Eritrea: Coping with Climate Change

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Research purpose and data

Purpose

- Provides a fresh outlook at the current status of climate variability in Eritrea and see closely mitigation measures.
- Critically reviews how community-based sustainable land management practices help build ecological resilience.

Data Source: The paper is based on empirical data, which has been extracted from:

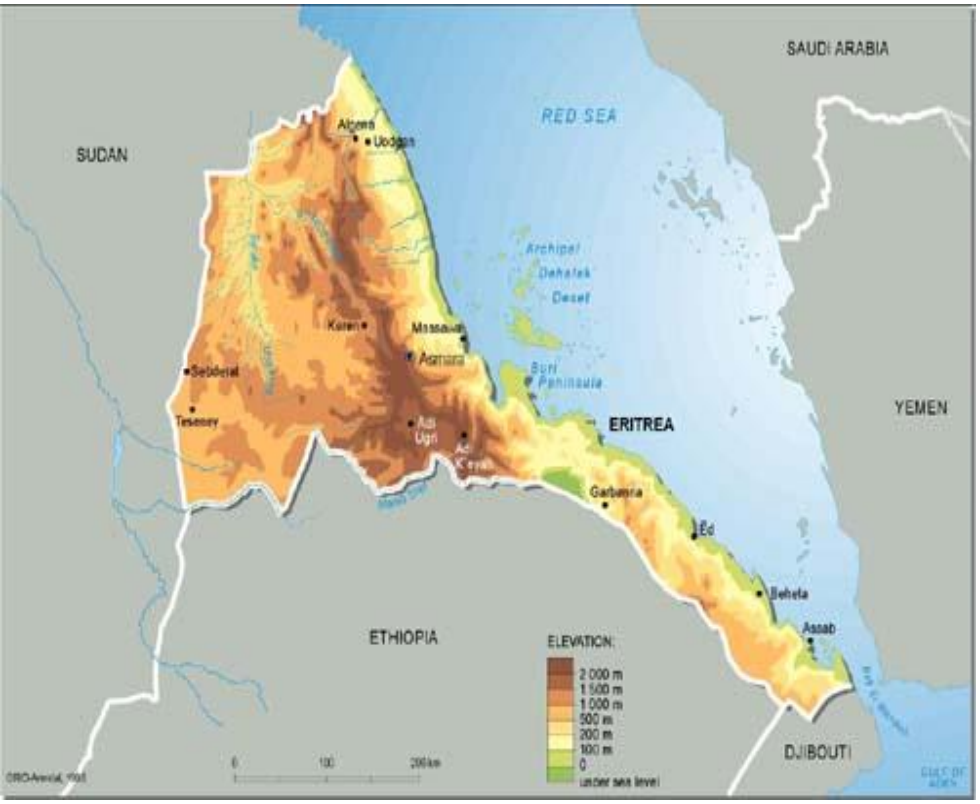
- Terminal evaluation report for the Global Environment Facility (GEF) projects in Eritrea; and
- Document review, and on-site visit to sustainable land management pilot projects in the country.

Eritrea
Coping with Climate Change

“Though climate change won’t mean the end of the world, the indisputable scientific facts show it will give mankind major problems over the coming decades.”

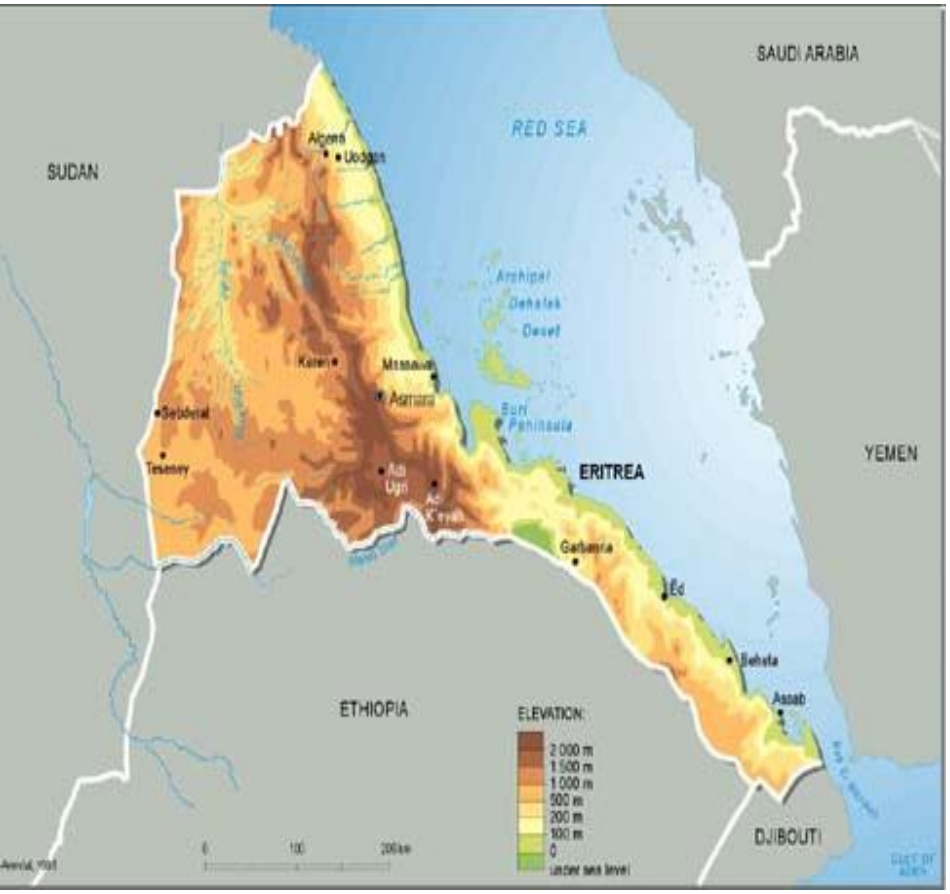
Petteri Taalas

Country Background and Context



- Agrarian society where land forms the main form of livelihood.
- Endowed with huge marine resources, which are yet to be fully exploited
- Eritrea is achieving the MDGs, but it faces challenges with respect to goal of eradicating poverty;
- Land degradation is prevalent throughout the country; covering 2.4 million hectares.

Country Background and Context



- Rural inhabitants are more susceptible to economic shocks from climate change and LD.
- Crop yield losses may cause food prices to significantly spike; leading to greater malnutrition; and
- Increased temperatures will increase water scarcity, posing health and development challenges

Greenhouse Gases (GHGs)

The Revised 1996 IPCC Guidelines was used for estimating

National Greenhouse Gas emission.

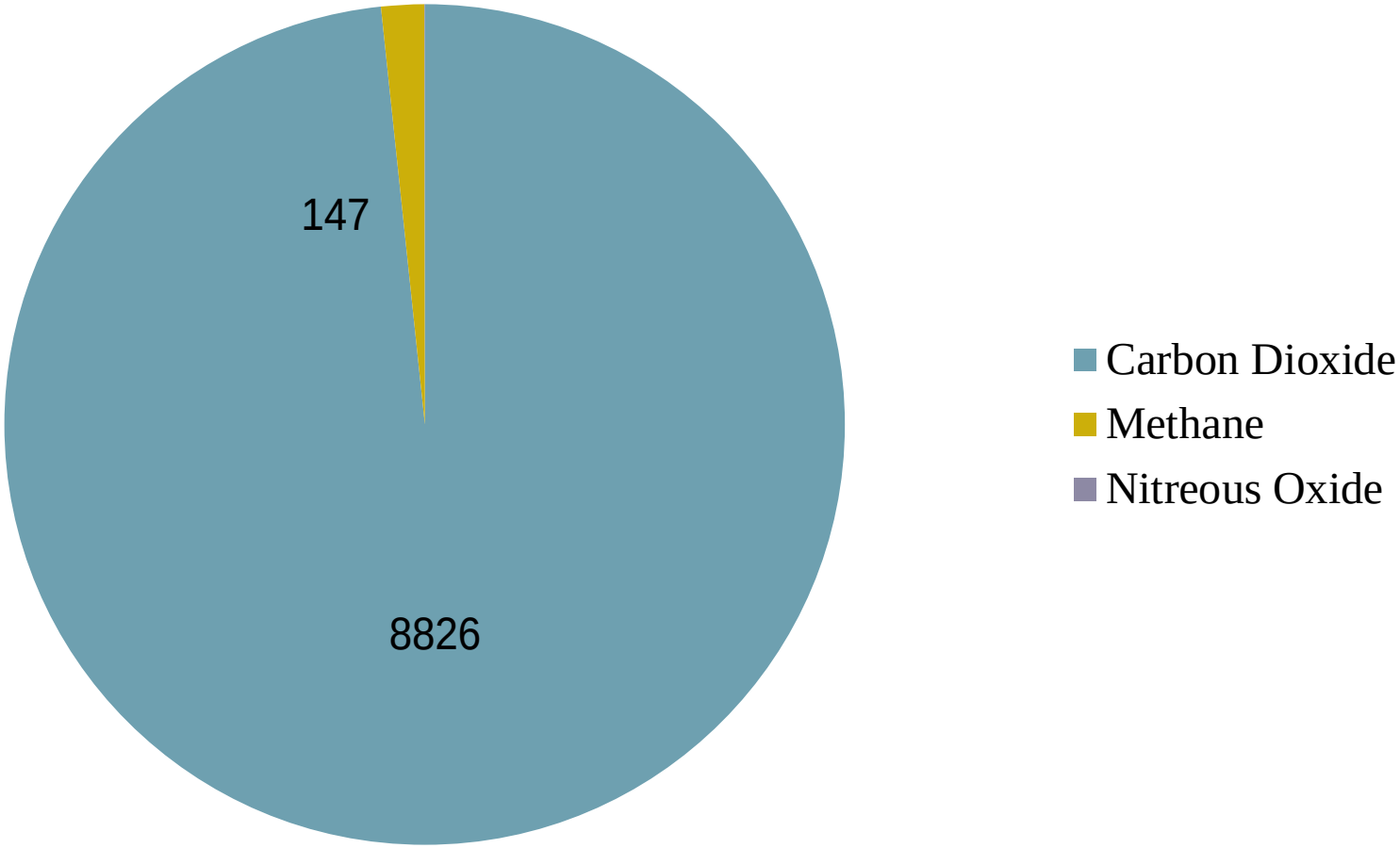
Carbon dioxide (CO2): Total CO_2 emission in 2000 was 8,826 Gg. and key sources included were the Energy Sector, Industrial Processes and the Land Use Change and Forestry Sector.

Methane (CH4) : Total methane emission in 2000 was 147 Gg of which the Agricultural sector followed by Energy, Land-Use Change and Forestry.

Nitrous Oxide (N2O): Nitrous Oxide emission was estimated at 1 Gg coming exclusively from the agricultural sector of Agricultural Soil source sub-category.

The four key GHG emitting sectors: Energy, Industrial Processes, Agriculture, Land Use Change and Forestry.

Greenhouse Gases...



Impacts of Greenhouse Gases...

Current projected climate change impacts include a temperature increase of about 4^{O}C by 2050.

Potential Impacts on Water Demand

The high climate sensitivity scenario for 2030s projects shows an additional 1.1 Billion m3 supply of water. This scenario if compounded with population growth rate of 3% will likely to require an additional supply of 2.2 Billion m3.

Potential Impacts on Stream flow

Under the B2 high climate sensitivity scenario, the stream flow of major rivers is likely to decrease by 50 % in 2030s. Under this scenario, hazards associated with drought will have adverse impacts on the biophysical and socio-economic systems.

Greenhouse Gases...

Potential impacts on agriculture:

- It is projected that there would be a decrease in cereal yield will have some influence on food security and food cost in the country. This analysis is consistent with that projected by the IPCC that crop production in low latitude developing countries would suffer more.
- Nonetheless, the impact could be significantly minimized in the near term by

  - improved irrigation practices,

  -improved crop management practices,

  -land and water management and the use of land races, and and adaptation to local agro-climatic and environmental conditions.

Climate variability: driving forces

Phase I: Traditional farming in Eritrea had been inappropriately extensive with low productivity; and

Phase II: Traditional farmers cultivate the same plot of land repeatedly without the use of fallowing Population pressure .

Result: Reduced land carrying capacity; increased probability of drought.

Fuel wood consumption

Agricultural expansion

Forest clearing for farming

Feeding animals

Coping mechanism: Experience from Eritrea

Climate change poses a great global threat, particularly to poor, vulnerable, marginalized populations'

World Bank

- The Eritrean government is working to counter the devastating impact of climate change through a range of initiatives and programs aiming at increasing community resilience and adapting capacity to climate change

  -Integrated water management and agricultural development;

  -A minimum integrated agricultural package;

  -Implementation of soil erosion measures; and

  -Development of community-based early warning systems

Coping mechanism: Experience from Eritrea

National Greening Campaign

Coping mechanism: Experience from Eritrea

Underground water harvesting

School-based Afforestation Program

KIITOS