

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

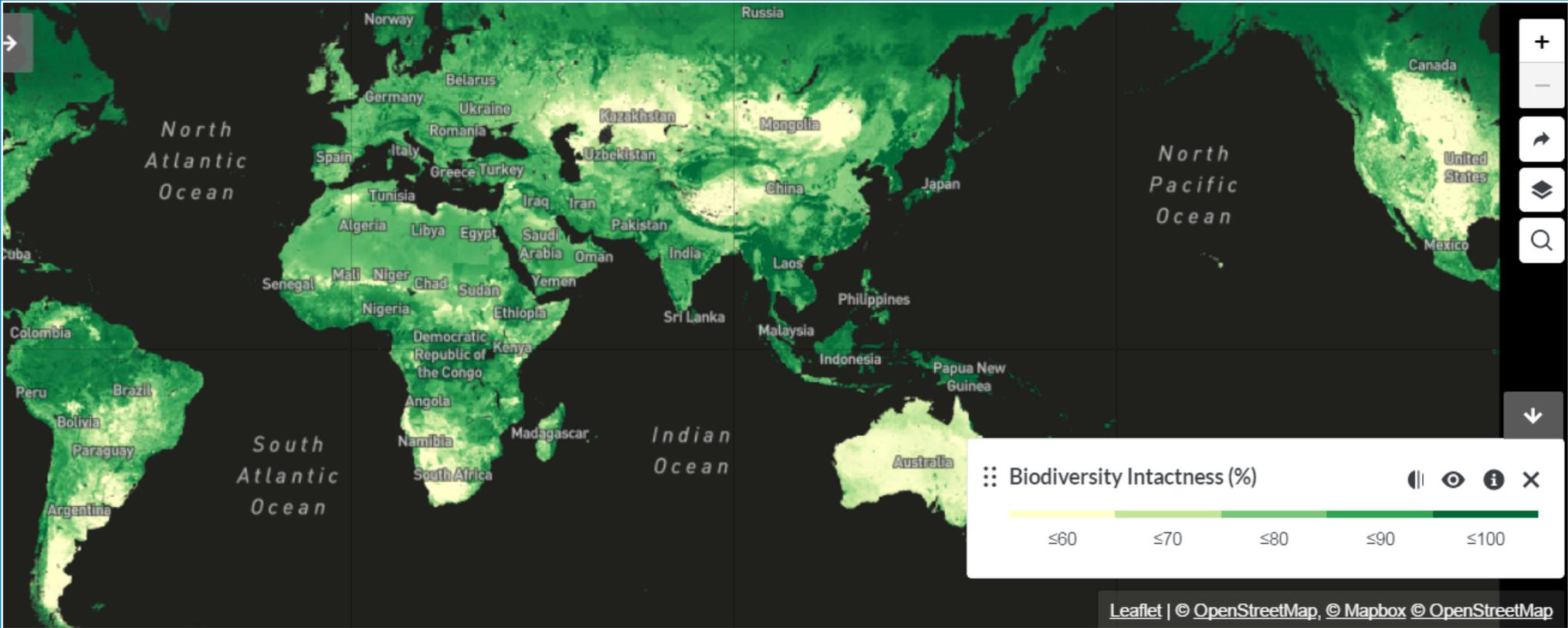
25 million km new
roads planned by
2050

(International Energy Agency, 2013)



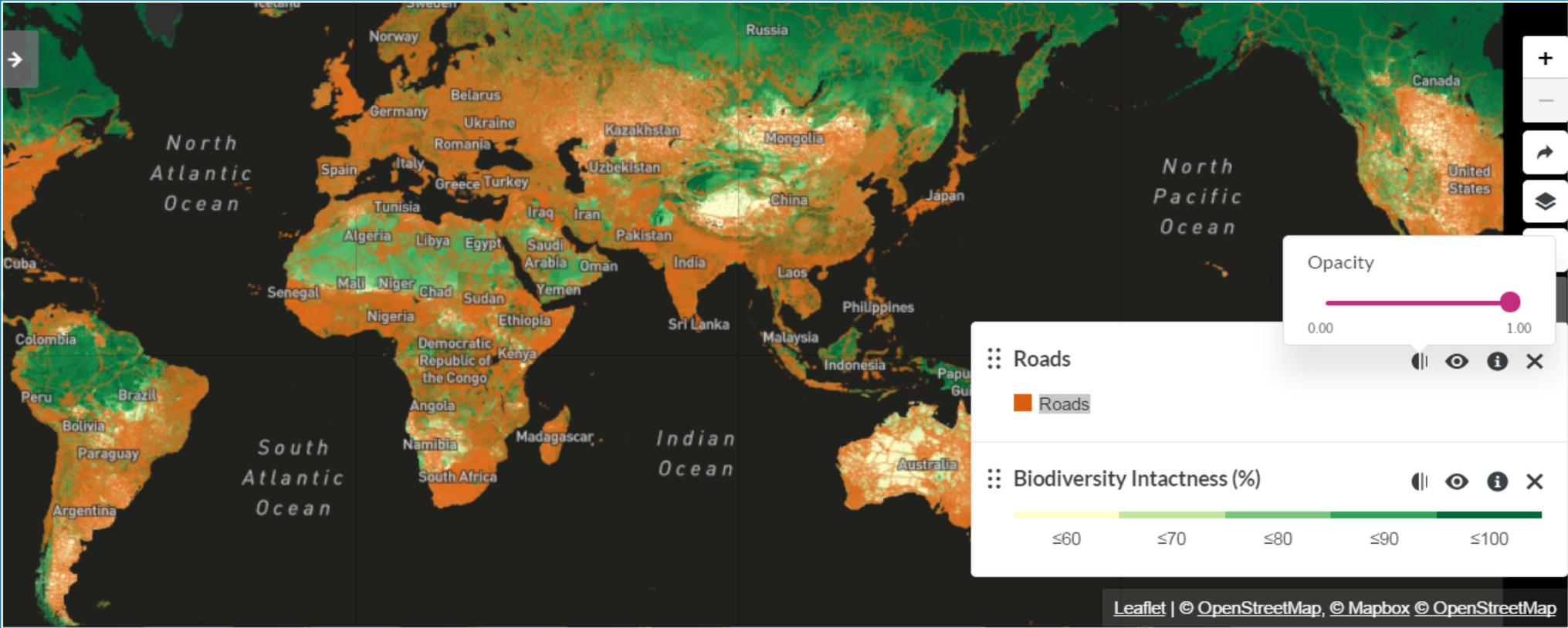
**90% of new roads
expected in developing
countries**

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



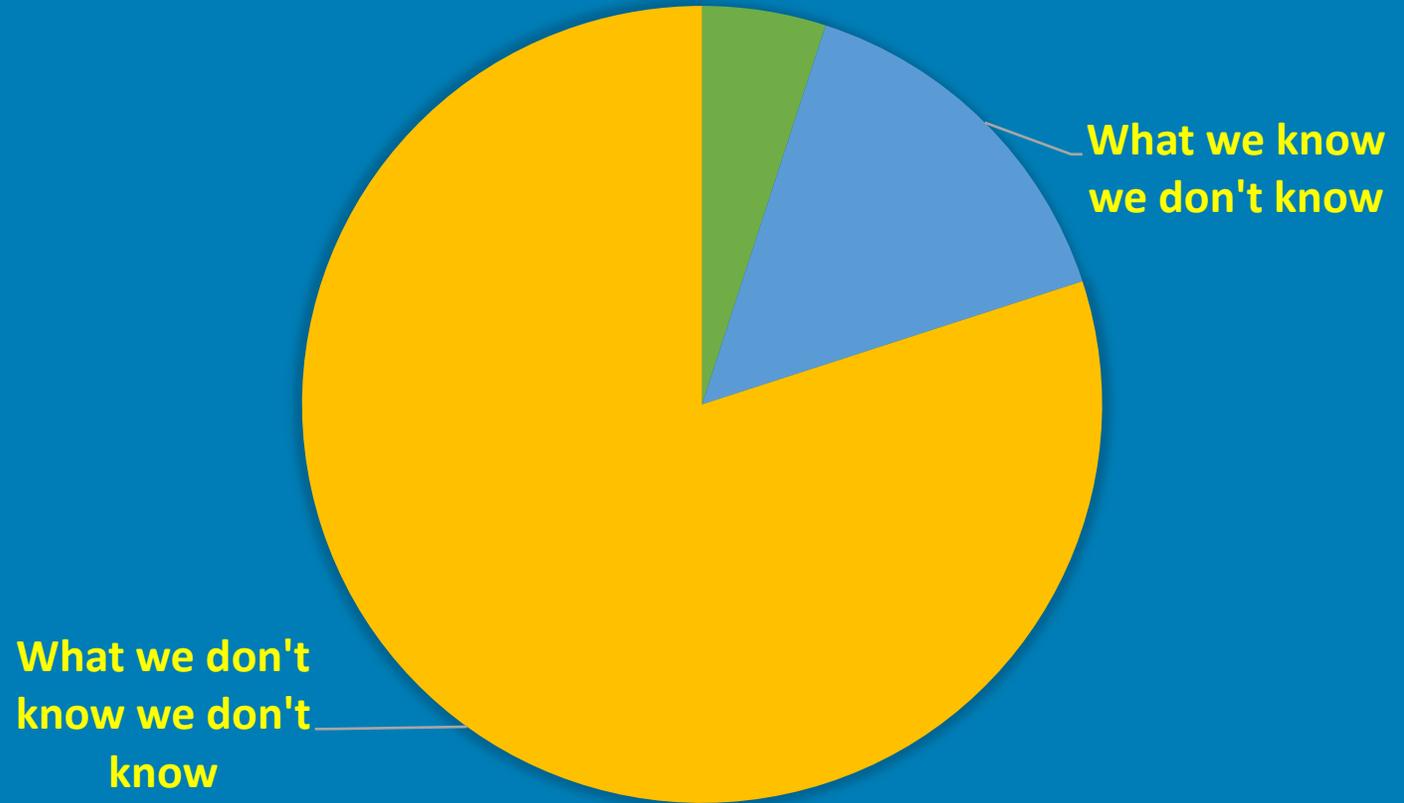
Note: All datasets accessed via Resource Watch, May 2018.

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

What we know





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)

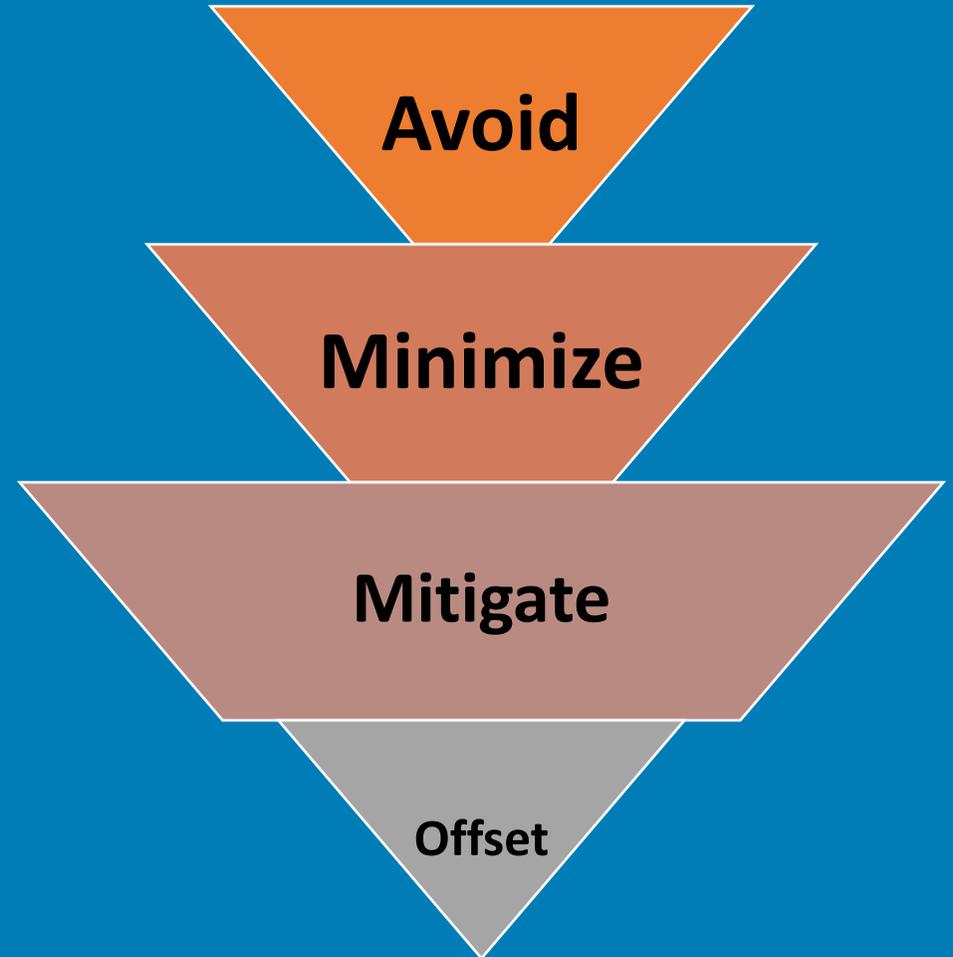
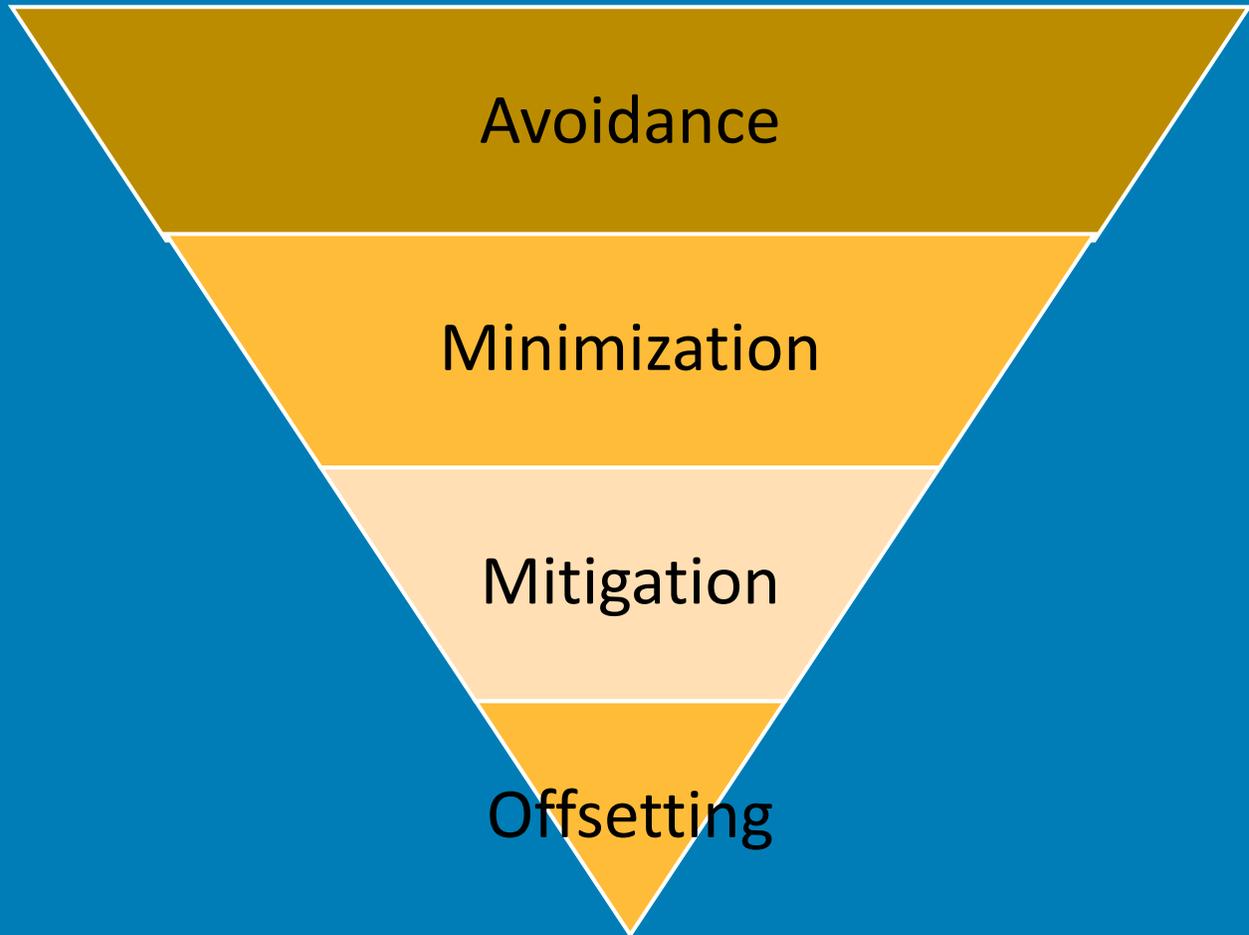


Induced
Clearance

An aerial photograph of a dense, lush green forest. The trees are tightly packed, creating a textured canopy of various shades of green. In the upper left corner, there is a blue circular graphic with a dark brown double-line border. Inside the circle, the text "Canopy Connectivity" is written in white, sans-serif font.

Canopy Connectivity

Mitigation hierarchy



A black gibbon is perched on a thick, light-brown tree branch in a dense, green forest. The gibbon has dark black fur and a lighter, almost white, patch on its face. It is looking towards the camera with a neutral expression. The background is filled with various shades of green leaves and branches, creating a natural, wild setting. The image is partially framed by a white curved border on the right side, which transitions into a solid blue background.

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



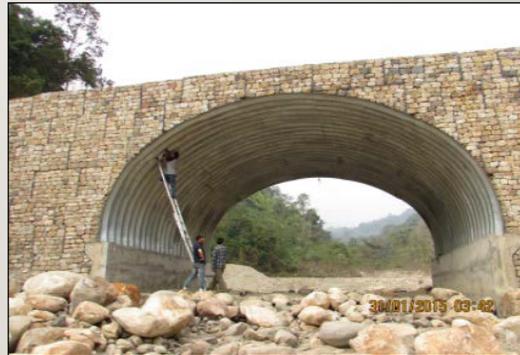
UP #1 NH2: 6.4m(w)x9.9m (L) x5.6m(h)



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



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



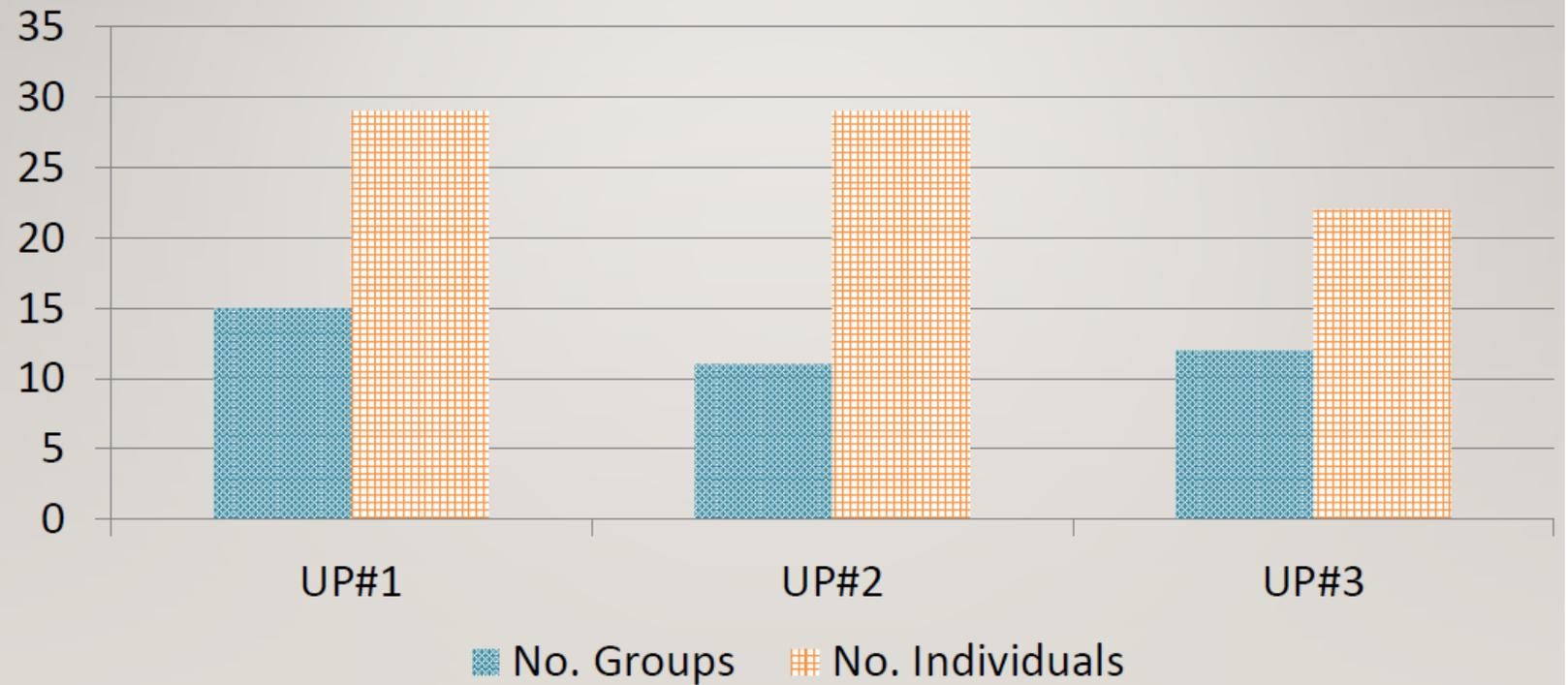
Neuli UP NH5: 10mx9.9mx7.6m

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

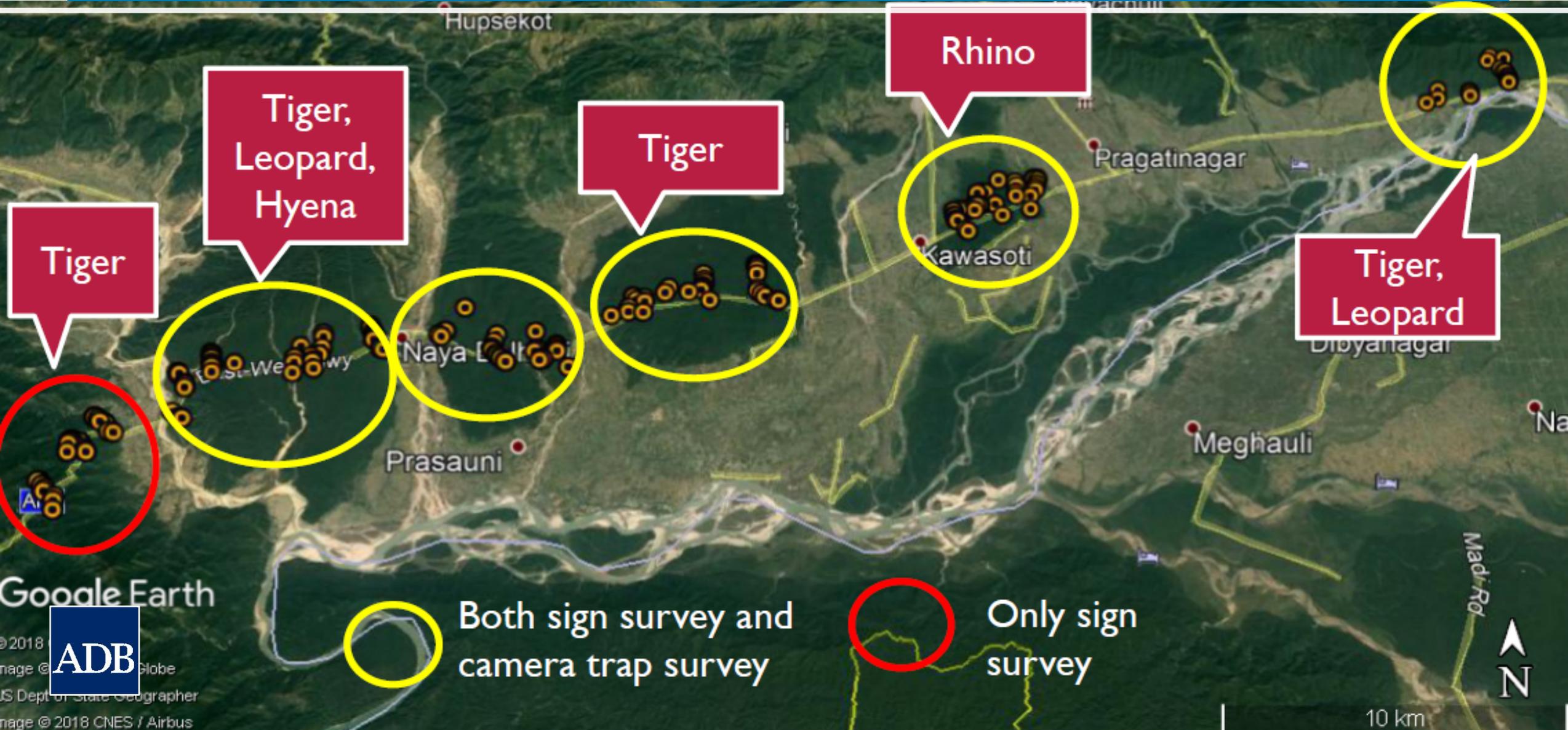




Overall patches

Legend

NEPAL: SASEC ROAD IMPROVEMENT PROJECT



Google Earth



© 2018
Image © Globe
US Dept of State Geographer
Image © 2018 CNES / Airbus

10 km



2/4/2019 2:25 AM 27 B



1/20/2019 4:32 PM 27 A



1/6/2019 10



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



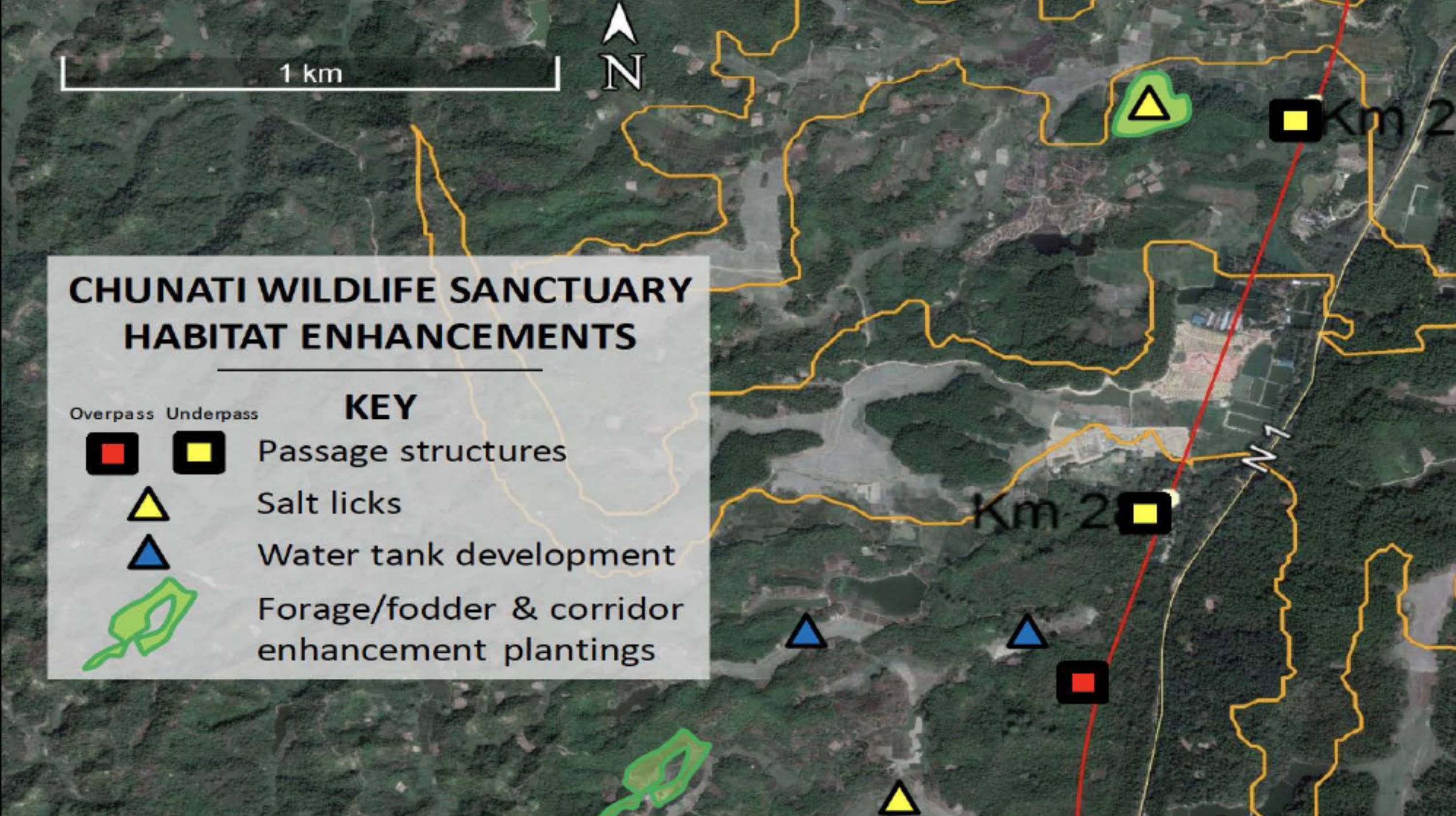
Salt licks



Water tank development



Forage/fodder & corridor
enhancement plantings



FASIAKHALI WILDLIFE SANCTUARY HABITAT ENHANCEMENTS

KEY

-  Salt licks
-  Water tank development
-  Forage/fodder & corridor enhancement plantings

Sheldepa Site

Jordepa Site

Boroitoli depa 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



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



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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