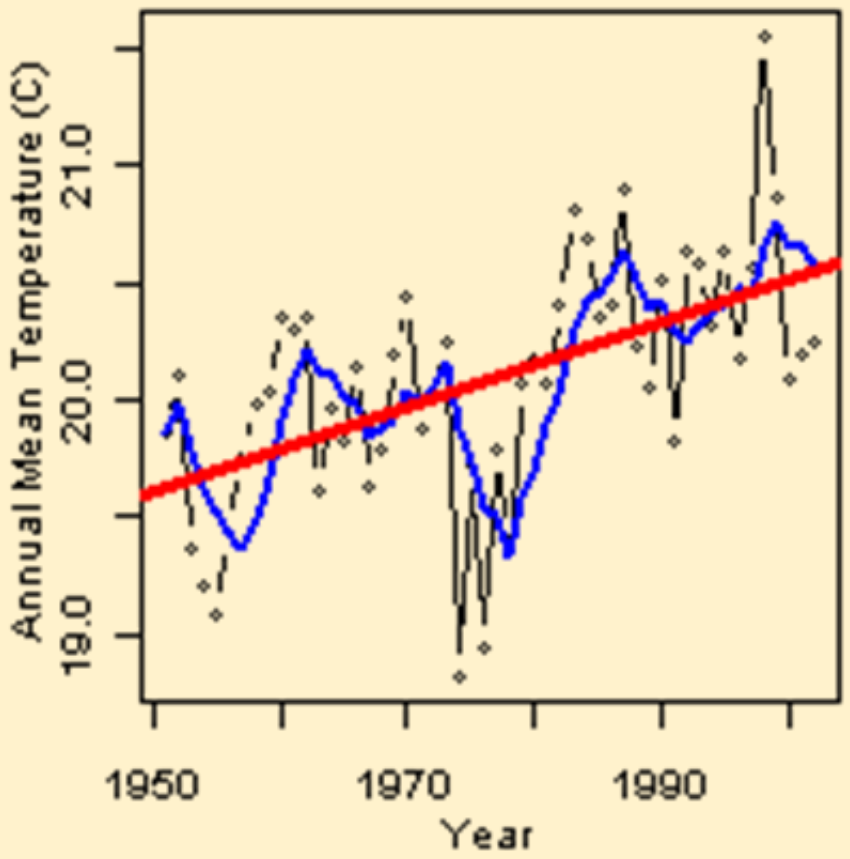
Waste sector emissions (Gg CO2 Eq.) – BAU and mitigation scenarios for the year 2030

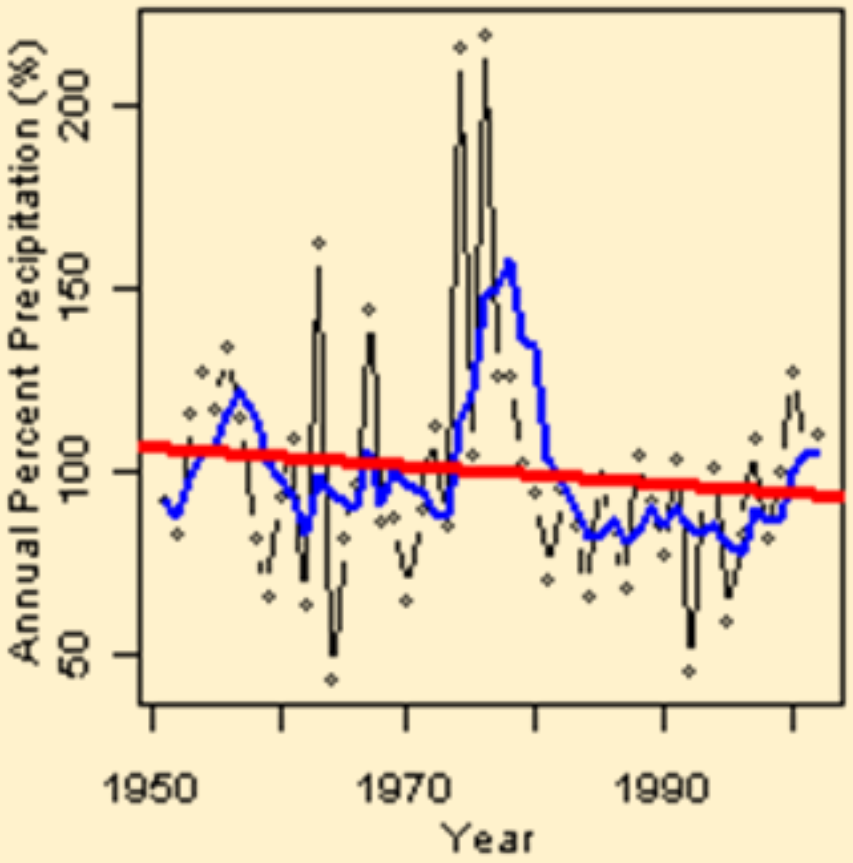


- Convert MSW from main cities to energy

4th National Communication V&A Summary

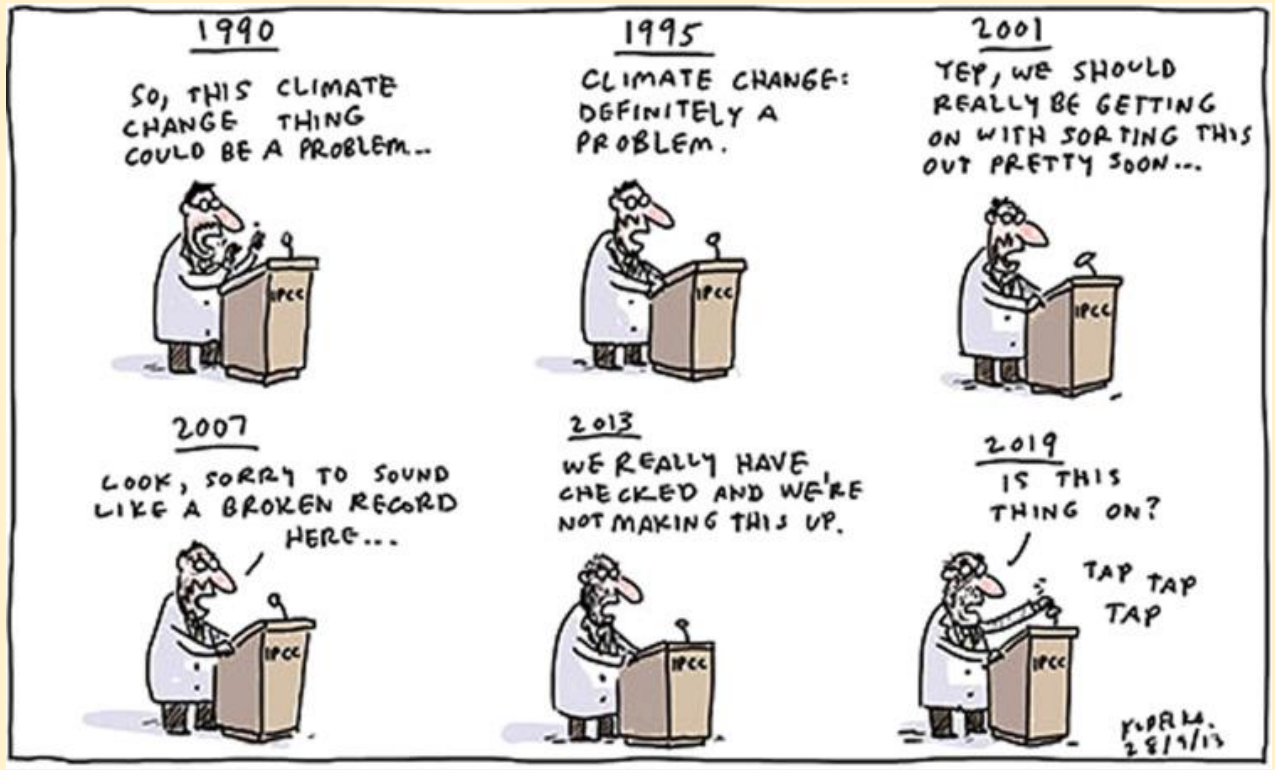
Changing Temperature and Precipitation





Source: Fifth Assessment Report of the IPCC

What is Known on Climate Change Impacts in Namibia



Objectives of the V&A Study

- Main objective of the V&A study was to ***quantitatively assess the vulnerability of the human settlements (constituencies)*** in Namibia to climatic variability and climate change
- The V&A study has two secondary objectives – i.e., to develop:
  - a ***Namibia Climate Change Vulnerability Risk Index (NCCVI)*** that captures Climate Change Vulnerability Risks across constituencies in Namibia
  - a ***Climate Change Vulnerability Risk Map*** that can:
    - be used to identify constituencies that are most vulnerable to climate variability and climate change;
    - inform the scope and types of adaptation activities, in each constituency, that are required to address climate variability and climate change;
    - inform adaptation investment (resource allocation);
    - be used to identify existing spatial gaps in terms of adaptation activities as well as adaptation investment

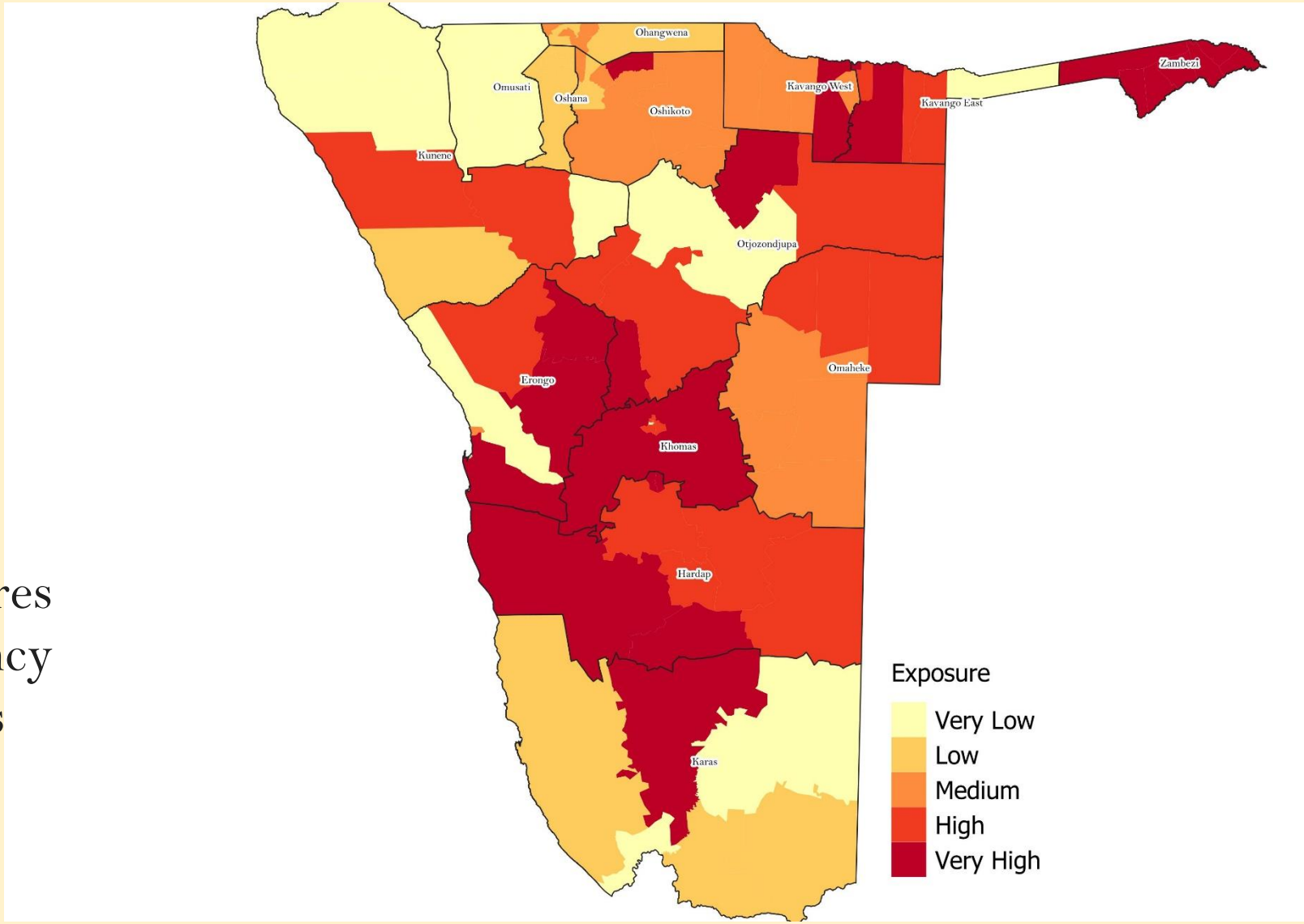
Contextualization of the Key Findings

- The VA was aimed quantitative assessing the vulnerability of human settlements across Namibia, with the following objectives:
  - To measure the exposure of constituencies to climate change risk
  - To measure the resilience/fragility of constituencies in Namibia to climate change risks
  - To measure the climate change adaptive capacity of constituencies
  - To the vulnerability of constituencies to climate change risks

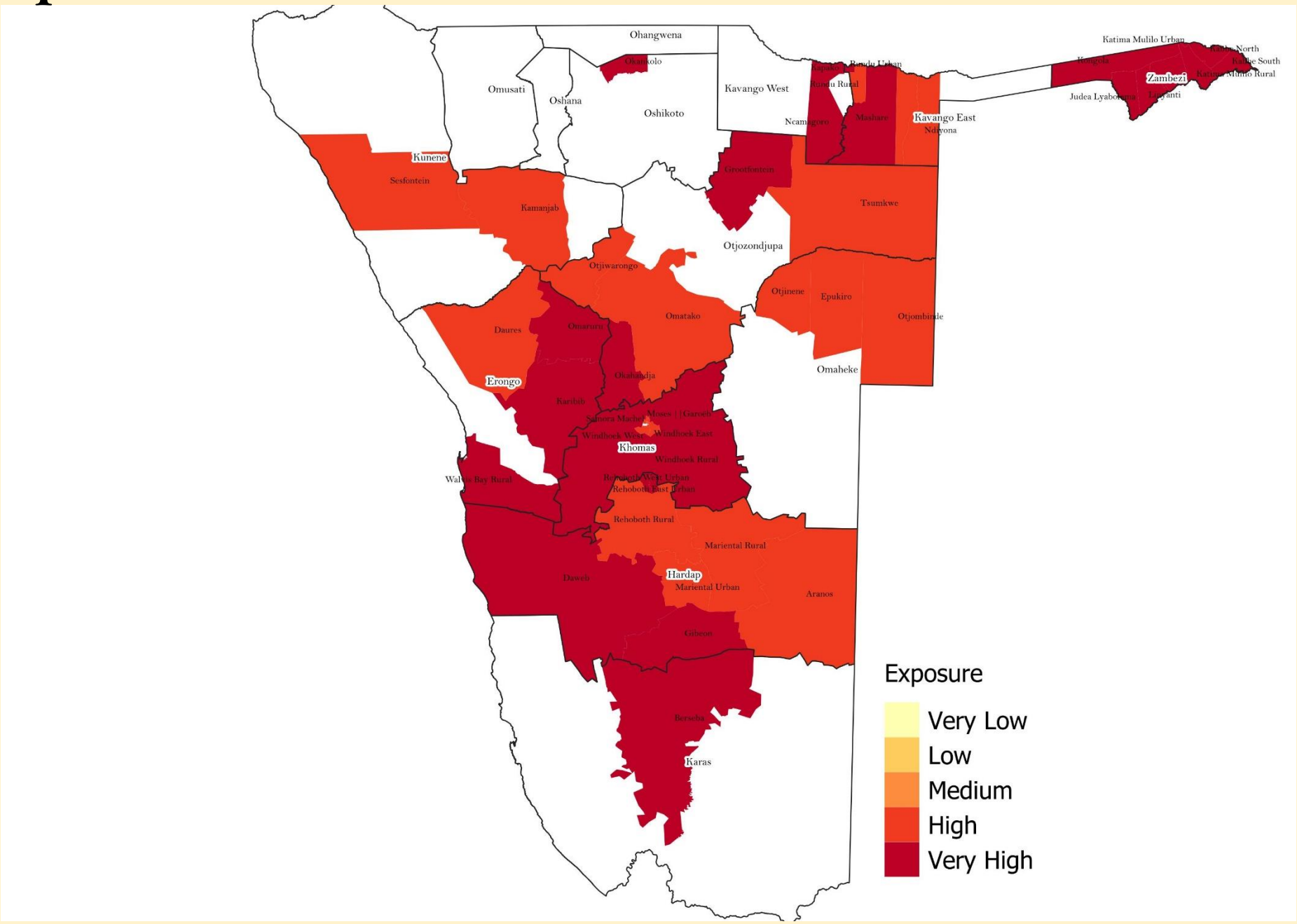
Exposure to CC risks

Exposure Index	• Drought frequency • Flood frequency • Temperature change • Precipitation change • Water deficit

- The **Exposure Index** measures the exposure of a constituency to climate change risks/threats



Highly Exposed Constituencies

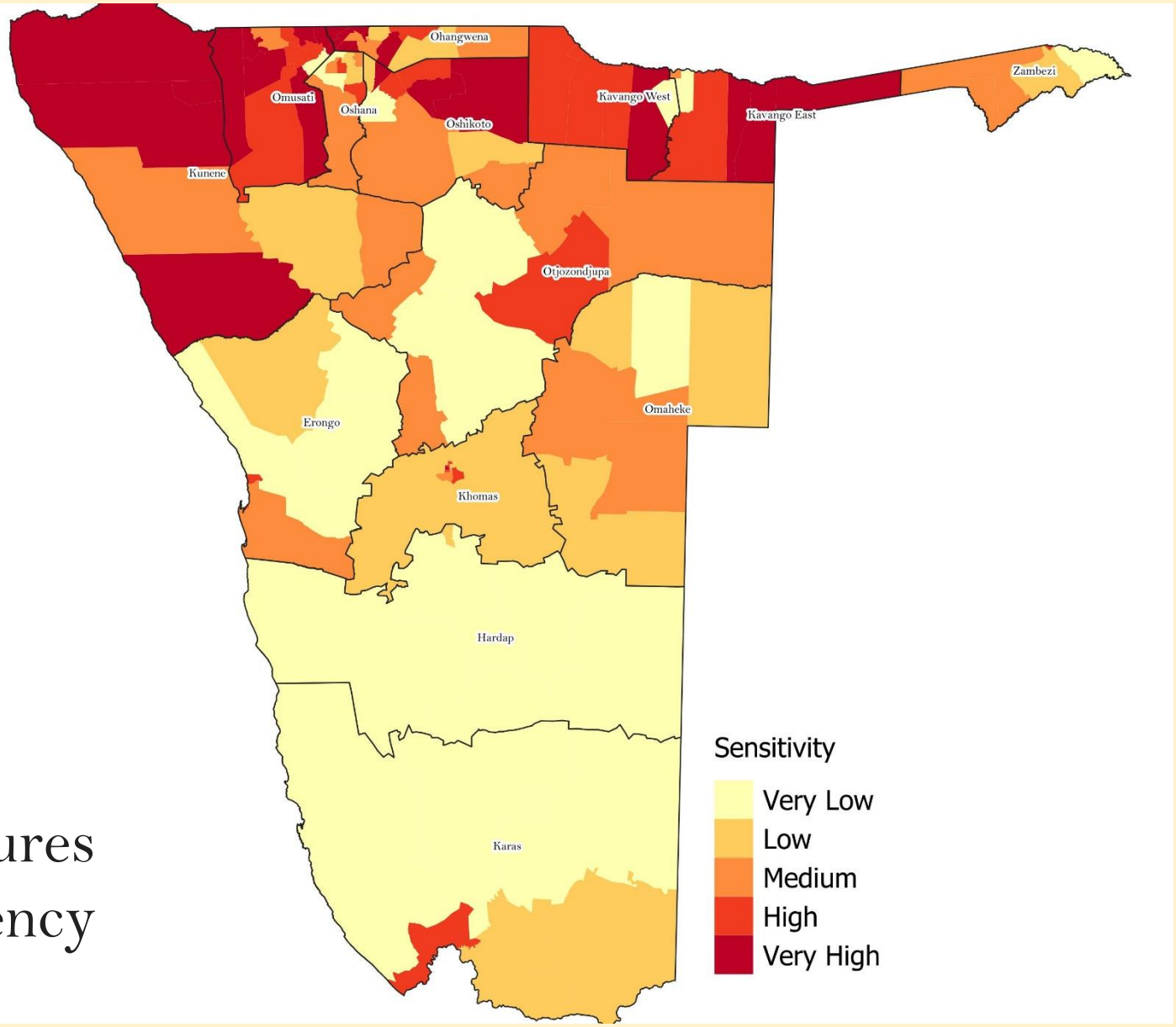


Sensitivity to CC risks

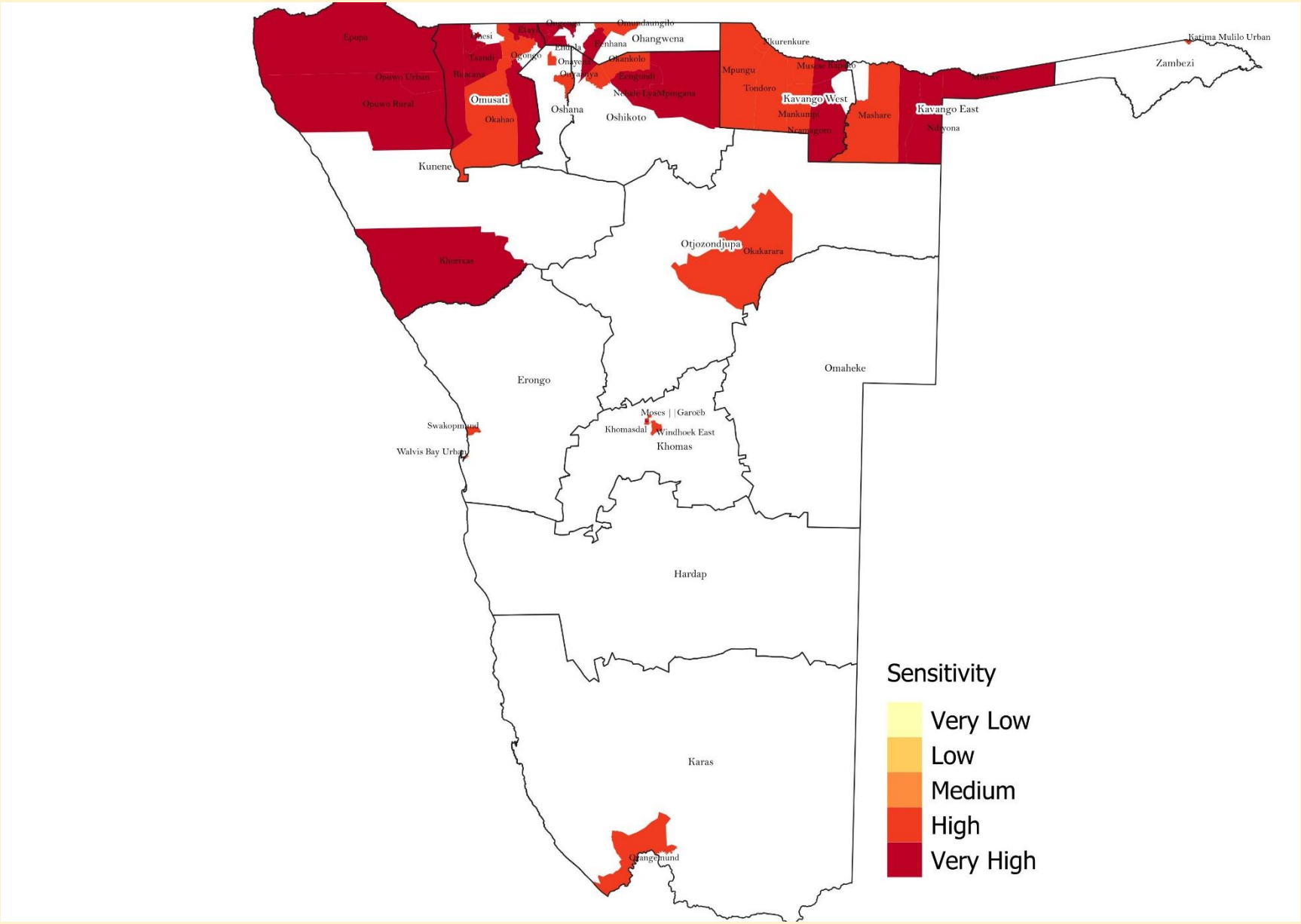
Sensitivity Index

- Vulnerable livelihoods
- Vulnerable demographics
- Low income households
- Poor households
- Food insecurity
- Agriculture households with Undiversified income sources
- Child head households
- Disabilities
- Unprotected water sources

- The **Sensitivity Index** measures resilience/fragility of a constituency to climate change risks



Highly Sensitivity *Constituencies*

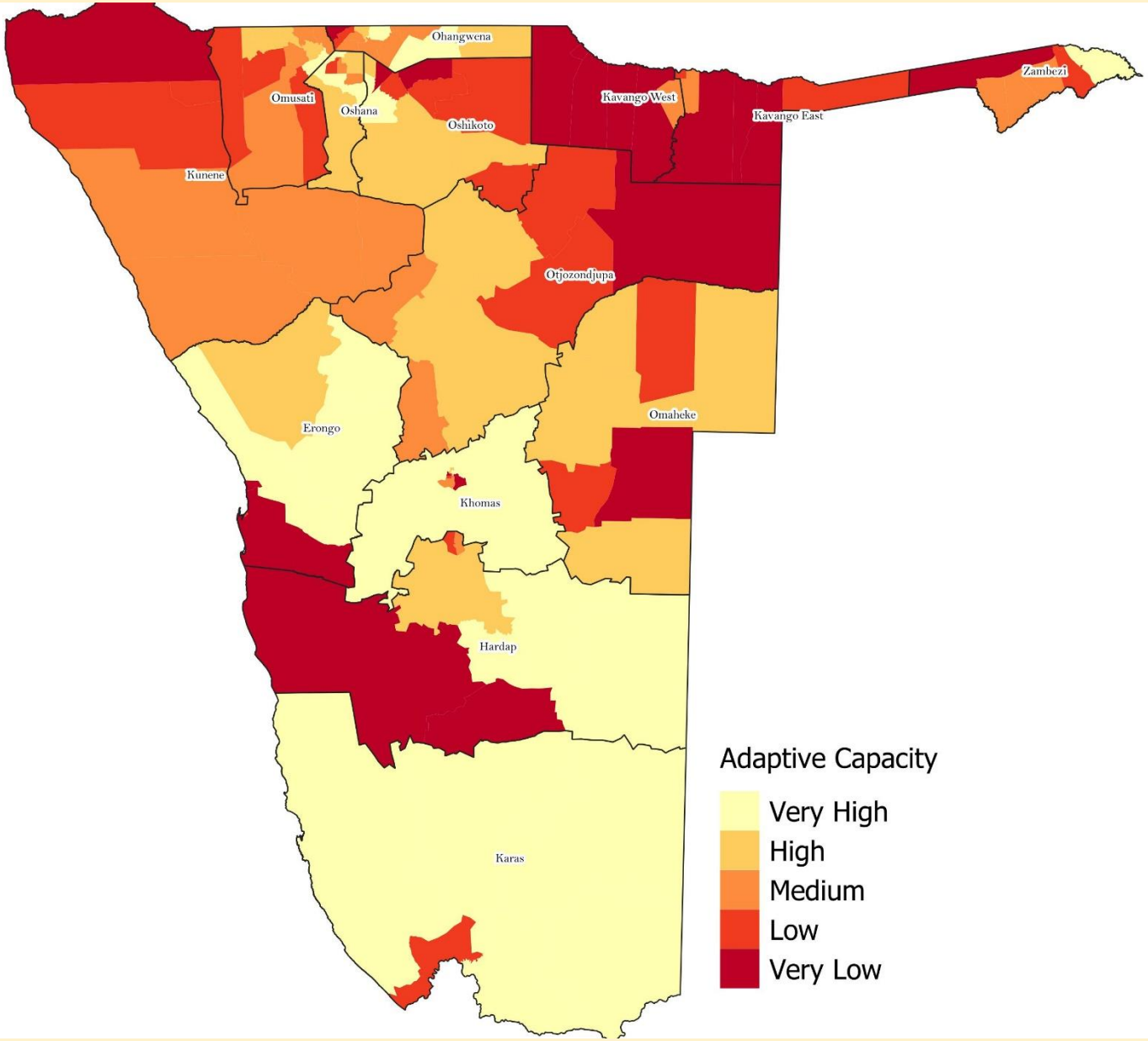


CC Adaptive Capacity

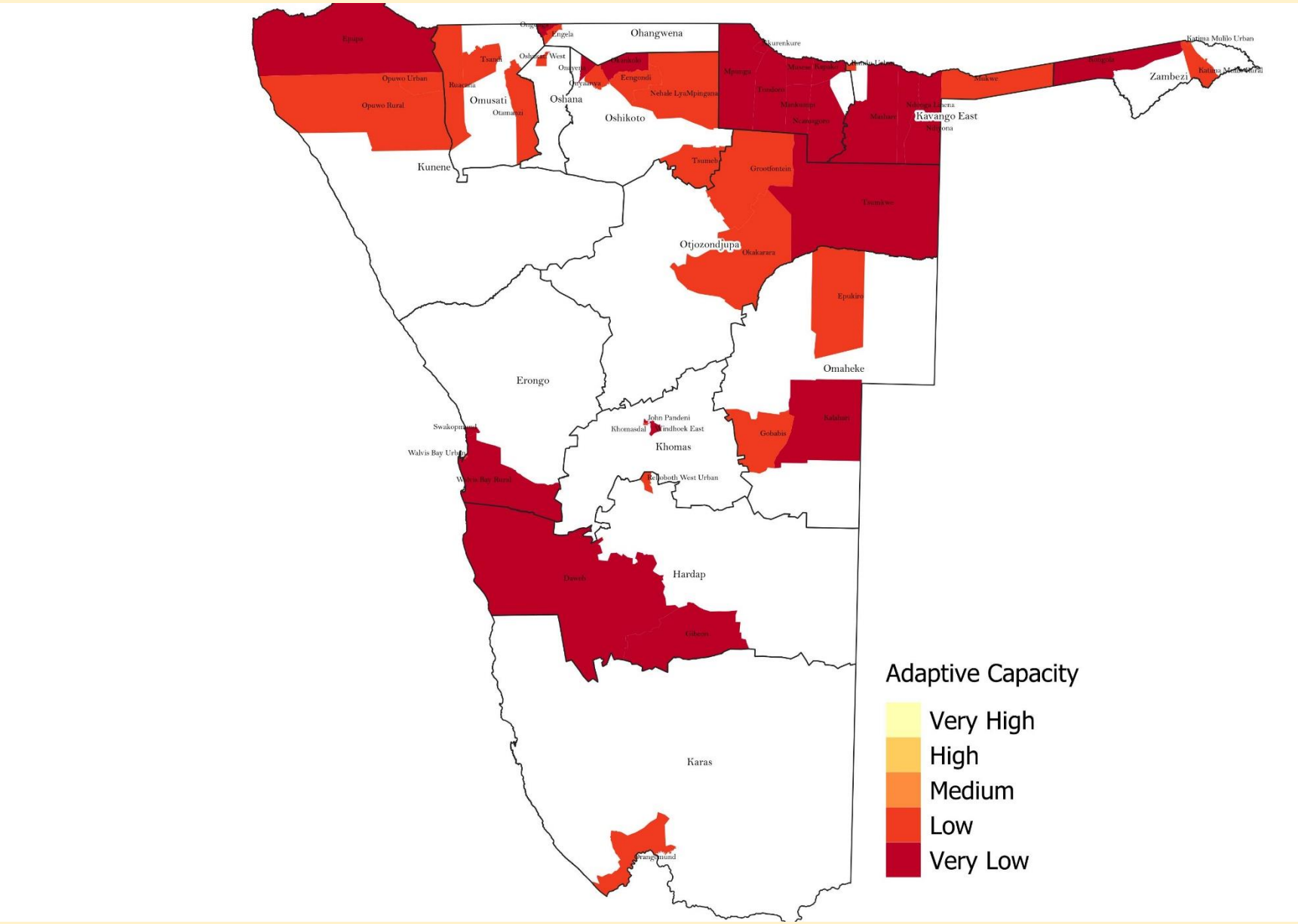
Adaptive Capacity Index

- Material deprivation
- Employment deprivation
- Health deprivation
- Education deprivation
- Living environment deprivation

- The **Adaptive Capacity Index** measures the ability of a constituency to cope/mitigated climate change risks/threats

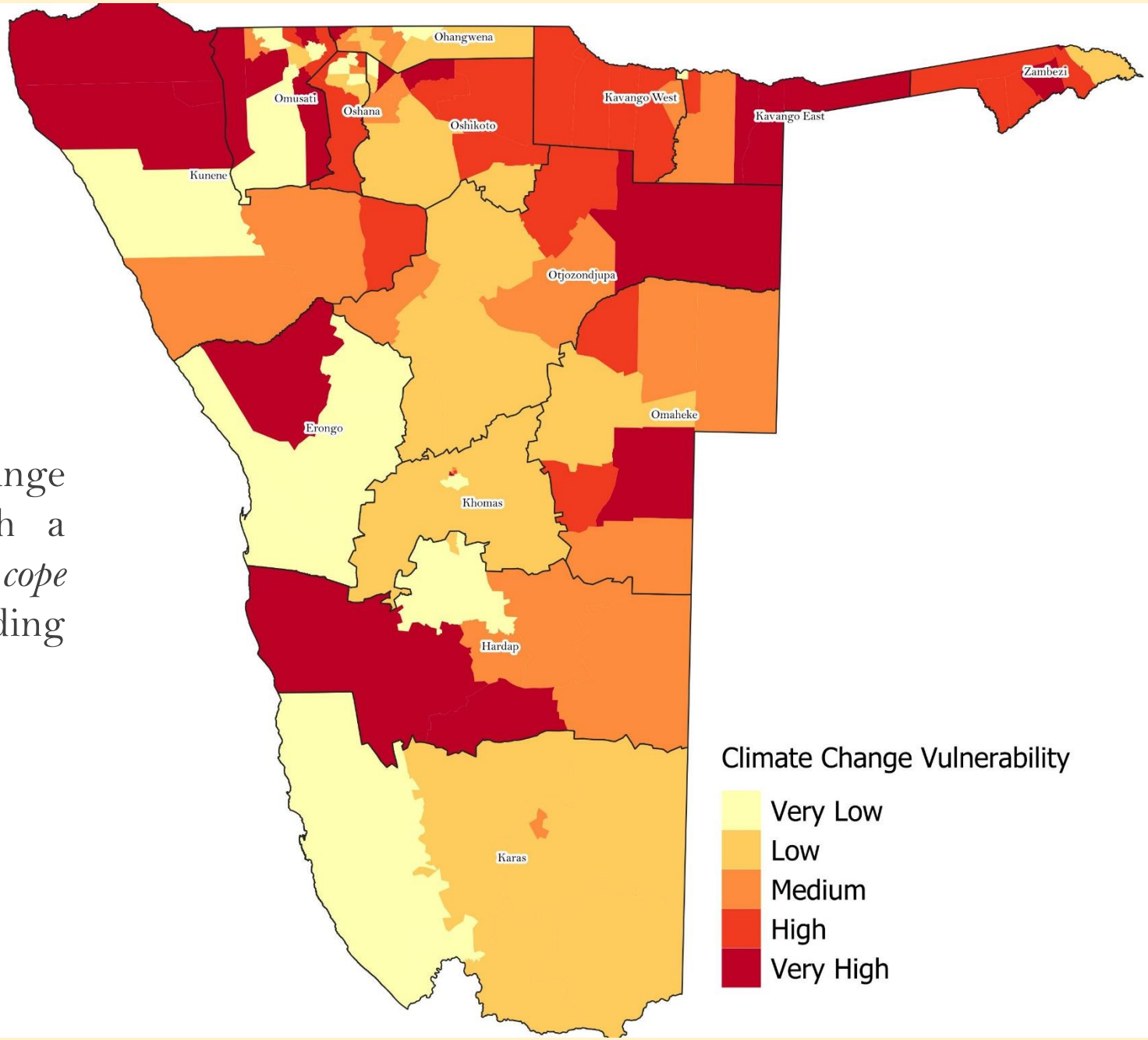


Constituencies with relatively low adaptive capacity

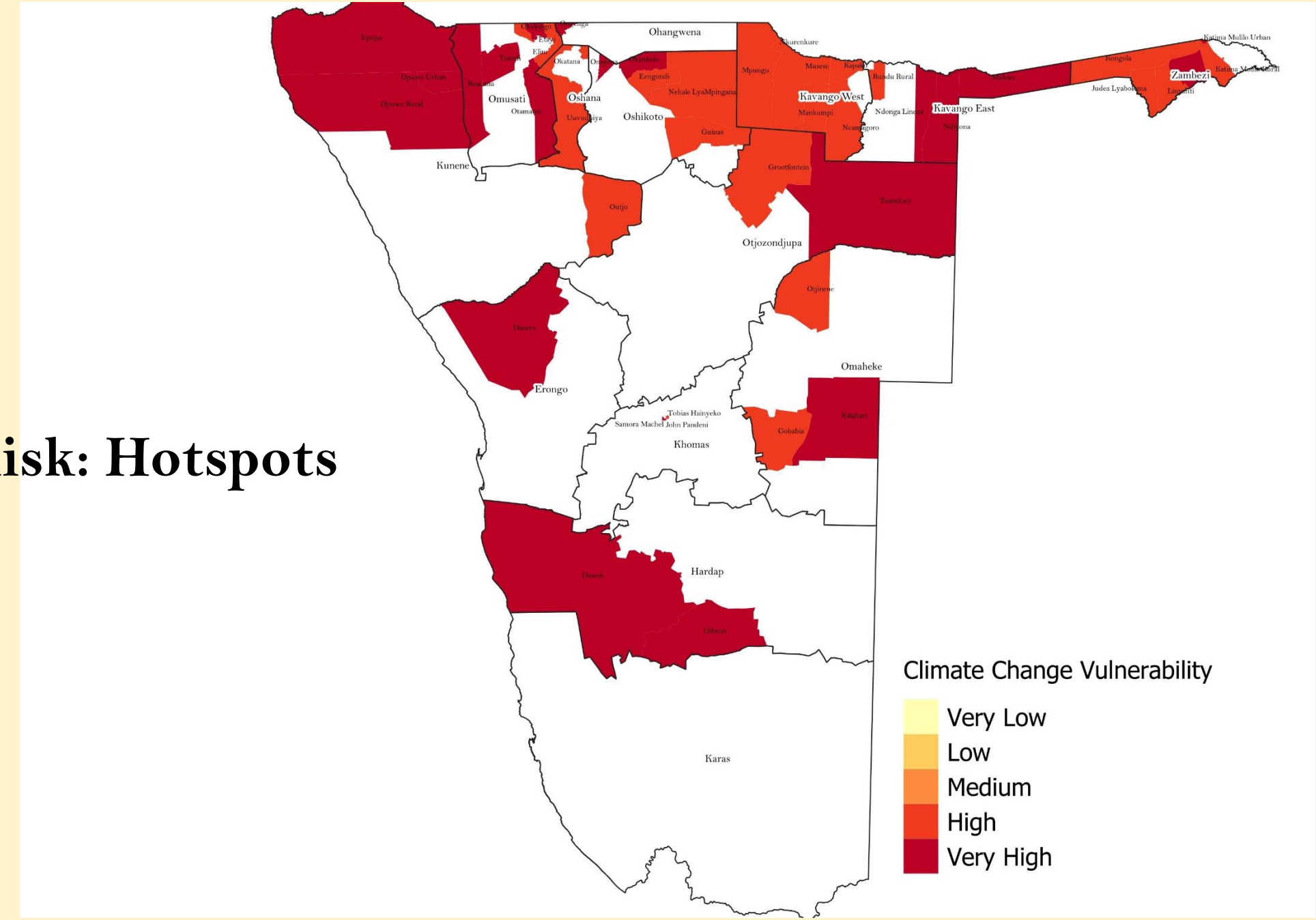


Vulnerability to CC (*Vulnerability Risk Map*)

- The NCCVI measures climate change vulnerability (i.e., the degree to which a ***constituency*** *is susceptible to*, and *unable to cope with, adverse effects of climate change*, including climate variability and extremes)

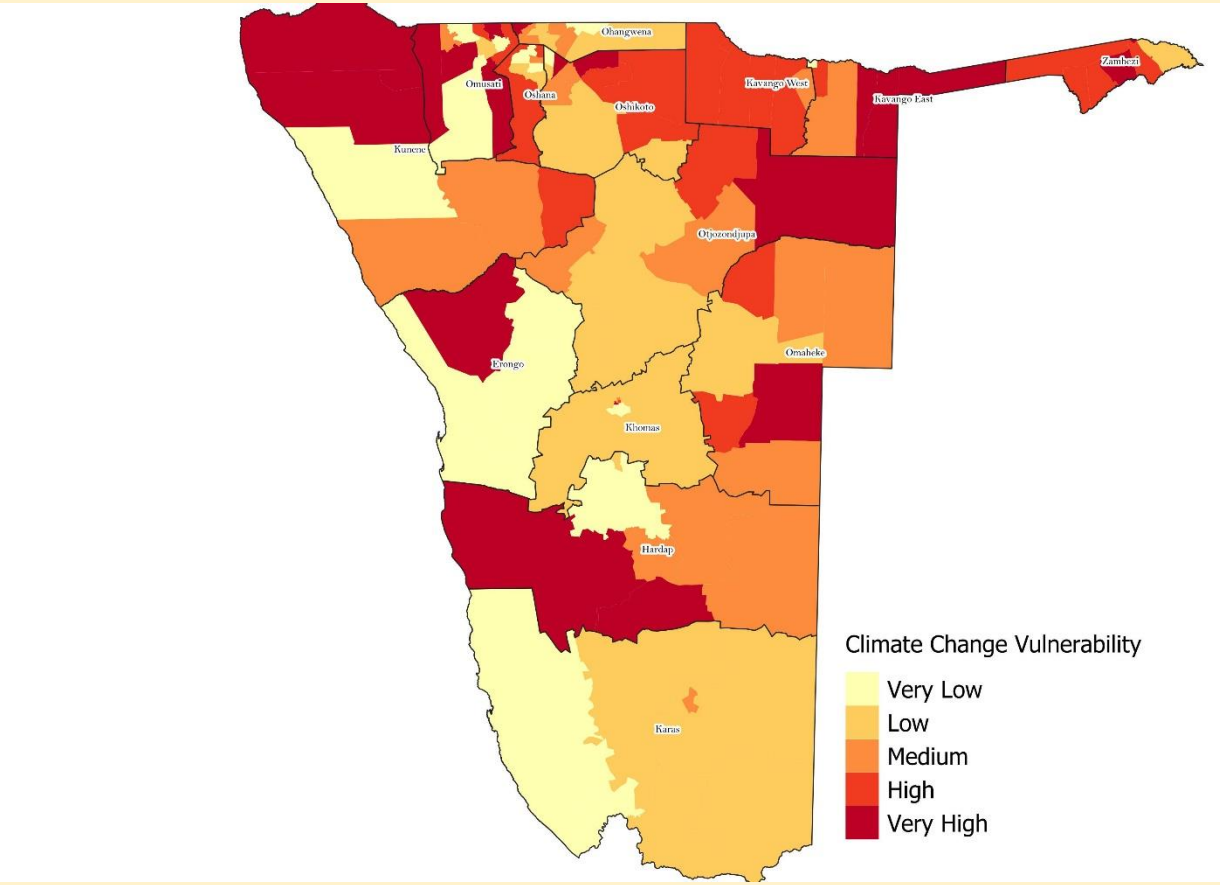


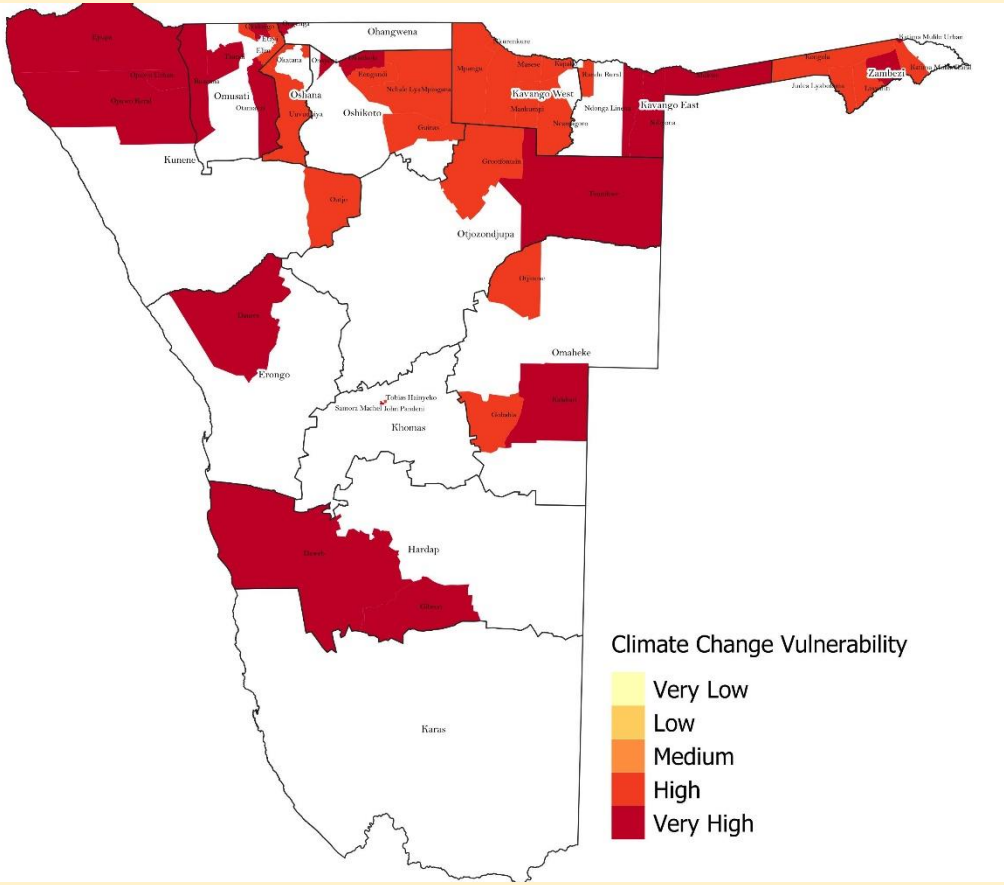
Vulnerability Risk: Hotspots



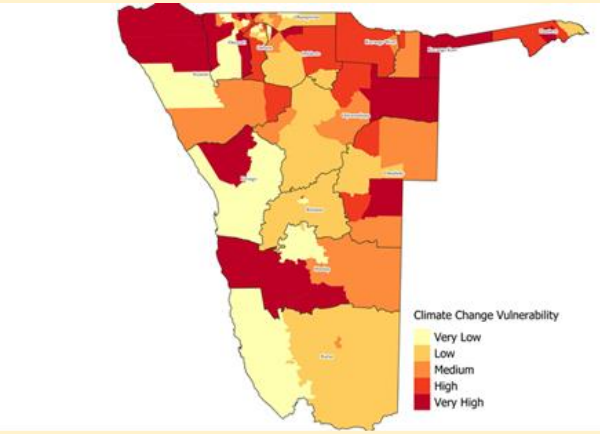
Key messages

Key Message 1: *who is vulnerable to climate change? [at national level]*

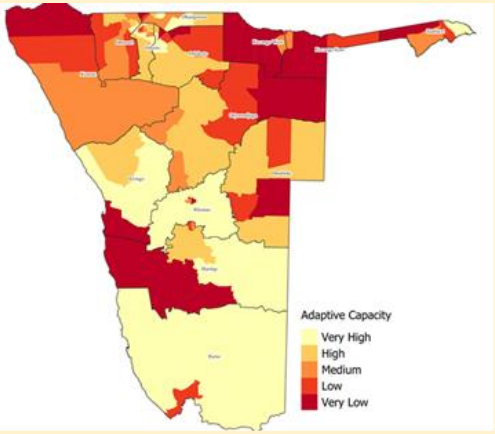




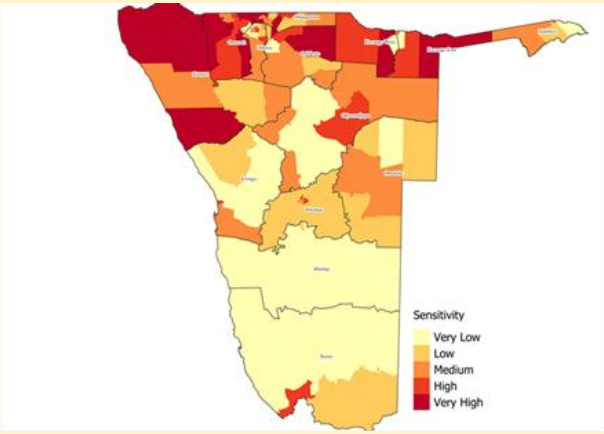
Key Message 2: the *drivers* of CC vulnerability Risks (why are they vulnerable?)



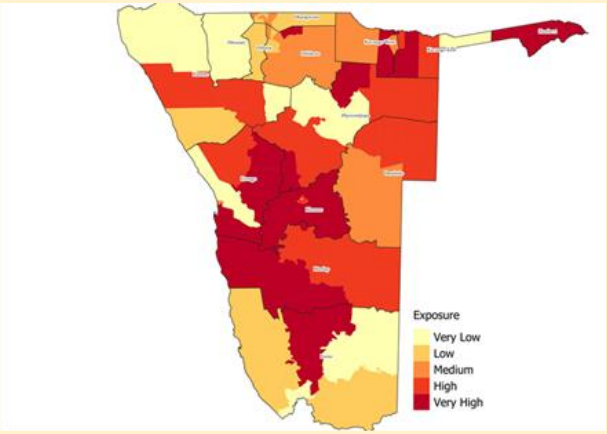
Vulnerability



Adaptive Capacity



Sensitivity

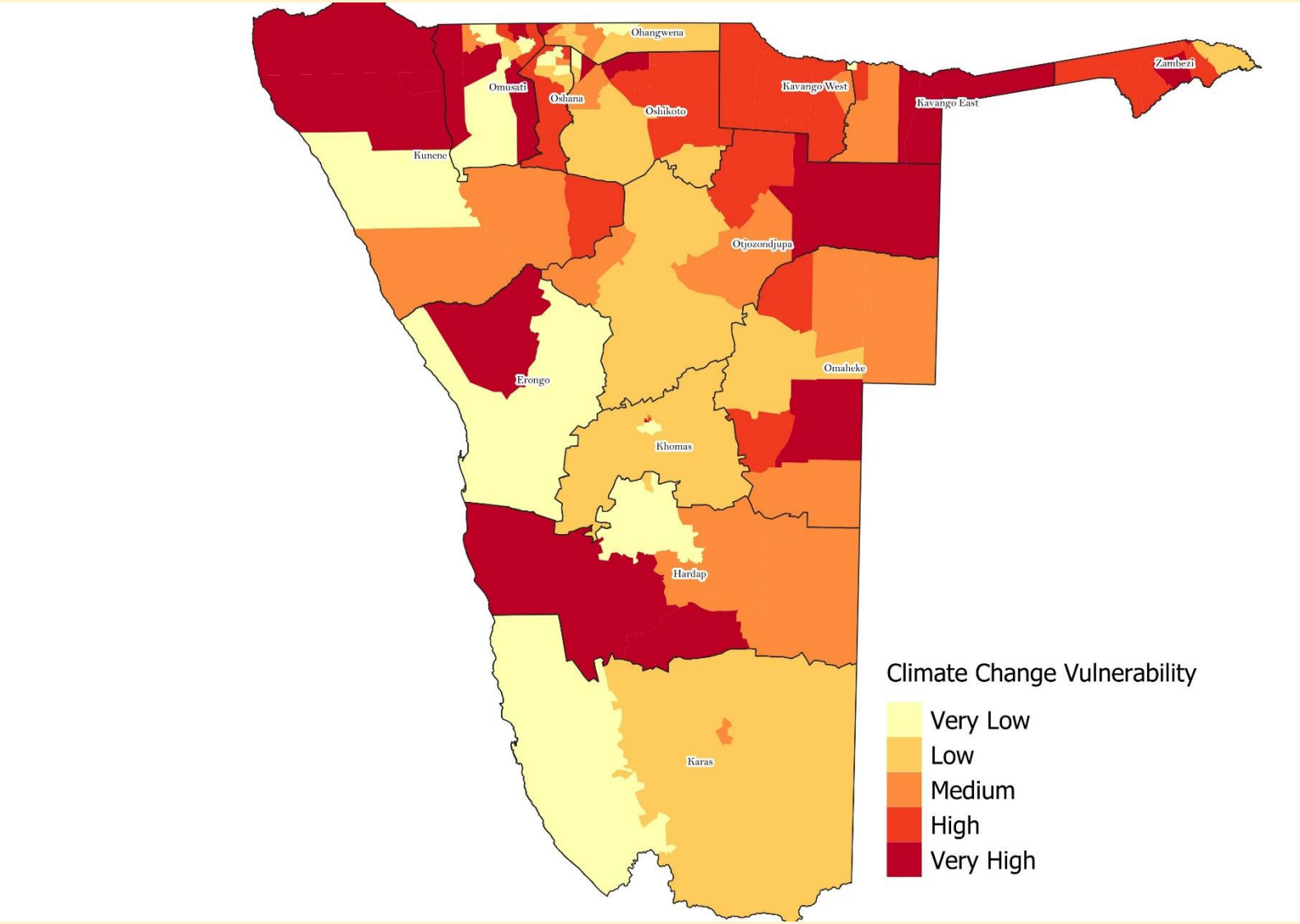


Exposure

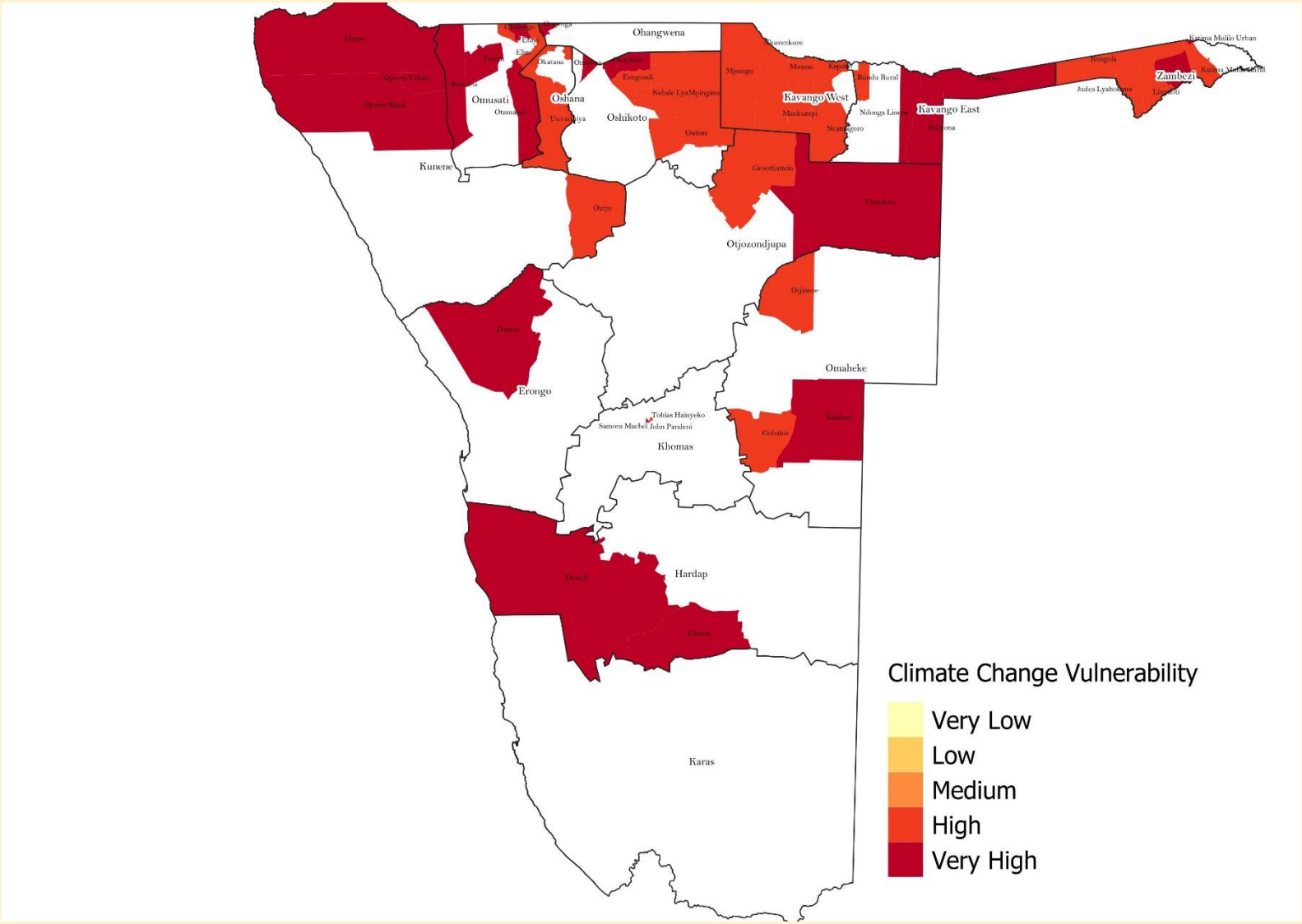
Key Message 3: *what are best approaches to climate change adaptation?*

Enhance resilience to climate change

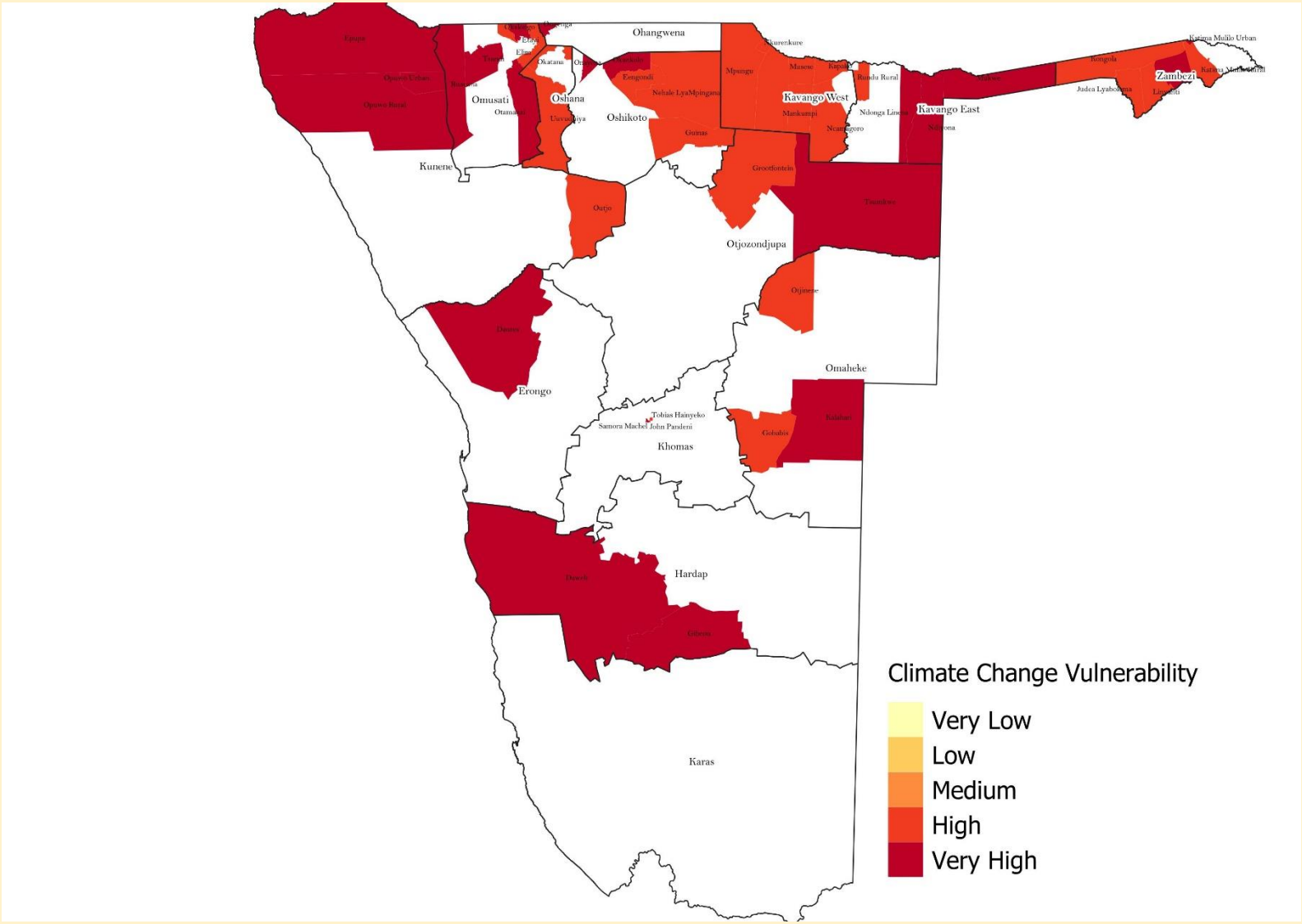
Build resilience to climate change



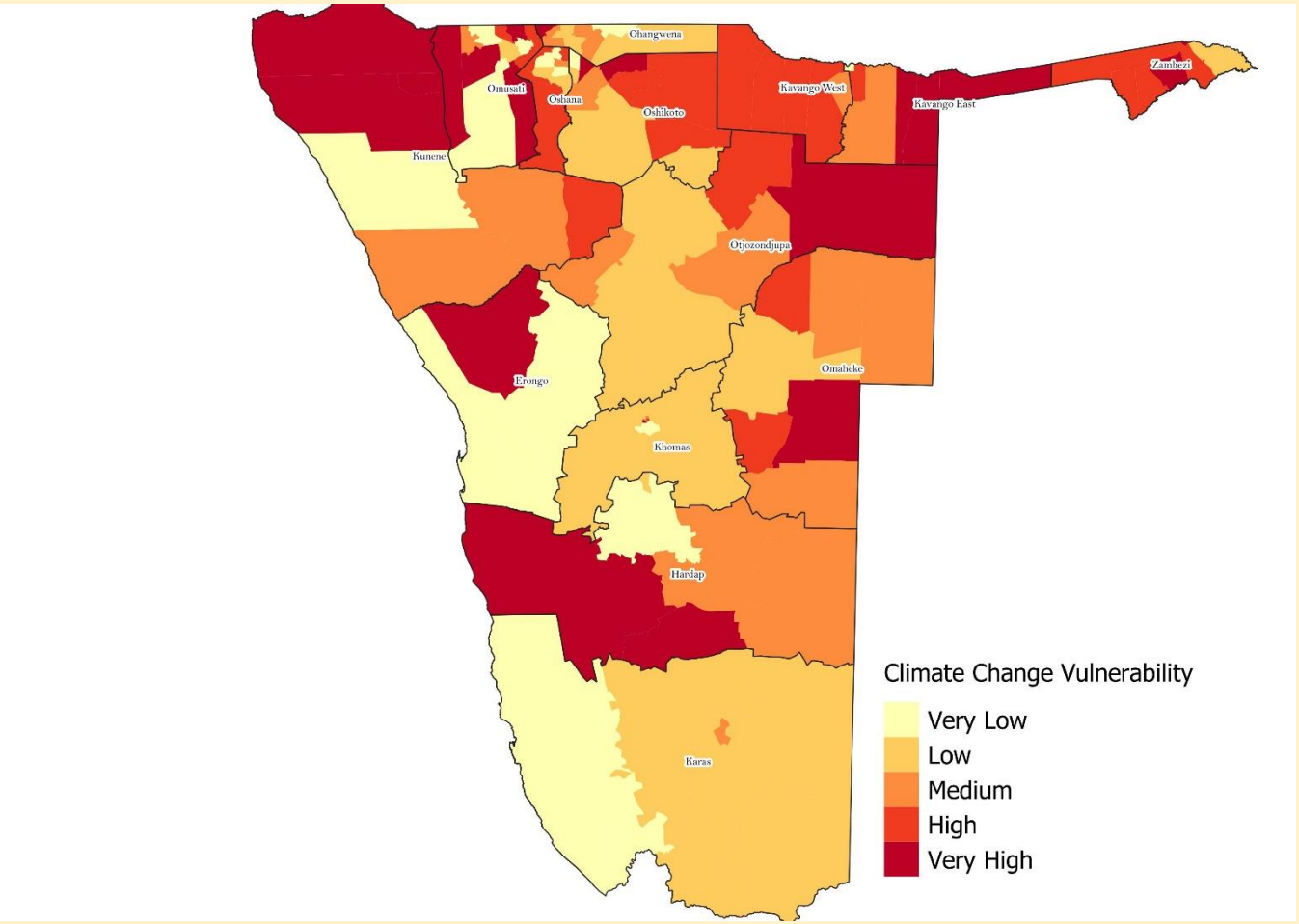
Key Message 4: *planning adaptation investments/activities*

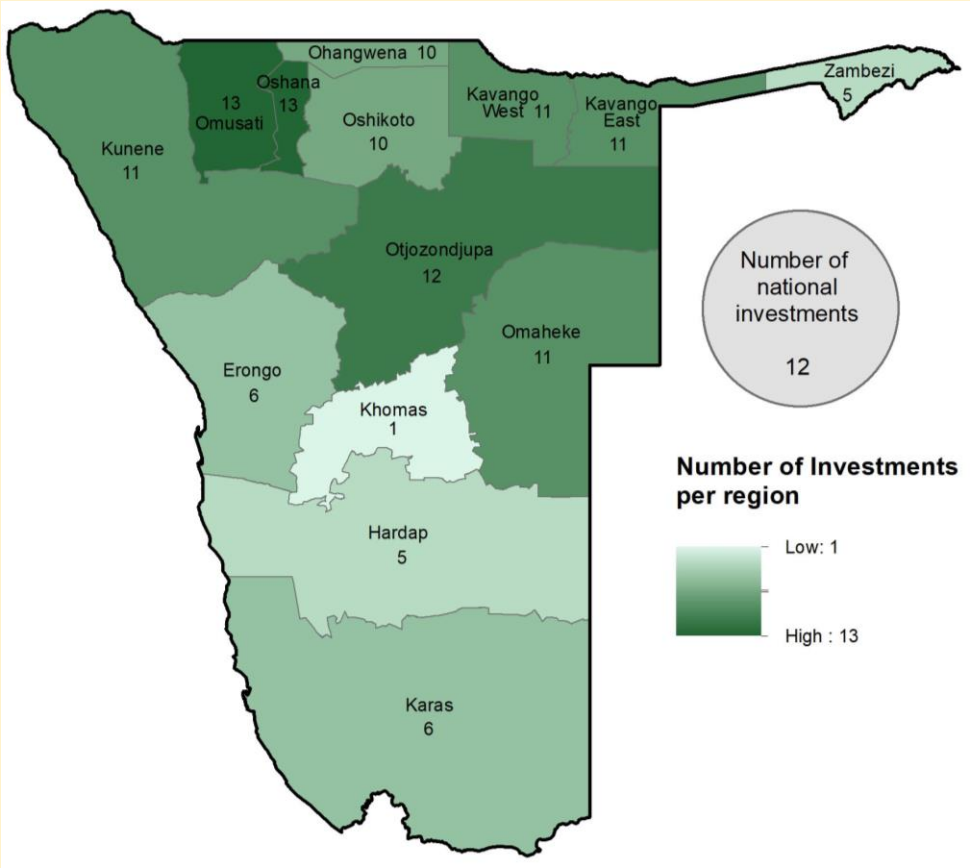


Key Message 5: *transitory vulnerabilities.*



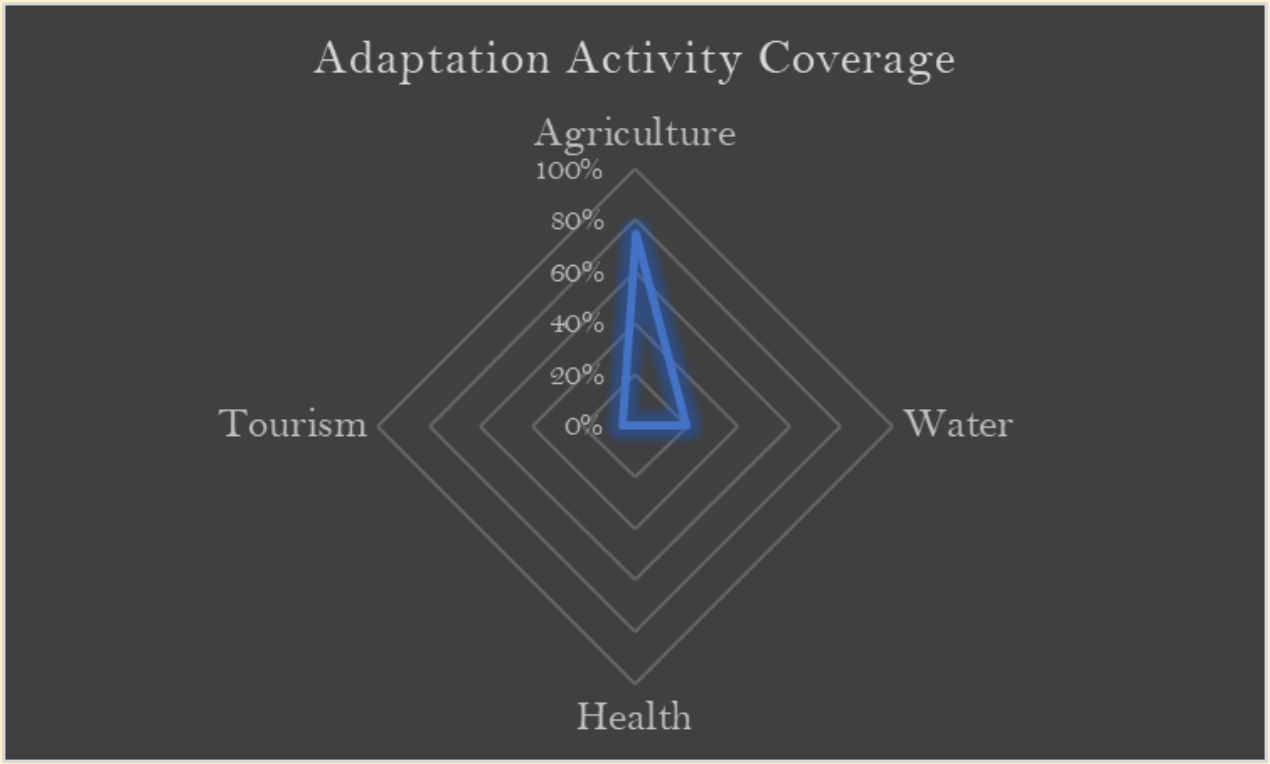
Key Message 6: *monitoring and evaluating adaptation strategies/policies*





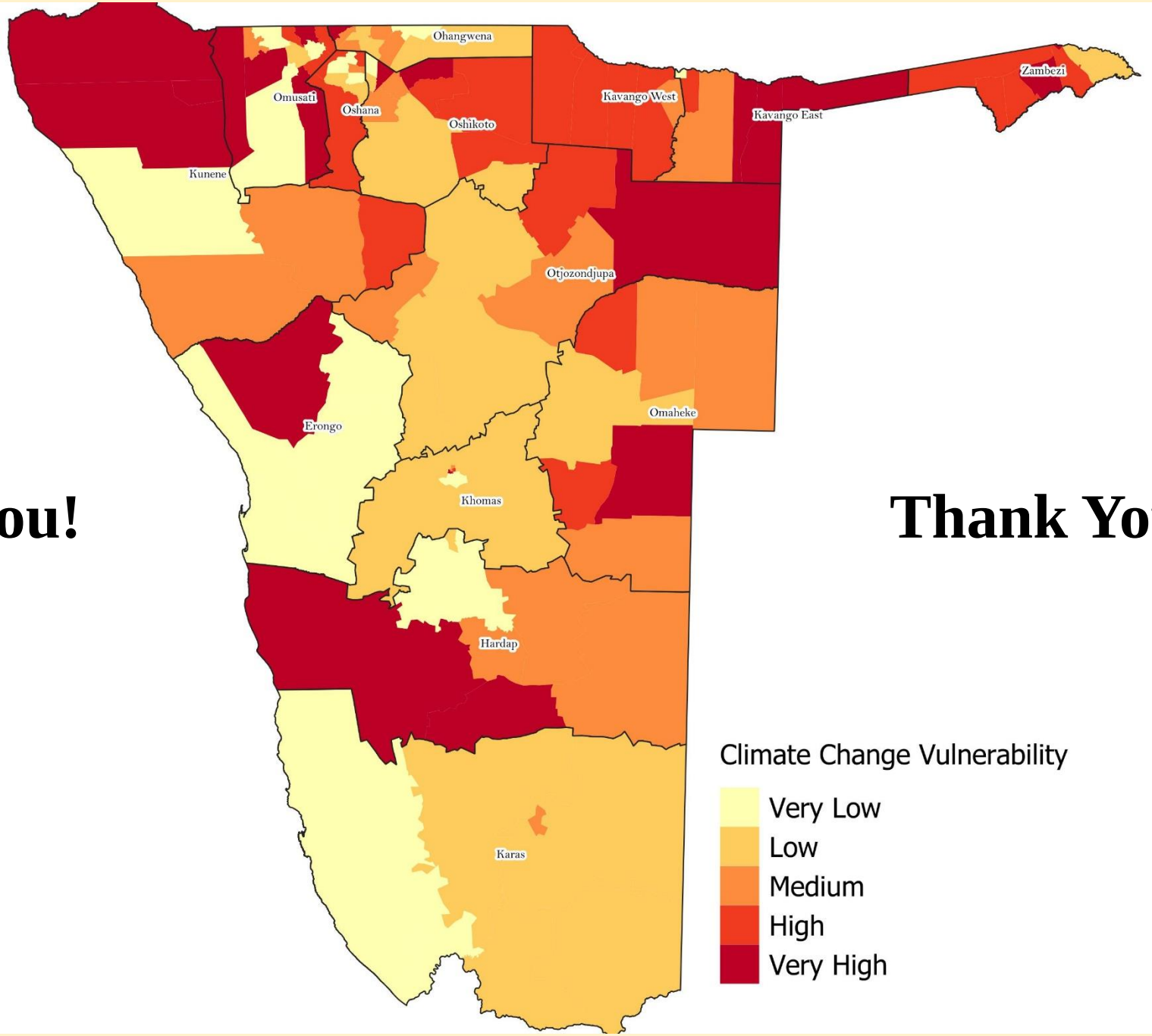
Key message 7: *response to Climate Change Risks across the Vulnerable Sectors*

- Results from a meta analysis on climate change adaptation response/activities/investments in Namibia shows that:
  - Agriculture (~ 75%)
  - Water (~ 20%)
  - Tourism (~ 5%)
  - Health (0%)



Source: own estimates

Thank You!



Thank You!