



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

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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 Ministerial 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

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**

Challenges...

- 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**



Frost



Drivers...

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

Drivers...

Invasive alien species

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



Prosopis infestation



Parthenium infestation

Infestation near Ginir district
, Bale Zone



Lake Tana , World's Biosphere reserve

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.

Solutions ...

- 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
 - ii. National Biodiversity Strategy and Action Plans (NBSAPs 2011-2020)
- **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.**

Transformational **change** ... In Post 2020 Global Biodiversity Framework

- ❖ 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

NBSs....

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

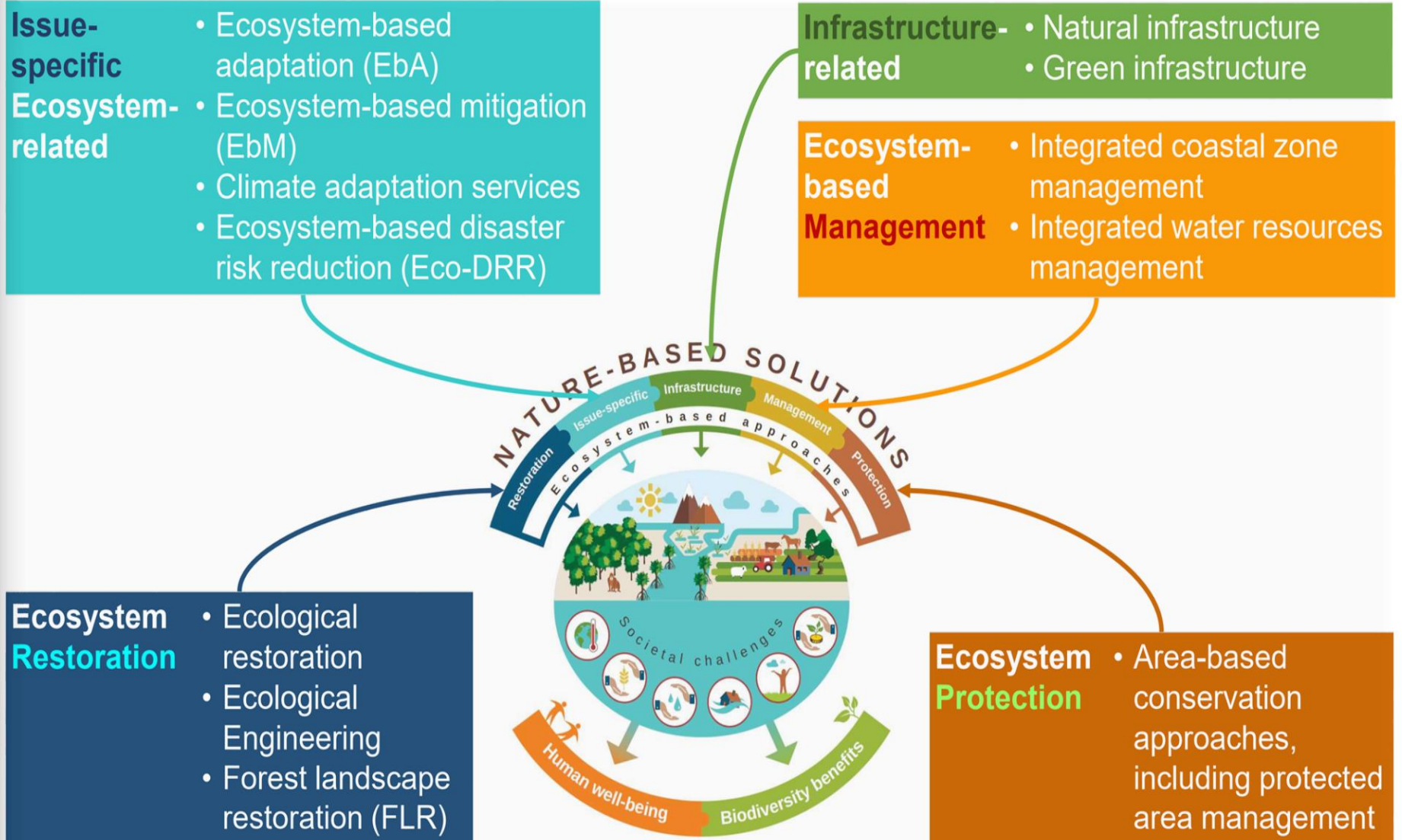
(COP 15 –Ecological Civilization.. China)

NBSs....

NBS 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:



NBSs....

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



8/18/2021

Forestry –

Protecting and growing forests as carbon stocks

- ▪ C- sequestration:
- A fforestation,
- 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 magnt ,
- use fuel efficiency
- Substitute biofuels
- Improve production processes



Ethiopia's experience of NBSs: Landscapes restoration

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**

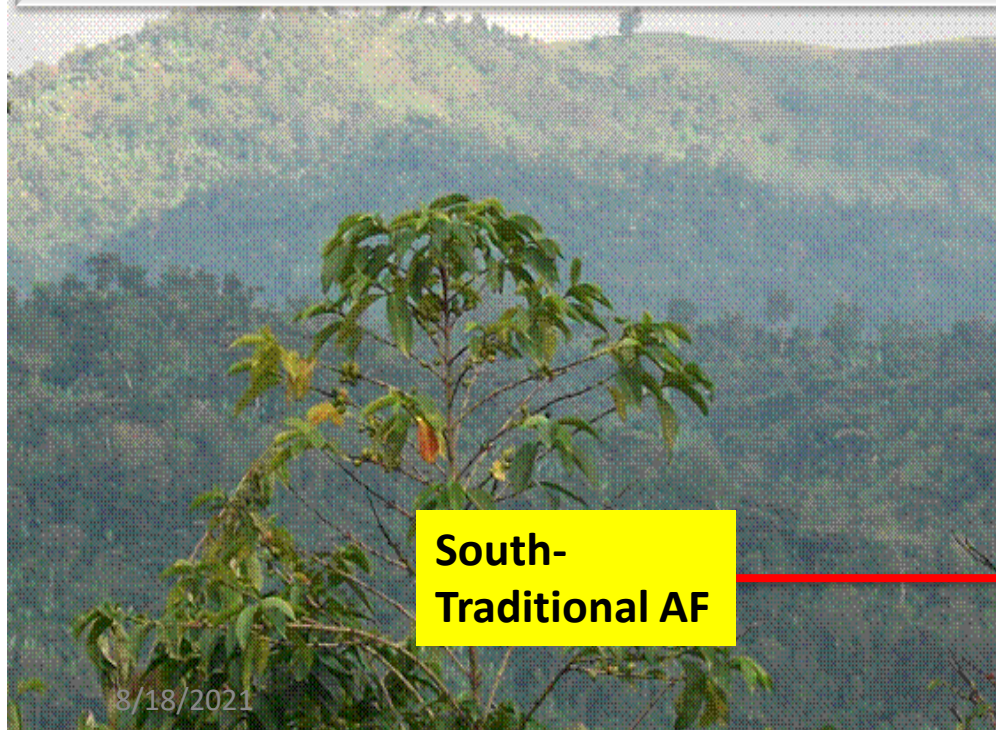
Ethiopia's experience of NBSs: Community Seed banks

- 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



NDC HIGHLIGHTS

Volume 1, No. 3, November 2020

NDC Highlights is a bimonthly newsletter of the Environment, Forest and Climate Change Commission, focusing on disseminating information and knowledge on the implementation of Ethiopia's NDC.

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

Exchanges of experience b/n community members



Eth. Exper. of NBSs : **Community-based Conservation**

Community-based Conservation, Management & Development Concepts for the **Wild Coffee Forests**” (2014-2017)

- 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