Importance of mangroves and bamboo in climate change mitigation and sustainable livelihoods

KONBAC

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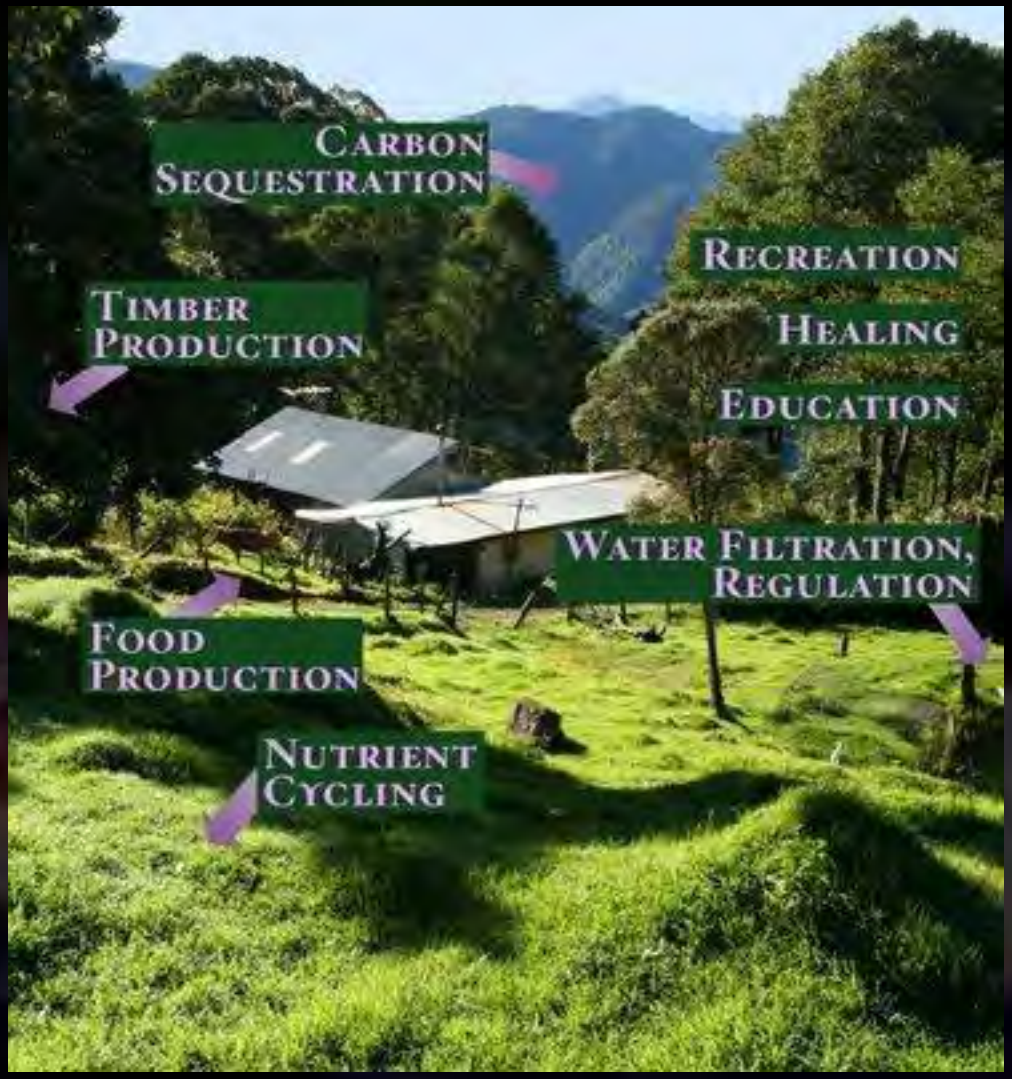
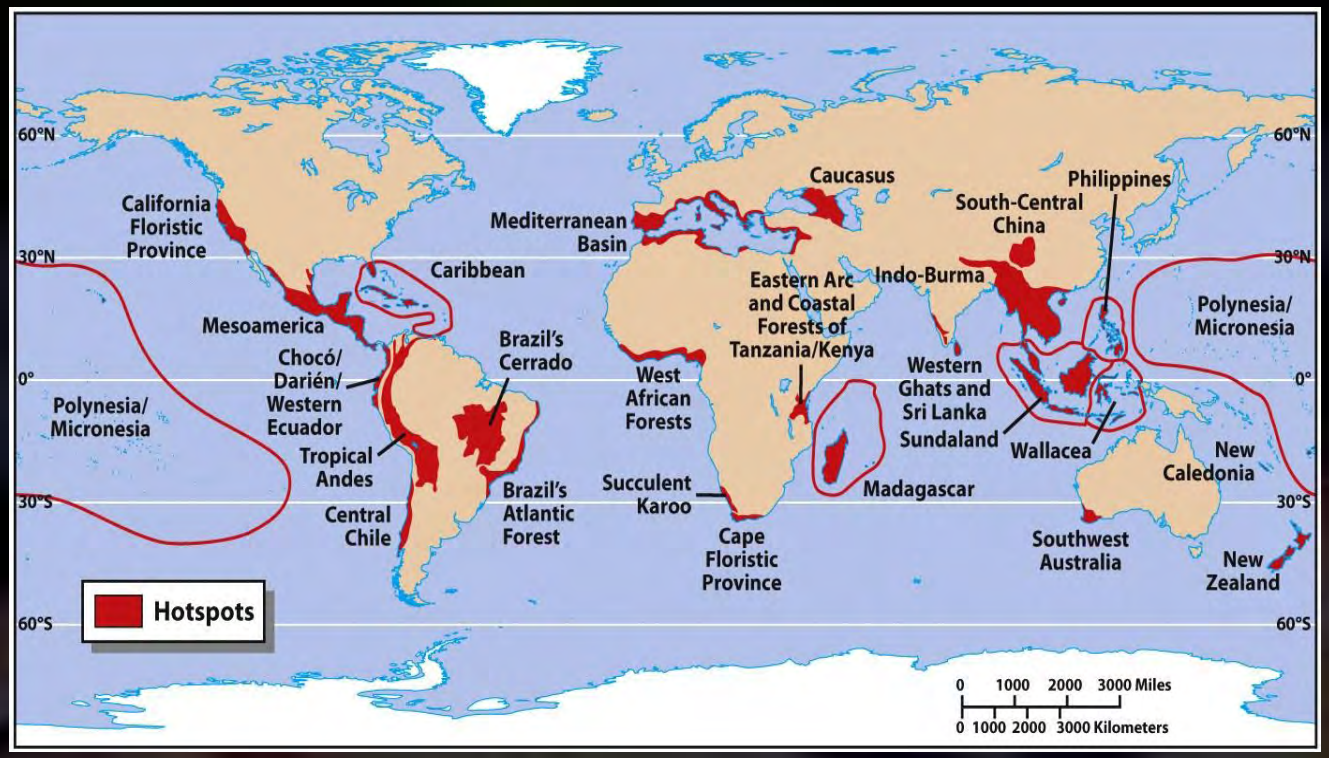
Look around, ecosystem services are everywhere



World's Natural Resources

CATEGORY	SPECIES
Total Vertebrates	62,305
Total Invertebrates	13,05,250
Total Plants	3,21,212
Others	51,563
Grand Total	17,40,330

Resources-rich regions are economically poor



As many 44% of all species of vascular plants, 29% of bird species, 27% of endemic mammal species, 38% of endemic reptile species, and 53% of endemic amphibian species live within *biodiversity hotspots*

Impact of higher temperature on agriculture

- Water scarcity and frequency of drought will increase
- Rise in temperature could increase the risk of heat or drought stress to crops and livestock
- Length of the growing period (LGP) is likely to change
- Physiological development is accelerated which hastens maturation and reduces yields
- Increased night-time respiration reduces potential yield

Key questions for deliberations in CoP 11

- How do we tackle poverty reduction with the ultimate goal of enhancing coastal livelihoods and well being of local populations?
- How does one consolidate sustainable management of coastal and marine biodiversity?
- How do we strengthen the environmental and strategic impact assessment processes for coastal and marine areas?
- How can countries realize the Aichi Biodiversity Target commitment on establishment and management of the Marine Protected Areas?

Climate change: community-based adaptations

ELELMENTS

- Social mobilization
- Skill development
- Appropriate technology
- Awareness

CHALLENGES

- Uncertainty in characterization of current/ future climate variability/ change
- Adaptation/ Development Dilemma
- Mainstreaming
- Up-scaling
- Validation of Best Practices

Coastal and Marine Biodiversity:

Global Benefits:

- fisheries provide over 15% of the animal protein in the global diet;
- intact and resilient coastal ecosystems protect inland dwellers from natural disasters occurring at sea;
- substances derived from the sea are key components in many commercial products, such as creams, paints, paper and medicines;
- marine phytoplankton releases half of all oxygen in the atmosphere; and
- coral reefs are the marine counterparts of tropical rainforests in terms of richness of biological diversity.

Supporting Community-led mangrove restoration

Community based nurseries

Transportation of mangrove propagules for direct sowing

Technology transfer: Community based restoration

Large-scale plantations for restoration of abandoned prawn farms

Community based reforestation in Asian region (the Philippines)

Anticipatory research for developing transgenics

MMRDA: Mapping for conservation

Mangrove transgenic plants: salinity tolerant genes

- cDNA libraries were constructed from the Mangrove species *Avicennia marina*
- A number of genes with potential application to abiotic stress have been isolated and characterised
- Four isolated genes were used for developing transgenics in rice, *Brassica* and *Vigna*

Transgenic rice for combating sea level rise

Gene deployment for salinity tolerance

Open field trial of transgenic rice with Superoxide dismutase gene from *Avicennia marina*

Bamboo for sustainable livelihoods

Bamboo: Global Benefits in lieu of climate change

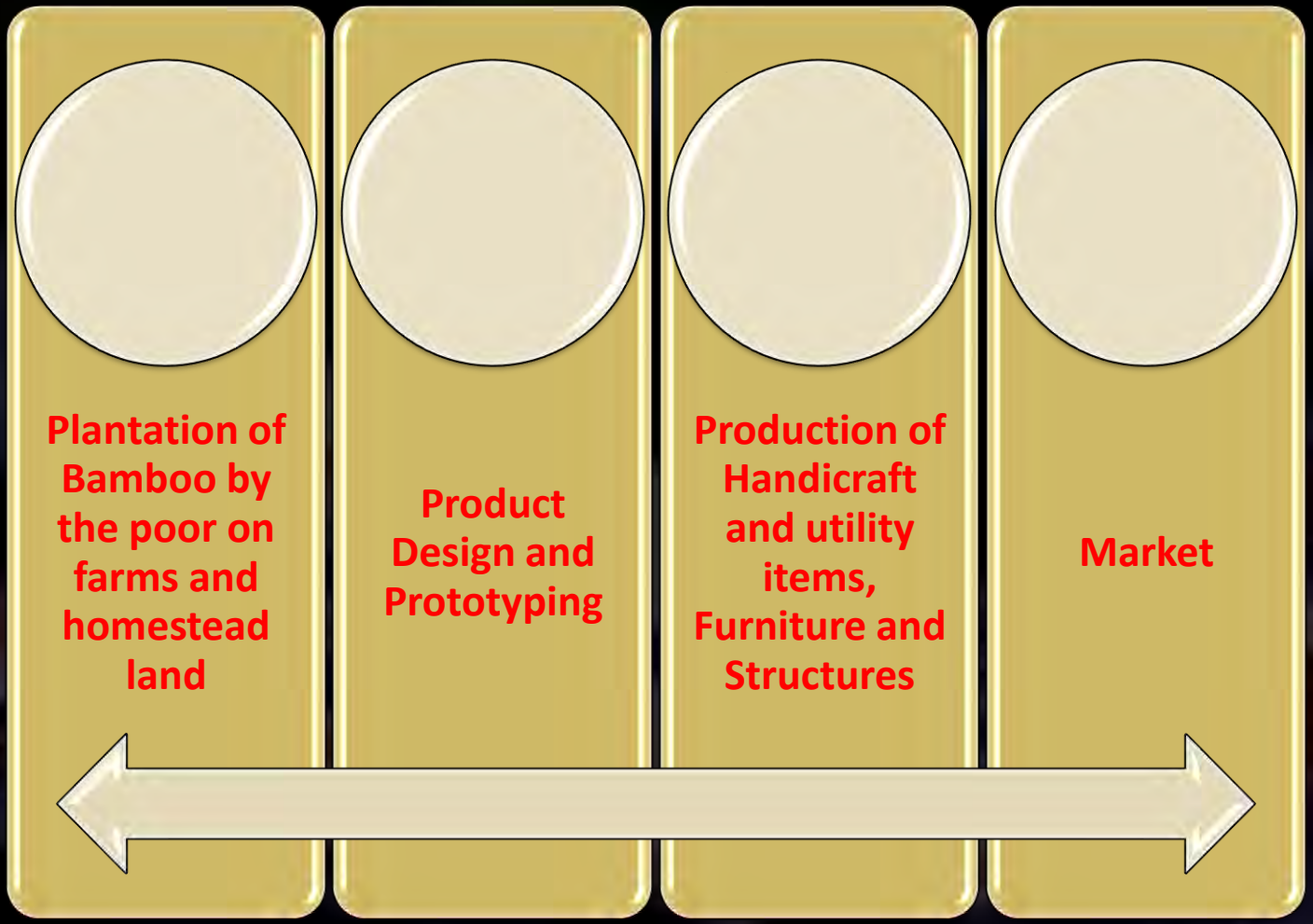
- Bamboo is the fastest growing plant on this planet. It grows 30 per cent faster than the fastest growing tree. Some species can grow even up to 1 meter per day.
- Bamboo provides fastest growing canopy to re-greening of degraded areas and generates thirty-five percent more oxygen than equivalent stand of trees.
- Some bamboo species are capable of sequestering up to 80 tons of carbon dioxide from the air per hectare
- Bamboo gives rise to new shoots from its extensive root system hence does not require re-planting after harvesting.

Bamboo for sustainable livelihoods

Bamboo: Global Benefits with regard to sustainable livelihoods

- Bamboo is one of the strongest building materials.
- Bamboo's tensile strength is 28,000 per square inch versus 23,000 for steel.
- Bamboo roots continue to remain in place after the harvest of above-ground biomass, thus preventing soil erosion and also retention of nutrients for the next crop.
- Bamboo can replace the use of wood for nearly every application - paper, flooring, furniture, charcoal, building materials, and much more.
- Bamboo fibers are far stronger than wood fibers and are much less likely to warp due to changing atmospheric conditions.

Bamboo based livelihoods: value proposition



5. The PPP Model of livelihood security: Lavasa

Building local-national-global partnership

INBAR

LAVASA

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Involving communities in Bamboo Development

Community involvement in production of high quality furniture and eco-friendly products for niche markets (corporate sector companies, high income groups, etc.)

Resource utilisation through livelihood enhancement

Partnership with Communities: Tarkarli Boathouse

Tarkarli Boat House

High end products for hospitality industry: Goa

Thank you so much!