Infrastructure, Biodiversity and the Sustainable Development Goals







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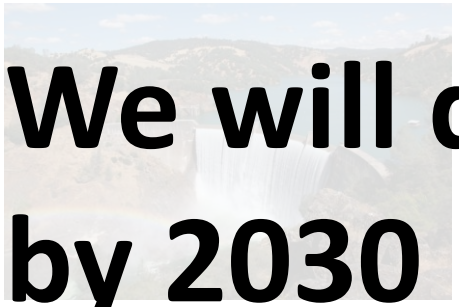
Infrastructure, biodiversity and SDGs

- **ENERGY**
- **MINING**
- **TRANSPORTATION**

Infrastructure, biodiversity and SDGs

➢ ENERGY ➢ MINING ➢ TRANSPORTATION

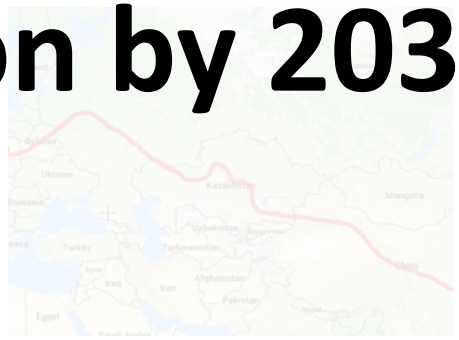


We will double infrastructure by 2030



$4.2 trillion USD in infrastructure by 2020, and $90 trillion by 2030



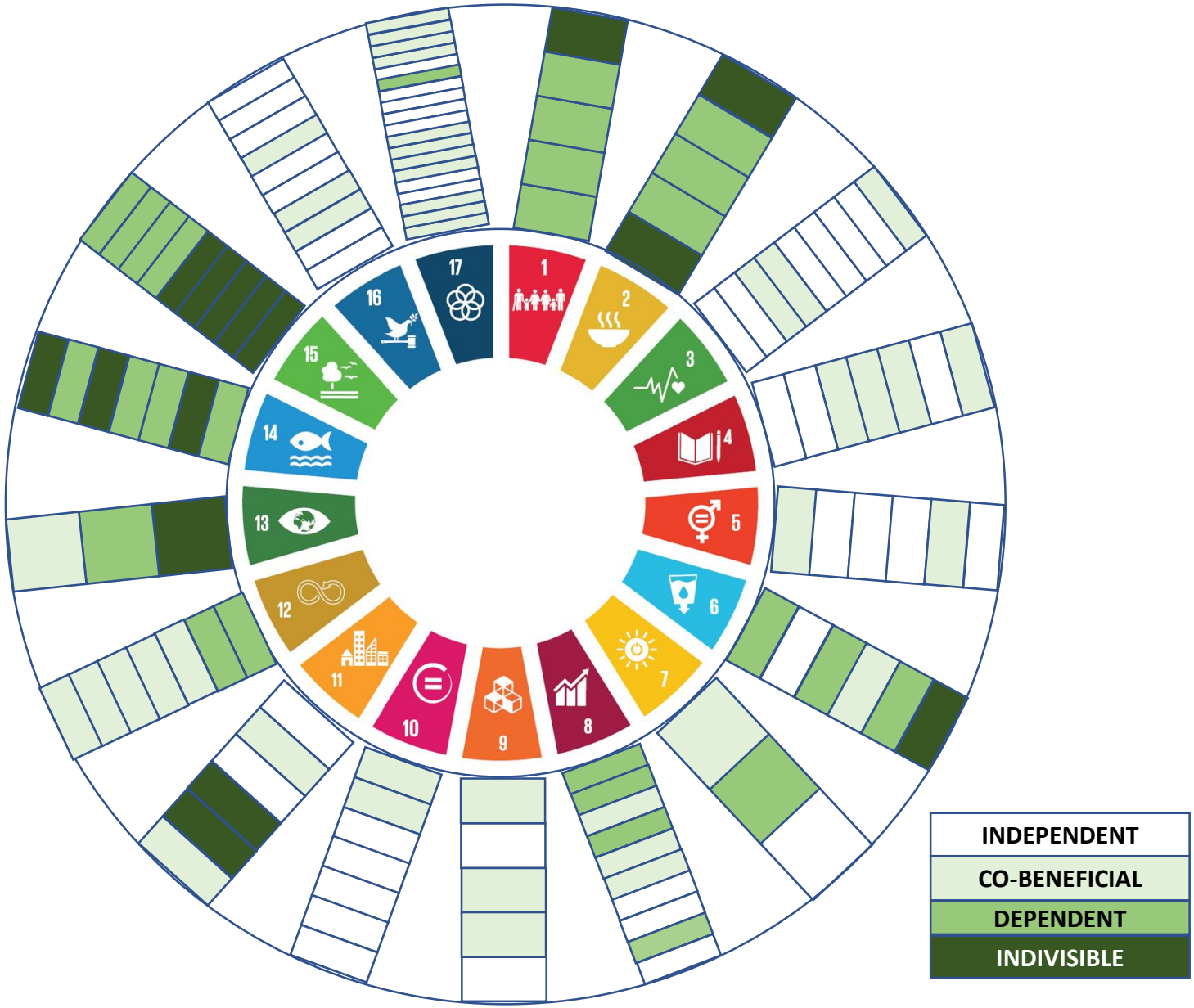


The Sustainable Development Goals

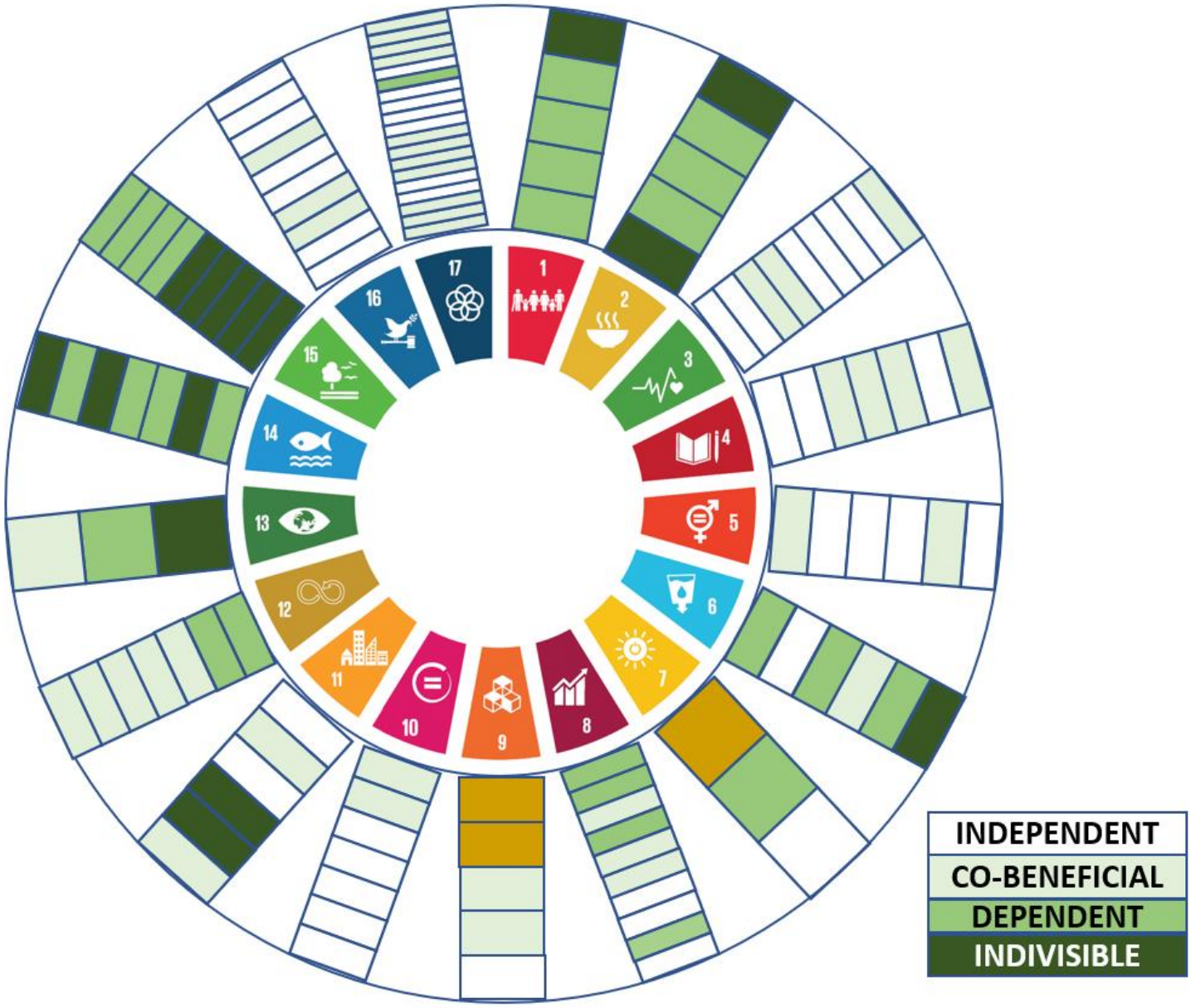
The Sustainable Development Goals

“The SDGs are integrated and indivisible”

Nature's contributions to SDGs



Potentially competing SDGs



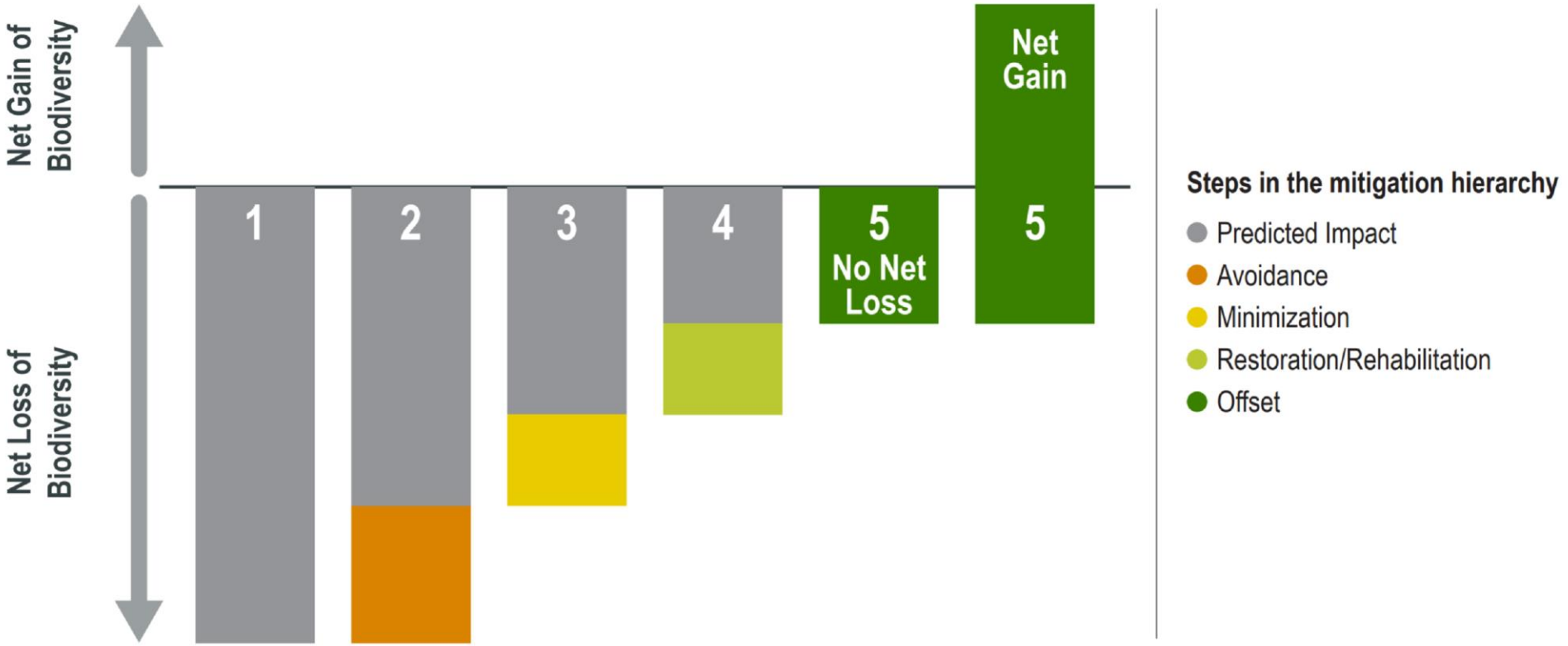
Infrastructure, biodiversity and SDGs

MITIGATION HIERARCHY*

1. **Avoid**
2. **Minimize, mitigate**
3. **Reverse, restore**
4. **Offset, compensate**

*Forest Trends

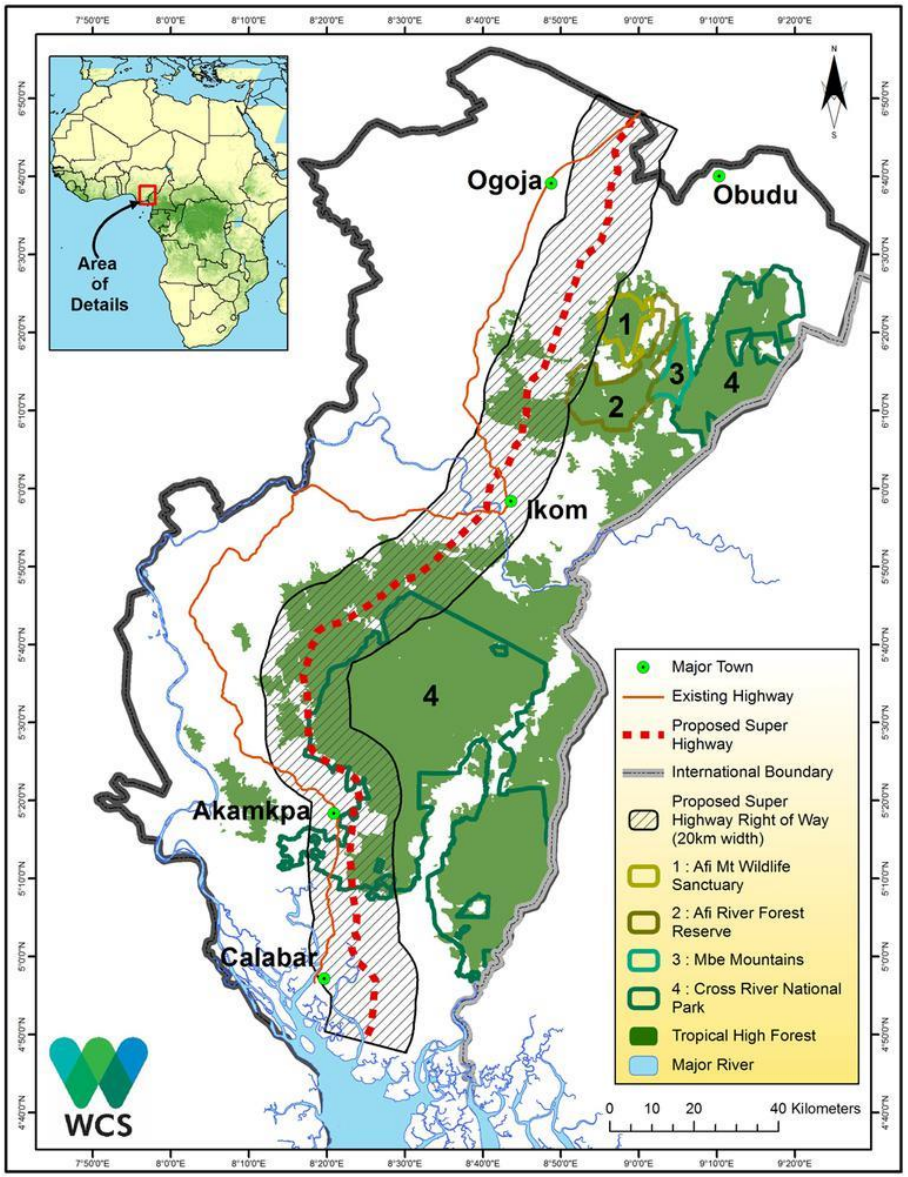
Infrastructure, biodiversity and SDGs



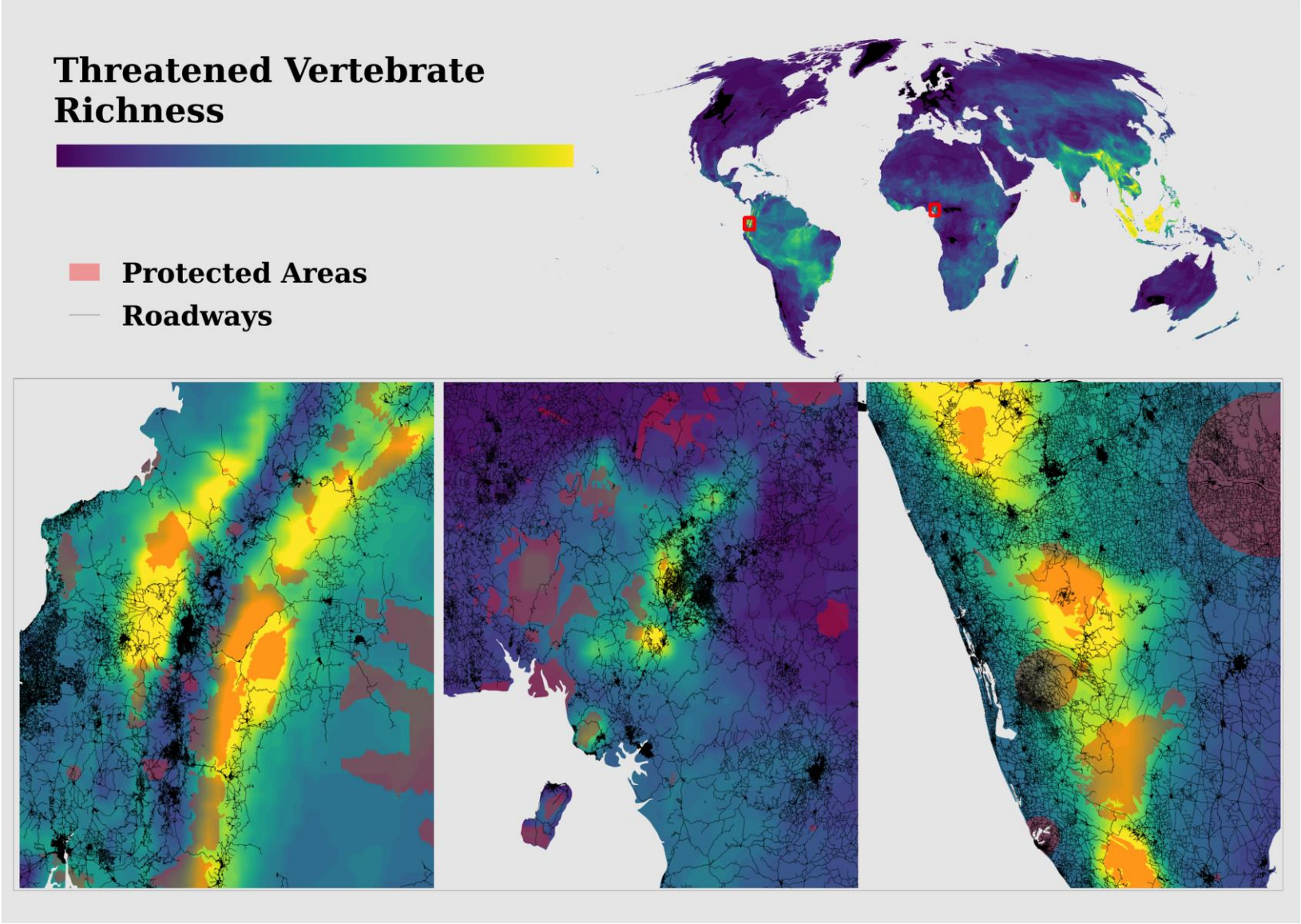
Infrastructure, biodiversity and SDGs

1. Avoid, eliminate

- Avoid creating impacts through land use planning, siting, stronger environmental, social impact reviews



Infrastructure, biodiversity and SDGs



Infrastructure, biodiversity and SDGs

Infrastructure, biodiversity and SDGs

Infrastructure, biodiversity and SDGs

2. Minimize, mitigate

- Reduce duration, intensity, timing and/or extent of impacts through mitigation measures

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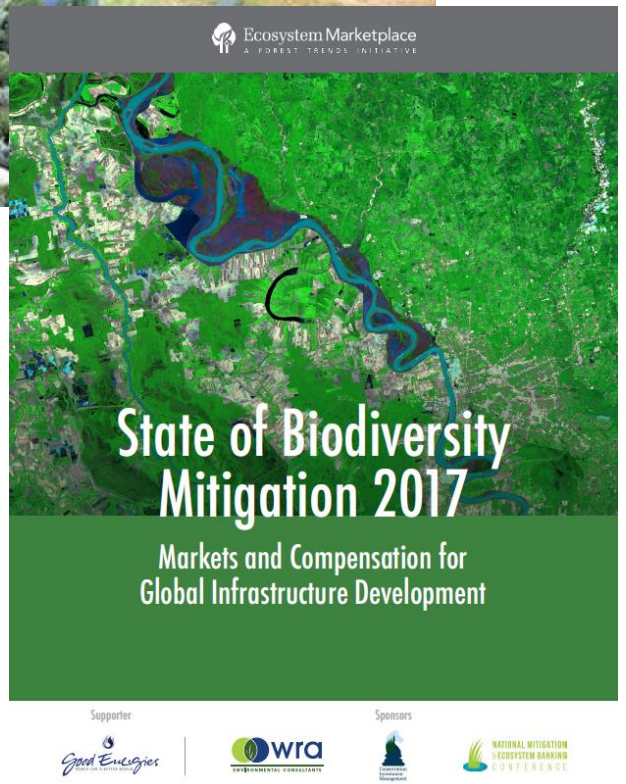
3. Reverse, restore

- Rehabilitate and restore degraded ecosystems as a result of infrastructure

Infrastructure, biodiversity and SDGs

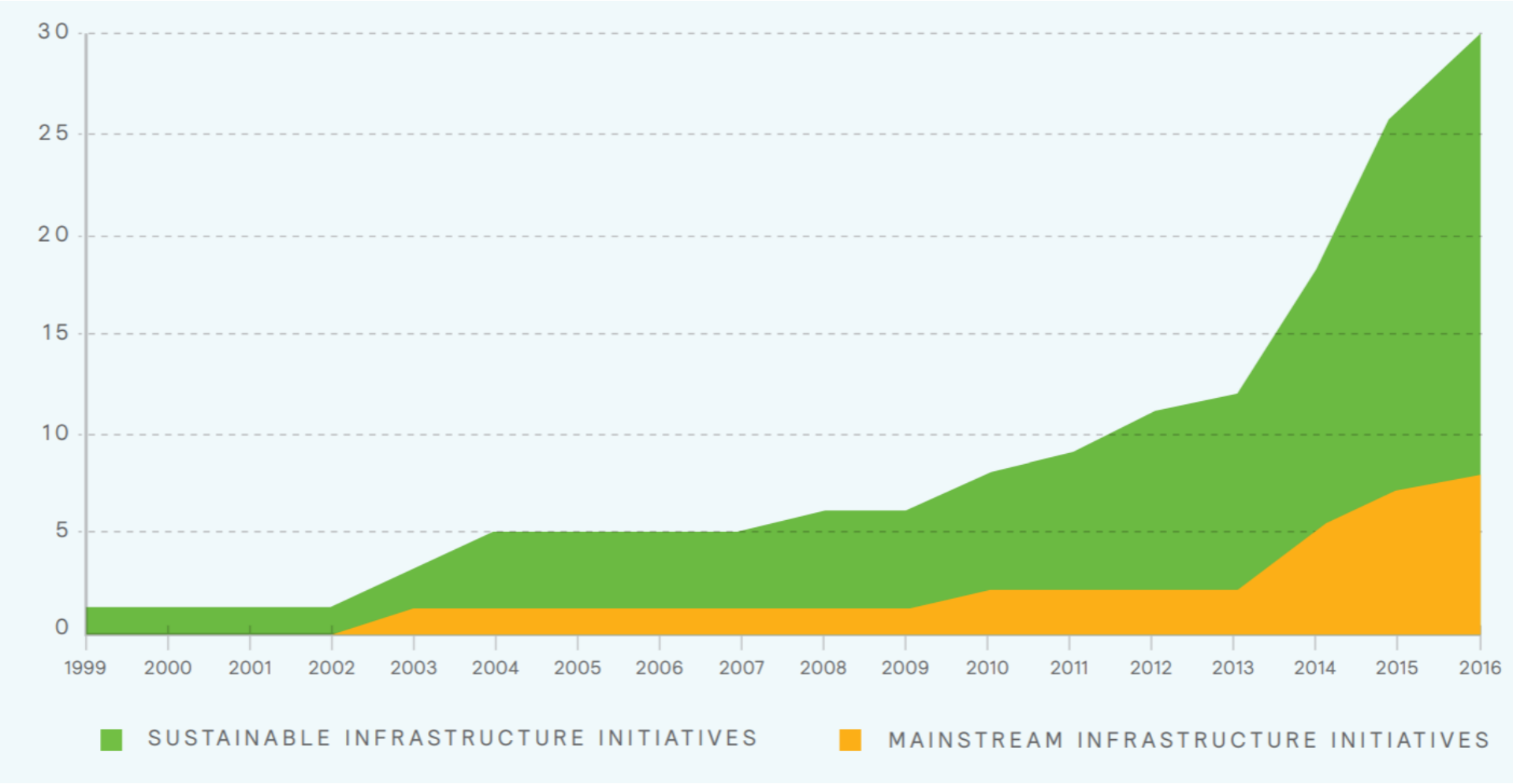
4. Offset, compensate

- Ensure no net loss of ecosystems, concept of ‘banking’ nature, biodiversity offsets to compensate for infrastructure



Infrastructure, biodiversity and SDGs

Sustainable Infrastructure Investment



Infrastructure, Biodiversity and the Sustainable Development Goals







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Wildlife and Transport Systems in India

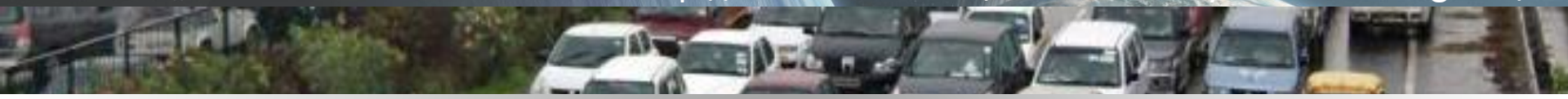
Sustainable Solutions

Dr. Asha Rajvanshi
Wildlife Institute of India

India is on a rapid trajectory of growth in transportation sector

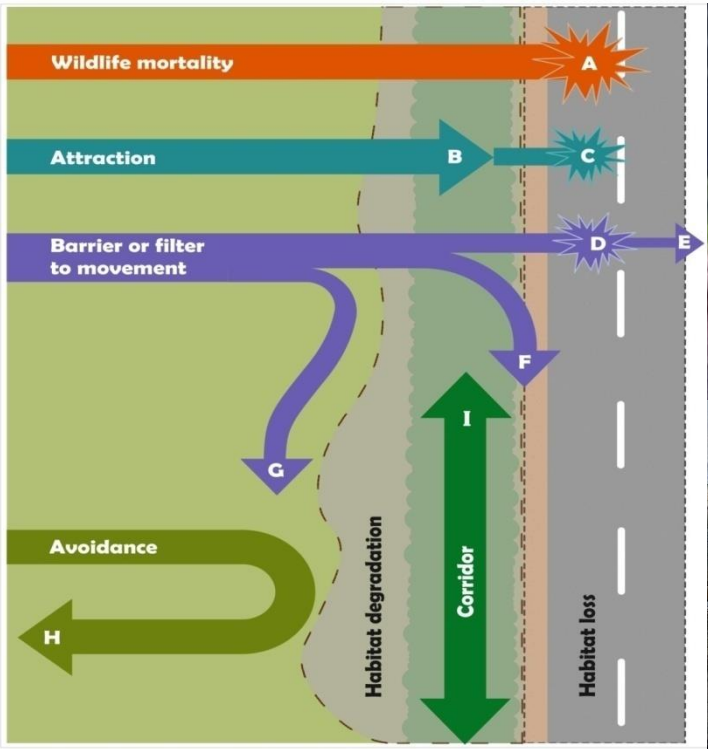
Indian Railways cover 3 million km- the distance from Earth to Saturn every year or 10 times the distance to the moon!

http://24coaches.com/indian-railways-facts-and-figures/

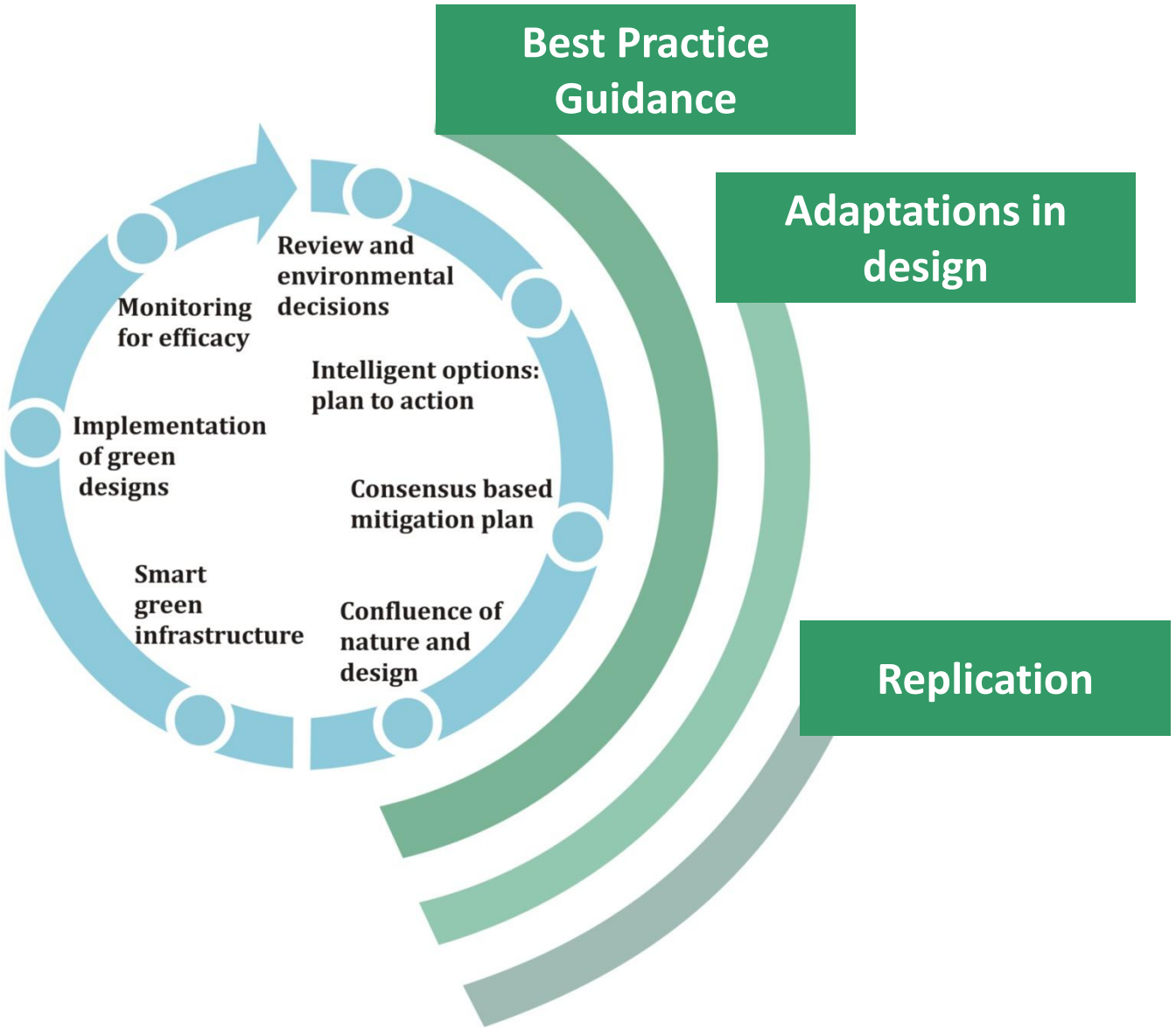


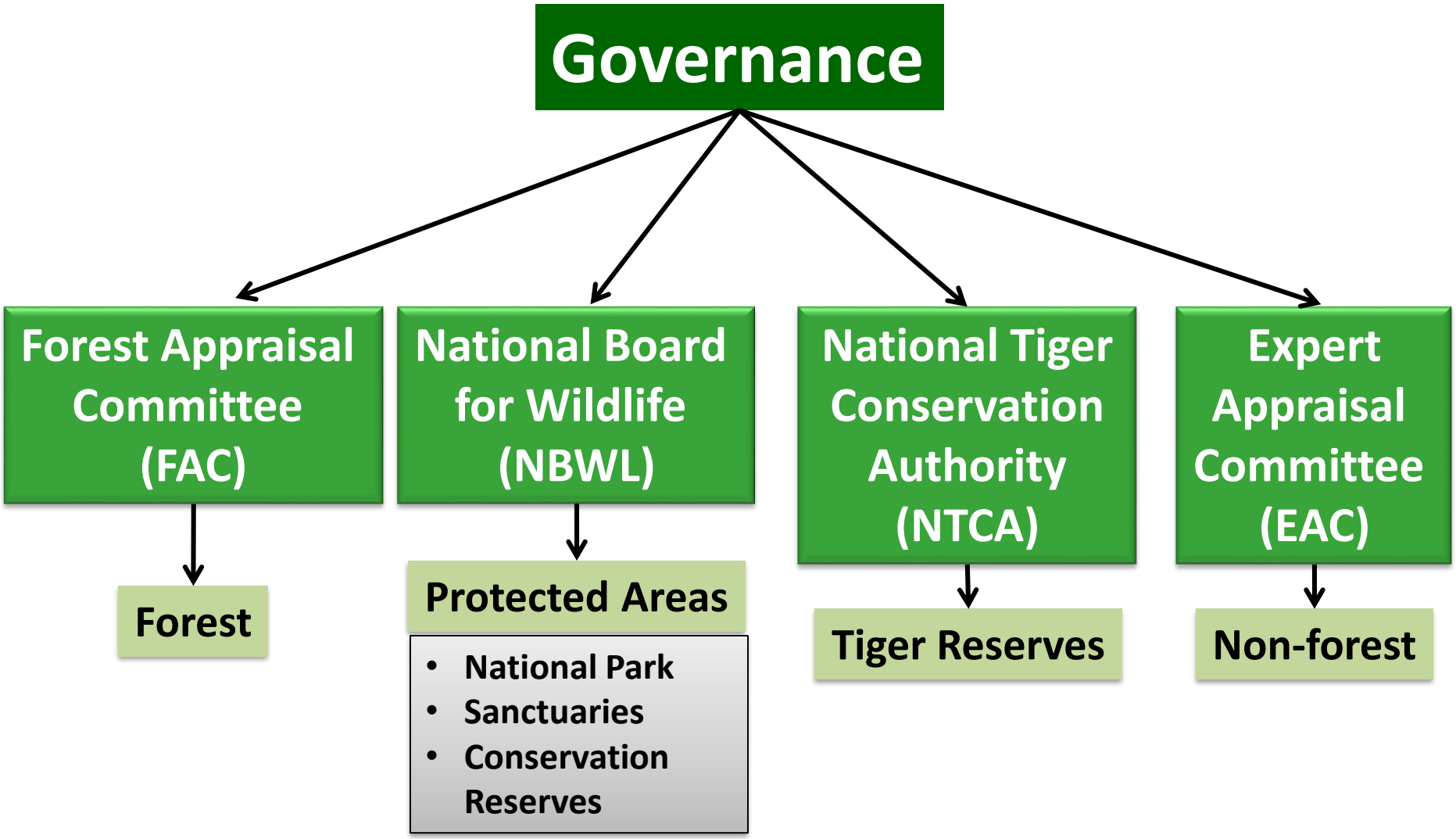
India has the second largest road network in the world (4.2 million km)

Growth, comes at a price for wildlife



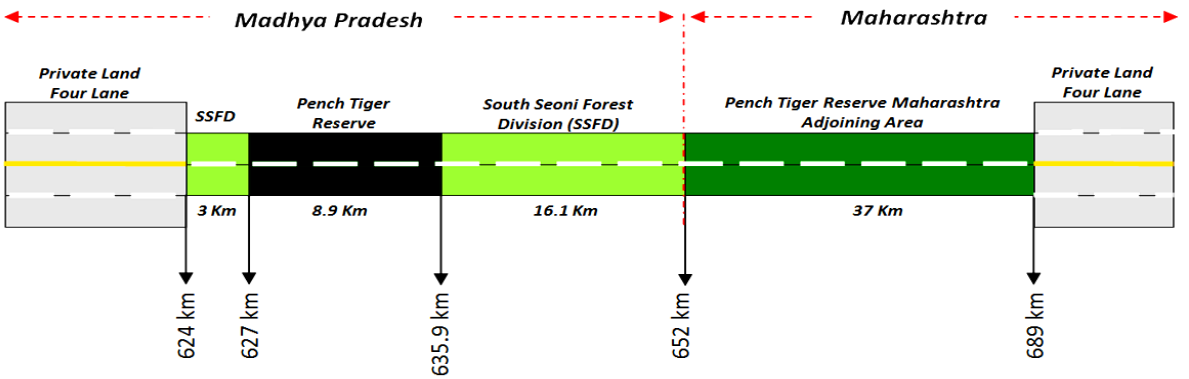
Key elements of sustainable solutions



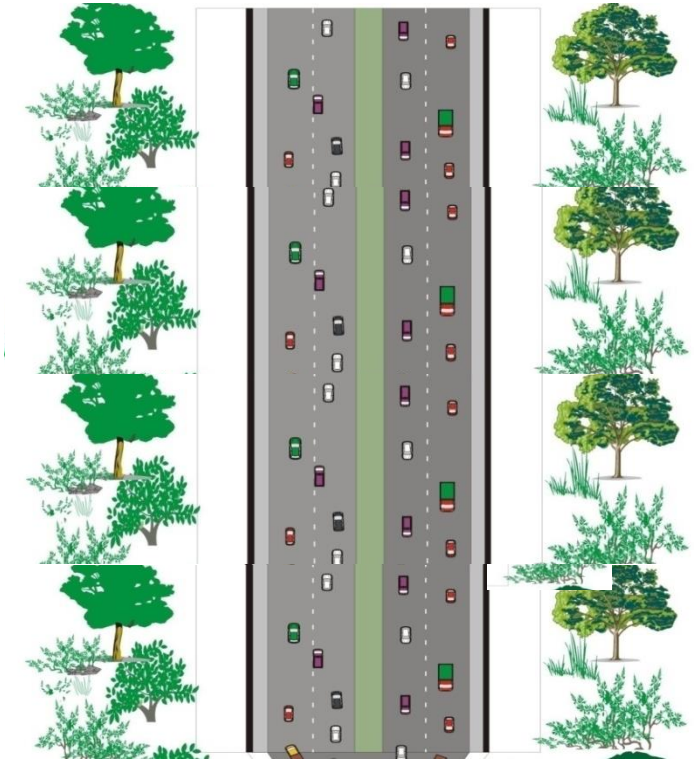


Challenge: Lack of coordination for decisions on roads aligned through multiple land use categories

Proposal for 4 laning of the National Highway - 7



Total stretch of road in MP and Maharashtra: 65 km



Effects of four lanes of the road merging into two lane road - increase in the time spent by the vehicles on the 2 lane section of the road.

***'Fait Accompli'* Situation**

Consensus based mitigation planning can lead to better outcomes on ground

Construction of Iron bridge 10.5 m high and 9.5 m wide (2015)

Country's first crossing structure to mitigate impacts on arboreal species

Total cost =USD 14000

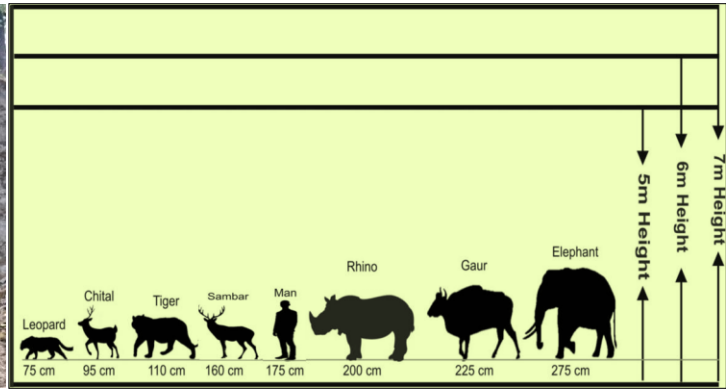
Iron ropes tied on both sides of the bridge and on trees on either side of the track to serve as approach way to the bridge.

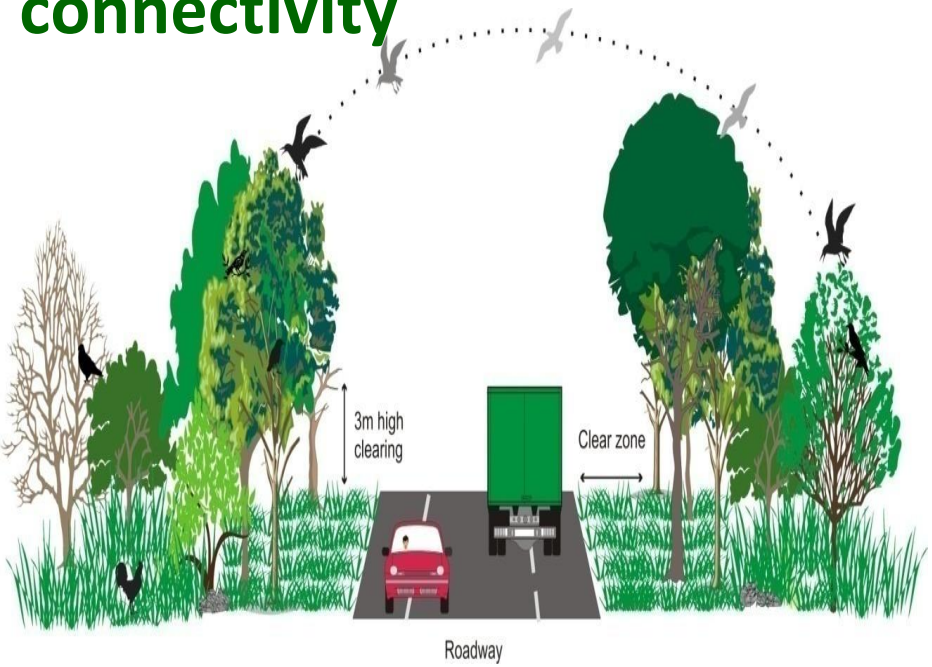
Way forward for positive actions for minimising the complexities for success with sustainable solutions

Best practice guidance greening the transport infrastructure

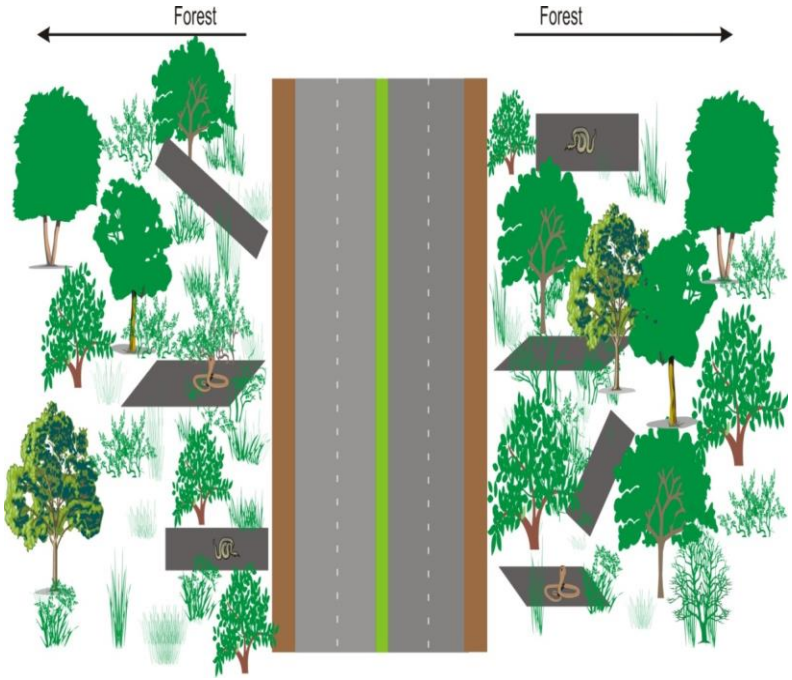
http://www.wii.gov.in/images//images/documents/eia/EIA_BPG_Report_2017.pdf

Range of guidance for species/taxa, habitat modifications to engineering options for securing connectivity



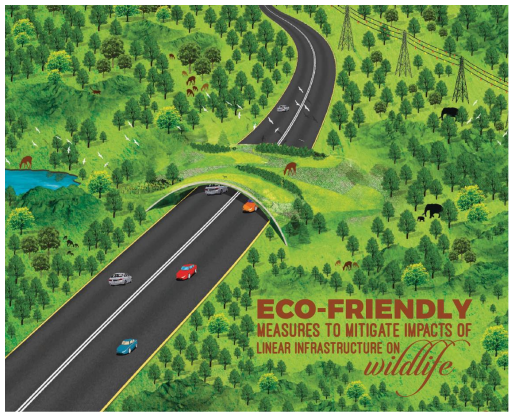


Structural Measures for Reducing Animal Mortality



Structural alternatives for reducing mortality of snakes on roads

From guidance to actions on ground



- This key resource widely recognised
- Partnered by key agencies: National Highway Authority, Indian Railways, nodal agency for granting approvals MOEFCC and the World Bank (Donor agency)

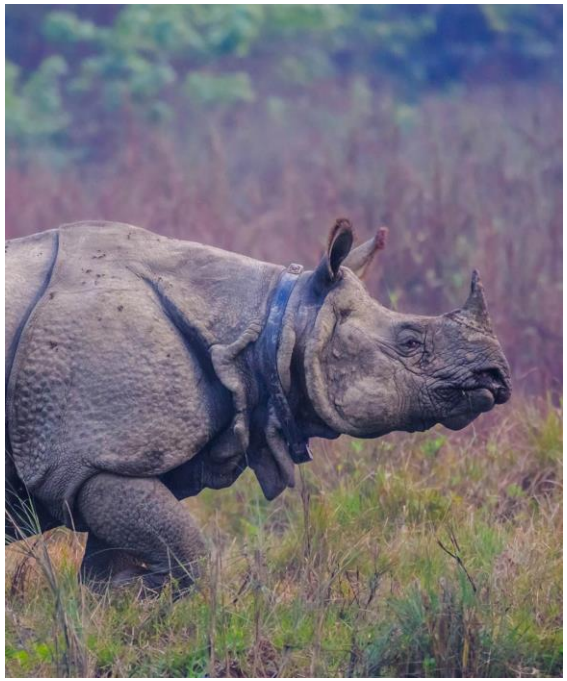
- Adoption of practice guidance forms a part of directives for all transportation planners
- Prescriptions are fairly adaptive
- Uptake of guidance is visible and enabled through success of capacity building initiatives for all stakeholders

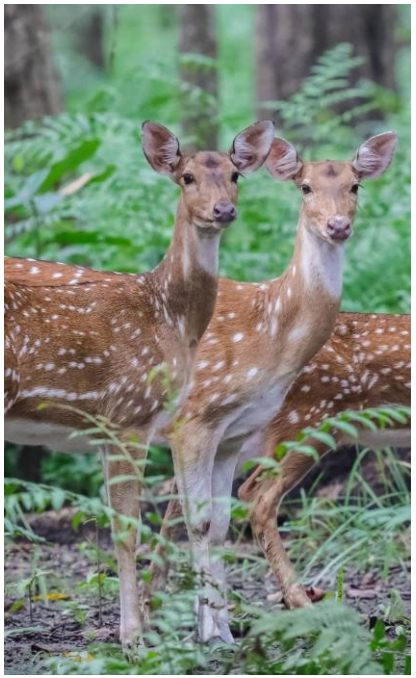
Recommendation to compliance?

Thank you

Integrating Climate Resilience and Natural Capital in Mega Project Planning and Designing:

The Case of Shifting of East-West Railway Alignment to Avoid Chitwan National Park Nepal






Maheshwar Dhakal, PhD
Joint Secretary
Ministry of Forests and Soil Conservation
Nepal

Nepal became a member of Trans Asian Railways (TAR)

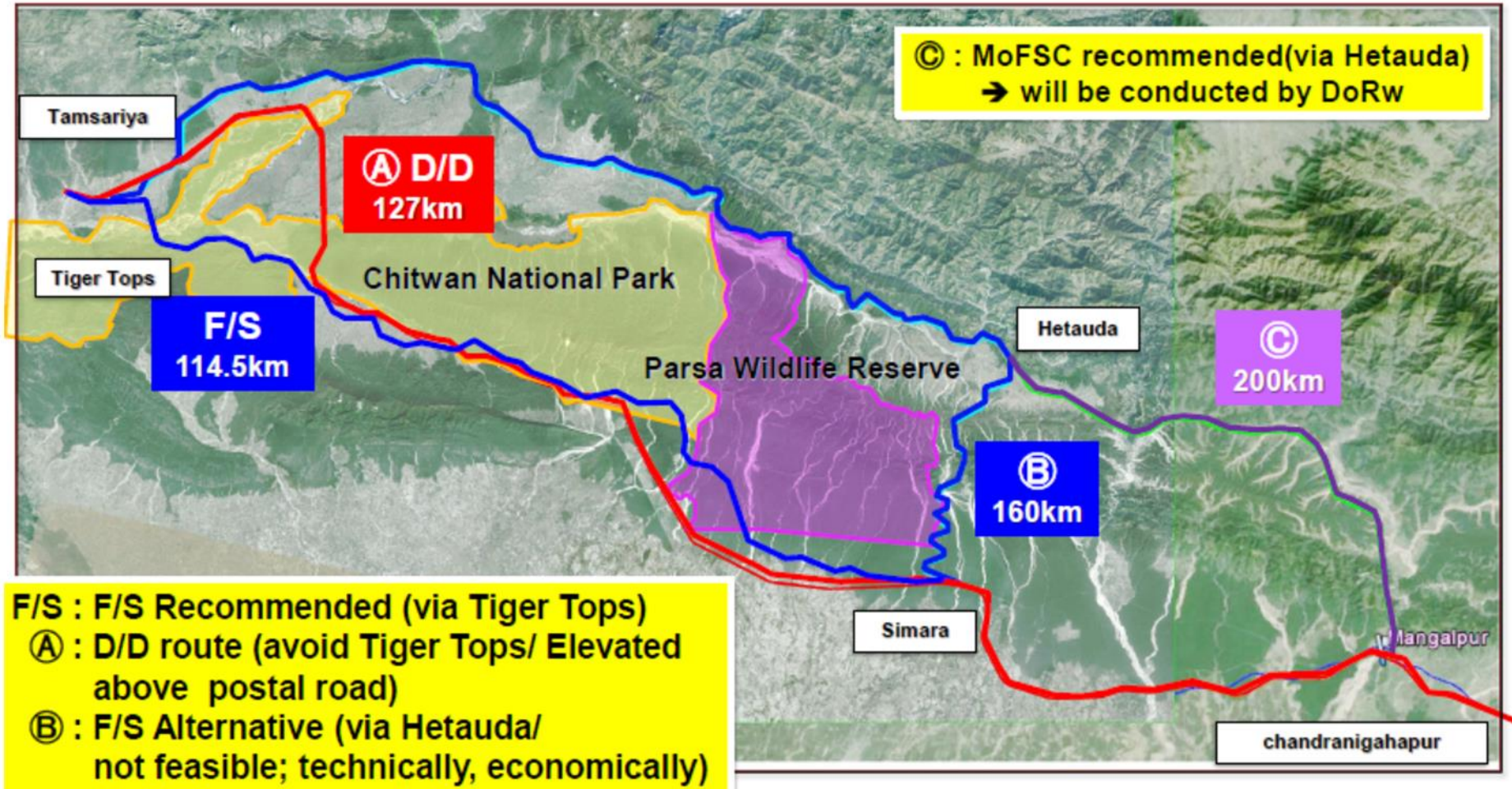
GoN signed on 10 November, 2006

Ratification on 6 March, 2012

National Railway Network Plan

2.3 Alignment(1)

Overview of Alternatives



F/S : F/S Recommended (via Tiger Tops)
Ⓐ : D/D route (avoid Tiger Tops/ Elevated above postal road)
Ⓑ : F/S Alternative (via Hetauda/ not feasible; technically, economically)
MoFSC recommended

Conservation Importance of Chitwan National Park

- A national park having more than 100 tigers in the single habitat
- The second largest population of greater one horned rhinoceros
- Prime habitat of mega herbivores like bison, elephant
- Riverine ecosystems of critically endangered species gharial crocodile and dolphin
- Habitat of more than 500 species of birds (native and migrated)
- A national park having higher number of ecosystems per unit area
- UNESCO -World Heritage Site

Efforts to Overcome the Chalemnges

- Consultation with World Heritage Center
- Interaction with national park stakeholders mainly with local communities, media and lawyer people
- Advocacy support of conservation partners mainly WWF Nepal (Experience sharing with India and Bhutan)
- Consultation and negotiation with Railway Department on Detail Project Report (DPR) for assessment of new alignment

Basic Principles and Consideration for Alternative Study

SN	Principles and Considerations	Originally Proposed Alignment	New Recommended Alignment
1	Distance	Short	Long
2	Population density	Low	High
3	Marketing areas	Population and marketing areas	
5	Industrial areas	Safety and risks	
6	Risk of disasters	High possibility	Low possibility
7	Environmental friendly	• Habitat fragmentation • Damage during construction	• No habitat fragmentation • Low damage
8	Social acceptance	Low	High
9	Economic feasibility	No	Yes
10	Land acquisition	Low	High
11	Operation and maintenance costs	High	Low

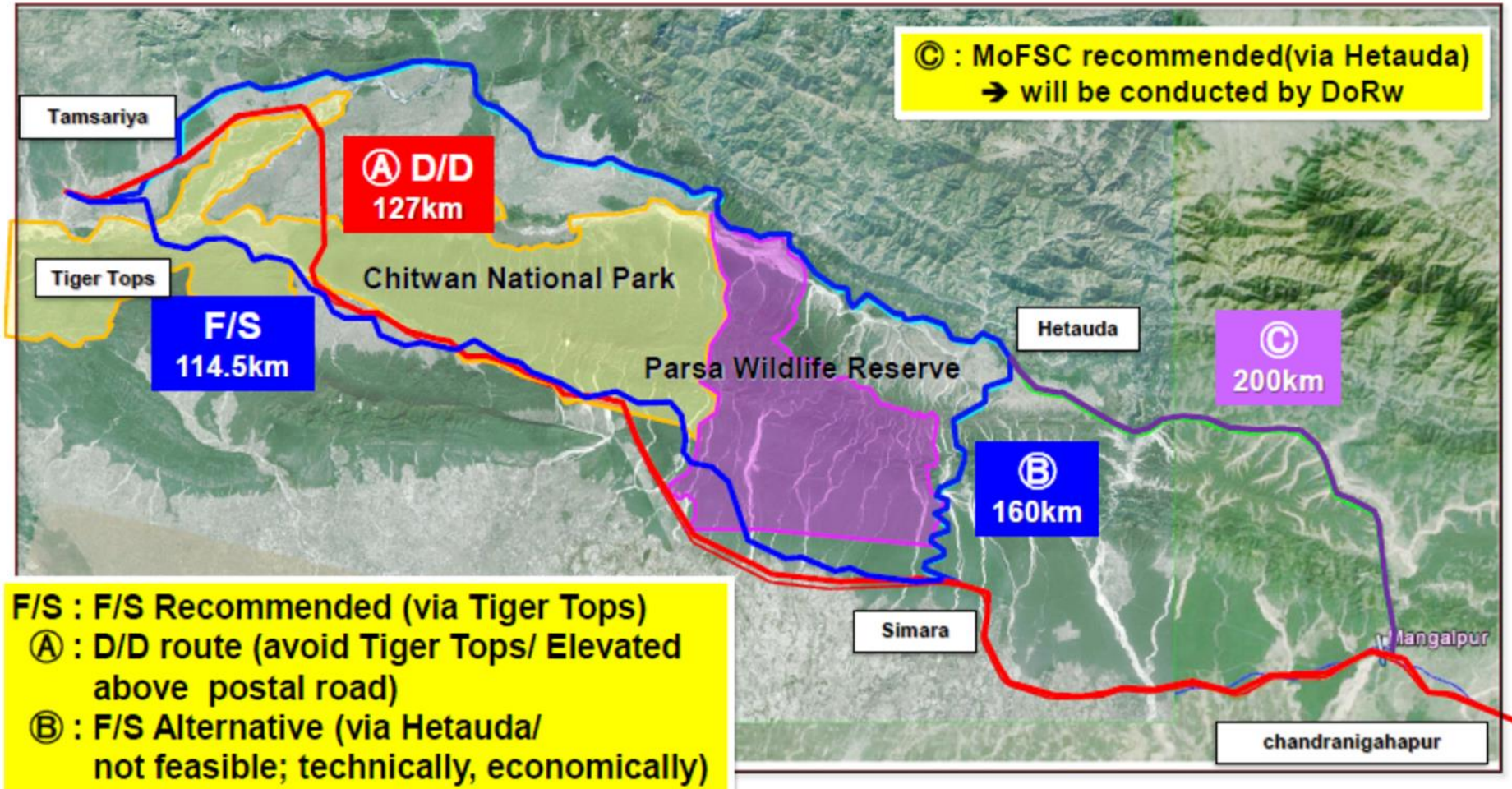
Environmental Damage and Financial Liability

Environmental Damage			
SN	Item	Originally Proposed Alignment	New recommended Alignment
1	Private Land (ha)	395	493
2	Forest Land (ha)	205	128
3	Other Land (ha)	36	61
	Total	636	682

Unit Costs and Comparison			
SN	Item	Costs/KM (US$)	
1	Originally Proposed Alignment	7.55	493
2	New recommended Alignment	6.7	128

2.3 Alignment(1)

Overview of Alternatives



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Ⓐ : D/D route (avoid Tiger Tops/ Elevated above postal road)
Ⓑ : F/S Alternative (via Hetauda/ not feasible; technically, economically) MoFSC recommended

Additional Pracations

- The alignment is suggested to shift the buffer zone area from core area
- A number of tunnel, over and underpass constructions are suggested
- Maintenance and strengthening of existing roads including Postal roads
- Wildlife guiding fence are suggested
- Sound and speed barriers are also suggested

Lesson Learned from the Case

- Biodiversity hotspot like Chitwan National Park has outstanding values (beyond economic values)
- Distance alone is not enough to reduce the costs of the project
- Assessment and consultation with multiple-stakeholders is fundamental while designing mega project

Thank You
for
Your Attention

Applying Green Growth principles to future infrastructure development: Building on lessons learnt from the Pasto- Mocoa road.

María Alejandra González
WWF-Colombia

Rodrigo Botero
Conservation and Sustainable Development Foundation

Hanoi, May 2017

HOW RELEVANT IS PASTO – MOCOA ROAD?

INFRASTRUCTURE DEVELOPMENT (46KM)

- IIRSA ‘anchor project’
- National priority
- IDB financing

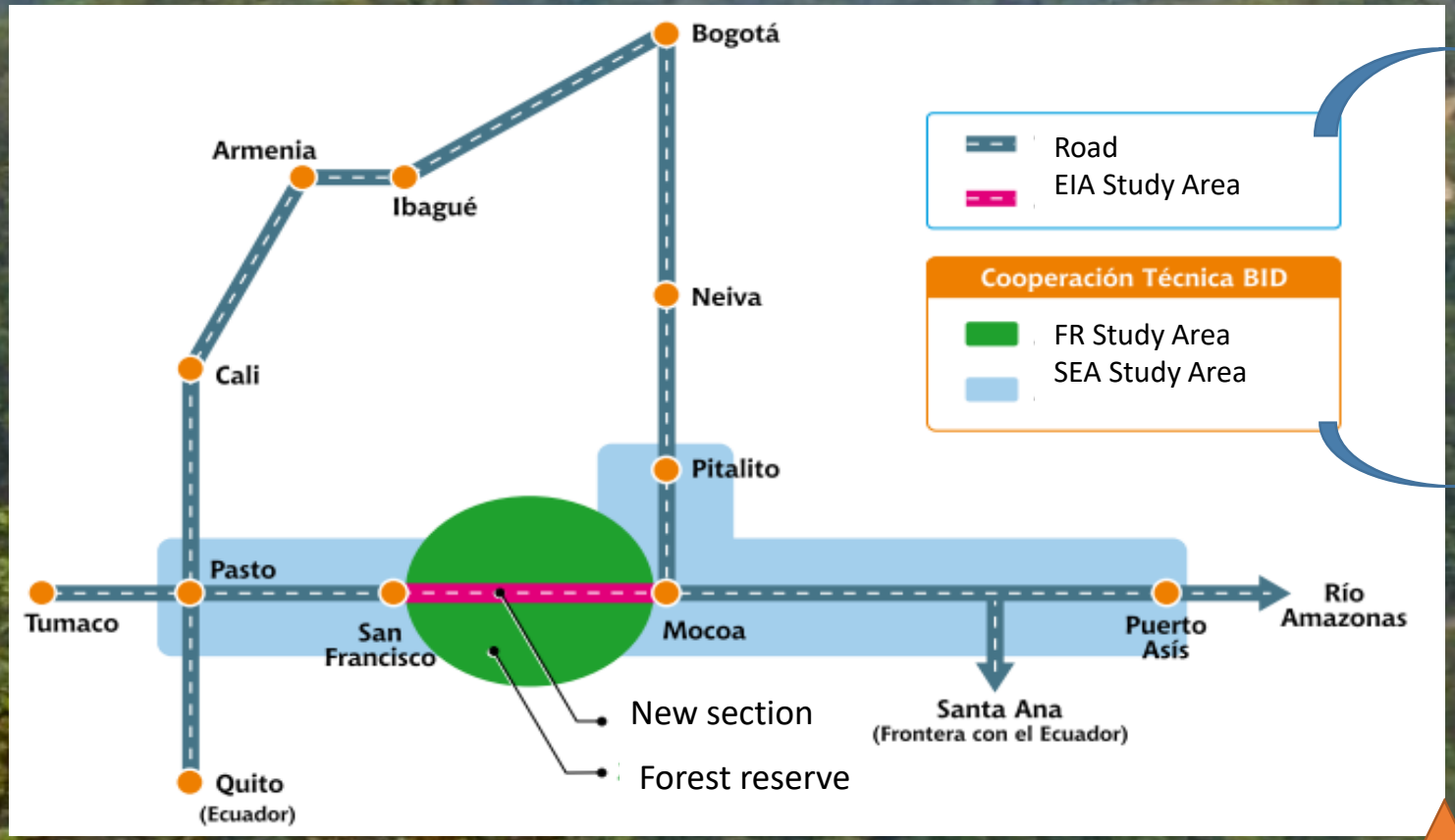
ECOSYSTEM IMPORTANCE

- Andean-Amazon Piedmont (biodiversity, amazon basin watersheeds).
- Forest protected areas and indigenous reserve areas.

HOW TO GO FORWARD?

- Work alongside the IDB safeguards and NGOs to improve road design.
- Applied a different approach at early phases (planning and design process): land use planning
- Multi-level stakeholder involvement. Local partners to support capacity for effective local monitoring and engagement in the process
- Combine Environmental Analyses/Assessment tools based on local particularities: SEA, EIA, FRMP.

HOW TO GO FORWARD?



Better Management Practices

+

Landscape Elements

To avoid, mitigate and compensate impacts

PMASIS

ENVIRONMENTAL AND SOCIAL INTEGRATED MANAGEMENT (PMASIS in Spanish)

AT A PLANNING LEVEL….

- MODIFICATION OF ROAD
- LAND USE PLANNING AS A MITIGATION TOOL TO BE CONSIDERED AT EARLY STAGES
- INFORMATION TRANSPARENCY
- STRENGTHENING LOCAL CAPACITIES

AT THE IMPLEMENTATION LEVEL….

- Two road sections (40%) have been constructed with better engineering standards and practices compared to original designs.
- Technical and financial requirements for sections inside the Reserve Area (60%) increment road costs. National Government has halted its construction.
- Constructed road section have been continuously highly affected by floods.
- Recently a natural disaster (Floods) occurred in Mocoa, more that 400 people died. The event is associated to poor land use conditions and climate change.

LESSONS LEARNT TO POLICY DEVELOPMENT

- IDB safeguards promoted the inclusion of sustainability criteria in infrastructure developments.
- **Cumulative and synergy impacts analysis** demonstrated the importance of regional approach.
- **Cumulative impacts assessments** showed LUP as the main variable for **connectivity**
- **Inter agency coordination** was a key element for a common governmental approach of LUP.
- Include **Sustainable Infrastructure concepts** in regional planning instruments.

CHALLENGES

- Including **road and environmental planning in a single exercise.**
- Protected Areas and land use restrictions are the best **offset strategy** to road impacts
- Incorporating **biological connectivity corridors** into the categories of LUP.
- Incorporating cumulative and synergistic impact assessment methodologies into **all projects** and change the scale of analysis. (Go trough local to regional scale !!)

CHALLENGES

- Increasing the **technical capacity** of engineers/technicians on green/sustainable infrastructure.
- **Strengthening legislation, technical guidelines** instead of relying on voluntary safeguards or commitments.
- Land use planning as a **mandatory analysis** for green infrastructure projects.
- **Green Infrastructure Guidelines** to be included in construction contracts, both governments and financing banks.

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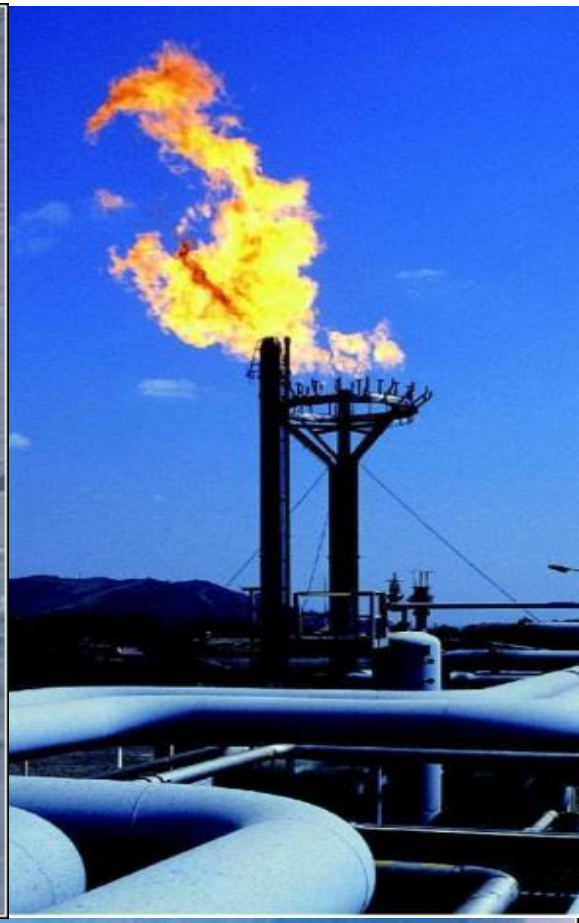
WWF – Colombia

UNDP / GEF / Russian MNRE Project
"Mainstreaming Biodiversity Conservation in Russia's Energy Sector Policies and Operations"

Mainstreaming Biodiversity in Russia's Energy Sector Policies and Operations



Midori Paxton - Head: Ecosystems and Biodiversity, UNDP

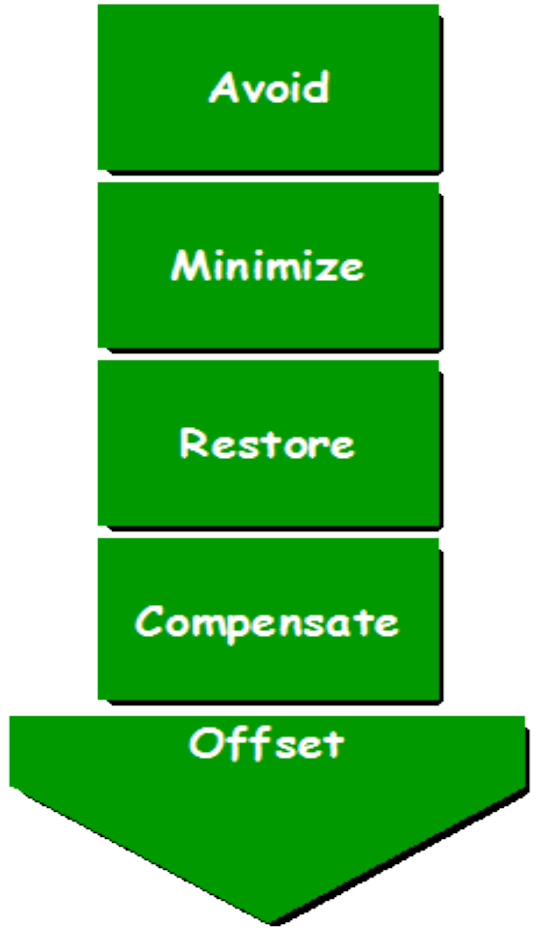
Project Overview

Initiated by Russian Government – Ministry of Natural Resources and Ecology

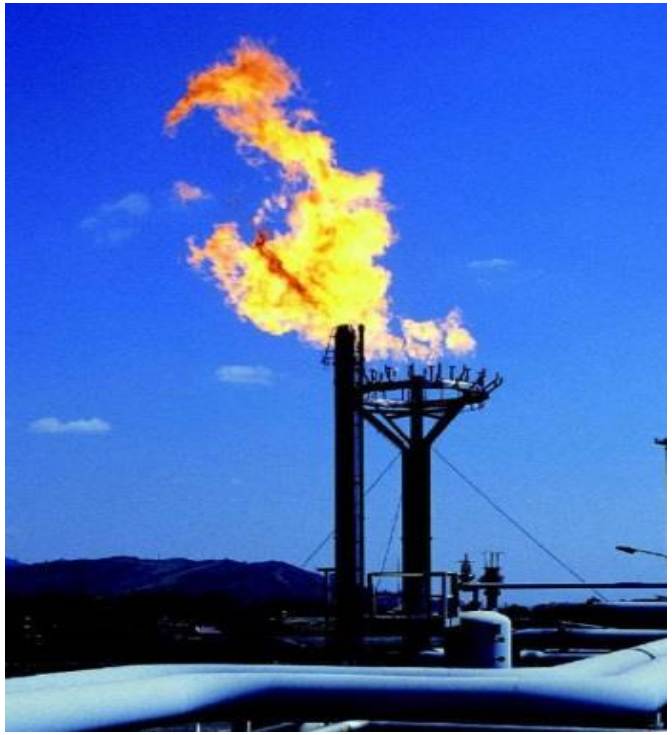
2012-2017; $ 7.2 million from GEF

Immediate objective: Mainstream Biodiversity conservation priorities into Russian energy sector policies and operations.

***Modus operandi:* introducing mitigation hierarchy into corporate operations and standards.**

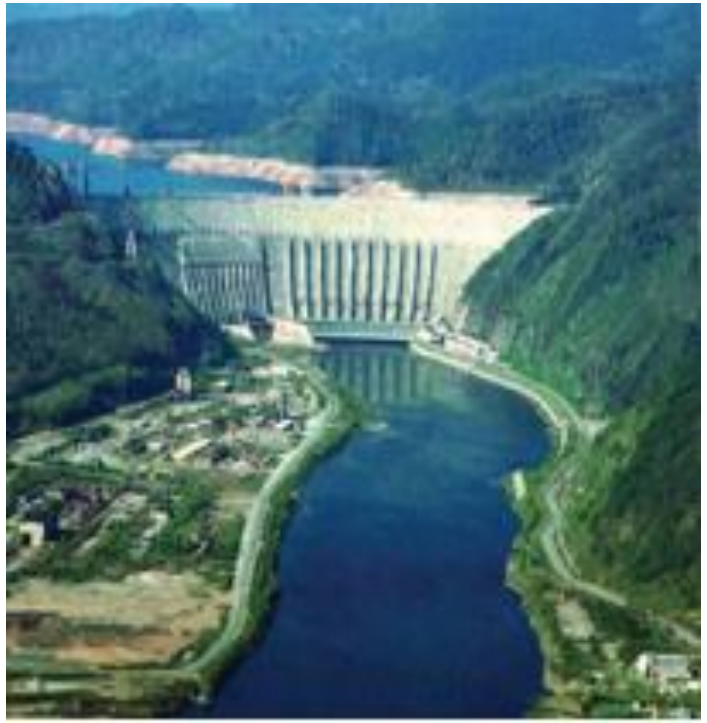


Target Energy Sectors



Oil & Gas

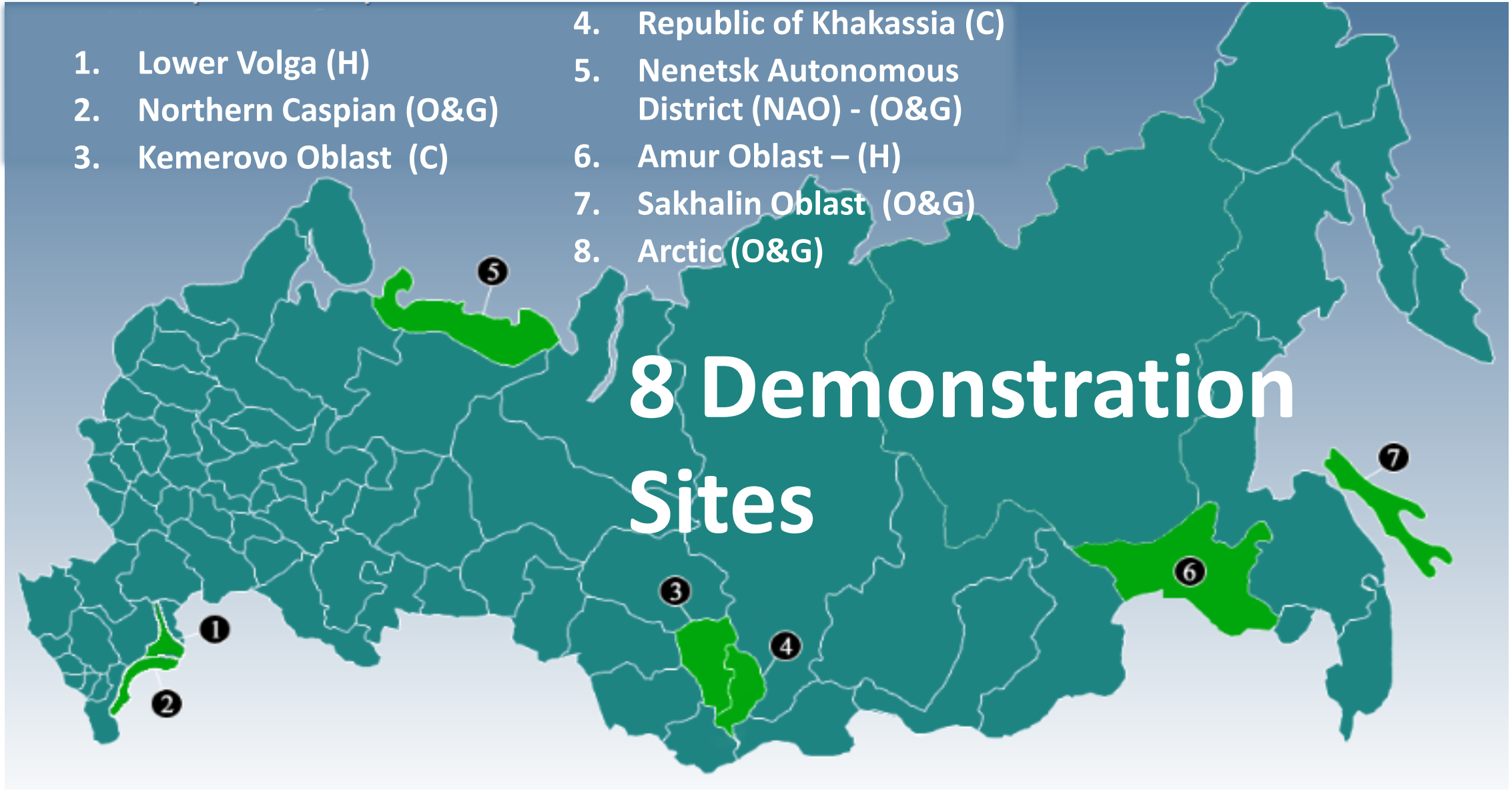
Coal Mining



Hydro-power

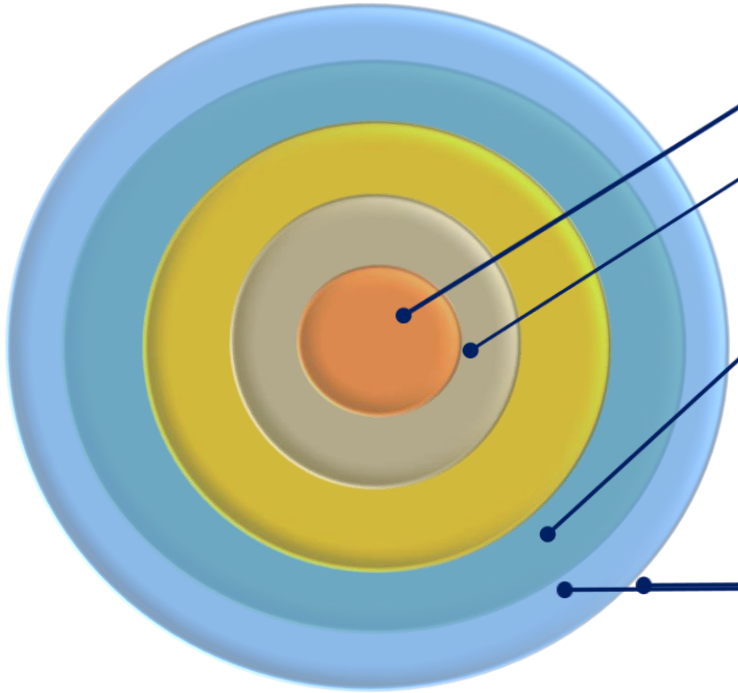
Mainstreaming Biodiversity Conservation into Russia's Energy Sector Policies and Operations

1. Lower Volga (H)
2. Northern Caspian (O&G)
3. Kemerovo Oblast (C)
4. Republic of Khakassia (C)
5. Nenetsk Autonomous District (NAO) - (O&G)
6. Amur Oblast – (H)
7. Sakhalin Oblast (O&G)
8. Arctic (O&G)



Improving Regulatory Environment

Regulatory actions on *the national/sub-national and regional levels*



Model Law for CIS Countries 'On biodiversity conservation, sustainable use and restoration' (20 may 2016) – Inter-Parliamentary Assembly of CIS – providing legal description of ecosystem approach and other BD issues

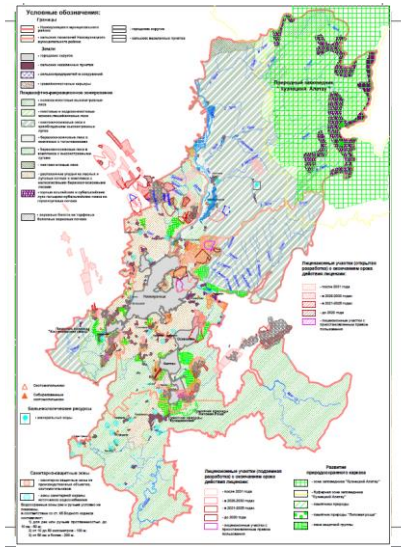
Mainstreaming BD in existing law on requirements for the industrial environmental control

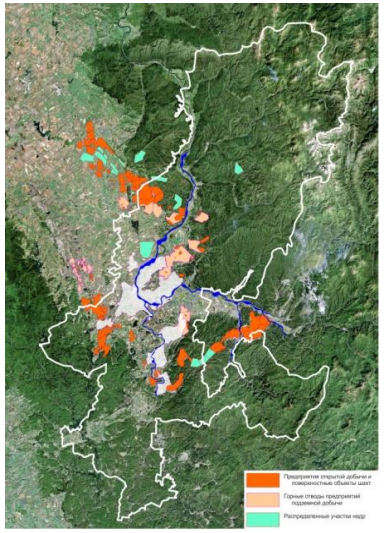
National Standards on Terms& Definitions for BC in relation to Implementing Best Available Technologies(GOST R 57007-2016); Decree 'On Requirements to Industrial Environmental Control Programmes…' – Tax preference from 2019 for Re-cultivation and Land Restoration upon Oiling and Coal Development (GOST R 57446-2017; GOST R 57447-2017); Water Bio Resources Conservation (GOST R 56828.34-2017)

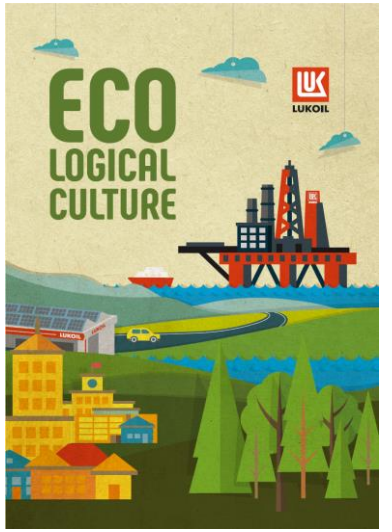
Compendium for Biodiversity solutions and updated standards for biodiversity conservation; Best Available Technologies for Mining (ITS 16-2016); Compendium for Best Available Technologies for Oil Production (ITS 28-2017) - national standards for extractive industries

Regulatory actions facilitated…

- ***15 agreements*** *between companies (e.g. LUKOI, SUEK) and national and regional government* on cooperation on biodiversity conservation
- ***12 corporate standards*** *and monitoring programs for biodiversity conservation adopted by energy companies*
- ***6 long-term agreements*** *for biodiversity conservation signed – framework for long-term mainstreaming work.*
- ***2 Independent ratings*** *for environmental responsibility of oil & gas and coal mining companies in collaboration with WWF – incentive for better BD mgt and disclosure of BD conservation information in GRI etc.*
- ***3 regional GIS platform*** *on biodiversity for decision-making by regional authorities and private sector – e.g. Amur region – main tool for SEA of energy sector development*







And Many More……..

- With IUCN and CBD SEC **-** Development of the Concept of **National Business & Biodiversity (B&B) Platform**
- **B&B Web-Portal** at the official web-page of Federal State Service of Environmental Control – sustainable mechanism of communication & cooperation
- **Working group on B&B** in Arctic established
- Energy companies **show BD conservation cost separately** from overall environmental costs, disclose BD conservation information in non-financial reports, and have BD conservation sections on their web-sites
- **Took kit** for mainstreaming biodiversity in **EIA & SEA** etc. etc.

Project Spatial Impact

- ✓ **Direct Impact:** (i) **104,772 ha** of production landscapes and seascapes under improved biodiversity management.; (ii) **106,322 ha** of new PAs established adjacent to license areas and other industrial areas in Kemerovo and Amur regions

- ✓ **Indirect Impact**: (i) Improved biodiversity status or reduced threats to biodiversity in **116.8 million ha** based on the avoid-reduce-remedy-offset principle; (ii) Improved management of energy production site covering over **5 million ha** caused by new regulations and acts resulting in improved biodiversity management practices.

Key Success Factors

1. **'Think Globally, Act Locally':** combination of international, federal, regional and local level work, demonstration based on international best practices
2. **Government Ownership:** and political will to cause changes; engage with various sector agencies and mainstreaming through already existing official mechanisms and workflows
3. **Mobilisation of Private Sector:** special mandate to work directly with private sector, involving over 40 companies
4. **Cross-regional cooperation:** for scaling up
5. **Focus on Upstream Work:** for systemic change
6. **Bridging:** government – private sector, environment-business communities
7. **Best available technologies** approach for biodiversity mainstreaming


UNDP
Empowered Lives
Resilient Nations.
Thank you !
www.bd-energy.ru
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