

TRAINING ON

Planning and Design of Smart Infrastructure for Biodiversity Protection

ADB

25–27 APRIL 2022

RHINO LODGE, SAURAHA, NEPAL

Hybrid event (in-person and via Zoom)



In a world that is evolving and communities that are growing, transportation infrastructure needs to be built based on principles such as inclusion, affordability, equitable access and environmental sustainability. Founded on such principles, the transportation systems facilitate the mobility of people, goods, and materials, helping ensure the attainment of sustainable social and economic development while still protecting nature and biodiversity.

While nations pursue this vision, they also face challenges in terms of managing and mitigating negative impacts of infrastructure projects. This training program provides an overview of the ecological effects of linear transportation infrastructure and evidence-based measures to avoid, mitigate and minimize their impacts. The course aims to train practitioners on integrating knowledge and practice between engineering and ecological sciences to improve the understanding of interactions between transportation systems and natural systems. The course promotes green engineering innovations that address negative impacts of the transportation system on the environment and stimulate innovative means of ecologically sustainable transportation infrastructure in Nepal and neighbouring countries.

The program of the 3-day training course (a hybrid event with in-person and virtual participants) is provided below:

Day/Time (Nepal time)	Topic/Activity	Participation
Day 1 25 April: Transportation and Roads: Overview and Context		
MORNING 9.00 a.m. – 1.00 p.m.	Virtual and in-person presentations and discussion	All virtual and in-person participants
AFTERNOON 2.00 p.m. – 5.00 p.m.	Site visit • Narayanghat – Butwal (NB) Road (to see wildlife underpasses and bioengineering work)	In-person participants only
Day 2 26 April: Practices and Science based Solutions		
MORNING 9.00 a.m. – 1.00 p.m.	Virtual and in-person presentations and discussion	All virtual and in-person participants
AFTERNOON 2.00 p.m. – 6.00 p.m.	Site visits • Narayanghat – Mugling Road (to see Wildlife underpasses) • Narayanghat – Hetauda – Patlaiya Road (to see biodiversity sensitive sites)	In-person participants only
Day 3 27 April: Exemplary initiatives and Performance evaluation		
MORNING 9.00 a.m. – 1.00 p.m.	Virtual and in-person presentations and discussion	All virtual and in-person participants
AFTERNOON 2.00 p.m. – 5.30 p.m.	Group work to identify key challenges and needs for greening transport infrastructure in Nepal and prepare an action plan.	Invited virtual participants and in-person participants only

WHO IS IT FOR?

Current practitioners working in transport infrastructure development, project planning and management, biodiversity assessment, environment safeguards, GIS and information technology. Practitioners may include government officials responsible for planning, design, construction and maintenance of linear transport infrastructure, consultants (engineering and environmental), academicians, NGOs, financial lending institutions and individual experts (engineers, wildlife ecologists).

In-person participants are officials from key departments under the Government of Nepal such as the Ministry of Physical Infrastructure and Transport (MOPIT), Department of Roads (DOR), Department of National Parks and Wildlife Conservation (DNPWC) and Ministry of Finance. Virtual participants are practitioners from other ADB Developing Member Countries (DMC).

DAY 1 (25 APRIL)

Transportation and Roads: Overview and Context

Day 1 will provide an overview and context of roads and biodiversity conservation in Asia and specifically Nepal. While roads play a critical role in pursuing sustained growth, they also cause a myriad of impacts on the ecological and physical environment. During the last two decades science-based solutions have been developed to reduce these impacts. International and national legislation and agreements on nature conservation and transportation infrastructure impacts and Nepal's plans for transport infrastructure will be discussed to provide a solid foundation for the learning process and practice.

TAKE-AWAYS

- Roads are critical to sustainable development, however, they oftentimes cause many ecological effects that influence the natural and physical environment.
- Conservation of biodiversity and ecological corridors are critical for long-term survival of wildlife populations.
- Linear infrastructure safeguards in Asia: How well are we doing?

DAY 2 (26 APRIL)

Practices and Science-based Solutions

Biodiversity baseline assessments a critical part of mitigation planning of transportation infrastructure projects. Day 2 will data collection needs, web-based data collection tools for data-sharing and analysis to support long-term environmental management, strengthen governance and institutional capacity. Addressing climate change impacts through nature-based solutions and managing cumulative impacts will also be covered.

TAKE-AWAYS

- Many online data resources and tools are available for assessing the impacts of linear infrastructure on wildlife and environment;
- How to plan and design road mitigation at different landscape scales;
- Applying nature-based solutions enhance climate resilience of the transport infrastructure

DAY 3 (27 APRIL)

Exemplary Initiatives and Performance Evaluation

Lessons learned from relevant projects can expand adoption of proven measures to mitigate road impacts on biodiversity. Day 3 will draw heavily on case studies in road infrastructure vis-a-vis mitigation in Asia. It will also take a closer look on the economic and financial benefits of ecologically friendly features and need to for analyzing cumulative impacts of multiple infrastructure projects located nearby. Infrastructure projects are on the rise and regional conservation will require a coordinated strategy.

In the final session (afternoon), meant for in-person participants and invited virtual participants only, a group exercise will allow participants to identify the main challenges and needs for greening Nepal's transport infrastructure and develop an action plan to promote ecologically sustainable transport infrastructure.

TAKE-AWAYS

- Lessons from relevant projects can help inform current and planned interventions with similar conservation challenges.
- Adoption of ecologically friendly features also bring financial and economic benefits
- Transportation infrastructure projects do not occur in isolation and must therefore consider cumulative impacts of other infrastructure nearby that are already existing and planned for future construction

REGISTER IN ADVANCE FOR THESE MEETINGS:

25 April (with waiting room): <https://adb-org.zoom.us/meeting/register/tJArfumrrD4qGtKbOM-1HuAnHamhoC2aT78->
Meeting ID: 946 9032 5006 / Passcode: Linear2022

26 April (with waiting room): https://adb-org.zoom.us/meeting/register/tJMrfuyqrTlrHtKTFyEyTiUr_6TaW9cAxiOp
Meeting ID: 976 9523 146 / Passcode: Linear2022

27 April: <https://adb-org.zoom.us/meeting/register/tJOtdOmrrDsrHtNbRs2vY8Taknqk42sDSHwO>
Meeting ID: 990 3032 0147 / Passcode: Linear2022

**Training on Planning and Design of Smart Linear Infrastructure
for Biodiversity Protection**
SCHEDULE OF EVENTS
25 – 27 April 2022

Day 1 25 April: Transportation and Roads: Overview and Context

Moderators

- Shushil Babu Dhakal, Department of Roads
- Bhupendra Bhatt, ADB Nepal Resident Mission

Time	Event Details		
9 a.m.	Introduction/Welcome		
	Speakers <ul style="list-style-type: none"> • Rabindra Nath Shrestha, Secretary, Ministry of Physical Infrastructure and Transport • Er. Shiva Hari Sapkota, Director General, Department of Roads, Nepal • Ramchandra Kandel, Director General, Department of National Parks and Wildlife Conservation • Bruce Dunn, Director, Safeguards Division, Sustainable Development and Climate Change Department, ADB 		
9:30 a.m.	Session 1	Biodiversity Conservation, Ecological Corridors and Transportation Infrastructure in Nepal	<ul style="list-style-type: none"> • Baburam Lamichhane, National Trust for Nature Conservation, Nepal
9:50 a.m.	Session 2	Ecological Effect of Roads: Science and Practice	<ul style="list-style-type: none"> • Rodney van der Ree, National Technical Executive-Ecology, WSP Australia, and Adjunct Associate Professor, University of Melbourne
10:10 a.m.	Q&A	Moderators	
10:30 a.m.	Tea Break (10 mins.)		
11 a.m.	Session 3	Transportation Infrastructure in Nepal: Current and Future Planning	<ul style="list-style-type: none"> • Sushil Babu Dhakal, Project Director, Department of Roads
11:10 a.m.	Session 4	National and International Legislation and Agreements on Nature Conservation with Implications for Linear Infrastructure Projects	<ul style="list-style-type: none"> • Bishwa Nath Oli, Biodiversity & Forestry Expert
11:35 p.m.	Session 5	Bioengineering: Soils, Slope Stabilization and Hydrology in Linear Infrastructure	<ul style="list-style-type: none"> • Gordon Keller, Geotechnical Engineer and Expert on Minimum Impact Low-Volume Roads Design and Engineering
12 p.m.	Q&A	Moderators	
12:25 p.m.	Lunch Break		
Afternoon	Site Visit 1	Site visit to see the wildlife underpasses and bioengineering work under the Narayanghat – Butwal (NB) Road	In-person participants only

Day 2 26 April: Practices and Science Based Solutions - An Introduction

Time		Event Details	
Moderators <ul style="list-style-type: none"> • Yubraj Dhakal, Department of Roads • Rakesh Maharjan, ADB Nepal Resident Mission 			
9 a.m.	Review of Day 1		
9:15 a.m.	Session 6	Practices of EIA in Nepal	• Prakash Gaudel, Nepal Electricity Authority
9:35 a.m.	Session 7	Impacts of Transportation Infrastructure on Biodiversity in Asia	• Rob Ament, Senior Conservationist, Center for Large Landscape Conservation and Road Ecology Program Manager, Western Transportation Institute, Montana State University
9:55 a.m.	Session 8	Current Practices and Design for Mitigating Road Impacts on Wildlife Populations	• Rodney van der Ree on behalf of Tony Clevenger, Senior Research Scientist, Western Transportation Institute, Montana State University
10:15 a.m.	Session 9	Baseline Biodiversity Assessment (BBA) and Safeguard Planning: Data need, analyses and outputs: Narayanghat – Hetauda – Patlaiya (NHP) example	• Clara Grilo, Researcher, Centre for Environmental and Marine Studies, University of Lisbon, Portugal
10:35 a.m.	Q&A	Moderators	
11 a.m.	Tea Break (10 mins.)		
11:10 a.m.	Session 10	Web-Based Tools For Bba and Stakeholder Engagement: Nhp and Nb Project Examples	• Benjamin Dorsey, Environmental Scientist and Spatial Data Specialist
11:35 a.m.	Session 11	Applying Nature-Based Solutions to Conserve Natural Capital and Achieve Climate Resilience	• Gordon Keller
12 p.m.	Session 12	Managing Multiple Linear Infrastructure Impacts	• Asha Rajavanshi, Environmental Scientist
12:25 p.m.	Q&A	Moderators	
1 p.m.	Lunch Break		
Afternoon	Site Visit 2	Site visit to see the Wildlife underpasses in the Narayanghat – Mugling Road Project and Narayanghat – Hetauda – Patlaiya Road	In-person participants only

Day 3 27 April: Exemplary initiatives and Performance evaluation

Time	Event Details	
Moderators <ul style="list-style-type: none"> • Deepak Bahadur Singh, ADB NRM • Shova Bhandari, Ministry of Physical Infrastructure and Transport 		
9 a.m.	Review of Day 2	
9:15 a.m.	Case Study 1	Design and Monitoring – Nagpur India, Nh-7, Tiger Crossing Structures <ul style="list-style-type: none"> • Bilal Habib, Conservation Biologist, Wildlife Institute of India
9:40 a.m.	Case Study 2	Design – India: NH-37 East West Highway, Kaziranga NP, Assam <ul style="list-style-type: none"> • Shantanoo Bhattacharyya, Additional Chief Engineer-Mechanical (Ret.), PWD, Assam
10:05 a.m.	Case Study 3	Cumulative Impact Assessments and Case Study examples <ul style="list-style-type: none"> • Patricia Cueva del Bueno, Environmental Specialist, ESSA Technologies Ltd
10:40 a.m.	Q&A	Moderator
11:10 a.m.	Tea break (10 mins.)	
11:20 a.m.	Case Study 4	Monitoring and Performance Evaluations: Case Study of the Bhutan Road Network Project – II <ul style="list-style-type: none"> • Karma Chogyel, Environmental Consultant
11:45 p.m.	Session 13	Economics of Transportation Infrastructure: Balancing Needs of Biodiversity Conservation and Costs <ul style="list-style-type: none"> • Kim Bonine, Training Director and Senior Analyst, Conservation Strategy Fund
12:10 p.m.	Q&A	Moderators
1 p.m.	Lunch break	
2 p.m.	Dialogue on Addressing Obstacles for Planning, Designing and Operating Smart Green Linear Infrastructure in Nepal	<ul style="list-style-type: none"> • Virtual and in-person participants
5:30 p.m.	Closing Remarks (for in-person participants)	
	<ul style="list-style-type: none"> • Shiva Hari Sapkota, Director General, Department of Roads, Nepal • Rudi Louis Hendrikus Van Dael, Head, Portfolio Management Unit, ADB 	