

**GAAP PRESENTATION AT NASA IDS:
SEASONAL PREDICTION OF HYDRO-
CLIMATIC EXTREMES IN THE GREATER HORN
OF AFRICA (GHA). THE FIRST
PARTICIPATORY RESEARCH AND PROJECT
MEETING**

Presented by Noor, GAAP Director



The Impact of Climate Change on Desertification in the Horn of Africa

- Desertification is a type of **land degradation** in which a relatively dry land region becomes increasingly arid, typically losing its bodies of water as well as vegetation and wildlife. It is caused by a variety of factors, such as **climate change** and human activities. Desertification is a significant global ecological and **environmental problem**. Considerable controversy exists over the proper definition of the term desertification for which Helmut Geist (2005) has identified more than 100 formal definitions
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 - **Desertification can be caused either by climate change or destruction...**
 - **A:** 1) Desertification can be caused either by climate change or destructive land use. 2) The location and arrangement of both physical and human phenomena.
 -
- physical **impacts** of **climate change**. their effect on social and economic systems /humans as stated This article refers to reports produced by the IPCC. In their usage, climate **change** refers to a **change** in the state of the climate that can be identified by **changes** in

Climate Change

- The Intergovernmental Panel on Climate Change (IPCC) defines climate change as:
 - *Any change in climate over time, whether due to natural variability or as a result of human activity.*
- Vulnerability to climate change has been defined as:
 - *The degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate variation to which a system is exposed, its sensitivity, and its adaptive capacity.*

Climate Change

- a leading human and environmental crisis of the 21st century and a major challenge to the world and the specifically African people, their governments and communities.
- a considerable threat to Africa, its ecosystems and many of its species:
- consequences include
 - rising sea-levels,
 - droughts and famine,
 - and the loss of up to a third of the world's plant and animal species
- Widely accepted now as a security threat in Africa.
- strengthened fears that environmental degradation and demographic pressures displace millions of people in Africa and create serious social upheaval

Climate Change and the GHA

- The GHA countries include; Burundi, Djibouti, Eritrea, Ethiopia, Kenya, Rwanda, South Sudan, Somalia, Tanzania, and Uganda
- The region suffers from severe effects of climate change and recurring and severe droughts and floods have caused
 - *widespread famine,*
 - *ecological degradation,*
 - *poverty and*
 - *economic hardships*
- Over 80% of the population in the GHA are rural and depend on smallholder agriculture for their livelihood
- **THE GHA IS RECIPIENT OF 40% WORLD FOOD DONATION**

what is the relationship between the impact of climate change and desertification in the GHA?

- **Desertification**

- defined as a process of land degradation in arid, semi-arid and dry sub-humid areas, resulting from various factors, including *climatic variations and human activities*. *Land degradation manifests itself through soil erosion, water scarcity, reduced agricultural productivity, loss of vegetation cover and biodiversity, drought and poverty*.
- The main **climatic factors** driving desertification include;
 - prolonged drought, soil erosion, dust and sandstorms, runoff water, the deterioration of the physical, chemical, biological or economic properties of soil, and the long-term loss of natural vegetation.
 - **Human-induced factors** driving land degradation and desertification include overgrazing, which removes vegetation cover; over-cultivation or poor farming practices which exhausts the soil; deforestation which destroys the trees that protect the soil; and poorly drained irrigation systems which turn croplands salty

Causes of desertification

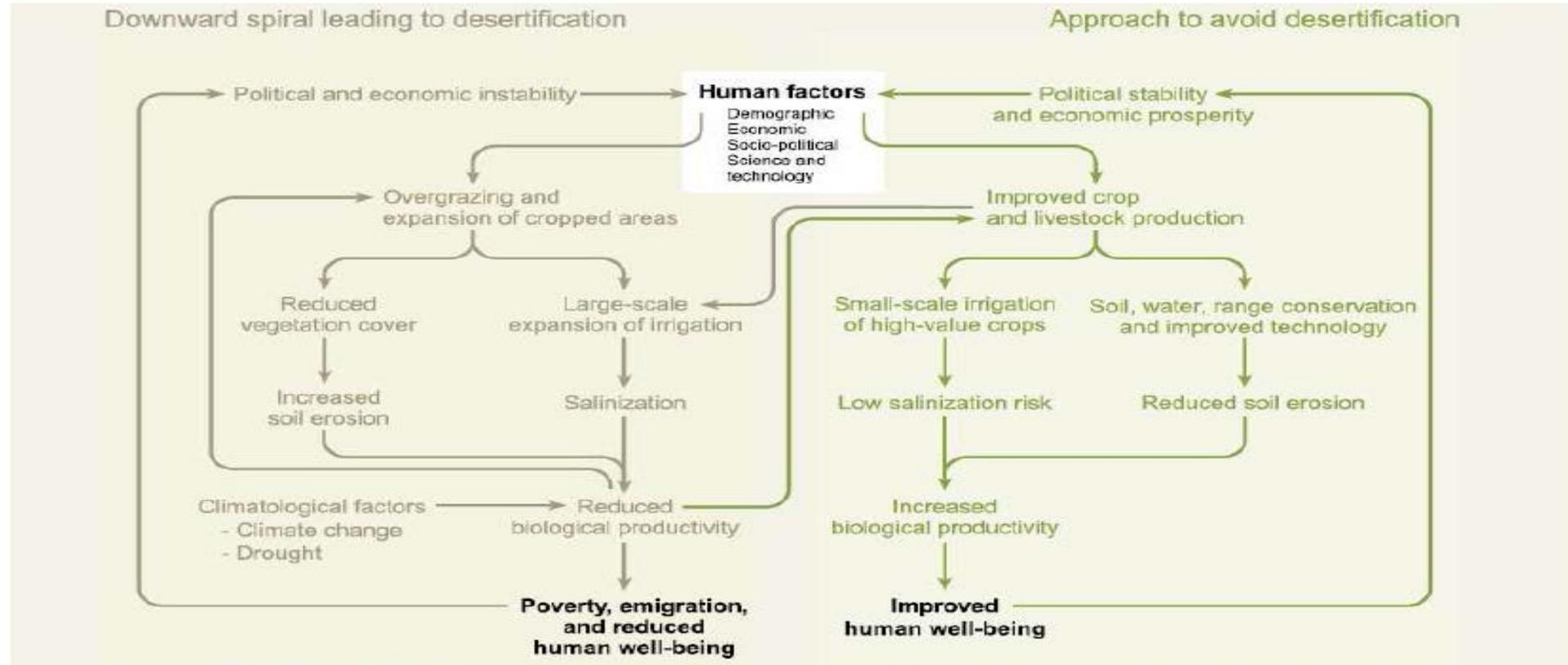
- Drought adds another dimension to the land degradation and desertification problem.
- Drought conditions affect ecosystems, agriculture, water resources, power supplies and basic human welfare. These effects can be exacerbated by desertification and land degradation
- For example, poor management of cropland may cause greater erosion and dust storms, amplifying the effects of drought on food production (UNGA, 2011:4). Taken together, land degradation, desertification and drought are the major environmental challenges confronting the GHA/world today.

Contin.... Desertification

- Desertification is not only the advancement and encroachment of desert sand dunes on land but also the persistent degradation of drylands ecosystems by human activities and climatic variations. Because of its severe impact on human well-being and the environment, “desertification ranks among the greatest development challenges of our time” (GTZ,2013).
- Desertification is largely driven by a core of direct and indirect factors mostly attributed to climatic variability and unsustainable human activities. A schematic description of factors driving desertification is provided on the left side of Figure 2.4 (MA, 2005).

Major factors driving desertification in the World and GHA

Figure 2.4: Major factors driving desertification in developing countries



Source: Millennium Ecosystem Assessment, 2005

Factors that causes desertification IN GHA

- Overgrazing
- Over-cultivation
- Deforestation
- Poverty
- Drought

Different agencies and organizations that are currently dealing with desertification and climate change in the GHA, providing an outline of their programs and initiatives

- National, Regional And International Programs and Support Measures On Climate Change, Desertification And Land Degradation In GHA
 - National interventions on Climate Change – NAPAs
 - *Article 4 of the UNFCCC mandates Parties to consolidate their Commitments by way of “formulating, implementing, publishing and regularly updating national measures to facilitate adequate adaptation to climate change”. The Article under clause 8 provides for Parties to “give full consideration to meet specific needs and concerns of developing country Parties arising from the adverse effects of climate change and/or the impact of the implementation of response measures,*

NAPA project list by GHA (May 2013)-Example of some countries in GHA

- **Burundi**
 - Disaster risk management and early warning
 - Terrestrial ecosystem rehabilitation of degraded land
 - Terrestrial ecosystem –safe guard natural environment
- **Ethiopia**
 - Agriculture – promote drought insurance
 - Early warning system
 - Water resources – water harvesting and irrigation
- **Rwanda**
 - Terrestrial ecosystems land protection and preservation
 - Early warning system capacity building
 - Water resources –irrigation development

Cont

- Uganda
 - Terrestrial ecosystem –community tree growing
 - Terrestrial ecosystem land degradation management
 - Early warning weather and climate information
- *Source: UNFCCC, 2013 (www.unfccc.int accessed November 02, 2013)*



Regional intervention programmes on Climate change

Critical Issues Exacerbating Disasters In The GHA

- Lack of adequate human and institutional capacities for weather and climate modeling and forecasting
- Weak or non-existence of National Disaster Management Systems
- Lack of community based weather and climate EWS
- Poor Coordination between the relevant government institutions for proper disaster management
- Lack of policy and Legal framework on Disaster Management to facilitate the coordination and implementation of disaster preparedness activities is weak
- Poverty and low level of disaster resilience in many communities (making vulnerability very
- High in the GHA)

Adaptive Strategies for Mitigating the Impacts of Climate Change on Desertification

- **Water Use and Management**

- One of the primary factors affecting water availability is the annual distribution of precipitation. There are large differences in water availability in soils within a given land system or landscape, depending on topography, geomorphology, and the nature of the soil and its depth

Community Based DRR Approach

- Member countries need to adopted a community based process in Disaster risk and vulnerability reduction. This **‘Bottom-top’ process has been found to be among the most effective means of reducing disaster through community sensitization, education and involvement right from risk mapping and assessment period; through disaster preparedness to response and recovery stages.**