

TRAINING ON

Planning and Design of Smart Infrastructure for Biodiversity Protection



25–27 April 2022

Rhino Lodge, Sauraha, Nepal



Managing Multiple Linear Infrastructure Impacts

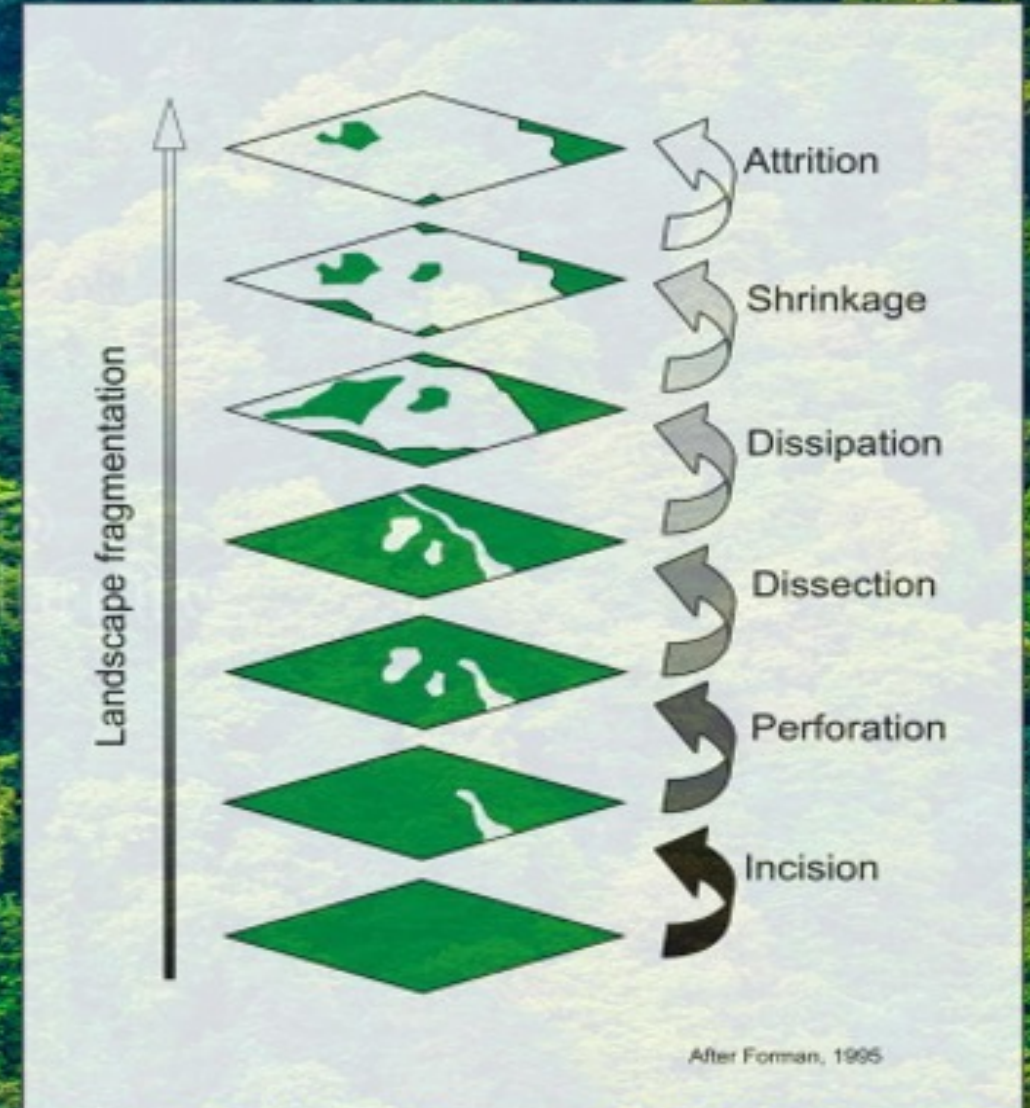
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Impacts of linear infrastructure development over space and time that are most significant are often overlooked and underestimated

Arresting sequential impacts of multiple developments on the landscape is the greatest challenge



Challenges of managing impacts of multiple developments

Impacts
magnify

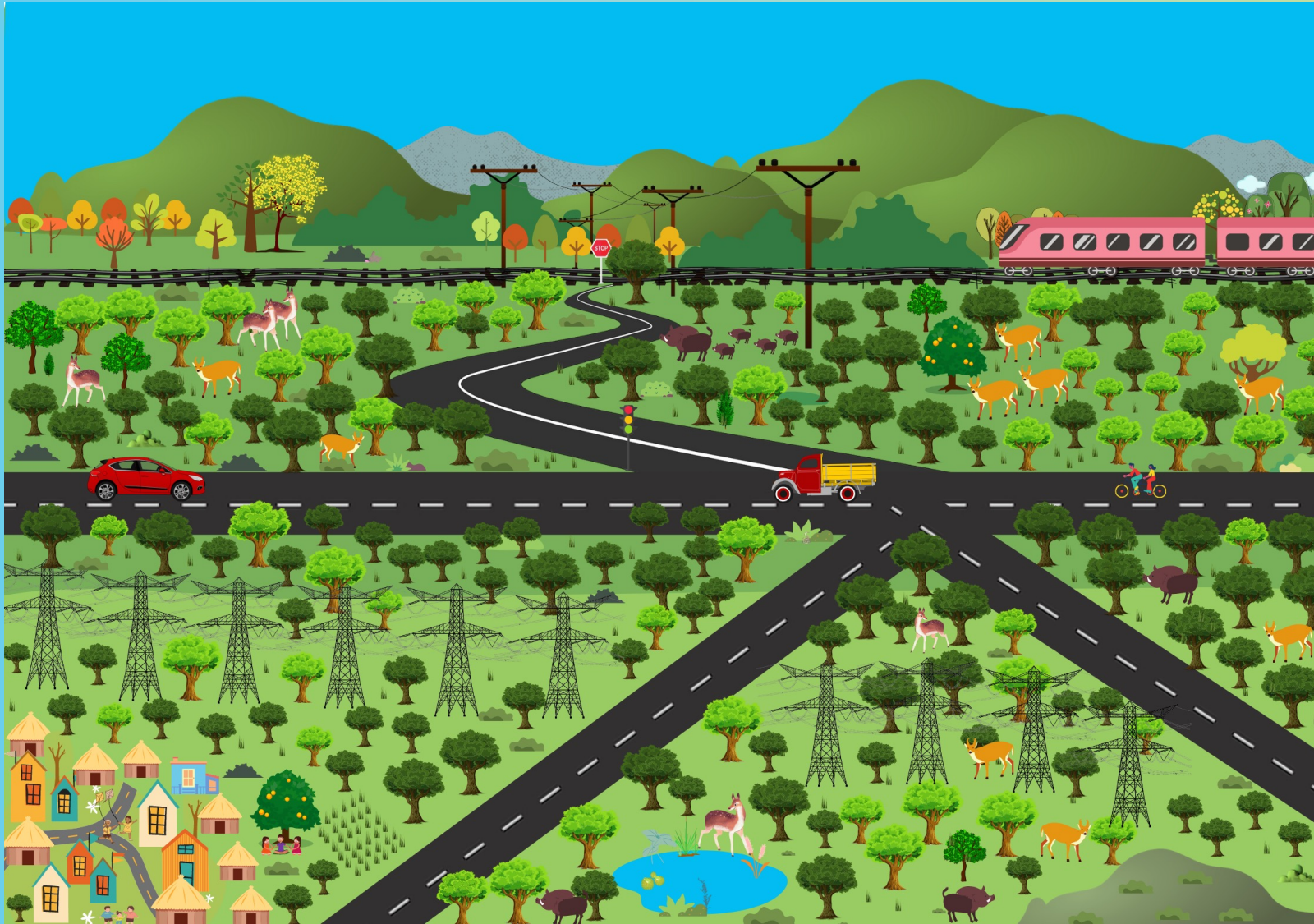


Impacts
diversify for
different
receptors



Impacts become
cumulative and
synergistic
(population decline,
endangerment and
extinction risk)





Habitat fragmentation induced by multiple infrastructure is a major driver of a range of other significant impacts that pose the greatest challenge for wildlife conservation

Relative impacts of linear developments on different animal groups

Taxa		MAJOR IMPACTS														
		Habitat loss			Habitat fragmentation			Disturbance-induced behavioural changes			Injury/mortality			Impediment to movement		
																
Mammals	Large mammals	High	High	Possible	High	High	Possible	High	High	Possible	High	High	Possible	High	High	Possible
	Medium and small mammals	High	High	Possible	High	High	Possible	High	High	Possible	High	High	Possible	High	High	Possible
	Arboreal animals/gliders	High	High	High	High	High	High	High	High	High	High	High	Moderate	High	High	High
Birds		High	High	High	High	Possible	High	Possible	High	High	High	High	High	Possible	Moderate	High
Reptiles		High	Moderate	Possible	High	Possible	Possible	High	High	Possible	High	High	Possible	High	Moderate	Possible
Amphibians		High	Moderate	Possible	High	High	Possible	Possible	High	Possible	High	Possible	Possible	High	Moderate	Possible
Invertebrates		High	High	Possible	High	Possible	Possible	High	High	Possible	High	Possible	Possible	High	Possible	Possible

Key  High impact  Moderate impact  Possible impact

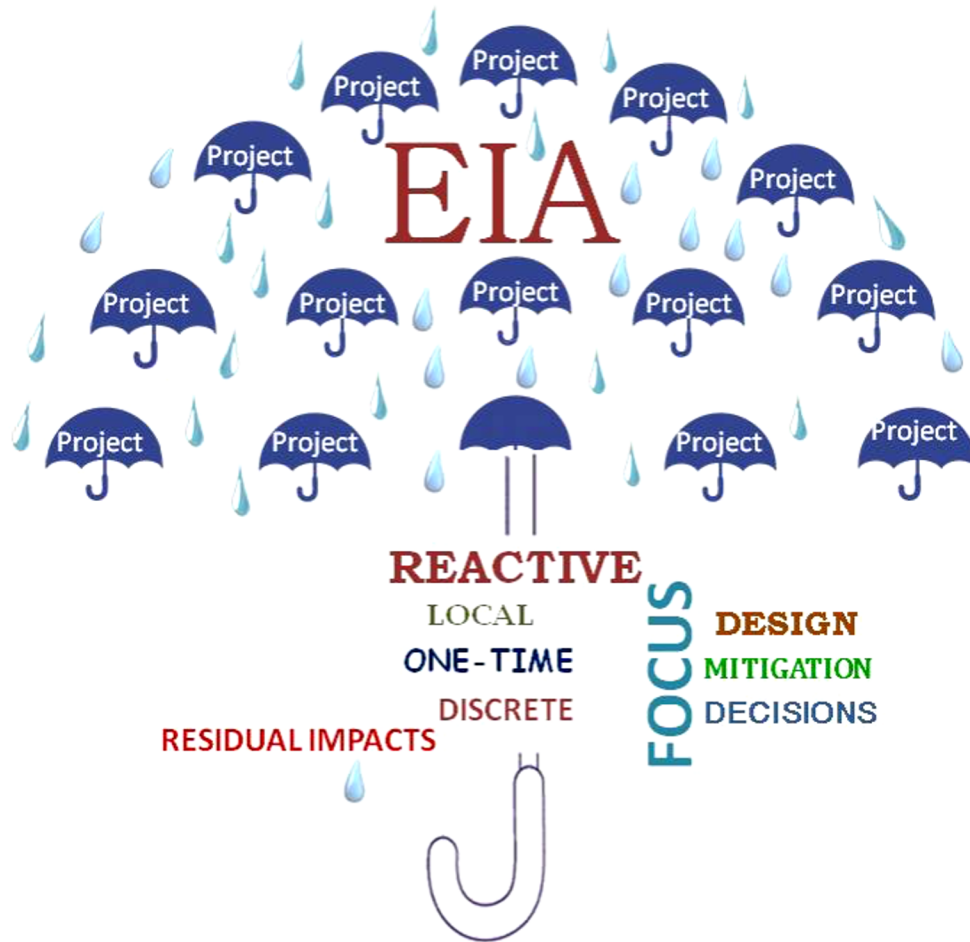
Source: WII. 2017

Regional planning and mitigation strategies can help secure landscape-level connectivity and multifunctionality for inclusive and green development

Key Considerations

- Maintaining connected landscapes remains a conservation priority
- Reconnecting habitats isn't always straightforward in a highly bisected landscape
- Scale of proposed and future developments is likely to be incompatible with viable, functional ecosystems
- Individual businesses need to become landscape-friendly
- Robust planning and assessment tools are needed for implementing mitigation hierarchy

Approaches for addressing impacts of multiple developments



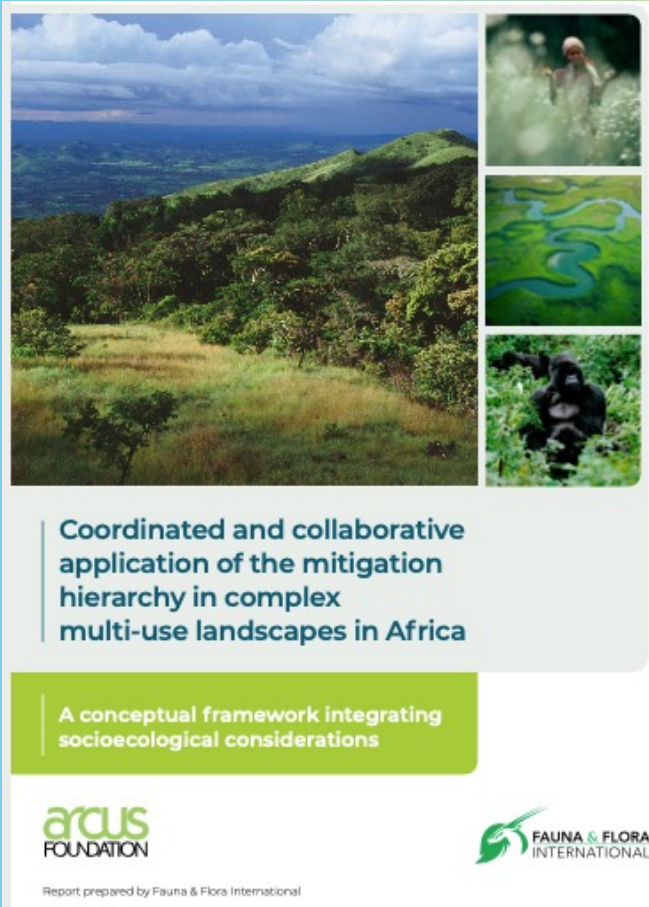
- EIAs are grossly inadequate in tackling the landscape scale complexity
- SEAs are constrained by lack of clear sectoral policies, economic priorities and transparency in the planning process
- Problems of accounting for the spatially and temporally diverse and diffuse potential impacts of multiple projects

Need for better upstreaming approaches

Requires multi-stakeholder engagement, cross- sectoral consultations and collaborative implementation of the mitigation hierarchy to achieve local and landscape objectives.



We found it !



Great example of upstreaming approach

This Framework integrates elements of EIA and SEA

Examples of existing processes that if done well can input to and help deliver framework steps

Landscape Conservation Planning

Target setting processes

Biodiversity and ecosystem service inclusive Land Use Planning

Biodiversity and ecosystem service inclusive SEA

Cumulative Impact Assessments (Independent or as part of SEA/ESIA)

Biodiversity and ecosystem service inclusive EIA/ESIA

Framework for applying the mitigation hierarchy in complex multi-use landscapes



STEP 1

- Jointly assess and understand the landscape as a socioecological system
- Conservation and restoration priorities
- Set limits to impacts



STEP 2

- Threats defined and contextualised in landscape



STEP 3

- Impact assessment and mitigation planning
 - Project level
 - Landscape level
 - Project ↔ landscape
 - Limits to mitigation



STEP 4

- Apply the mitigation hierarchy
- Collaborative cross-sectoral action to mitigate and manage impacts to biodiversity and ecosystem services across landscape
- Contribute towards landscape objectives

The framework can be used to help:

Strengthen biodiversity and ecosystem service inclusive Land Use Planning and SEA i.e. what needs to be avoided and restored; setting limits to impacts

Inform and improve project level EIA/ESIA process and outcomes by establishing the landscape context, conservation and restoration priorities (landscape level) and limits to impacts and mitigation options

Convene stakeholders to catalyse landscape level planning and integrated landscape management processes towards more sustainable outcomes

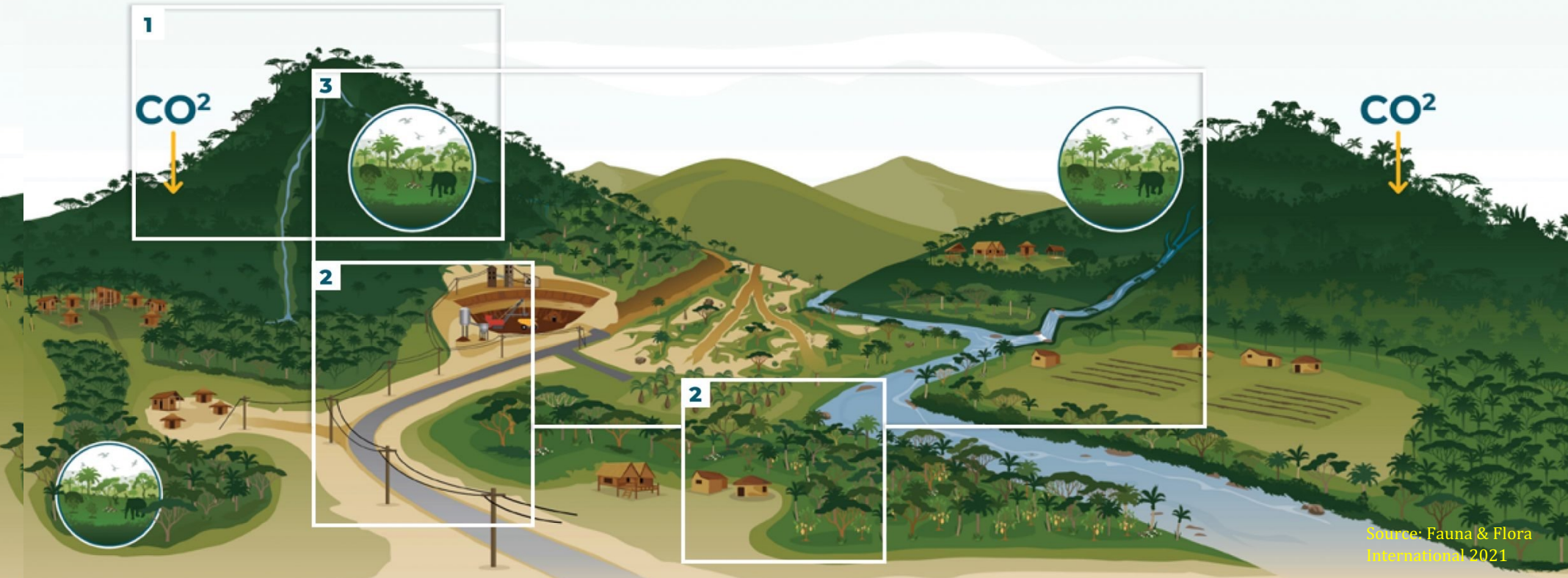
Improve assessment of ecological and socioecological consequences of cumulative impacts in the landscape

Inform and/or improve the feasibility of project mitigation plans

Support design of pragmatic, action oriented impact mitigation plans in SEA, EIA/ESIA processes

Improve delivery of sustainability objectives and commitments at project and landscape scales

Contribute to delivery of national commitments and targets (biodiversity, climate, water, forests etc)

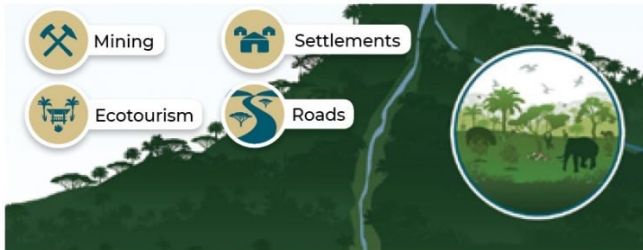


Source: Fauna & Flora International 2021

Prospects of replicability of this framework are high with refinement as needed

All land users contribute to landscape objectives through individual, collective and collaborative actions to:

1. AVOID and **SECURE** priority areas to maintain biodiversity and ecosystem services



Mine invests in the protection of high biodiversity values through an offset. **Ecotourism** supports biodiversity conservation through active presence and value generation. **Communities** play critical role in forest management and protection. Common use of **infrastructure** and utility

2. MITIGATE and **MANAGE** induced and cumulative effects across the landscape



E.g. rationalisation of linear



E.g. working together to promote sustainable livelihoods to deliver multiple benefits

3. RESTORE degraded ecosystems and **AVOID** and **MINIMISE** future impacts



E.g. all land users contribute to ecosystem restoration to improve connectivity and resilience; riverine habitats restored to improve

As Asia experiences unprecedented economic growth, much of the region's natural landscapes are threatened by the rapid expansion of linear infrastructure development.

Biodiversity loss in disintegrated landscapes is both a challenge and a major barrier to future developments.

Investing in 'Biodiversity-safe' development and 'nature based solutions' is the option for development gains at a landscape level.

Innovative approaches, collaborative thinking and coordinated efforts are the keywords for responsible and nature friendly growth.

THANK YOU

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