

# Improving Resilience through Foresight Thinking and HDM-4

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VIRTUAL | VIRTUEL

XVI WORLD WINTER SERVICE AND ROAD RESILIENCE CONGRESS XVI° CONGRÈS MONDIAL DE LA VIABILITÉ HIVERNALE ET DE LA RÉSILIENCE ROUTIÈRE XVI CONGRESO MUNDIAL DE VIALIDAD INVERNAL Y RESILIENCIA DE LA CARRETERA



# Outline

- Reimagining the future of Transport
- Future Application of HDM-4
- Case study HDM-4 Road Decarbonization Toolkit



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# Roads and other Transport infrastructure have long life-cycles.



#### **Reimagining the Future of Transport in Asia and the Pacific**

Our foresight study is designed to drive long-term thinking and support the design of a futureready transport investment pipeline. The project starts with trends and results in a set of principles and strategies for future transport policy and investments. We support your future thinking.

Trends	Implications	Visions	Principles
Trends shaping the future of transport globally, with a focus on Asia, relevance to DMCs, and a view to 2030.	Implications of trends for DMCs, considering different modes as well as associated risks and opportunities.	Series of future visions to consider in future transport implementation, investments and policy.	Practical principles and strategies for each vision, in order to ensure relevance across all DMCs and stakeholders.
What is driving change?	What will the impact be?	What future do we want?	How can we get there?



## **FUTURE TRANSPORT TRENDS – A COMPLEX ECOSYSTEM OF CHANGE**



Environmental risks

Advanced technologies

**Energy and resources** 

**Economic and trade patterns** 

**Geopolitics policies** 

#### Permafrost



Source: MRTD Mongolia

#### **Reduced Access**



Source: Author 2022-02-08

### Bridge



Source: ADB



Source: ADB

## Plausible visions for future transport in Asia and the Pacific





VISION 1 Safe, reliable, and efficient systems

VISION 3 Resilient systems



VISION 5 Deliver environmentally considerate outcomes



VISION 7 Technology-enabled transport services



VISION 2 Inclusive and accessible spaces and services



VISION 4 Seamless transport and logistics systems



VISION 6 Robust institutional, financial, and technical capacity



VISION 8 Strong regional cooperation and comprehensive development



Vision 3: *Develop and Deliver Resilient Infrastructure Systems* 

Future road infrastructure and systems are planned, designed, and operated to deliver long- term resilience through a holistic and whole-ofsystem approach to enable low-carbon and resilient developments.



# A wide range of tools and resources are available.



# **Considerations for Future Resilience Applications of HDM-4**

Design responsive and flexible **Predictive Modelling** - Use data and predictive modelling to identify and • road networks for enhanced evaluate multi-hazard risks for road transport systems and understand resilience potential impact Adaptive Planning – Evaluate solutions that meet near term needs while allowing for adaptation over long term to meet changing needs Embed resilience in policies, Whole-of-system strategies – upstream support to develop resilient • planning and governance investment pipelines for governments and private sector Ensure risk-informed road **Project level risk management** – multi hazard risk assessments to inform • selection of that support resilient developments network management **System-wide risk management** – Upstream planning and system-wide risk assessments to inform project pipeline that will steer national development towards resilience Prioritize nature-based **Nature-based features** - integrate nature based features to enhance solutions and adaptable resilience in transport projects Natural system restorations - leverage road projects to restore and enhance infrastructure • natural functions or retrofit nature into urban environment e.g. greenways and nature corridors.



# **HDM-4 Road Decarbonization Toolkit**





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## **Available Resources & Assets**



#### FUTURES THINKING IN ASIA AND THE PACIFIC

WHY FORESIGHT MATTERS FOR POLICY MAKERS

APRIL 2020



#### REIMAGINING THE FUTURE OF TRANSPORT ACROSS ASIA AND THE PACIFIC

A PRELIMINARY FORESIGHT STUDY

**JULY 2021** 

#### HOW TO EXPLORE AND SHAPE THE FUTURE





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