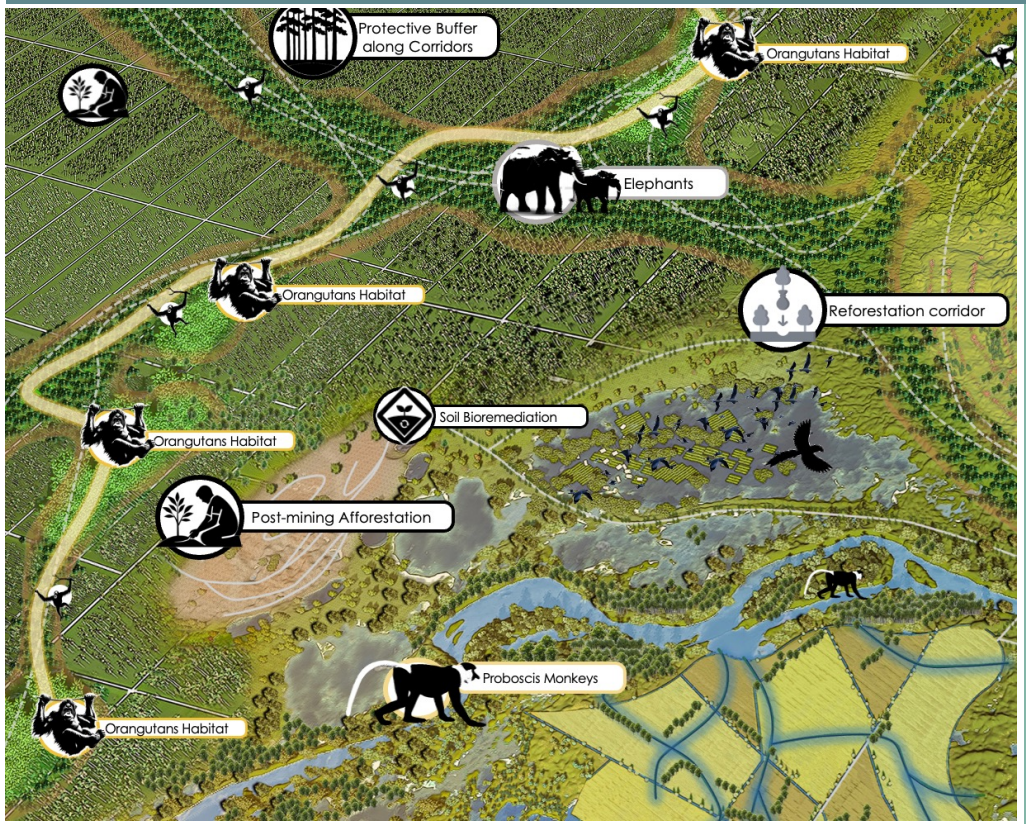
NbS-59: WILDLIFE MOBILITY LINKAGES



Wildlife mobility corridors serve as nature-based solutions (NbS) that ensure the safe passage and survival of migrating animal species in Southeast Asia, e.g. elephants, tigers, gibbons, proboscis monkeys, orangutans, birds, pollinators, small mammals, and insects, whose habitats are fragmented by roads, railways, mining, agriculture, and urbanization.

These corridors integrate forested pathways, restored landscapes, and green infrastructure like wildlife overpasses, underpasses, and canopy bridges tailored to the needs of various species. Technological innovations such as GPS tracking, camera traps, and bioacoustic monitoring enable the identification and protection of key movement routes.

Synergies between insects and mammals, like pollinators guiding animals to food-rich habitats, are leveraged to enhance ecosystem connectivity. By blending ecological restoration with sustainable land use planning, wildlife corridors maintain biodiversity, prevent human-wildlife conflict, and secure critical habitats, ensuring that species can migrate, forage, and reproduce while adapting to environmental changes. Successful examples include the Kinabatangan Wildlife Corridor in Malaysia and the wildlife-friendly design of railway projects in Thailand, showcasing how technology and nature can harmonize for conservation.

LANDSCAPES SUPPORTED

EbA (ECOSYSTEM-BASED APPROACHES)

- ECOSYSTEM RESTORATION
- BIODIVERSITY CONSERVATION
- CLIMATE CHANGE MITIGATION
- SUSTAINABLE LIVELIHOODS
- WATER & SOIL REGULATION

MAIN PROBLEMS ADDRESSED

- SOIL EROSION
- FLOOD CONTROL
- DISASTER RISK REDUCTION

ECOSYSTEM SERVICES AND ACTIONS

SUPPORTING

- **Soil health improvement**: Facilitates nutrient cycling and soil aeration through enhanced water infiltration.

REGULATING

- **Flood mitigation**: Reduces stormwater runoff and prevents urban flooding by increasing water infiltration.
- **Urban cooling**: Lowers ambient temperatures by reducing heat island effects through greenery and water retention.

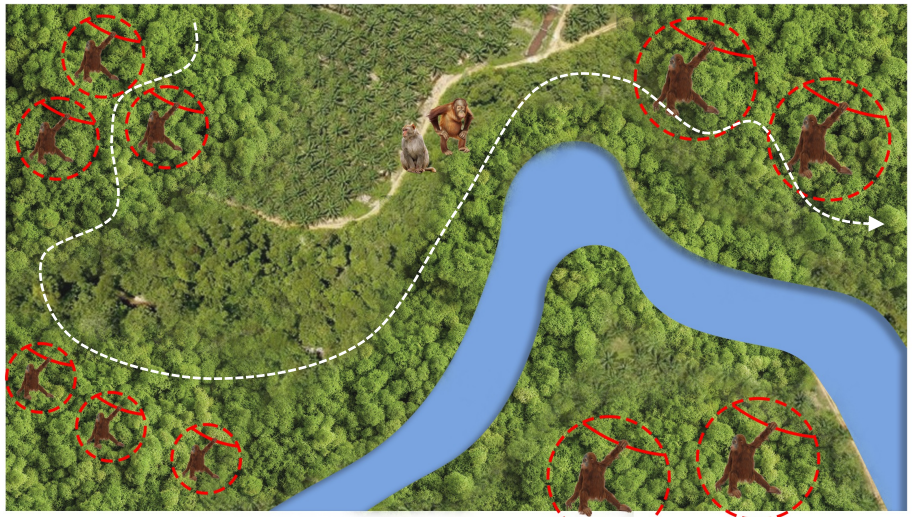
PROVISIONING

- **Groundwater recharge**: Replenishes local aquifers by allowing rainwater to percolate into the ground.

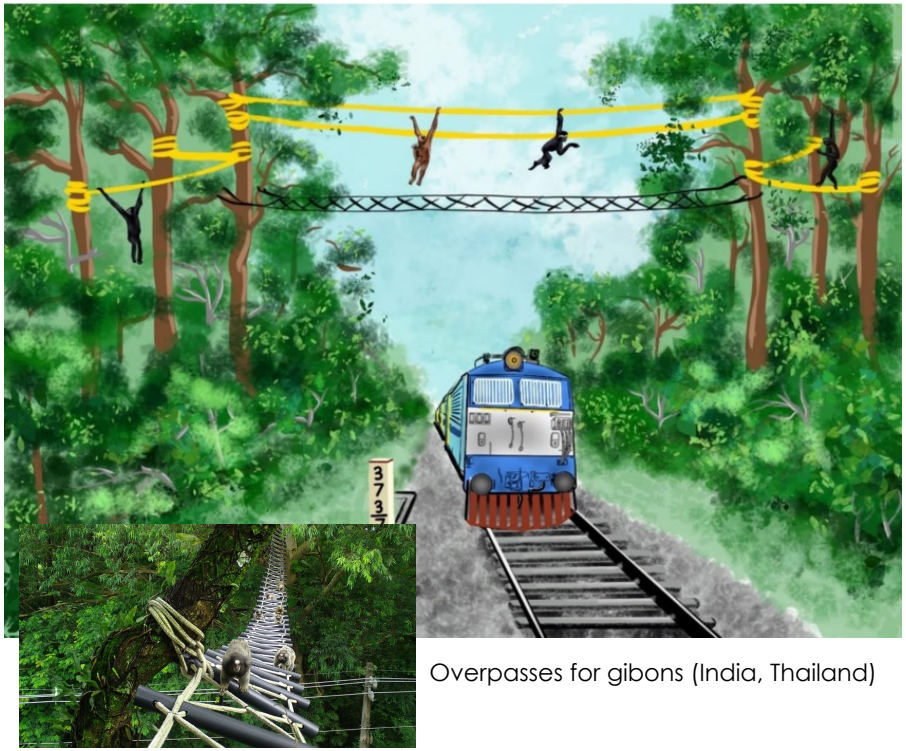
SOCIAL BENEFITS

- **Improved walkability and livability**: Enhances urban aesthetics and encourages pedestrian-friendly environments.
- **Disaster resilience**: Builds community resilience against climate impacts like floods and heatwaves.

NbS-59: WILDLIFE MOBILITY LINKAGES



Mobility patterns of male orangutans in corridors passing across oil palm cultures



Overpasses for gibons (India, Thailand)

PROJECT'S CHALLENGES & RISKS

- **Initial Costs and Maintenance:** Establishing rainforestation sites can be costly due to the need for native seedlings, technical training, and labour for site preparation.
- **Timeframe for Benefits:** Unlike fast-growing monocultures, native trees take longer to grow and produce economic returns, which may deter smallholder farmers who need short-term income.
- **Complexity of Implementation:** Successful implementation requires expertise in native species selection, site-specific ecosystem restoration, and sustainable farming practices.
- **Competition for Land:** Competition with other land uses like monoculture plantations or housing, especially in areas with high population pressure.

NbS co-BENEFITS AND THEIR INDICATORS

Biodiversity Restoration
Increase in native tree species richness per hectare by 50%-70% within 5 years.

Soil stabilisation and erosion control
Reduction in soil erosion rates by up to 60% on reforested slopes within 3 years.

Carbon Sequestration
Annual sequestration of 5-10 tons of CO_2 equivalent per hectare in mixed agroforestry systems.

- **Food Security Enhancement**
  Annual yield of agroforestry crops (e.g., coffee, cacao, or root crops) contributing to 20%-30% of household income within 3 years.
- **Improved Watershed Protection**
  Reduction in peak runoff volume by up to 40% during heavy rains, improving downstream water quality.
- **Community Resilience and Livelihood Support**
  30%-50% increase in income diversification among participating households due to tree products and agroforestry crops.

COST ANALYSIS

- **Direct Costs**
  Establishment costs of $1,500–$3,000 per hectare, including planting materials, labour, and training.
- **Indirect Costs**
  $500–$1,000/ha annually for maintenance, monitoring, and opportunity costs of initial land-use changes.
- **Time Horizon**
  20–30 years with a discount rate of 5%–7%, considering long-term ecological and livelihood benefits.
- **Direct Benefits**
  $2,000–$4,000 per hectare annually from agroforestry yields like fruits, timber, and crops after 3–5 years.
- **Indirect Benefits**
  Ecosystem services valued at $5,000–$7,000/ha annually, including carbon sequestration, water regulation, and biodiversity conservation.
- **Risk Assessment**
  Medium risk due to potential challenges like invasive species, market access, and community buy-in.

REFERENCES:

Mount Pangasugan, Leyte Rainforestation Initiative, the Philippines
Gunung Kidul Regency Forest Landscape Restoration, Java, Indonesia
Mae Chaem Watershed Agroforestry, Thailand

IMPLEMENTATION OPPORTUNITIES:

Timor Leste: Maubisse Highlands
Hilly areas of Quang Nam Province, Vietnam
Cardamom Mountains in Cambodia:
agroforestry crops like durian and rambutan