

FOR PARTICIPANTS ONLY
14 March 2017
ENGLISH ONLY

UNITED NATIONS
CENTRE FOR REGIONAL DEVELOPMENT

In collaboration with

Ministry of Public Works and Transport, Lao People's Democratic Republic
Ministry of the Environment (MOE), Japan
Partnership on Sustainable, Low Carbon Transport
United Nations Economic and Social Commission for Asia and the Pacific, and
United Nations Office for Sustainable Development

TENTH REGIONAL ENVIRONMENTALLY SUSTAINABLE TRANSPORT (EST) FORUM IN ASIA,
14-16 MARCH 2017, VIENTIANE, LAO PEOPLE'S DEMOCRATIC REPUBLIC

Case Study on Bhutan LRT System ~ Outcome of the Pre-feasibility Study

(Presentation for EST Plenary Session 5 of the Provisional Programme)

Final Draft

This presentation has been prepared by Mr. Julien Gaudremeau, Rail Concept and Dr. Charlie Hargroves, Strategic Transitions Group for the Tenth Regional EST Forum in Asia. The views expressed herein are those of the author only and do not necessarily reflect the views of the United Nations.

Disclaimer: The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

UNCRD Technical Mission to Bhutan: Pre-Feasibility Study to Identify Suitable Mass Transit Options in Bhutan



Presentation to the 10th EST Forum in Vientiane, Laos, 15 March 2017





The Bhutanese Way



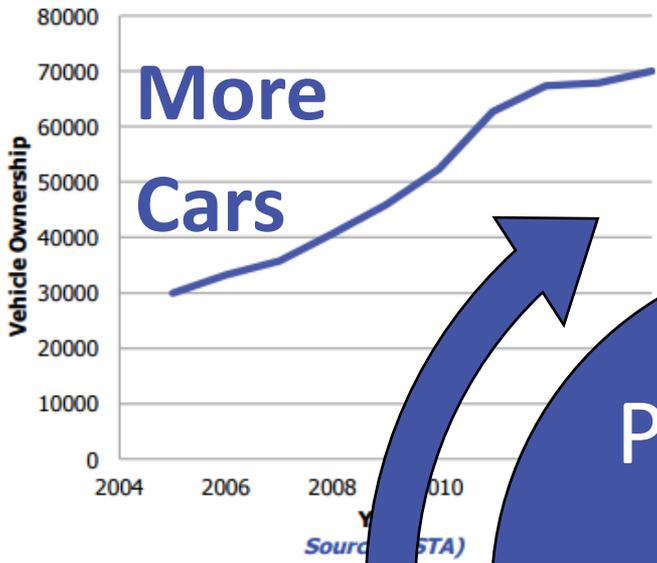
“Ensuring peace, prosperity and security for our nation for generations to come”.

UNCRD Technical Mission to Bhutan: Pre-Feasibility Study to Identify Suitable Mass Transit Options in Bhutan

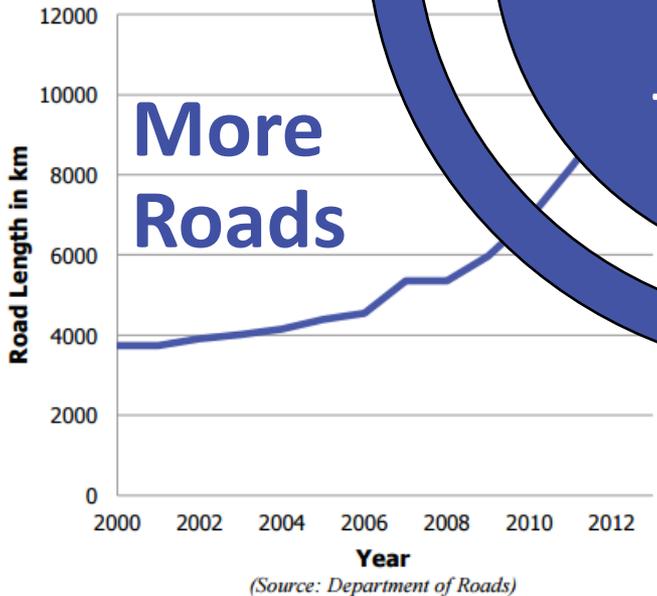


What type of transportation system can Bhutan
gift to its children and future generations?

Motorization trend in the past decade



Expansion of road network over time



More Congestion, Pollution and Accidents

Prosperous
Cities are
Breaking
this Cycle

Bali Vision 3 Zeros
– Zero Congestion
– Zero Pollution
– Zero Accidents



PETER NEWMAN *and* JEFFREY KENWORTHY

THE END of AUTOMOBILE DEPENDENCE

*How Cities are Moving
Beyond Car-Based Planning*



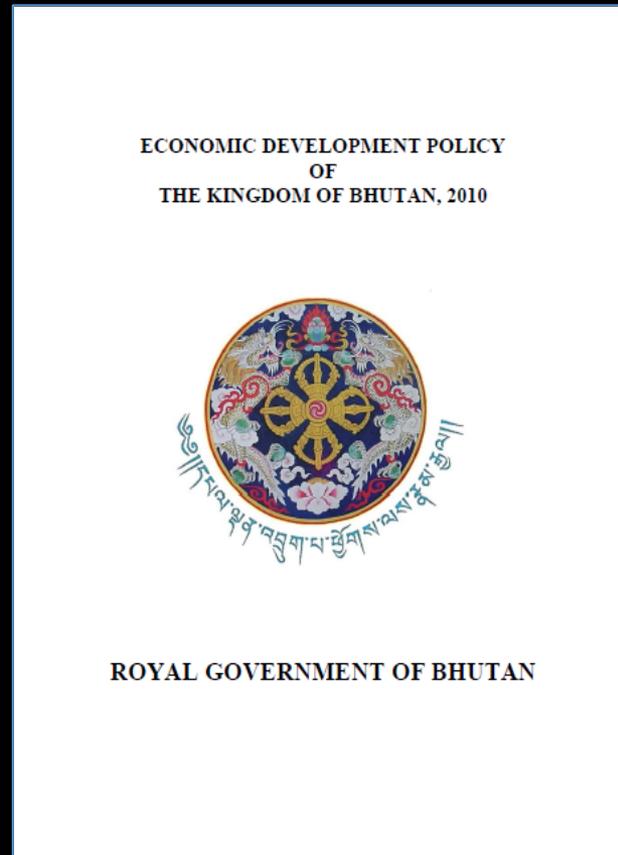
*“ Vehicle fleets across
Asia are doubling
every 5 to 7 years...”*

*“ Congestion in Dhaka
costs more than half
of the countries
annual development
expense...”*

*Cities reducing car
dependence work
better....*

Economic Development

“Clean, safe and reliable mass transportation...



... an electric tram/train network.”

Shifting to a renewable energy based transport system will have many economic benefits.

Social Considerations



How can a visionary transportation system enhance the Happiness of Bhutanese people?

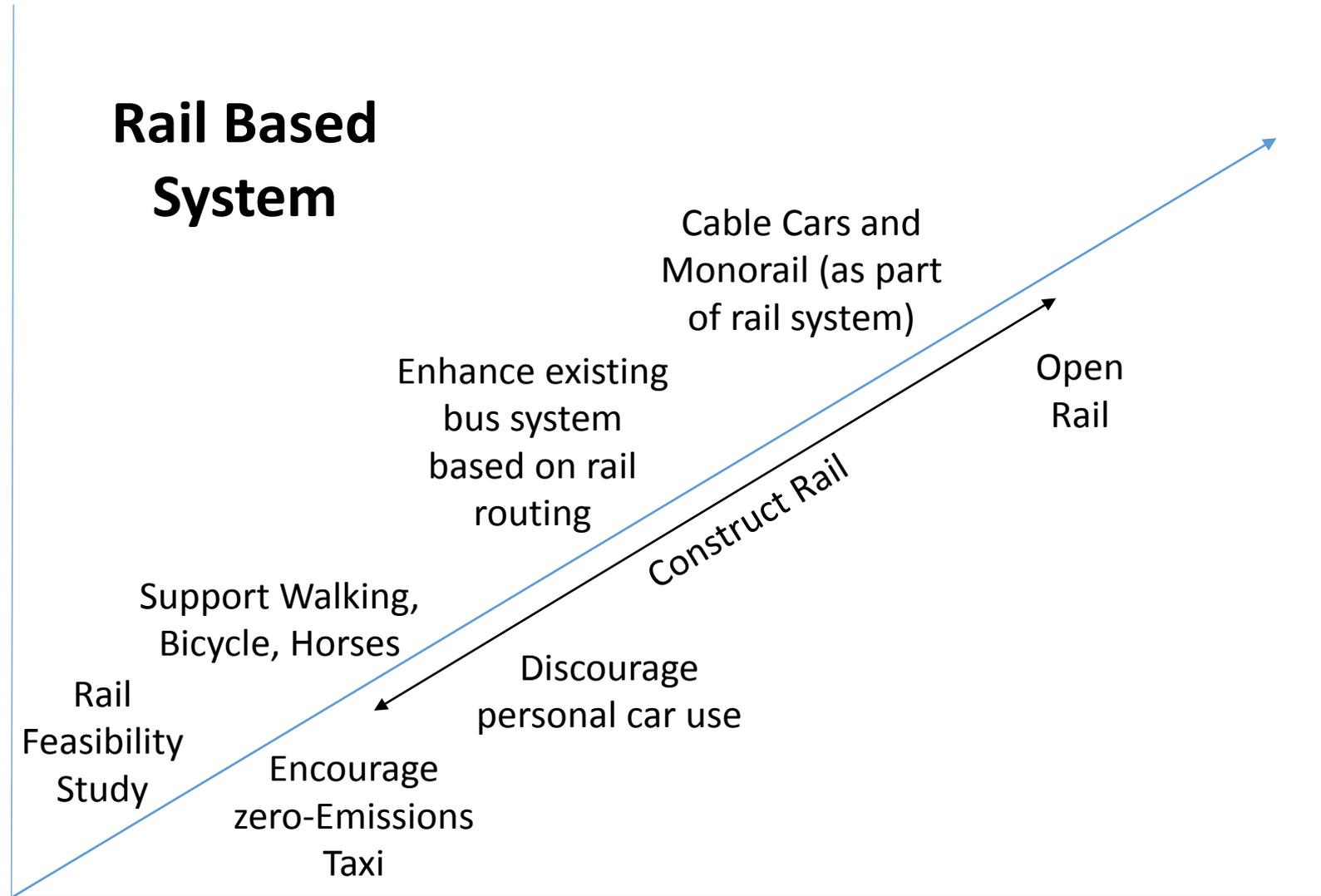
Integrated Solutions



“Balanced Movement: Movement and transport are a group of systems that are integrated with one another” (Principle of Intelligent Urbanism)



Operational Stage 2016-2030



Where should Bhutan we start?

1. India (Phuentsholing) – Thimphu

2. (Airport) Paro – Thimphu

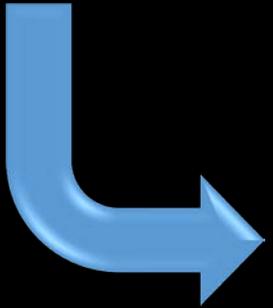
3. Inside Thimphu

4. Connections with other parts of the country



Main questions of Pre-Feasibility Study

What is the most suitable mass transit option?



What are the social, environmental and economic considerations?



What are the likely technical configurations?

What is the technical solution?



It is recommended that the priority is on developing **Heavy Rail** from Thimphu to Indian border at Phuentsholing **for passengers and freight**

This would be completed by a **Light Rail** connecting to Paro and **which will continue within Thimphu**

Next Step: Detailed Feasibility Study

**Traffic Forecasts
and Data Collection**
(surveys, databases, modelling)

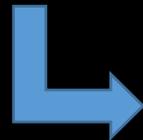
+

**Service Delivery
Requirements**
(price, time, frequency, location)



Technical Options
(carriages, rail alignment, interchanges, costs)

Sustainability Considerations
(social, environmental, and economic)



Recommendations

In particular the following agencies of the Royal Government of Bhutan

Road Safety & Transport Authority (RATA)

Ministry of Economic Affairs (MoEA)

Ministry of Works and Human Settlement (MoWHS)

Ministry of Information and Communications (MoIC)

National Environment Commission (NEC)

Department of Road (DoT)

Ministry of Foreign Affairs (MoFA)

Mayor of Thimphu

UNCRD Technical Mission to Bhutan: Pre-Feasibility Study to Identify Suitable Mass Transit Options in Bhutan



Presentation to the 10th EST Forum in Vientiane, Laos, 15 March 2017

Thank you for your attention!

Dr Charlie HARGROVES

Director, Strategic Transition Group, Australia

Julien GAUDREMEAU

Director, Rail Concept, France