

Why, What and How to Protect natural Capital in the Planning and Implementation of Transport Projects



Francesco Ricciardi, Environment Specialist, Sustainable Development and Climate Change (SDCC), Asian Development Bank.

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Natural Capital and Infrastructure: **What are the challenges?**





Transport Infrastructure Trends

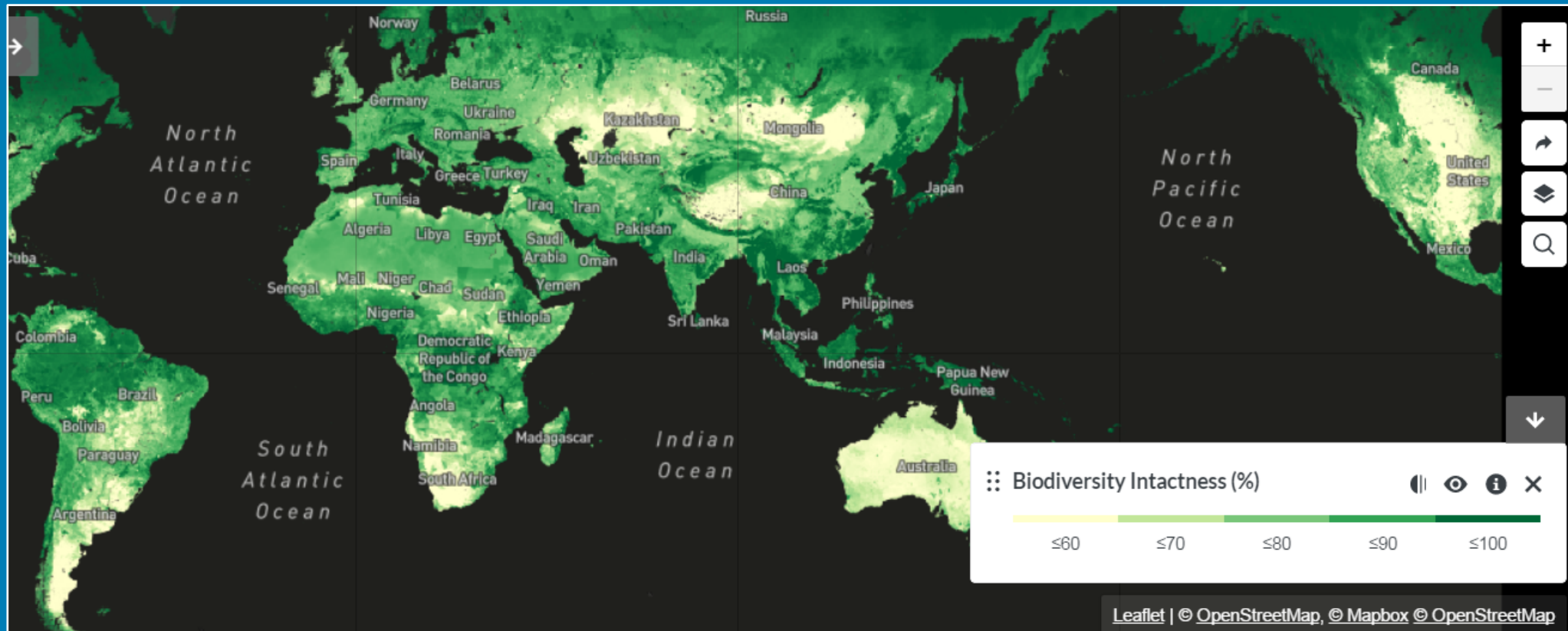
25 million km new
roads planned by
2050

(International Energy Agency, 2013)



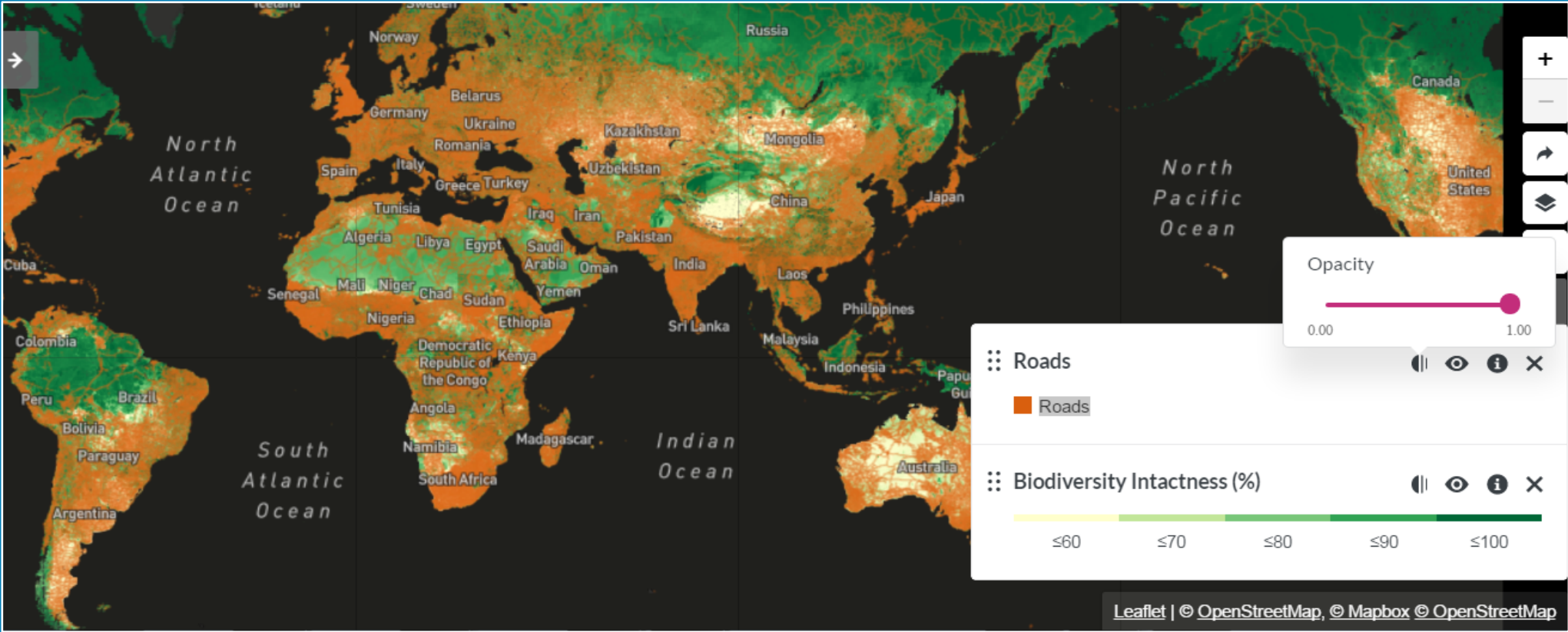
**90% of new roads
expected in developing
countries**

Places where nature is more “intact”



Biodiversity intactness: Compares average abundance of originally present species relative to their abundance now after land use change or human impacts
(Source: UNEP/WCMC)

Current and projected roads by 2050

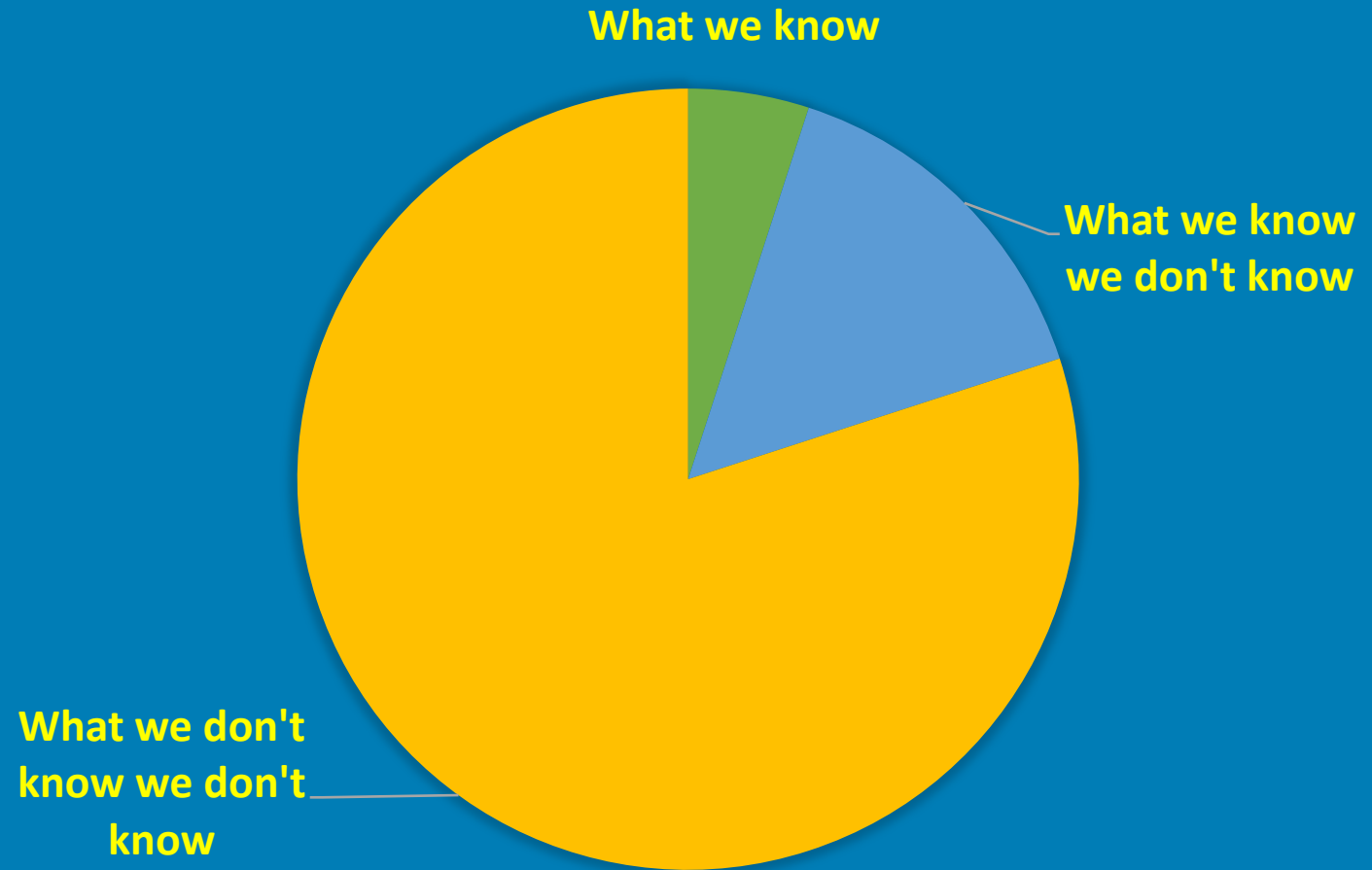


Note: All datasets accessed via Resource Watch, May 2018.

There is so much uncertainty that every decision should be carefully considered. If undecided on what and how to assess biodiversity impacts:

- 1) Ask the experts
- 2) Don't assume
- 3) Try to get as much info as possible
- 4) Do not always trust the developer or its consultants, verify their findings and assumptions

BIODIVERSITY





Induced Impacts

From unplanned but predictable developments caused by the project that may occur later or at a different location (a type of indirect impact)

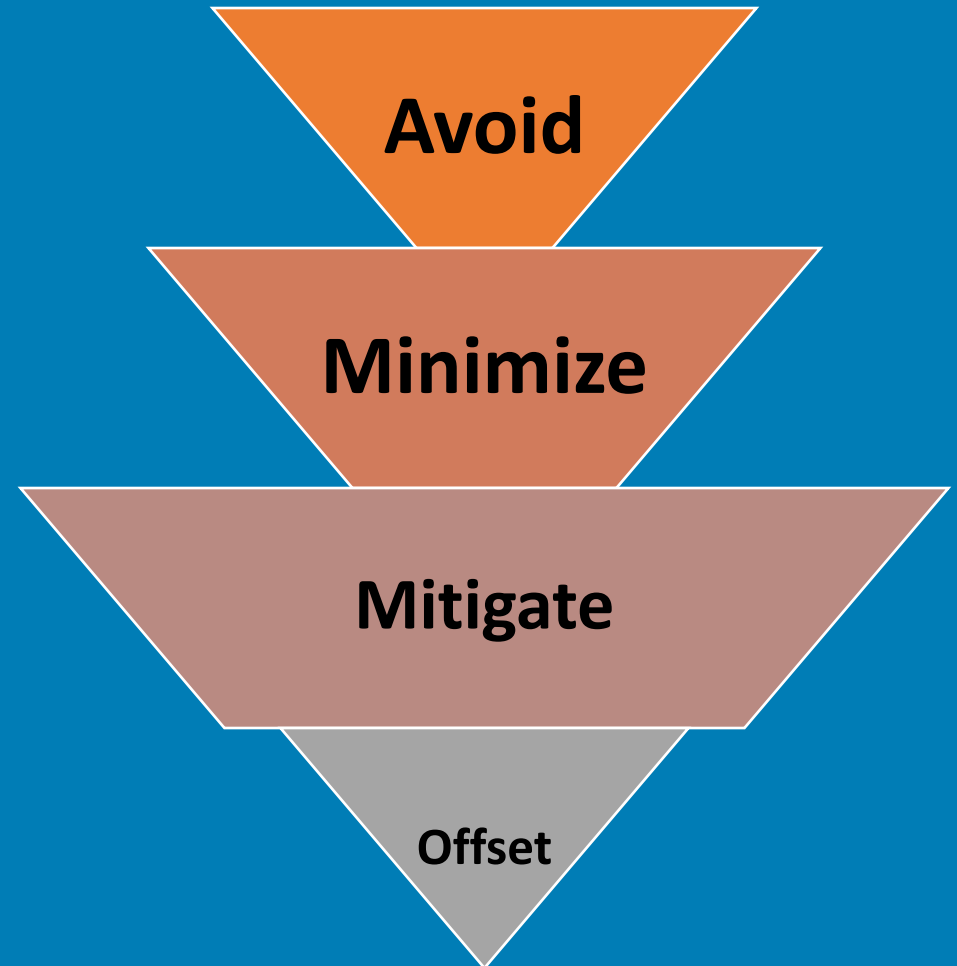
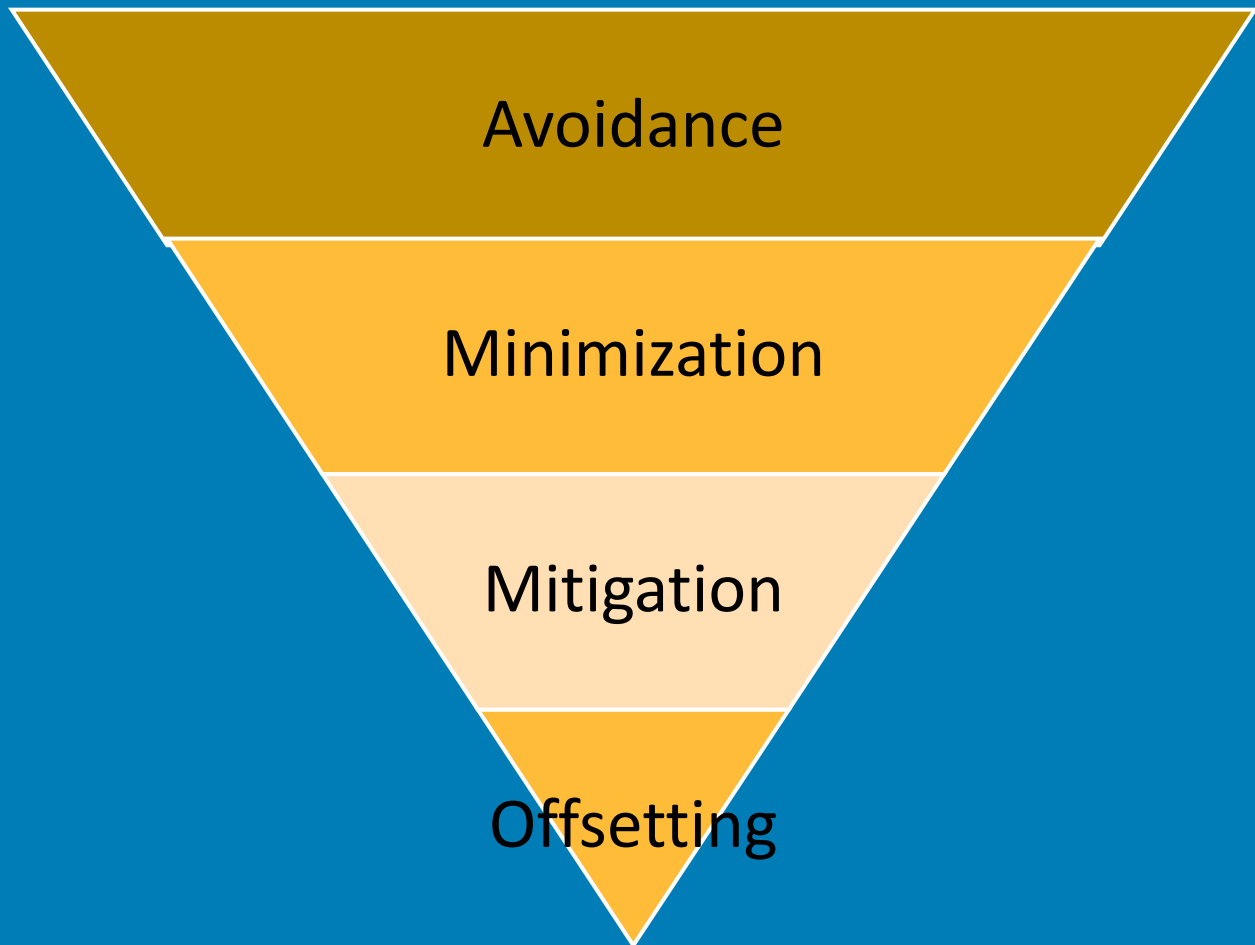
An aerial photograph showing a dense forest with a winding, cleared path or road. Several plumes of white smoke are rising from the forest, indicating an active fire. The smoke is most prominent along the cleared path and in several smaller areas. The forest is a mix of green and brown, suggesting some areas have been burned or are in the process of being cleared.

Induced Clearance



Canopy Connectivity

Mitigation hierarchy





Wildlife-Friendly Transport Projects

BHUTAN: Road Network Project 2



Scope: Green field construction of 5 national highway sections (121km) and 2 feeder roads (62km)

ECOLOGICAL CHALLENGE

Green field road construction: opens up intact forests; habitat fragmentation; requires clearing of 100 ha of forests and about 21,000 trees

Protected areas: 30 km of NH3 in buffer zone Royal Manas National Park; 7.5km of NH 5 inside Khaling Wildlife Sanctuary

Wildlife: Tiger (*Panthera tigris*); Asian Elephant (*Elephas maximus*); Gaur (*Bos gaurus*); Rufous necked hornbill (*Aceros nipalensis*)

BHUTAN: Road Network Project 2



UP #1 NH2: 6.4m(w)x9.9m (L) x5.6m(h)



UP # 2 NH2: 10m x9.9m x5.7m



UP#3 NH2: 6.6mx9.9mx7.6m



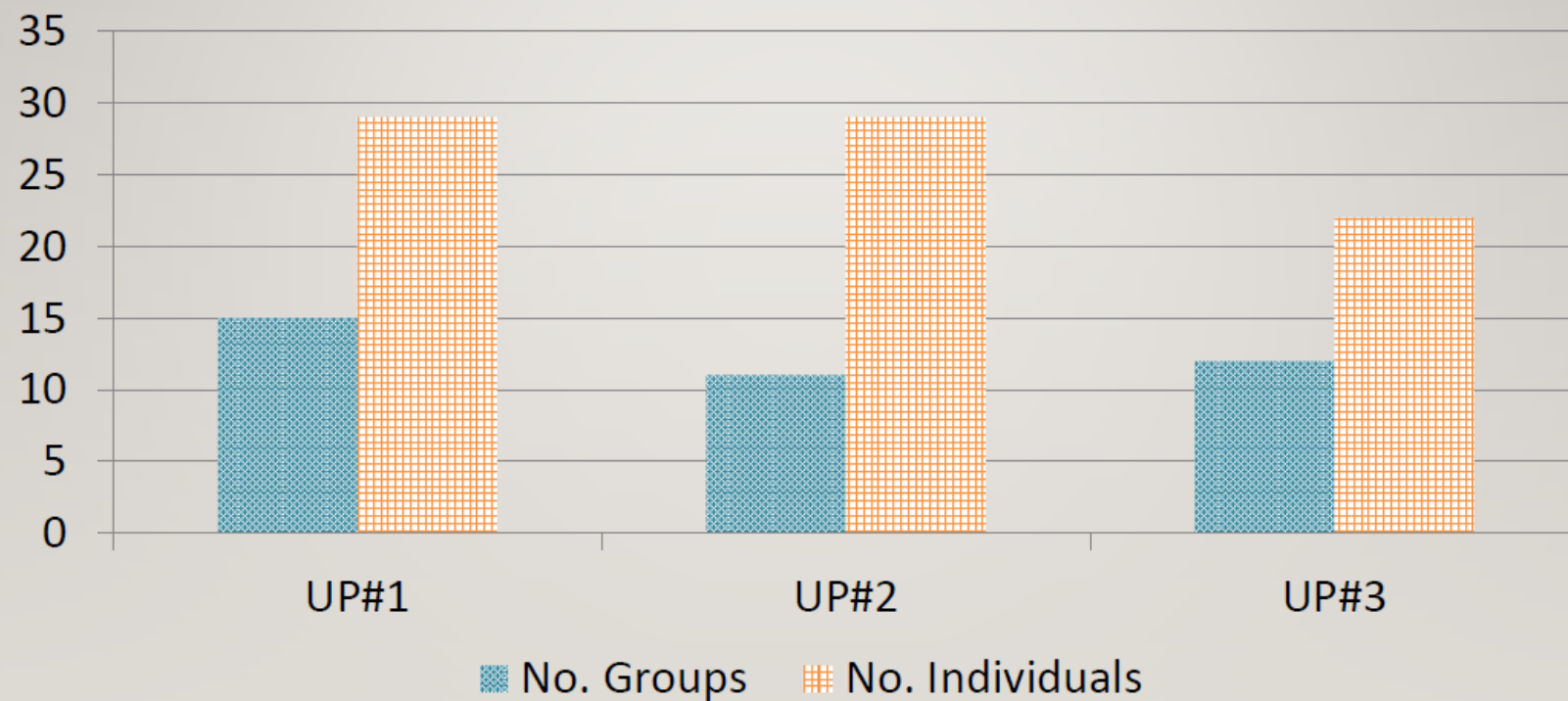
Neuli UP NH5: 10mx9.9mx7.6m

Wildlife underpasses: 26 cross drainage structures; 8 large steel arch underpasses

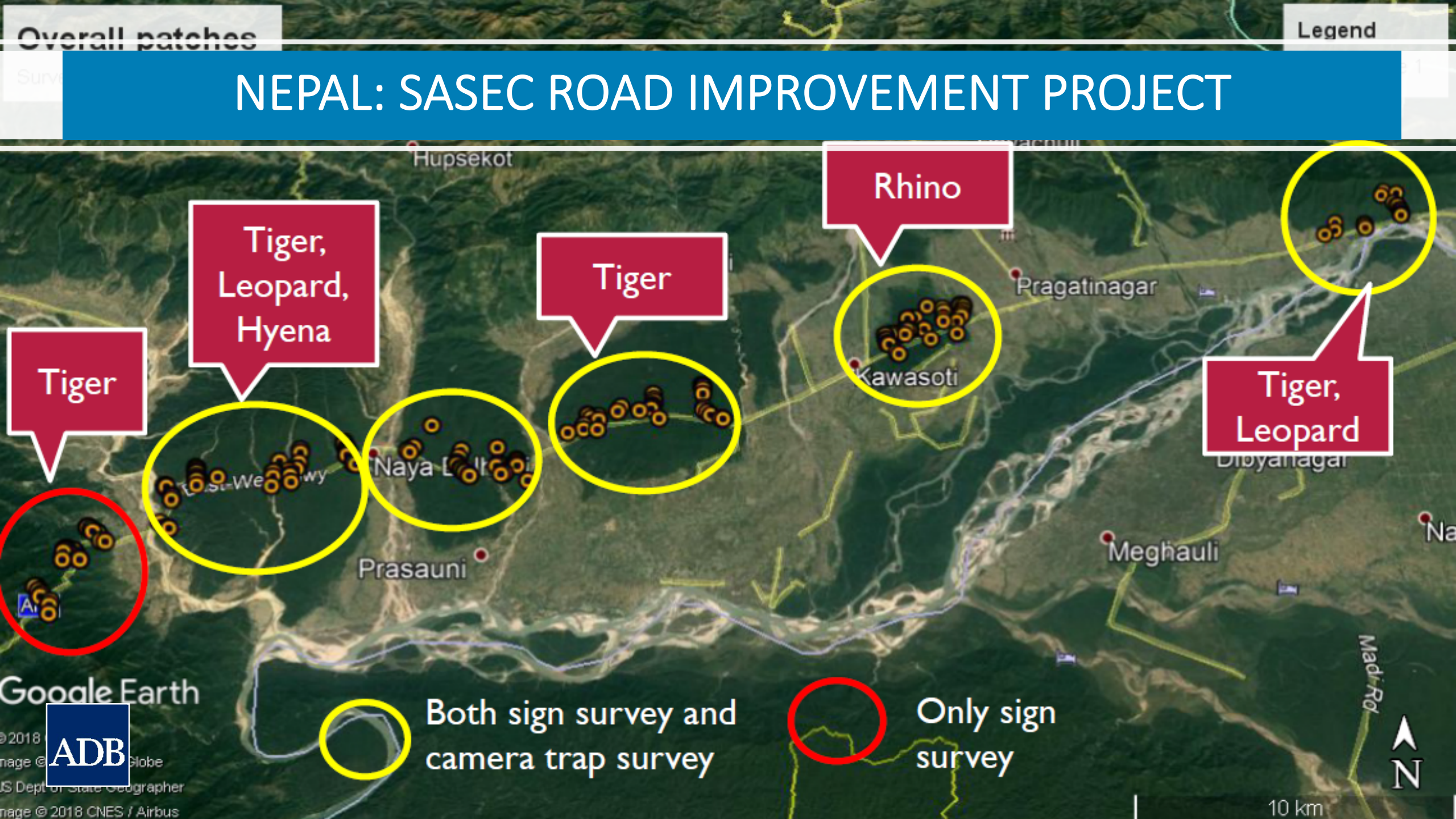
BHUTAN:
Road
Network
Project 2

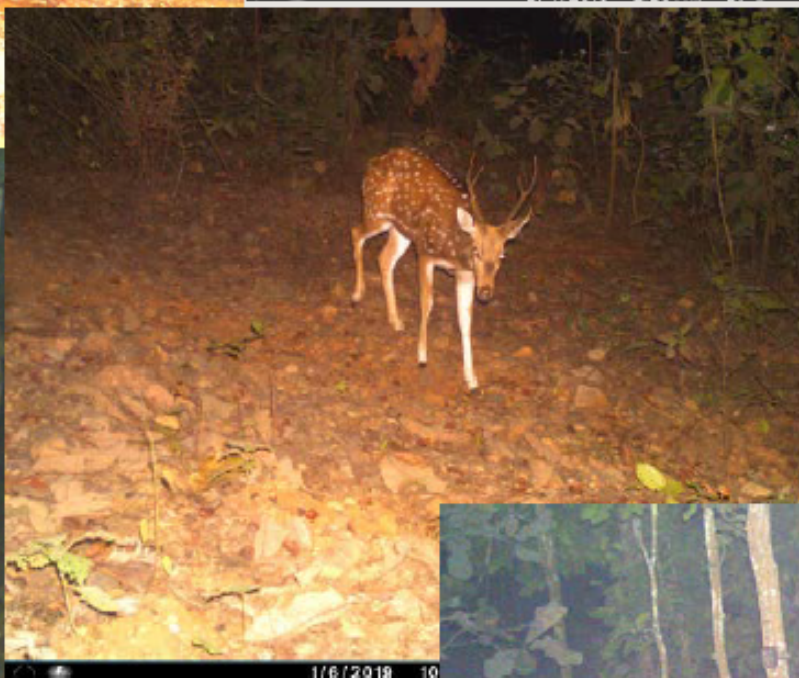
FINDINGS: UNDERPASS # 1, 2, 3 (NH2)

Usage of UP by Elephants: Nov 2015 – May 2016









BANGLADESH: SASEC Chittagong – Cox's Bazaar Rail Project



- Alignment passes 3 protected areas for a total of 27 km (26.7% of rail length)
- Alignment passes several Crossings of the Asian Elephant



Scope: Greenfield construction of single line dual gauge 101 km rail line in South – eastern Bangladesh

STRATEGY TO ACHIEVE NO NET LOSS AND NET GAIN OF BIODIVERSITY

MITIGATION & CONSERVATION GOALS	Primary and secondary goals by PA		
	CWS	FWS	MNP
1. Preserve Asian elephant landscape connectivity and minimize habitat fragmentation	Primary	N/A	N/A
2. Prevent Asian elephant and other wildlife mortality from train-wildlife collisions	Secondary	Secondary	Primary
3. Provide passage for other wildlife species and protect high biodiversity areas	Secondary	Secondary	Secondary
4. Resolve human elephant conflicts	Secondary	Primary	Secondary
5. Implement habitat enhancements to mitigate construction impact and promote elephant recovery	Secondary	Secondary	Secondary

1 km



CHUNATI WILDLIFE SANCTUARY HABITAT ENHANCEMENTS

Overpass Underpass

KEY



Passage structures



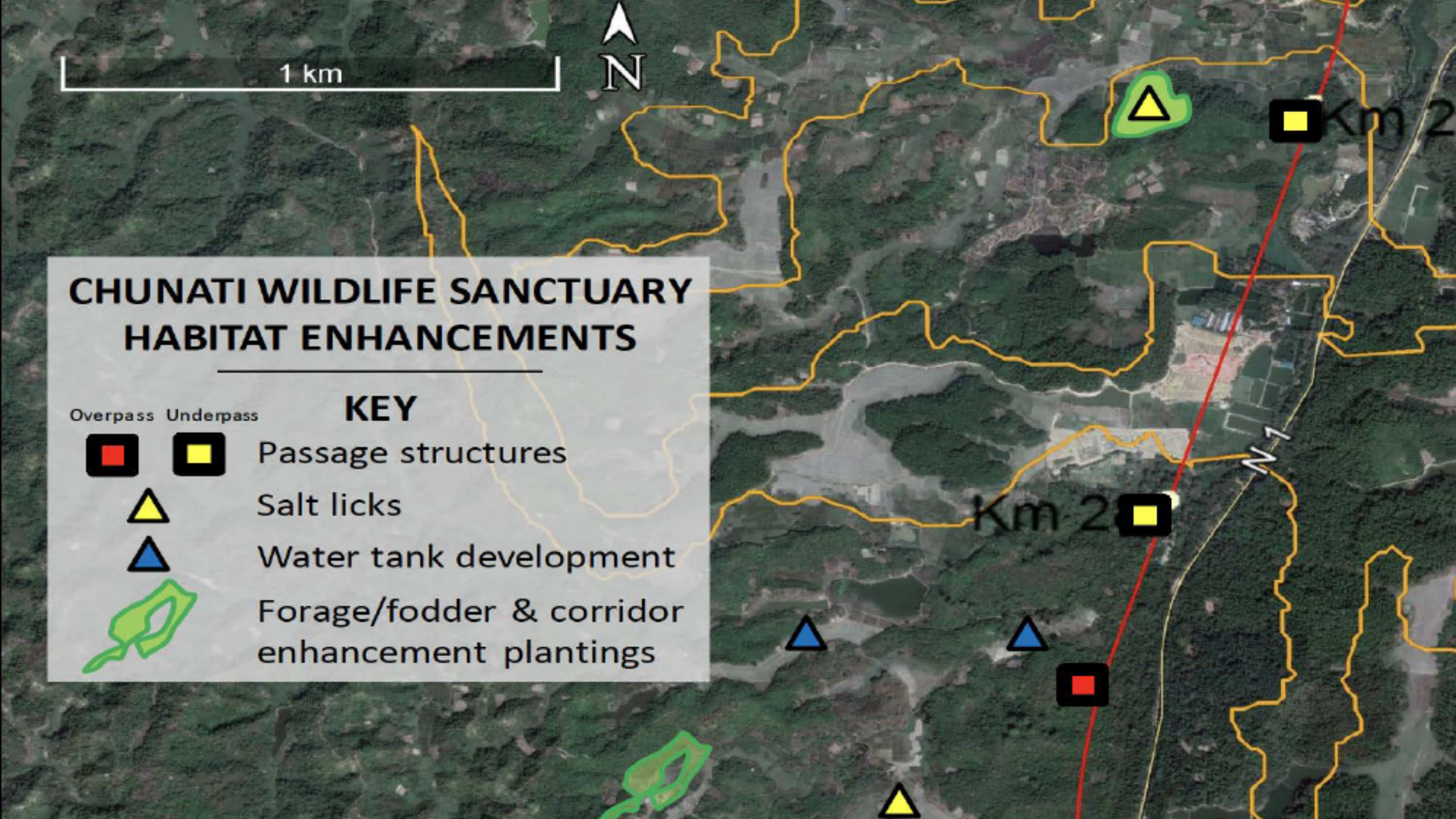
Salt licks



Water tank development



Forage/fodder & corridor
enhancement plantings



Km 56

Boroitoli depa Site

FASIAKHALI WILDLIFE SANCTUARY HABITAT ENHANCEMENTS

N1

KEY



Salt licks



Water tank development



Forage/fodder & corridor
enhancement plantings

Sheldepa Site

Jordepa Site

MEDHKACHAPIA NATIONAL PARK HABITAT ENHANCEMENTS

KEY



Salt lick



Forage/fodder & corridor
enhancement plantings

Km 64



Km 65



**How can
we make
infrastructure
projects more
sustainable
for nature?**



ADB's Strategy 2030: Vision





A new framework from planning and designing with nature



Strengthening policy & planning frameworks



Promoting nature-based solutions



Developing eco-sensitive designs



Strengthening policy and planning frameworks



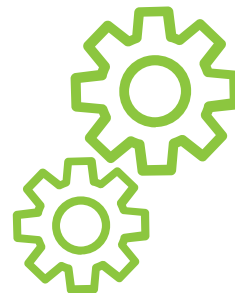
Assessing ecosystems
and their services



Developing ecosystem- and
biodiversity-sensitive options



Evaluating costs and
benefits



Integrating nature-based solutions
and eco-sensitive design into
infrastructure plans



Building resilience through nature-based solutions

Photo source: WWF

A photograph of a lush green landscape with a body of water in the foreground, surrounded by dense vegetation and trees. A curved wooden walkway leads through the greenery. The image is partially covered by a green curved graphic on the left side.

Integrating nature-based solutions in Jiangxi
Pingxiang “Sponge Cities” Project




Eco-sensitive planning and design

Wildlife corridors designed for elephants under the
South Asia Subregional Economic Cooperation Road
Connectivity Project





Measuring results

A black and white photograph of two elephants in a natural, rocky environment. One elephant is in the foreground, facing right, and another is partially visible behind it. The image is partially obscured by a green curved shape on the left side of the slide.

Monitoring data from “camera traps” indicates elephants and other species are now using the wildlife crossings in Southern Bhutan.



Looking ahead





Recommendations

- Strengthen regulations & incentives to integrate natural capital into infrastructure.
- Bring engineers and ecologists together to mainstream eco-sensitive design features.
- Scale-up nature-based solutions through new financing modalities & capacity building.



Questions for consideration

- How can we better engage communities in the design and implementation of nature-based solutions?
- How can we use digital technologies to improve the eco-sensitive planning, design?
- How do you make nature-based approaches more bankable?

THANK YOU



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