Nature- based Solutions to global challenges: Ethiopia’s experience

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29 July 2021
| 1. Introduction |
| 2. Benefits of Biodiversity |
| 3. Key challenges of 21\textsuperscript{st} century |
| 4. Main Drivers of BD & ecosystem service |
| 5. Anticipated Solutions |
| 6. Transformational Change |
| 7. Nature –based Solutions /NBSs |
| 8. Ethiopia’s experience of NBSs |
| 9. The way forward |
1. Introduction

- Ethiopian is:-
  - rich in biodiversity resources
  - a Centre of origin & diversity for many biodiversity
  - is hosting the Eastern Afromontane and Horn of Africa BD Hot spots of the globe (34 BD Hot spots around the globe)

- Some of the reasons having rich BD resources, Eth.has:-
  - Wide altitudinal range (116m bsl - 4,620 masl)
  - Diverse agro-ecological areas
  - Diverse cultural diversity
Introduction...

- Ethiopian Biodiversity Institute (EBI) is the mandated institute for the conservation, wise and sustainable use and faire and equitable benefit sharing of the rich BD.

- Ethiopia is a member of Minsteriral Meeting of Like-minded Megadiverse Countries (LMMC) Group.
2. Benefits of biodiversity

• **Direct-Consumptive**
  ✓ Food (70% plants) & Fodder
  ✓ Fuel, Fiber, Medicine etc.,

  *** >70% of the people in developing countries use plants as a primary source of medicine

  ✓ Natural compounds
  ✓ Gene pool source, etc.

• **Indirect**
  ➢ Climate regulation
  ➢ Soil management
  ➢ Waste disposal
  ➢ Nutrient cycling
  ➢ Hydrological regime
  ➢ Species interactions
  ➢ Eco-tourism
  ➢ Recreation
  ➢ Research

8/18/2021
3. Key Developmental challenges of the country

- Extreme / Persistent poverty
- Climate change
- Over-exploitation of natural resources by growing population
- Biodiversity loss & genetic erosion
- Over-use of marginal lands
- Deteriorating soil health (degradation, erosion and landslides)
- Salination of fertile lands & water logging
- Floods, drought

➢ Unbalanced ecosystems Consequences
In Ethiopia, climate variability and change, including rising temperatures and increasing rainfall variability, challenge the country’s efforts to realize its vision of inclusion prosperity.

- It has negatively impact in such sectors as agriculture (production and productivity).
- Influencing lives of many people in dry and semiarid as well as highland area.
- Affecting domestic and wild biodiversity, and ecosystem services, etc.
4. Main drivers of biodiversity & ES loss (IPBES 2019)

Habitat conversion/ changes in land use
Drivers...

Direct exploitation of wildlife (Unsustainable use)

Elephants killed in Mago National Park
Drivers ...

Climate change

✓ Over 30 years in average temp. raised by 0.2°C /decade.

✓ floods & droughts have increased in the past 50 years
Pollution
– air, water, soil, and marine plastic pollution

- Chrome liquid waste heading toward the river without prior treatment.
- Causes cancer
- Found in sampled vegetables

Mishandled solid waste
Invasive alien species

▲ by 40% since 1980, due to increased trade & human population dynamics and trends.

- Prosopis infestation
- Parthenium infestation
- Lake Tana, World’s Biosphere Reserve
- Infestation near Ginir district, Bale Zone
5. Anticipated Solutions to the challenges

Parties to the CBD took solutions below:

• Followed the Strategic Plan for Biodiversity 2011-2020 and its Aichi Biodiversity Targets

• Aimed taking effective & urgent action to halt the loss of biodiversity to ensure that

  ➢ By 2020, ecosystems are resilient and continue to provide essential services,

Outcomes

❖ None of the 20 Aichi Biodiversity Targets have been fully met, although some specific elements within the targets have been achieved.
Currently, the globe aspires to ensuring the vision “Living in harmony with nature” by 2050.

However, experiences show us that:

i. MDGs (Millennium Dev’t Goals), and

Both were not fully achieved as they were hoped.

iii. the current progresses towards realizing SDGs of the 2030 indicate the need for more effort

The Question is how it will be made possible to achieve “Living in harmony with nature”
6. Transformational change is demanded

- "Transformational change is more about WHO should change, not WHAT should change.
- To achieve the objectives of the CBD, the S the Paris Agreement & other multilateral agreements DGs.
- Concrete actions, goals, targets and pathways for the global post-2020 Biodiversity Framework.
- Post 2020 Global Biodiversity Framework first draft was released.
In Post 2020 Global Biodiversity Framework

- In Rome Africa proposed a nature based solution (NBS) as a means for:
  - Climate change mitigation, adaption and disaster risk reduction
  - Regulation of air quality, hazards and extreme events and quality and quantity of water
- Some parties complained not to integrate the term under CBD
- But NBS is one of the key themes of the COP26
7. Nature based solutions /NBSs

❖ **Actions to protect, sustainably manage, and restore natural or modified ecosystems**, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits.”

❖ Are actions inspired by, supported by, or copied from nature, that **deploy various natural features and processes**, are **resource efficient and adapted to systems** in diverse **spatial areas**, facing social, environmental, and economic challenges.

❖ **It is to address**
  – climate change & disaster risk,
  – food & water security,
  – socio-economic development
  – human health
The main goals of NBS

i. The enhancement of sustainable urbanization and restoration of degraded ecosystems,

ii. The development of climate change adaptation and mitigation,

iii. The improvement of risk management and resilience.

iv. Achieving SDGs, Agenda 21, Agenda 2030 (COP 15 –Ecological Civilization.. China )
NBSs involve 3 types of actions which may be combined at regional and local level:

i. **Preserving the integrity and good ecological status of ecosystems**;

ii. **Improving sustainable management of ecosystems used by human activities**;

iii. **Restoring degraded ecosystems or creating ecosystems**.
NBS approaches can be classified into:

1. Ecosystem restoration approaches (e.g. ecological restoration, ecological engineering and forest landscape restoration);
2. Specific ecosystem-related approaches (e.g. ecosystem-based adaptation, ecosystem-based mitigation, and ecosystem-based disaster risk reduction);
3. Infrastructure-related approaches (e.g. natural infrastructure and green infrastructure approaches);
4. Ecosystem-based management approaches (e.g. integrated coastal zone management and integrated water resources management); and
5. Ecosystem protection approaches (e.g. ABC approaches including protected area management).

Cohen-Shacham et al. (2016)
Policy support for NBS in Ethiopia

i. Domestic policy support
- Green Legacy initiative
- CRGE 2011
- 10 year Dev’t plan (2021-2030)
- Ethiopian NDC- updated in 2021
- Ethiopia’s National Adaptation plan to climate change
- A long term ambition to realizing a carbon –neutral economy
- Enhanced NDC

ii. Global policy
- Paris agreement
8. Ethiopia’s experience of NBSs

Implementation of Climate Resilient Green economy /CRGE approach

• **CRGE** Launched in 2011, it sets that **resilient to climate** change impacts, with no net increase in GHG emissions from 2010 levels.

• **Prioritizes**- agriculture, Forest, power, and technology
Ethiopia’s experience of NBSs: Key National Priorities

**Middle income country in 2025**

### Agriculture
- Improving crop & livestock practices
  - Reduce deforestation - intensification & irrigation
  - Improve animal value chain
  - Shift animal mix (e.g., poultry, sheep, goats, fish, etc)
  - Mechanize draft power

### Forestry
- Protecting and growing forests as carbon stocks
  - C-sequestration: afforestation, reforestation
  - 15 M ha Forest Landscape Restoration (FLR)
  - Efficient stoves reduce fuel wood demand

### Power
- Deploying renewable and clean power generation
  - Build renewable power generation
    - Hydropower
    - Wind
    - Geothermal
    - Solar
  - Export renewable power

### Technology
- Industry, transport and buildings – Using advanced technologies
  - Construct eclectic rail network
    - Capital city
    - Ethio-Djibouti railway
  - Improve waste management
  - Use fuel efficiency
  - Substitute biofuels
  - Improve production processes
Landscapes restoration

• The globe proposed to rehabilitate 350M hectares by 2030.

• Ethiopia made the largest pledge - to restore 22 million hectares (20% of total land size)
  – Bonn Challenge in 2011 = 15 M
  – the New York Climate Summit 2014 = 7 M
  ➢ Total = 22 M ha total

• Tree & shrub-planting program has transformed degraded and deforested land
• **Local community, Universities, CBO, NGOS worked together**
Ethiopia’s experience of NBSs: Community Seed banks

➢ 30 community seed banks have been established /CSBs

➢ 61 Farmers varieties of 34 field & hort. crop spp. have been conserved in CSBs and on-farm conservation sites

➢ 47 Varieties and 24 species restored
Ethiopia’s experience of NBSs: Expansion of Agroforestry

- Provides (Timber, firewood, construction & fruits) and income,
- Environmental services (reduce erosion, increase soil moisture and fertility, coffee shade & maintain micro climate balance).
- As a tool for mitigating and adapting climate change
- Improve the smallholder’s livelihoods
- leads to a 40% increase in productivity
Ethiopia’s commitment to implement NBS to deter the impacts of climate change

Ethiopia’s NBS interventions including:

▪ restoring and greening degraded landscapes,
▪ sustainably managing land, water, and forest resources, and financing.

“Nature-based solution is our first line of defense against devastating impacts of climate change”

H.E Professor Fekadu Beyene, Commissioner, EFCCC

Source: NDC highlight: Volume 1, No. 3, November 2020
Ethiopia’s experience of NBSs: Ethiopia's updated NDC

- Ethiopia's updated NDC plan intends to reduce GHG emissions by 68.8% (-277.7 Mt Co2e) by 2030.
- It targets that aim to meet 40 Adaptation interventions which the previous plan didn't.
- The implementation costs about USD 316 billion.
- Out of which
  - 40.5 USD billion goes to adaptation
  - 275.5 b goes to mitigation.
- 20% of the finance is domestically , and
- 80% of will be expected from international partners.
Eth. Exper. of NBSs : Sustainable Land Management - Efforts

- **Watershed** management
- Rehabilitation of degraded land
- **Rangeland/Pasture land development**
- Natural Resource management & conservation

- Protection & rehabilitation of Bonga Biosphere
- Afforestation & regeneration on buffer and transition zones
- Participatory Forest management institutions
- Four Biosphere reserves are conserved by PFM approach

➢ Increase No & diversity of species
➢ Employment opportunities from the conservation work
Eth. Exper. of NBSs : Green Legacy Initiative (GLI)

• It started in 2019 to plant **4 billion trees planting through the Green Legacy initiatives**, 

• Ethiopia’s Green Legacy Initiative targets to plant **20 billion trees** by 2022
Eth. Exper. of NBSs : Urban Greening

• Addis Ababa greening projects which are linked to promoting urban tourism & creating a livable city.

• Urban agriculture initiatives growing- the desired type of fruit and vegetables

• Aimed to expand the experience to regional cities

➢ Climate change mitigation
9. The way forward

- NBS should focus the protection and/or restoration of a wide range of natural ecosystems
- Engagement and consent of Indigenous Peoples and local communities,
- NBS has to focus on native species
- The globe should work for one planet, one health system
  - Africa has to eco one voice for the inclusion of NBS as a means for
    - Reducing threats of biodiversity
    - Meeting people needs through sustainable use and benefit-sharing
  - NBS requires policy framework and finance then awareness
  - Compile data and information on NBS
Thank you