

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”.

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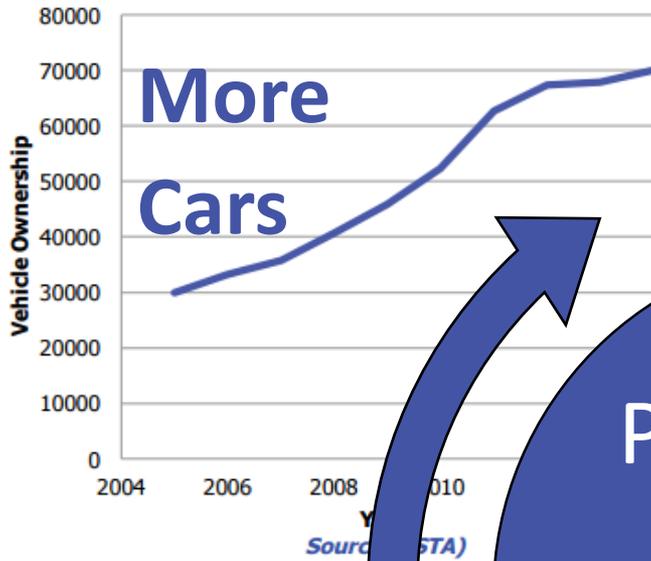


What type of transportation system can Bhutan
gift to its children and future generations?

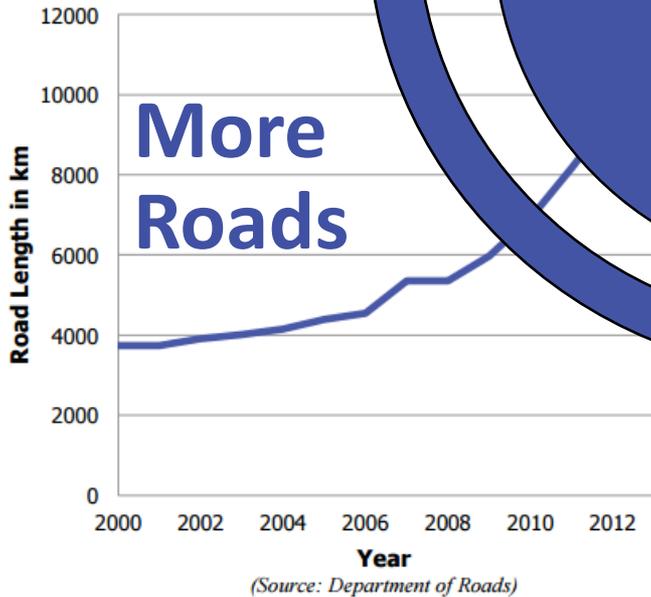
More Congestion, Pollution and Accidents

Prosperous
Cities are
Breaking
this Cycle

Motorization trend in the past decade



Expansion of road network over time



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*



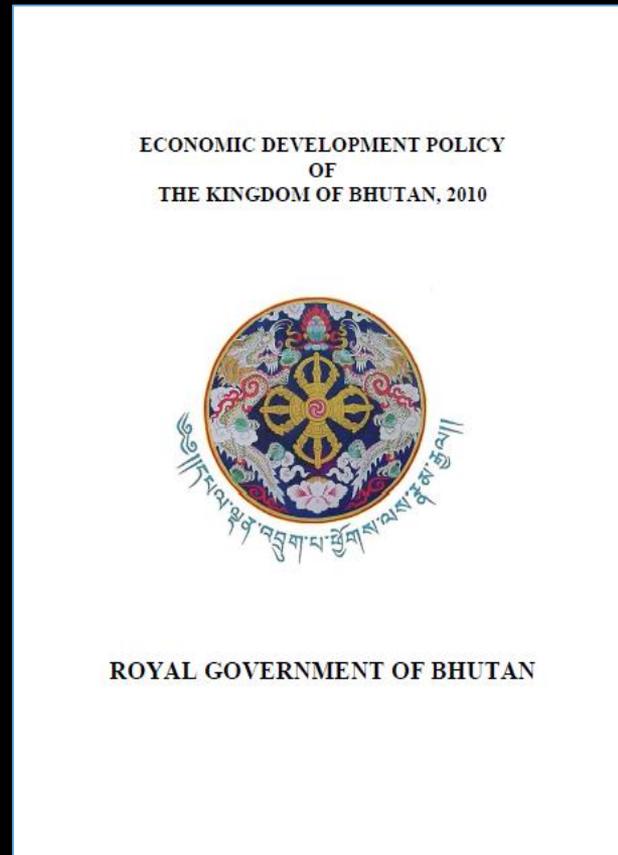
“Vehicle fleets across Asia are doubling every 5 to 7 years...”

“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)





International Trackless Tram
Research Alliance (ITTRA)

Characteristic	Bus Rapid Transit (BRT)	Light Rail Transit (LRT)	Trackless Tram System (TTS)
Speed and Capacity	✓	✓✓	✓✓
Ride Quality	✗	✓✓	✓✓
Land Development Potential	✗	✓✓	✓✓
Cost	✓	✗	✓
Disruption during construction period	✓	✗	✓✓
Implementation Time	✓	✗	✓
Overall	✓	✓✓	✓✓✓

Newman, P., Hargroves, K., Davies-Slate, S., Conley, D., Verschuer, M., Moritz, M., Yangka, D., and Glazebrook, G. (2018) The Trackless Tram: Is it the Public Transport and City Shaping Catalyst we have been waiting for? Journal of Transportation Technologies (In-Press).

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 a technical solution?



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

Complimented by a **Light Rail or Trackless Tram** connecting to Paro and **which will continue within Thimphu**

Next Step: Detailed Feasibility Study

Traffic Forecasts &
Land Value Uplift

(surveys, databases, modelling)

+

Service Delivery
Requirements

(price, time, frequency, location)



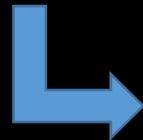
Technical Options

(carriages, rail alignment, interchanges, costs)



Sustainability Considerations

(social, environmental, and economic)



Recommendations

We would like to thank the Royal Government of Bhutan and the UNCRD



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

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Thank you for your attention!

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