



# Ecological Degradation and Global Change: The Case of Drylands

## Terminologies

- Drylands - areas where the ratio of mean annual precipitation (P) to potential evapotranspiration (PET) (i.e. index of aridity) is less than 0.65. Hyper arid ( $< 0.05$ ), arid (0.05 - 0.20), semi arid (0.20 – 0.50) and dry sub humid (0.50 – 0.65).
- Desertification - land degradation in arid, semi arid and dry sub humid areas resulting from various factors, including climatic variations and human activities.
- Land degradation – the aggregate diminution of the productive potential of land, including its major uses, its farming systems and its value as economic resource.



## Some Forms of Land Degradation in the Drylands

- Wood Degradation – result from increased conversion of woodlands to cropland or increased demand for tree products. Some of the questions to be addressed include: Do farmers have to continue converting these woodlands to agroforestry parklands and to what extent? Do we need to conserve these woodlands and for what purposes? How do we conserve them to meet the resource requirements of the increasing population?
- Parkland Degradation – occurs when the remaining trees on parklands are cut down because of either increased demand for tree products or cultivation area. Some of the questions to be addressed include: How do we increase the productivity of parklands to meet the increasing demand for food and other tree products?
- Crop Land Degradation – takes place on lands which have already lost their woody vegetation and have now become degraded or are degrading as a result of intensive cultivation by increased mechanization, irrigation, etc. Questions to be addressed include: How can we restore the woody vegetation to create environmental stability in these areas or how can we reclaim these degraded or degrading lands?



## Extend and Distribution of Drylands

- Not adequately addressed during e-discussion but important → Scale of the problem.
- Drylands → 43% landmass (65% countries) in SSA. 16% (arid), 21% (semi arid), 8% (dry sub-humid); sub-regional distribution.
- However, categorization – approximate due to high variability in climatic conditions including drought and anthro-pogenic factors; boundaries – dynamic.
  - \* Question of → reliability of data, suitable methodologies for monitoring trends.
  - \* Question → Adequate capacity in Africa, Institutions – Africa/Partners which can collaborate.



# Causes and Consequences of Ecological Degradation

## Causes of Ecological Degradation

- Aspect most discussed during e-discussion
- While root causes are complex and site specific, driving forces fall in two broad categories; natural and human related.
- Natural factors (6) → background paper, discussion papers – Demel and Bashir. However,
  - \* Whether the affected governments or responsible organizations have put in place mechanisms for monitoring the environment and areas vulnerable to drought including aspects like early warning systems, legal and institutional framework for drought management and empowering communities to address pertinent issues did not come out clearly.
  - \* Issues about land degradation and global warming e.g. Africa's contribution to the later or carbon sequestration were least discussed.
  - \* The role of wind as a causative agent did not receive desired input despite its contribution to land degradation in the Sahel.



## Causes of Ecological Degradation

- Human factors generated highest level of interest.
  - (-) Social, economic aspects and dryland management issues → part of workshop presentations.
  - (-) Over-grazing, over-cultivation, deforestation, water-logging and salinisation of irrigated lands came out quite prominently.
  - (-) Poverty and food insecurity, lack of individual and communal ownership of natural resources, poor market access and political instability came as a second group of causative factors.
  - (-) Inadequate institutional arrangements, inadequate or lack of suitable dryland development policies and lack of skills in recognizing natural resource bases and their potentials were also discussed.
  - (-) Population growth – debatable. However, cases exist where population growth has resulted in land degradation in as much as it has spurred development. Either way, underlying causes require understanding to mitigate the effects of degradation or enhance rehabilitation.



# Causes and Consequences of Ecological Degradation

## Effects or Consequences of Ecological Degradation

- Main consequence in the drylands is desertification which manifests itself in various biophysical and socio-economic conditions.
- Biophysical effects include soil degradation, reduction in available water including its quality, diminution of vegetation resources (including biological diversity) as well as urban and related industrial problems.
- Socio-economic conditions include poverty, rural-urban migration (environmental refugees), reduced per capita agricultural production of affected countries, among others.



# The Way Forward

- Background paper [Chikamai and Kigomo], Expert review paper [Bonkougou], useful recommendations.
  - Contributions from e-discussion and this paper → gaps and proposed areas for intervention.
- Natural factors – in balance with natural rehabilitation but human factors → accelerated forms of degradation;
  - Place people at the centre of development of the drylands and fully integrate their activities in response to the biophysical changes [Ecological degradation] taking place.
  - Build capacity of dryland communities through advocacy, training/education, resource mobilization so as to empower them deal with specific problems arising from their actions.



# The Way Forward

- Dryland ecosystems - endowed with a rich diversity of natural resources and yet they are characterized with lack of diversification in resource use with high levels of poverty.
  - Need to recognise the potential that exist in the other dryland resources and develop them for sound economic development e.g. gums and resins in the drylands of Eastern Africa.
  - Need to relate dryland management to broader development goals building on the understanding that the main structural components of land include soil, minerals, water and a range of biological resources (flora and fauna).
- In terms of technologies, the aspects of trees outside forests[TOF], use of domestic waste water as well as the ability of dryland trees to regenerate through suckering and layering were proposed as some of the valuable interventions in rehabilitation initiatives.
- For sustainability, African people should play an active role in the formulation and implementation of various projects. Opportunities are emerging through various technical networks like FORNESSA, AFORNET, SAFORGEN, NGARA etc. that provide useful fora for negotiation. Alliances also ought to be established with programs like NEPAD and sub-regional bodies like IGAD, SADC, CILSS.