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Investing in Climate Change Adaptation through Agroecological Landscape Restoration: A Nature-Based Solution for Climate Resilience (Technical Assistance 6539)

Integrating the Principles of Ecological Agriculture into Upland Farming Systems of the Manupali Watershed in the Philippines

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Agroecological Landscape Restoration: Enhancing Climate Resilience through Nature-Based Solutions Webinar
14 October 2025

icem

World Agroforestry

LANDCARE FOUNDATION PHILIPPINES

OBJECTIVES

- ✓Develop and implement climate change adaptation solutions through agroecological landscape restoration;
- ✓Strengthen capacity of communities to restore and manage their climate-resilient landscapes for food and nutrition security through agroecology

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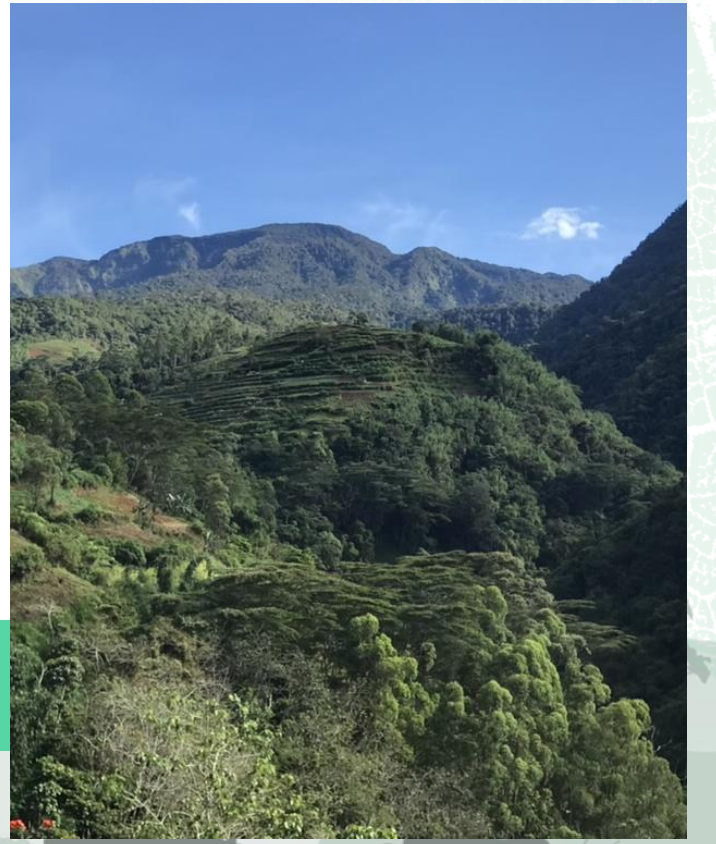


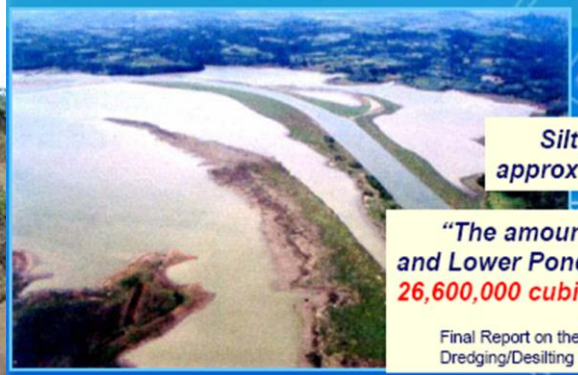
Environmental, socio-cultural and economic significance of the Manupali watershed

Watershed Degradation






PRESENT CONDITION OF PULANGI IV HEP RESERVOIR



That is equivalent to 6,826.69 MWH worth of storage volume loss.

Silt deposition at Waterways is approximately 237,807 cu. meters.

"The amount of silt deposited at the Upper and Lower Pondage Area is estimated to be 26,600,000 cubic meters."

Final Report on the Engineering Preparatory Works for the Dredging/Desilting of Pulangi IV HE Plant Complex. 2002

Siltation rate is estimated to be 1.5MCM/year. It greatly reduced the design live storage capacity by up to 30%. If not acted upon, the reservoir will be dried up in, more or less, 20 years.

"Complying the Standards of a World Class Filipino Power Corporation."

Climate Change Projections in Mindanao

Wetter Wet Season

https://media.istockphoto.com/id/1346473753/photo/flooding-caused-by-torrential-rain-damages-agricultural-crops-in-the-philippines.jpg?s=612x612&w=0&k=20&c=EVDJFw3Wt3iK0WZhkMvshrOWYR_RvksOqxiGRigVA68=

Drier Dry Season

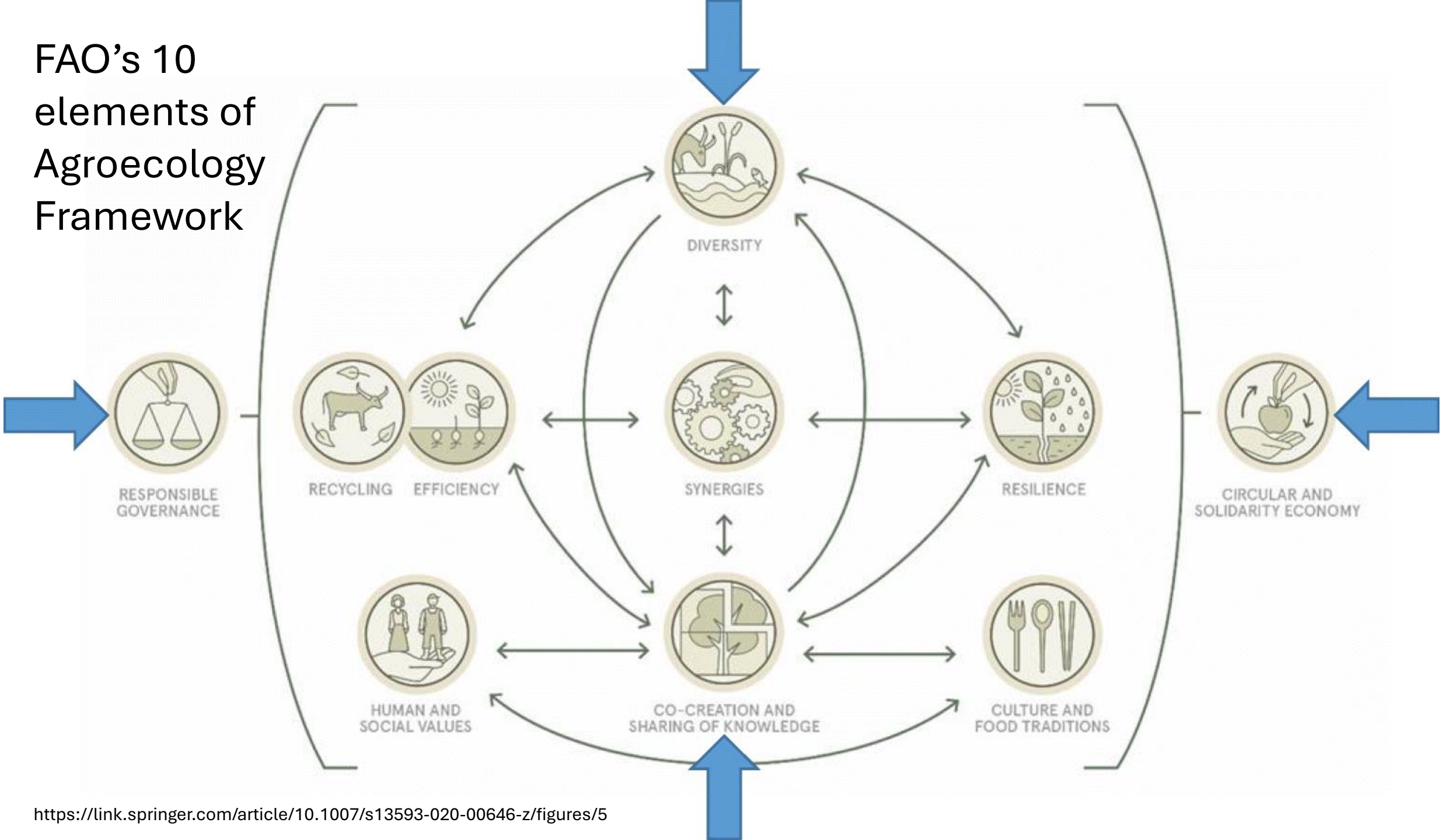
https://www.philstar.com/headlines/2022/03/17/2167836/pagasa-declares-start-dry-season

Climate Change Projections in Mindanao

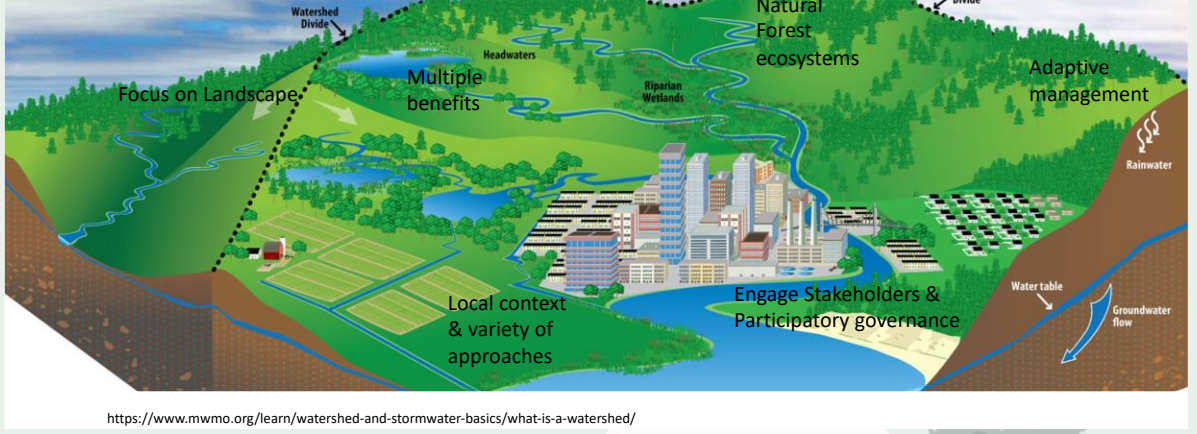
https://rnz-ressh.cloudinary.com/image/upload/s--RRPcVj8M--/c_scale,f_auto,q_auto,w_1050/v1649109972/4LTT3YP_image_crop_141298

https://iucn.org/news/ecosystem-management/201901/informing-global-standard-nature-based-solutions

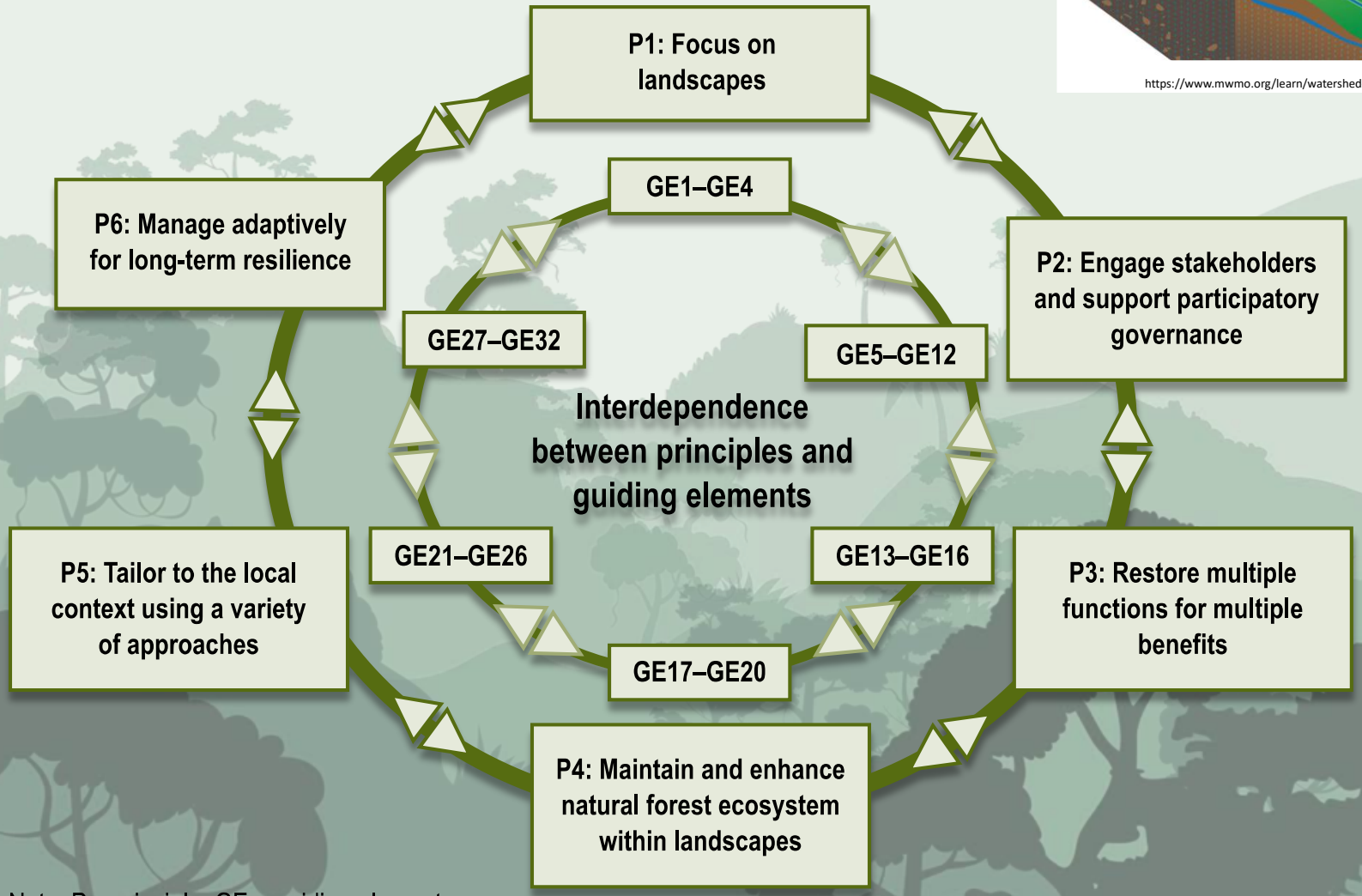
FAO's 10 elements of Agroecology Framework



https://link.springer.com/article/10.1007/s13593-020-00646-z/figures/5



https://www.mwmo.org/learn/watershed-and-stormwater-basics/what-is-a-watershed/

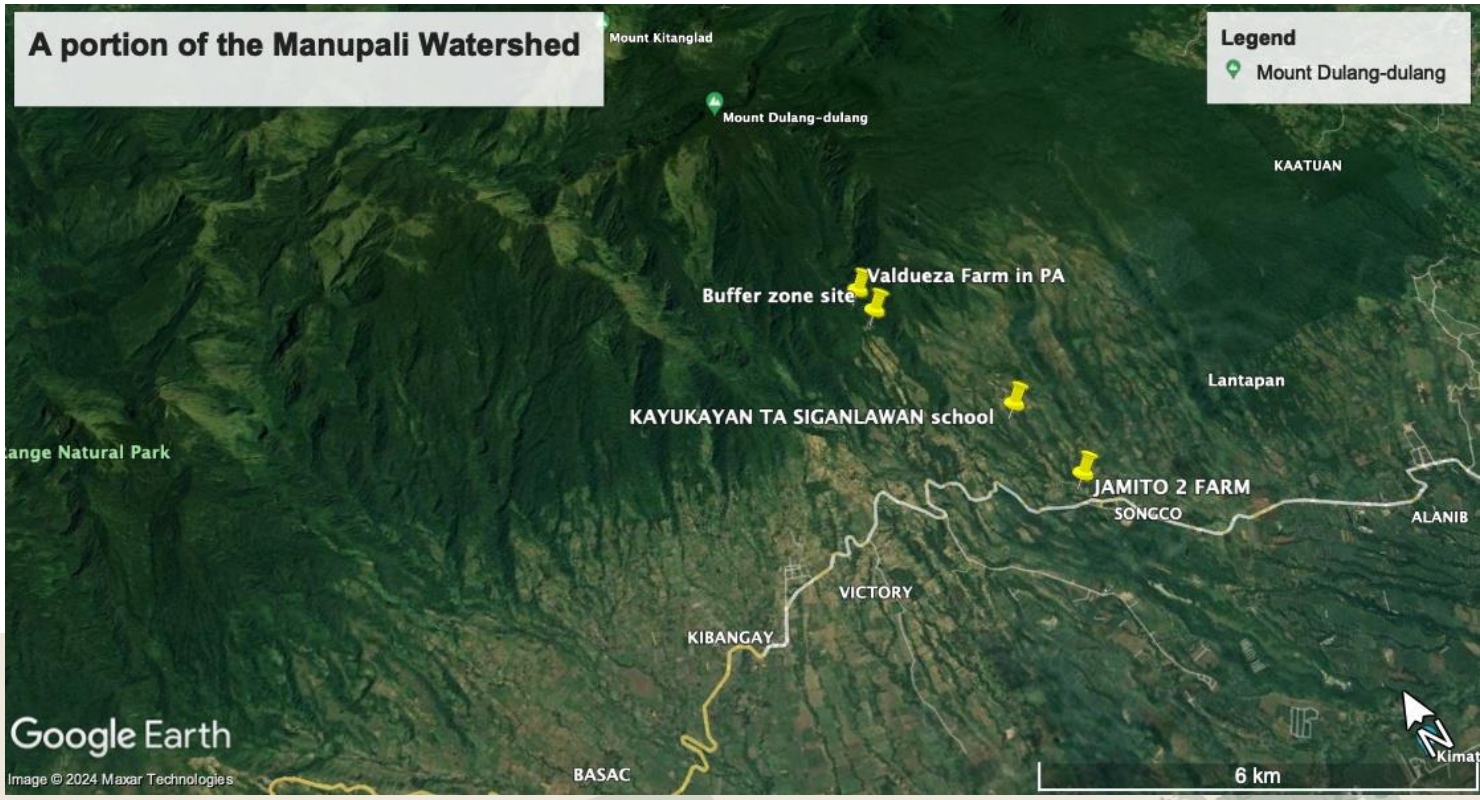


Note: P = principle; GE = guiding element.

Principles & Guiding Elements of Forest & Landscape Restoration

Integrated Landscape Approach

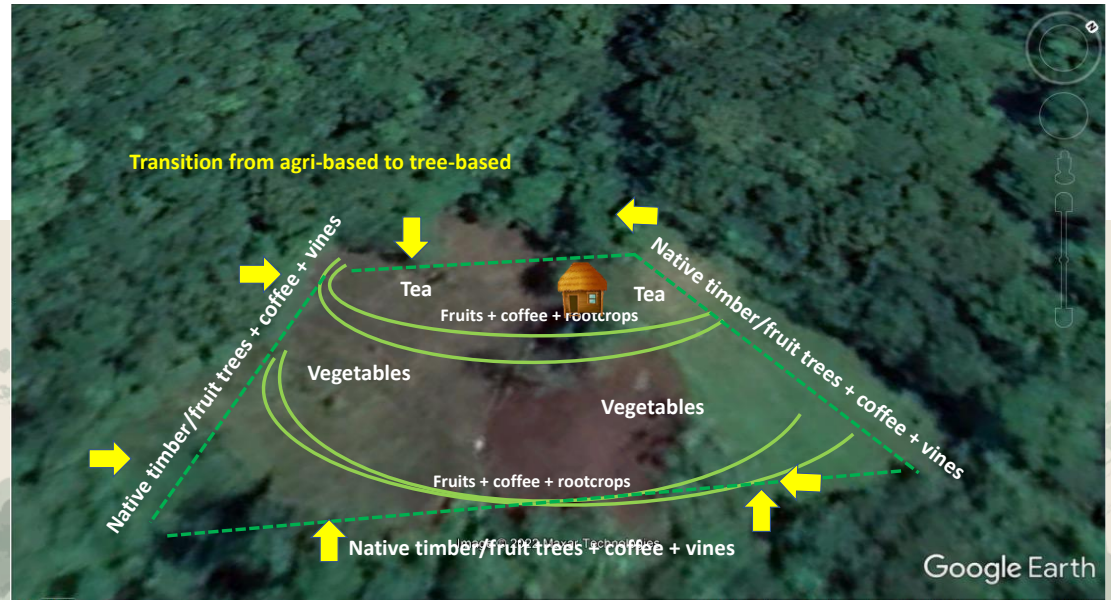
- Assessments & planning on a landscape level

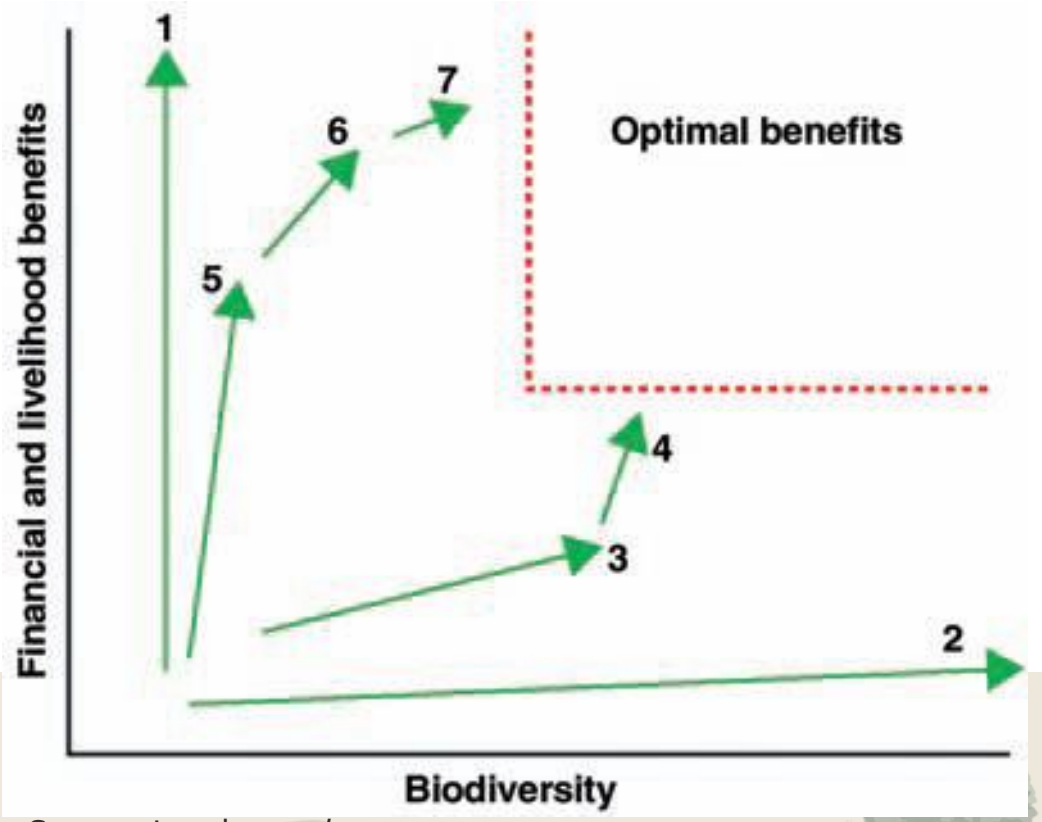


Stakeholder Engagement & Participatory Governance

Optimal Balance of Environmental and Socio-economic Objectives in Restoration

- Consultations & Negotiations
- Trade-off analysis
- Improved Livelihood



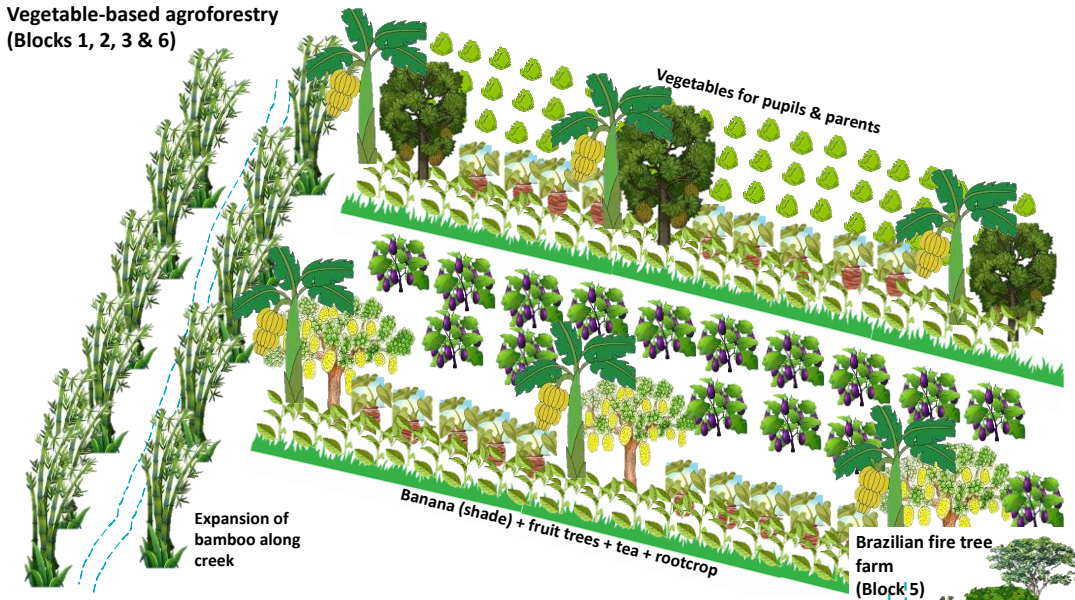


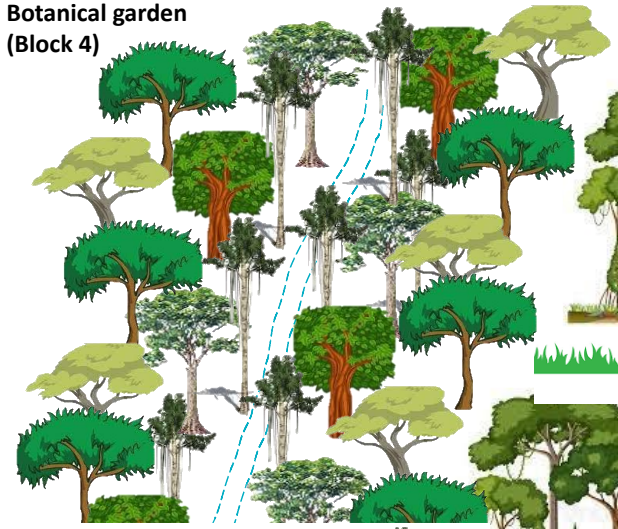
Source: Lamb, *et al.*, 2005

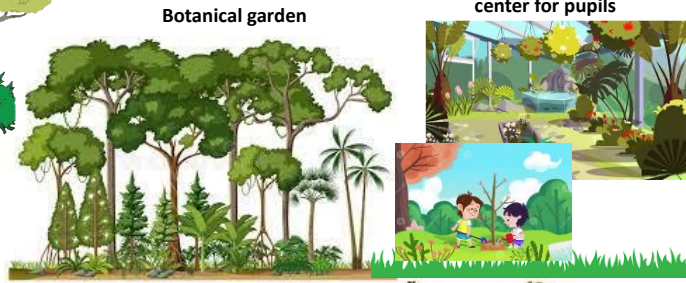
Complex Tree-based Agroforestry Systems are more Climate and Market-resilient

- Increase native tree species
- Biodiversity promotes stability/resilience
- Diversified income

Complex Tree-based Agroforestry Systems are more Climate and Market-resilient







Restoring Ecological Functions to Ensure Multiple Benefits

- Healthy soils
- Stable hydrologic functions
- Interconnected & interacting ecosystems
- Restored biodiversity
- Protect & maintain forests

Knowledge sharing

Sustainable and Long-term Financing of FLR

- Tapping on Climate Change/Environmental Funds; development banks - government, private sector
- FLR should develop systems that attract investors

https://images.pexels.com/photos/47344/dollar-currency-money-us-dollar-47344.jpeg?cs=srgb&dl=pexels-pixabay-47344.jpg&fm=jpg

https://media.istockphoto.com/id/1488839607/photo/philippines-money.jpg?s=612x612&w=0&k=20&c=haP91AY6kM9dDuV_gdYqTUzMlGZzfyaawVenDMDbimw=

Adaptive Management for Long-Term Resilience

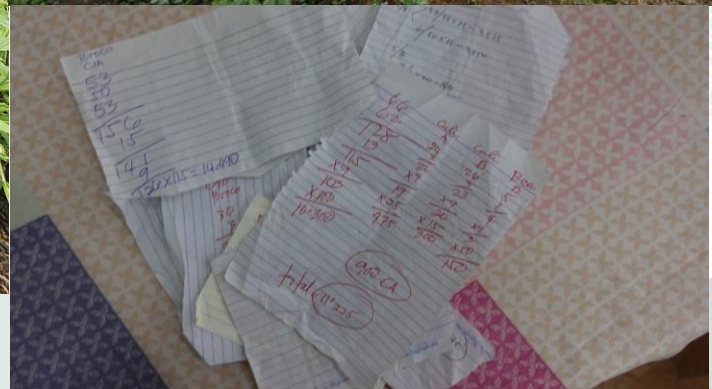
- Employ adaptive management approach
- Develop participatory M & E
- Periodic assessment of CC vulnerability

Demo Site 1: Farmer managed natural regeneration using indigenous knowledge system and appropriate FLR techniques in the protected area

Before

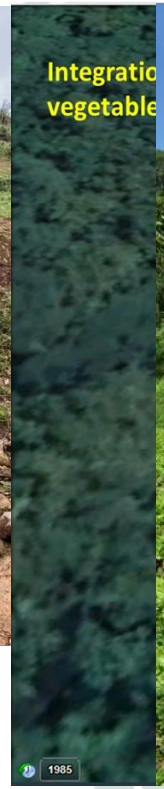
Farm restoration plan

Now



Demo site 2: Climate resilient vegetable-based agroforestry for ecotourism

Before



The restoration plan

Now

Demo site 3: Parents-Teacher Community Association-managed FLR with the *Kayukayan ta Siganlawan* IP School

Before

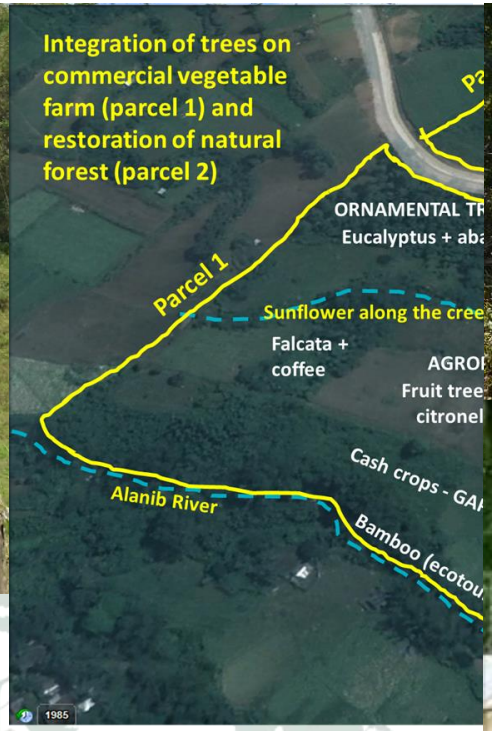
The restoration plan

Now

Demo site 4: Complex AF and genetic conservation for native trees of Mt. Kitanglad

Before

The restoration plan



Now

Key challenges and lessons learned

- The need for an integrated and holistic landscape approach to promote NbS.
- The synergy of stakeholder engagement and participatory governance.
- The role of farmers' aspirations and gender equality in determining their own land-use

Key challenges and lessons learned

- Complementary value of varied knowledge sources. The benefit of building a strong and accessible climate-related information and database as support tool
- The importance of building local capacity and replication of NbS through demonstration activities
- The need for appropriate and fair incentives

Fostering support to scale and sustain the demonstration sites

- Integrating NbS (Agroecology/FLR) as a program activity in the CLUP/FLUP
- Scaling the demonstration sites through the LGUs restoration programs
- Formation/strengthening of LGU-led Watershed Management Committee

CONCLUSION

- In conclusion, degraded landscapes in Mindanao can be restored **using NbS (FLR /Agro-ecology) into productive, biodiverse, climate-resilient landscapes** for sustainable production of ecosystem goods and services in Mindanao and other watersheds nationwide.

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Thank you very much!