

Nepal EST Strategy 2015-2040

National Sustainable Transport Strategy (NSTS) for



Surya Raj ACHARYA, PhD

President, Institute for Development and
Policy Studies (IDPS)

Visiting Faculty, Institute of Eng, Tribhuvan
University

suryaraj.acharya@gmail.com

At the request of Ministry of Physical Infrastructure and Transport, Government of Nepal this Strategy has been prepared with the technical assistance from UNCRD. The background papers for the strategies were prepared by Dr. Surya R Acharya, Kamal Pande, Glynda Bathan and Robert Earley. Earlier drafts were discussed in two consultative workshops organized for stakeholders' feedbacks in Kathmandu.

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- 1. Background**
- 2. Vision, Objectives, Targets and Indicators**
- 3. Transport Trends, Status and Issues**
- 4. Challenges and Opportunities**
- 5. Strategic Perspective for Nepal**
- 6. Strategic components and Actions**

Background

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- Government of Nepal has realized importance and relevance of Sustainable Transport
- *At the request of Ministry of Physical Infrastructure and Transport, Government of Nepal, National Sustainable Transport Strategy (NSTS) for Nepal has been prepared with the technical assistance from UNCRD.*
- The Strategy is built on some initiatives already taken and will serve as a umbrella strategy for Transport sector in Nepal.

Different dimensions of Sustainable Transport (ST)

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<i>Economic</i>	<i>Environmental</i>	<i>Social</i>
1. Accessibility	1. Local emissions	1. Traffic safety
2. Transport costs	2. GHG emissions	2. Accessibility
3. Productivity	3. Pass-km per capita	3. Inclusiveness
4. Congestion	4. Fuel consumption	4. Affordability
5. Mobility	5. Fuel quality	5. Gender
6. Employment	6. Ecological impacts	6. Universal access
7. Comfortability	7. Soil/water pollution	7. Resettlement
8. Profitability	8. Noise and wastes	8. Poverty reduction
9. Energy efficiency	9. Transport use of arable land	9. Road use parity
10. Public subsidy	10. Per capita travel	10. Participatory
11. Load factor	11. Transit mode share	11. Impact on heritage
12. System reliability	12. Resource exploitation	12. Security
13. Multimodality	13. Soil erosion	13. Fitness/health
14. Connectivity	14. Landslide hazards	14. Livability
15. Energy security	15. Climate resiliency	15. Spatial separation

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Vision

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The Vision for National ST Strategy (2015-2040)

*“Developing a **transport** system that is efficient, accessible, people-centric, affordable, reliable, safe, inclusive, environmental friendly, and climate/disaster resilient”*

Objectives, Targets & Indicators

Economic Dimension

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Objectives	Targets/Indicators
<ul style="list-style-type: none"> • Efficiency in investment and service operation 	<ul style="list-style-type: none"> • <i>Reasonable IRR and profitability</i> • <i>Operating cost per vehicle km</i> • <i>Energy consumption per pass-km</i> • <i>Unit cost per pass-km; large public transport vehicles</i>
<ul style="list-style-type: none"> • Improved accessibility 	<ul style="list-style-type: none"> • <i>Minimize time to road head (ICT, RT);</i> • <i>% Coverage of public transport (UT); Walkability</i>
<ul style="list-style-type: none"> • Higher mobility 	<ul style="list-style-type: none"> • <i>Average travel speed in city area (30 km/hr) (UT)</i> • <i>Average travel speed for ICT (general highway 50 km/hr; Exp ways 80 km/hr; railway ####km/hr)</i>
<ul style="list-style-type: none"> • Affordable transport services 	<ul style="list-style-type: none"> • <i>ICT/RT- fare per Km as % of per capita income</i> • <i>UT- daily commuting cost as % of per capita income</i>
<ul style="list-style-type: none"> • Reliable transport services 	<ul style="list-style-type: none"> • <i>Provision of schedule services (% of delay)</i>
<ul style="list-style-type: none"> • Leveraging transport for poverty reduction 	<ul style="list-style-type: none"> • <i>Degree of labor intensive technology</i> • <i>% of investment in backward areas</i>

ICT: Intercity Transport; UT: Urban Transport; RT: Rural Transport; #: to be completed

Objectives, Targets & Indicators

Environmental Dimension

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Objectives	Targets/Indicators
<ul style="list-style-type: none"> • Sustainable use of natural resources and nature conservation 	<ul style="list-style-type: none"> • <i>Minimize use of arable land for infrastructure</i> • <i>Minimize impacts on ecological resources (ICT, RT)</i>
<ul style="list-style-type: none"> • Minimize local pollution and noise effects (UT) 	<ul style="list-style-type: none"> • <i>Minimize car/motor cycle ownership (#/population)</i> • <i>Mode share of public transport (#%)</i>
<ul style="list-style-type: none"> • Minimize CO₂ emissions from transport 	<ul style="list-style-type: none"> • <i>Per capita CO₂ from transport sector</i> • <i>CO₂ emission per pass-km (## g CO₂)</i>
<ul style="list-style-type: none"> • Climate/disaster resiliency of transport infrastructure 	<ul style="list-style-type: none"> • <i>Adapt infrastructure to climate and other disasters; ability to recover service</i>

ICT: Intercity Transport; UT: Urban Transport; RT: Rural Transport; #: to be completed

Objectives, Targets & Indicators

Social Dimension

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Objectives	Targets/Indicators
<ul style="list-style-type: none"> • Improve transport safety and security 	<ul style="list-style-type: none"> • <i>Reduced traffic accidents (# per vehicle, # per vehicle-km)</i> • <i>Reduced incidence of travel related crimes</i>
<ul style="list-style-type: none"> • Ensure inclusiveness of transport system 	<ul style="list-style-type: none"> • <i>% of public transport coverage; % of NMT</i> • <i>% of disabled friendly infrastructure and barrier-free vehicles</i>
<ul style="list-style-type: none"> • Ensure gender equity in transport services 	<ul style="list-style-type: none"> • <i>% of women-only public transport vehicles; % of reserved seats for women</i>
<ul style="list-style-type: none"> • Minimize social impacts of transport development 	<ul style="list-style-type: none"> • <i>Minimize degree of community separation due to transport routes; minimize accidents</i>
<ul style="list-style-type: none"> • Integrate transport and public health 	<ul style="list-style-type: none"> • <i>Minimize local pollution</i> • <i>Share of NMT modes in total trips</i>

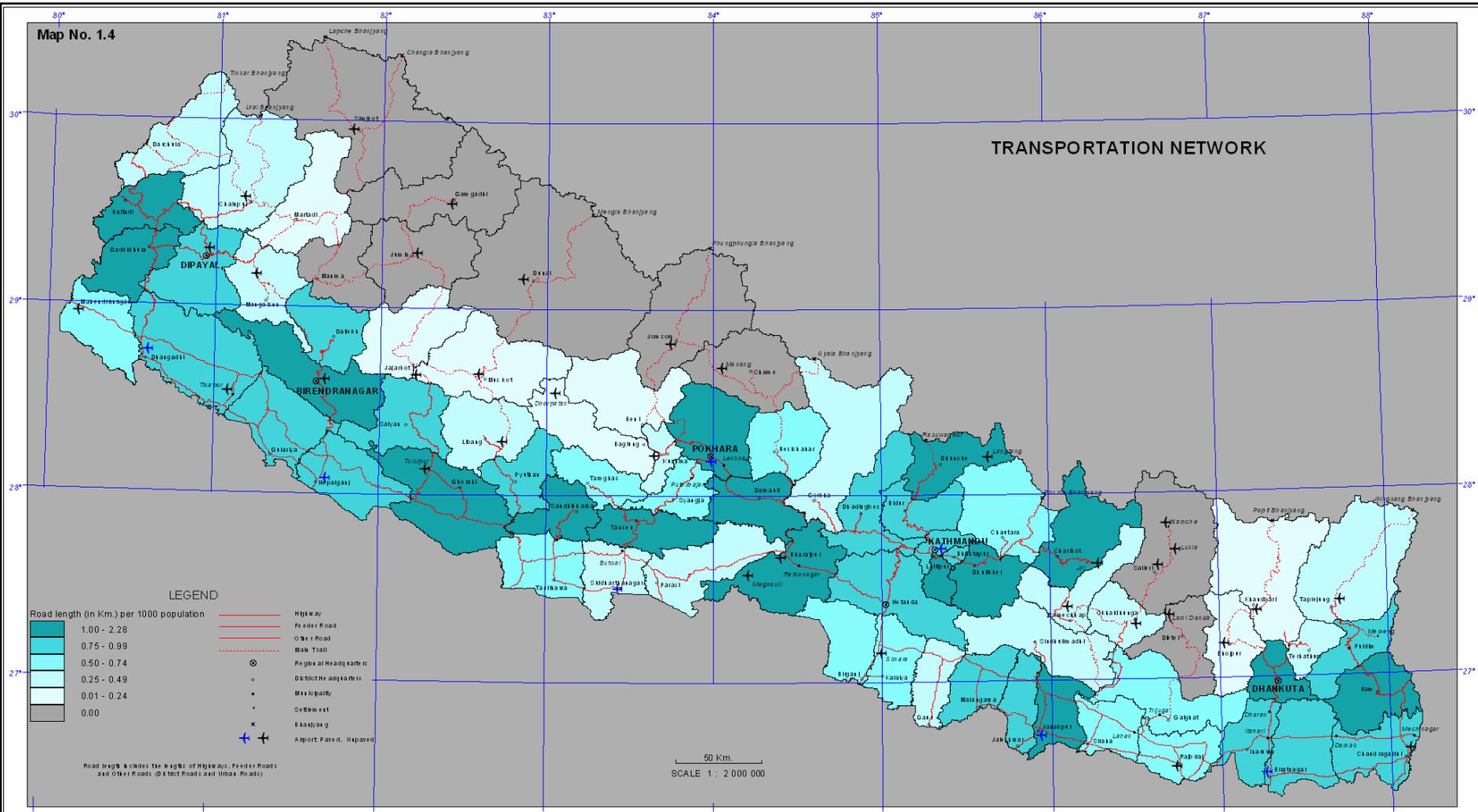
ICT: Intercity Transport; UT: Urban Transport; RT: Rural Transport; #: to be completed

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Transportation Network



Source: Central Bureau of Statistics

Road Network Length 2015

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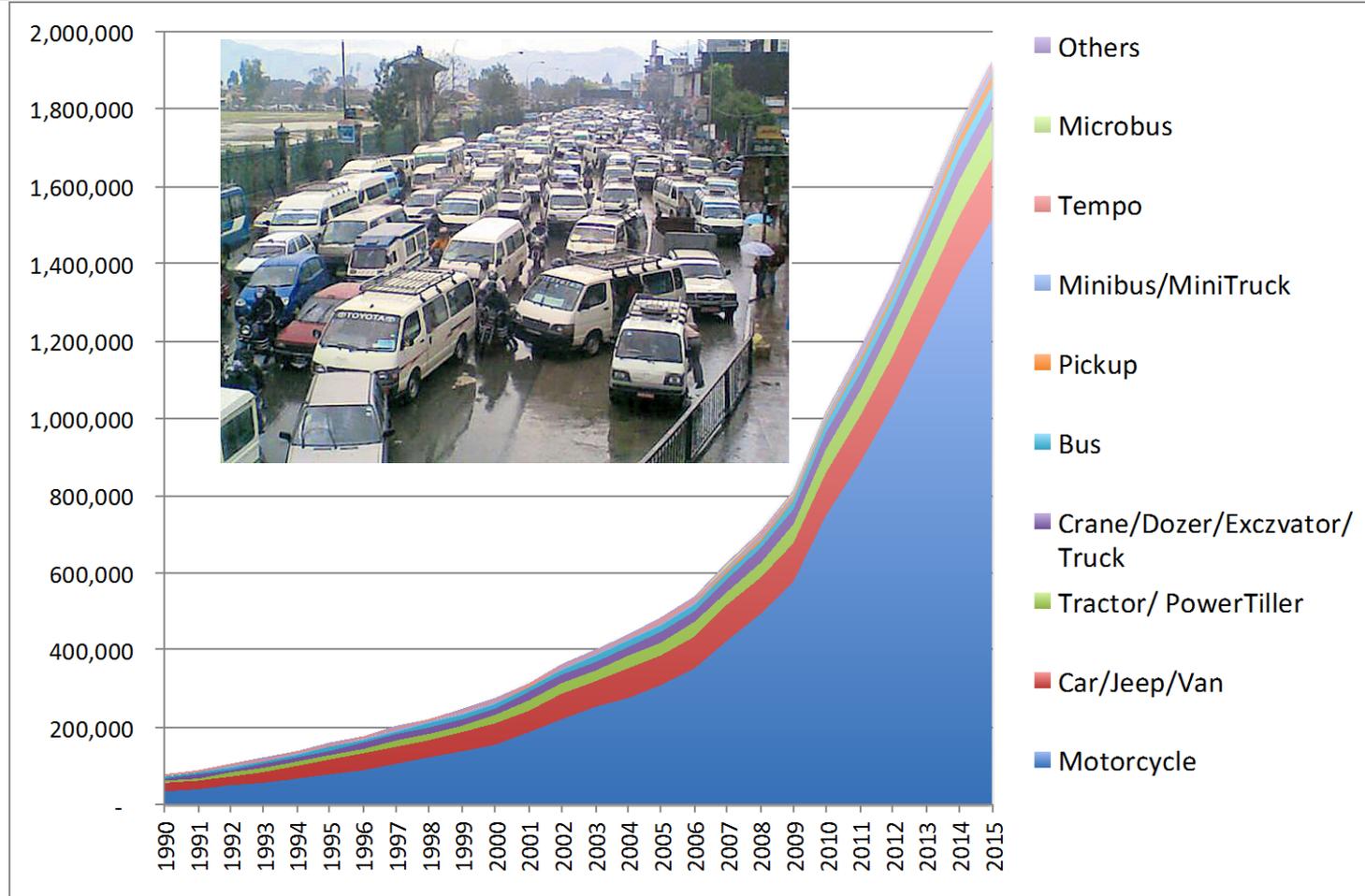
	Black topped		Gravel		Fair Weather		Total
	Km	%	Km	%	Km	%	Km
Strategic Road Network (SRN)	11,349	42	6,192	23	9,394	35	26,935
Local Road Network (LRN)	1,697	3	12,548	24	38,898	73	53,143

Data Source: Economic Survey 2015

Vehicle Population in Nepal

(as of March 2015)

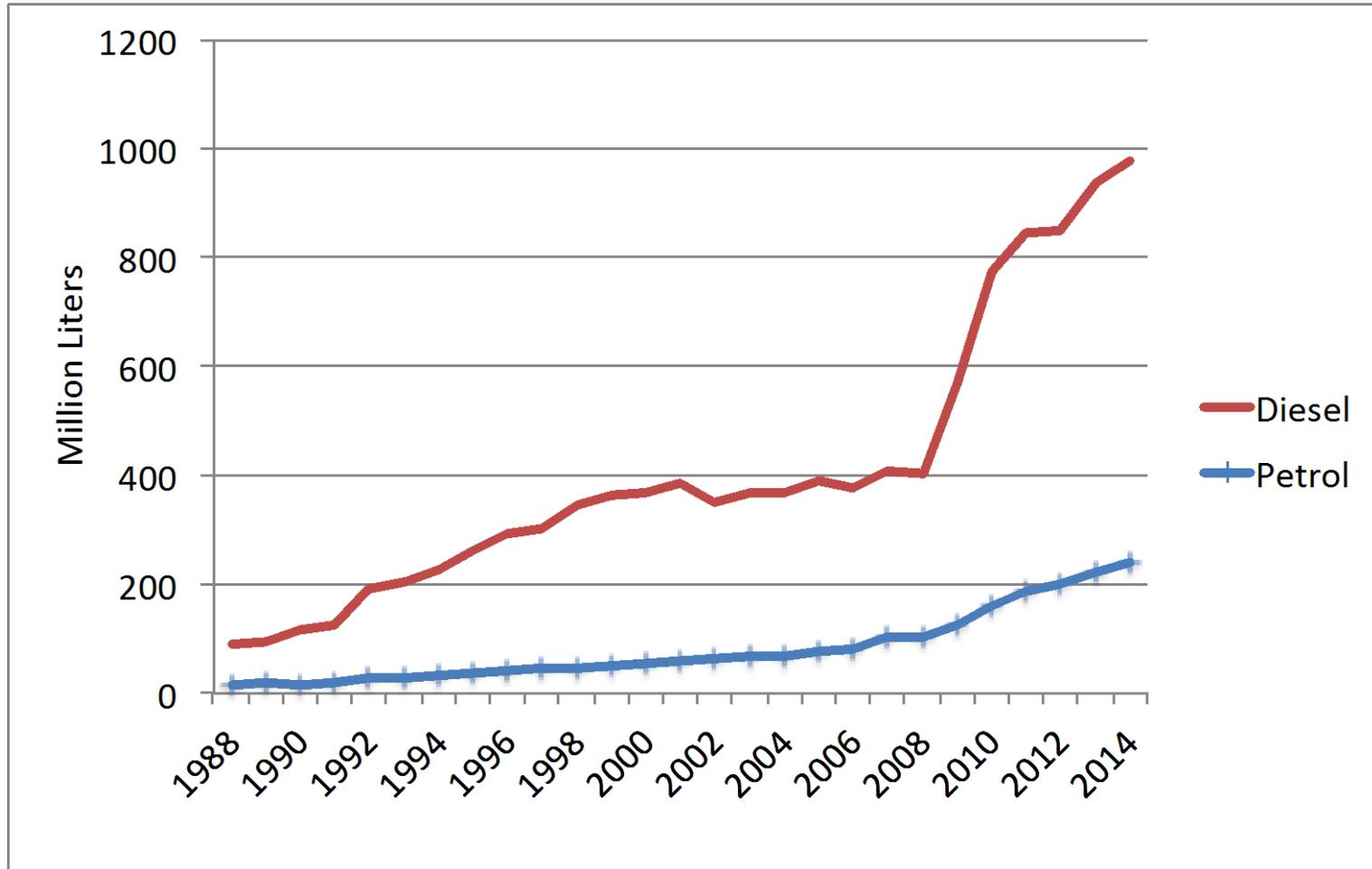
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Data source: Economic Survey

Trend of diesel/petrol consumption

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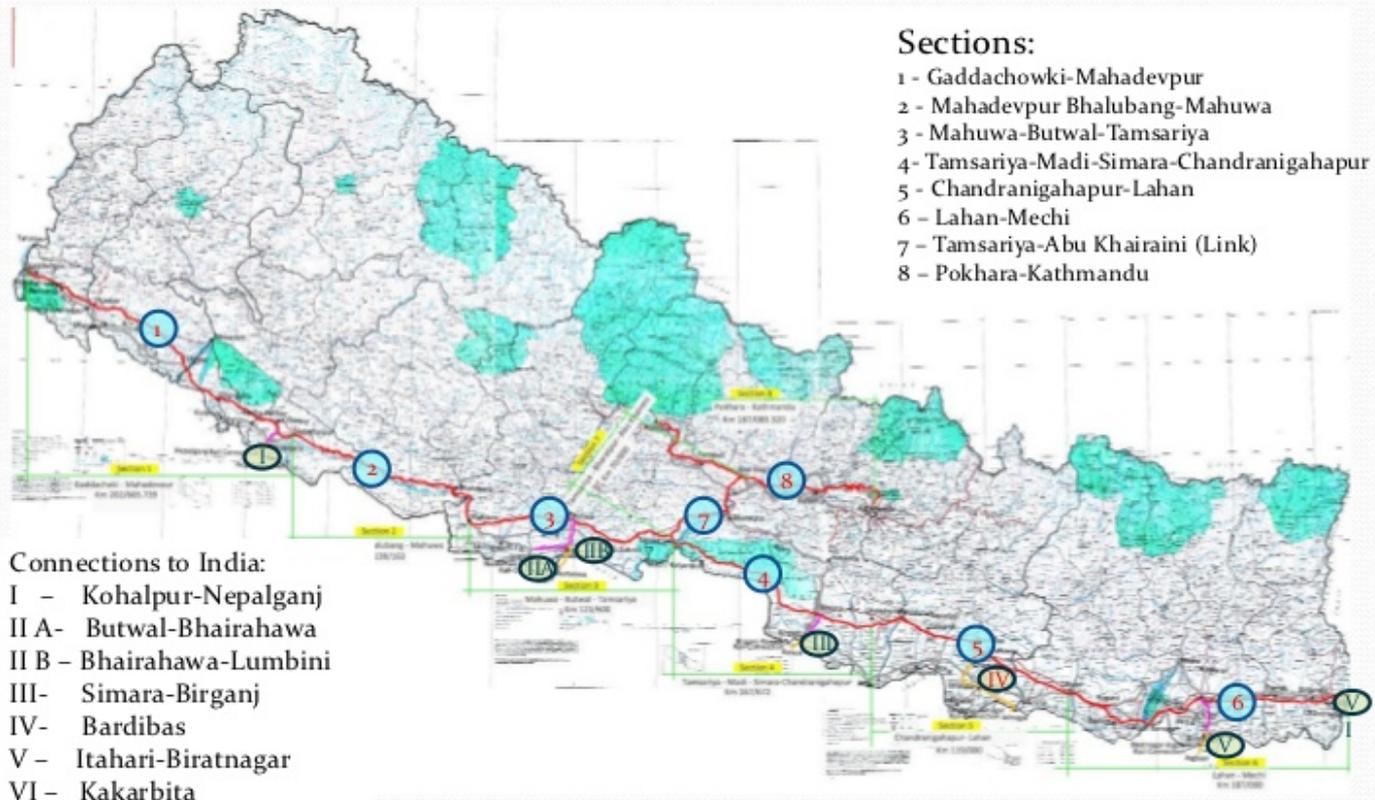


Data source: Economic Survey

Proposed railway network

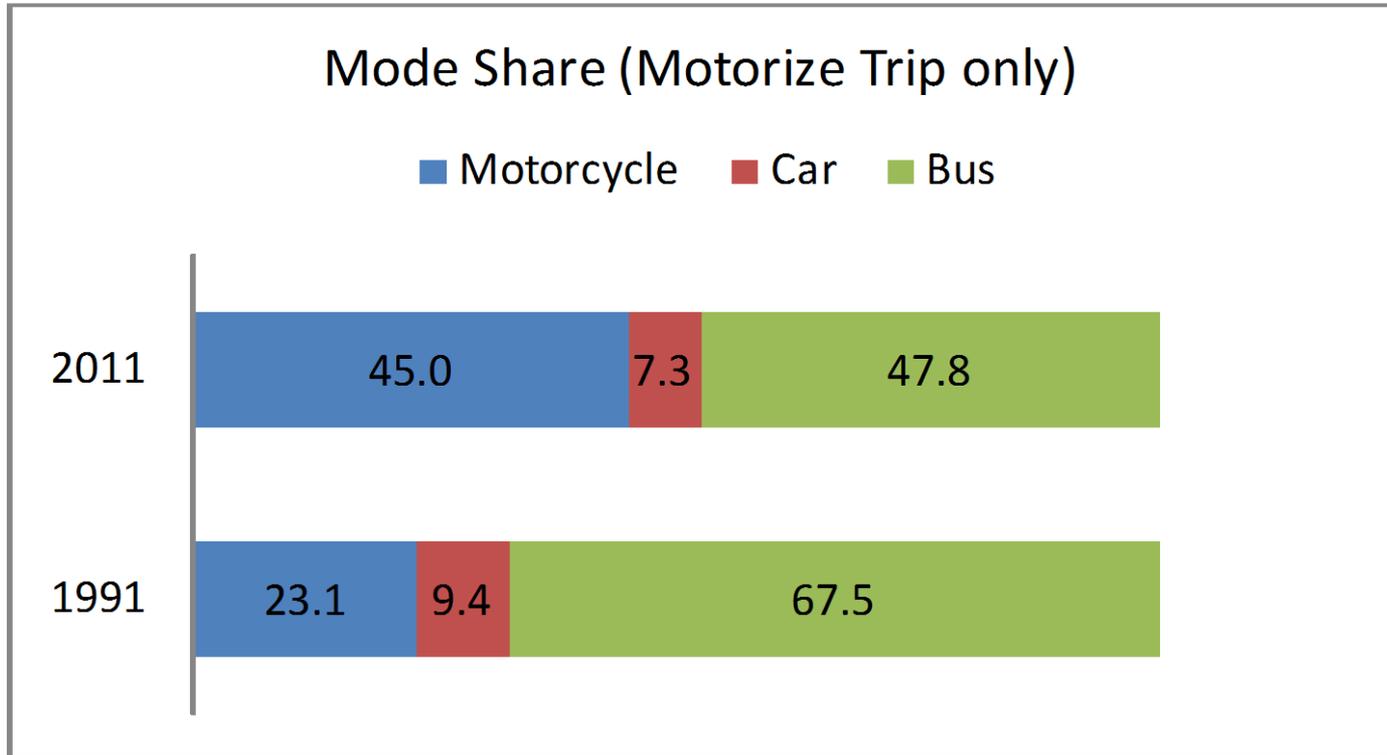
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Index Plan of Proposed Nepal Railway



Mode Share in Kathmandu Valley

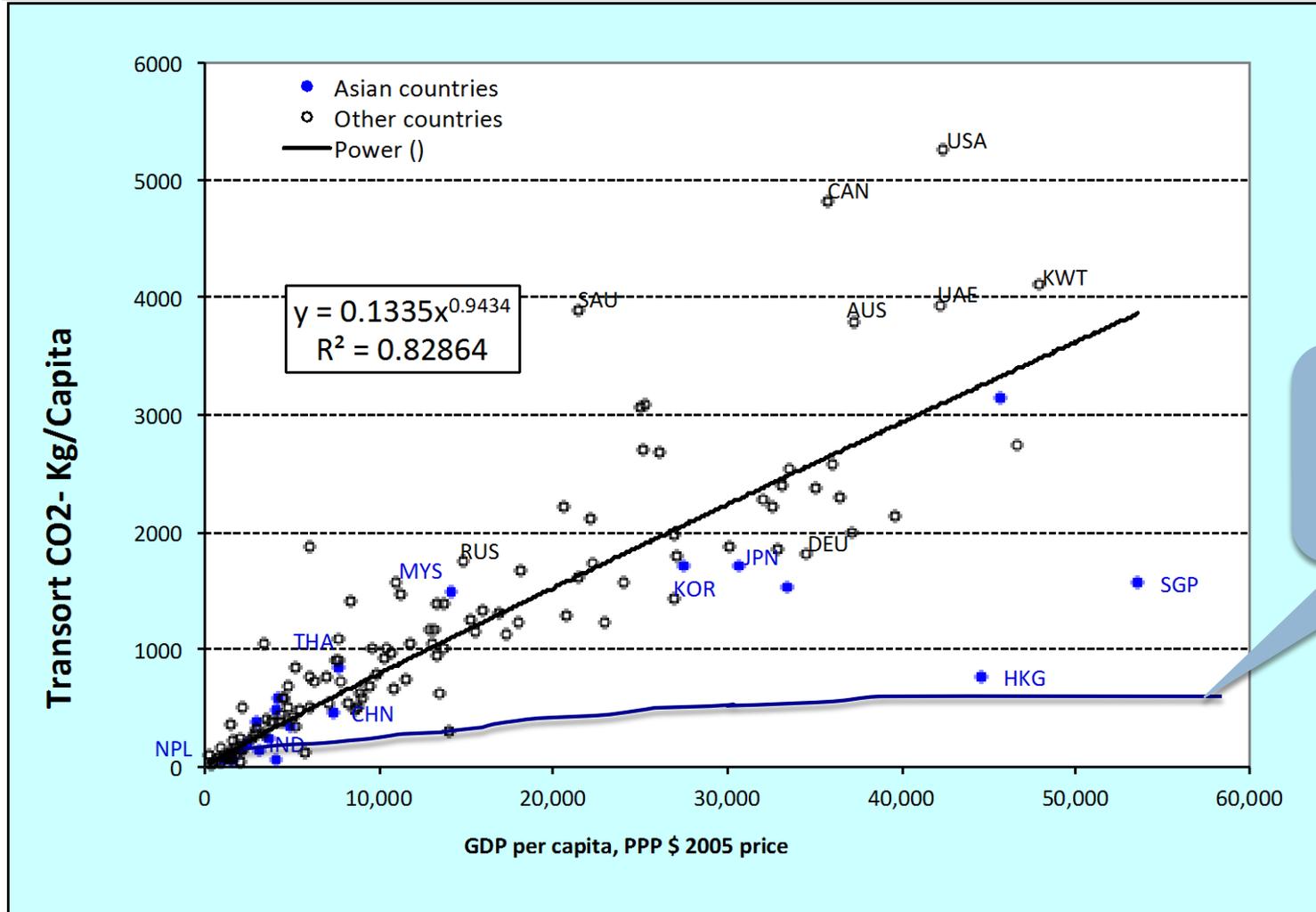
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Data Source: JICA (2012)

GDP per capita (\$PPP) versus per capita emission from Transport sector

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Emissions path of for Nepal?

Data source: IEA (2012)

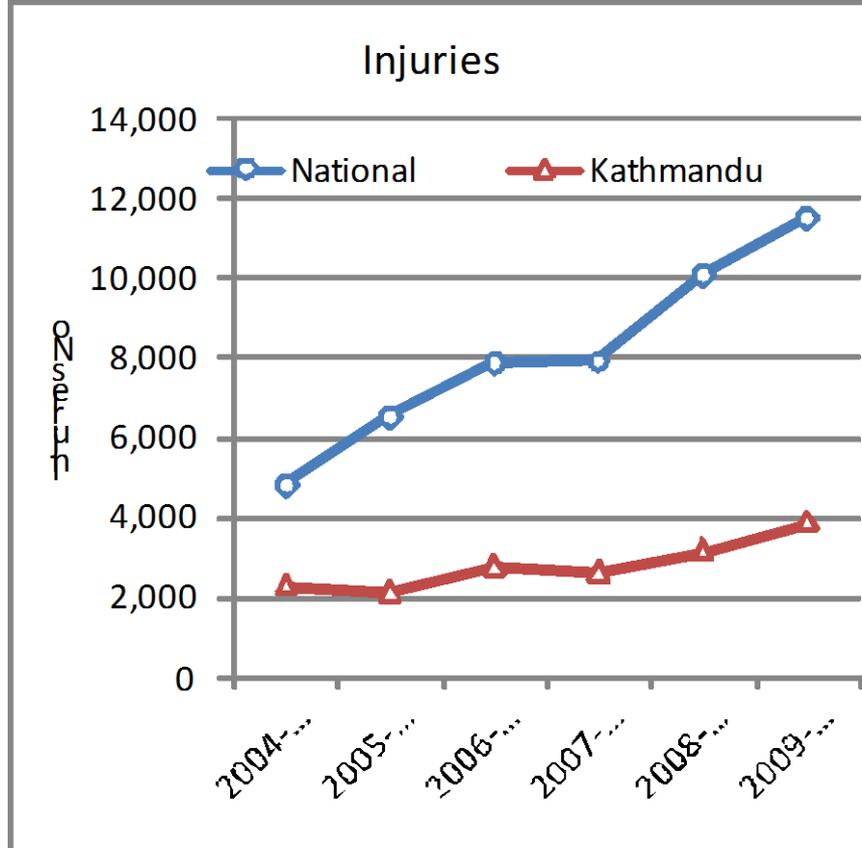
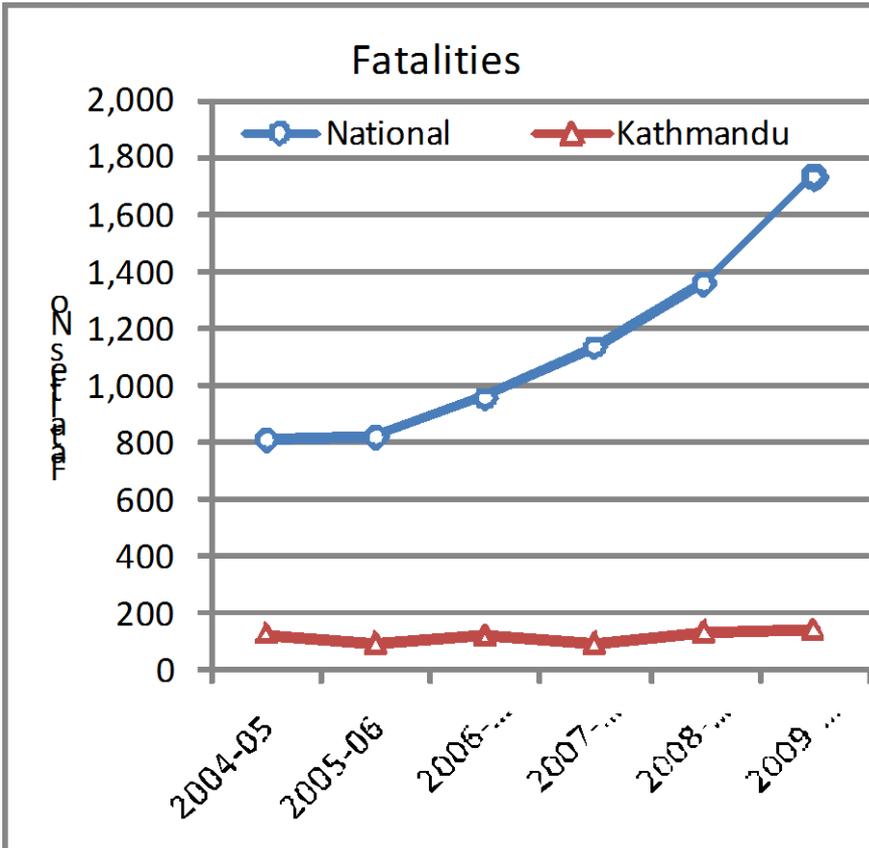
Chronological list of major policy initiative targeting vehicular emissions

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- 1991: Banned diesel three wheelers registration.
- 1994: Emission standards for in-use vehicles
- 1999: Banned three wheelers operated by diesel
- 1999: Subsidies for electric vehicles.
- 2000: Nepal Vehicle Mass Emission Standard EURO I.
- 2000: Stopped two stroke registration
- 2001: Announced the ban of 20 years old vehicle, but not implemented.
- 2001: National Transport Policy
- 2003: National Ambient Air Quality Standards
- 2004: Two stroke three wheelers banned from operation
- 2009: National indoor air quality standard and implementation guideline
- 2012: EURO III standard

Road accident trend

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Data source: MoPIT (2013)

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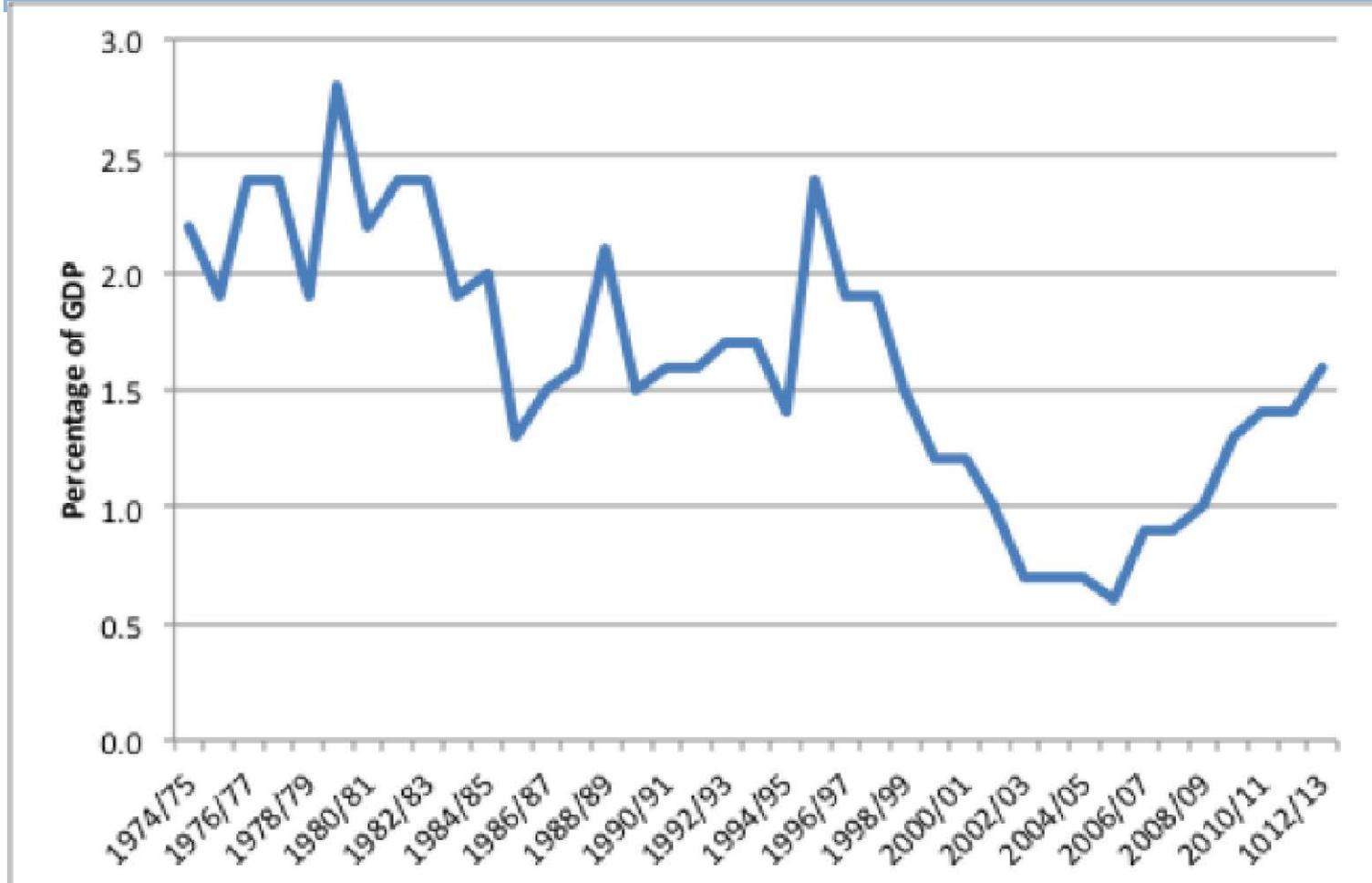
Driving Factors for transport sector

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1. Economic growth and restructuring
2. Change in the regional development patterns
3. Rapid urbanization
4. Increasing demand for transport (all purpose)
5. Increasing demand for fossil fuel; energy security
6. Climate change and disaster agenda (mitigation/adaptation/resilience)
7. Introduction of new technology in transport sector
8. Low carbon and inclusive transport

Public Investment in transport 1975-2013

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Data source: Nepal Rastra Bank

Challenges

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1. Inadequate transport investment
2. Weak project designing/implementation capacity
3. Decoupling economic growth and motorization
4. Haphazard urban development and settlement patterns
5. Maintaining environmental and safety standards in urban areas and low-cost rural roads
6. Changing behavior for modal shift (private to public, non-motorized modes) safe driving
7. Improving regulation (entry, exit, route permit, fare)

Opportunities

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1. Possibility of achieving more appropriate spatial form
2. Real prospect of developing integrated transport system
3. Public transport is still dominant mode- just need to maintain
4. Good prospect **for commercial viability of public transport**
5. Appropriate geography for railway transport
6. Real prospect of **zero emission** transport (rail and electric vehicles): hydropower generated electricity
7. Prospect of building climate/disaster resilient transport system in the aftermath of recent EQ

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Strategic Perspective for Sustainable Transport in Nepal

Sustainable Transport System

Environmentally sound

Economically efficient

Socially acceptable

Policy drivers

Institutional measures

- Regulation, standards
- Incentives, subsidies
- Operational coordination

Integrated planning

Investment for sustainable modes and facilities

Foundation: Appropriate physical form

- Infrastructure for sustainable modes
- Appropriate spatial structure
- Climate/disaster resiliency

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Strategic Components and Actions

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Components

1. **Planning for coordinated/integrated transport system**
2. **Investment for infrastructure and new technologies**
3. **Building climate/disaster resilient transport system**
4. **Travel demand management (TDM)**
5. **Environmental and social safeguards**
6. **Alternative funding and financing for transport**
7. **Capacity building and institutional reform**

Strategic Components and Actions

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Urban, Intercity and Rural Transport Highlights

1. Planning for coordinated/integrated transport system

- ✧ National transport network and regional development
 - Regional connectivity; extended metropolitan areas
- ✧ Transport and urban structure
 - Compact and smart cities
 - Transit oriented development (TOD)
- ✧ Rural accessibility and settlement planning
 - Agriculture development, tourism, livelihood
- ✧ Hierarchical and integrated transport system
 - Transfer stations/facilities, parking places

Strategic Components and Actions

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Urban, Intercity and Rural Transport Highlights

2. Investment for infrastructure and new technologies

- ✧ Roads, railways and non-motorized transport
 - Acquiring right-of-ways at an early stage
 - Timely/effective maintenance
- ✧ Electrification of transport system
 - Electric railways and ropeways
 - Electric vehicles (buses, cars, 3W, 2W)
- ✧ ITS and 'smart' buses
 - High capacity and low floor buses, smart card, GPS

Strategic Components and Actions

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Urban, Intercity and Rural Transport Highlights

3. Building climate/disaster resilient transport system

- ✧ Network planning with redundancies
- ✧ Design standards to cope with disasters
 - Variable standards by hierarchy/criticality
- ✧ Construction materials/methods
- ✧ Innovative approaches for slope stabilization
 - Bio-engineering and other methods
- ✧ 'Engineered' rural roads
- ✧ Facilities/preparedness for quick restoration

Strategic Components and Actions

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Urban, Intercity and Rural Transport Highlights

4. Travel Demand Management (TDM)

- ✧ Reduce travel demand (total or by time)
 - Land-use and transport coordination
 - Pricing transport to reflect real social cost
 - Staggered working/school hours; Telecommuting
- ✧ Modal shift from private to public modes
 - 'Unattractive' private modes ('push' factor)
 - 'Attractive' public modes ('pull' factor)

Strategic Components and Actions

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Urban, Intercity and Rural Transport Highlights

5. Environmental and social safeguards

- ✧ Review guidelines for environmental/social assessment
- ✧ Regulation on polluting/aging vehicles
- ✧ Clean/alternative fuels
- ✧ Improved emission/safety standards of vehicles
- ✧ Compliance monitoring of vehicle maintenance
- ✧ Provision of safety audit for infrastructure and vehicles
- ✧ Regulation on driving license and driving behavior

Strategic Components and Actions

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Urban, Intercity and Rural Transport Highlights

6. Alternative funding and financing

- ✧ Public Private Partnership (PPP)
- ✧ Provision of toll and other user's charges
- ✧ Earmarking fuel tax and vehicle tax for transport fund
- ✧ Use of value-capture (capture real-estate gains)
- ✧ Property tax for infrastructure fund
- ✧ Special taxes to fund specific transport infrastructure

Strategic Components and Actions

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Urban, Intercity and Rural Transport Highlights

7. Capacity building and institutional reform

- ✧ Capacity of public/private organizations for project planning/design/implementation
- ✧ Establishment of transport database (including OD surveys)
- ✧ Restructure transport regulatory institutions and reform regulatory provisions for transport services.
- ✧ Rationalize/reform public transport system including taxi market based on competitive market principles and fair return to investors
- ✧ Establish a transport research institute

Sumup

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1. This draft is prepared with the premise that the concept of Sustainable Transport (ST) provides more comprehensive framework to achieve synergy between 'sectoral' and other sustainability goals.
2. The National Sustainable Transport Strategy (NSTS) is built on various policy initiatives taken various government agencies in transport related areas.
3. Following the due process, the Government of Nepal will consider the Strategy for official adoption.

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Thank you!