UNESCAP Capacity Building Workshop, Bhutan

Integrated National Transport Planning and Policy Formulation

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• Integrated management of mobility, transport infrastructure, urban development and environment protection are essential for achieving sustainable development.

• **Transport integration** is an organizational process through which the planning and delivery of elements of transport system are brought together across modes, sectors, operators and institutions with the aim of increasing the net environmental and societal benefits (Preston ITF, 2012)
Need of Transport Integration

• Multi-sectoral nature of transport (modes, operations, priorities, organisations etc.) requires integration of plans and policies

• Multiple agencies operate under different levels of Govt. who require coordinated actions based on integrated policies

• Need for consistency between policies in different sectors and levels of decision-making

• Need for greater understanding of effects on other sectors

• Need to ensure seamless transport service
Objectives of Integrated Transport Planning

Objectives

• Ensure balanced, integrated transport system development (to provide seamless transport service - urban and national; passenger and freight)

• Provide efficient mobility services in terms of time, cost, etc.

• Reduction of adverse effects - social and environmental

Imperatives for integrated transport system development

• Physical interface between modes

• Operational integration between modes

• Service integration - common fare, ticketing system, etc.
### Rungs of a Integrated Transport Ladder

| I       | 1. The integration of transport information.  
|         | 2. The physical integration of transport services |
| II      | 3. The integration of transport fares and ticketing.  
|         | 4. The integration of infrastructure provision, management and pricing for passenger transport modes |
| III     | 5. The integration of passenger and freight transport  
|         | 6. The integration of (transport) authorities. |
| IV      | 7. The integration between transport measures and land use planning policies.  
|         | 8. Integration between general transport policies and the policies of the education, healthcare and social services sectors. |
| V       | 9. The integration between transport policies and policies for the environment and for socio-economic development |

Source: Preston, ITF 2012
Ladder of Interventions

*Do nothing or simply monitor the current situation

*Provide Information: Inform & educate people

*Enable choice: enable people to change their behaviors

*Guide through changing the default: make healthier choices the default option for people

*Guide choice through incentives: use financial or other disincentives to influence people to pursue certain activities

*Guide choice through disincentive: use financial or other disincentives to influence people to not pursue certain activities

*Eliminate Choice: regulate the options available to people

Source: Preston, ITF 2012
Stages of National Transport Planning

I. Macro economic forecasting of national supplies and demands;

II. Development of regional supply and demand forecasts compatible with national forecasts (Traffic Generation)

III. Construction of national transport networks;

IV. Distribution of traffic between various transport zones (Traffic Distribution)

V. Determination of optimal allocation of traffic flow between different competing modes (Modal split)

VI. Optimal route assignments on different modes (Network Assignment)

VII. Evaluation of alternative transport projects and policies.
Policy barriers

Policy is a guiding principle used to set direction and addresses questions such as ‘What’, ‘and ‘why’

1. Legal and Institutional barriers
   - lack of legal powers to implement a particular policy instrument, legal responsibilities split up

2. Financial barriers
   - Budget restrictions, financial restrictions and limitations on flexibility to use the revenues

3. Political and socio-cultural barriers
   - lack of political or public acceptance to policy instrument, restrictions by pressure groups and cultural attributes

4. Practical and technological barriers
   - practical issues like land acquisition, weak enforcement, and administration, absence of technology and skills etc.
Institutional Issues

- Implementing issues of integrated policies reflecting multi-sectoral nature
- Vertical and horizontal coordination issues
- Institutional void between national and urban levels
- Functional versus jurisdictional problem and institutional culture to work together
- Poor Institutional capacity (in-house capacity)
- Inherent weaknesses of the planning process and integration of transport with spatial policies
Case Studies

India
Bhutan
Why India is moving towards Integrated Planning

What has improved

- Golden quadrilateral
- Increased competition in civil aviation

What has remained the same

- Inefficient port structure
- Inadequate urban transport
- Lack of reform in railways

Source: NTDPC, Feb 2014
Why India is moving towards Integrated Planning

Projected increase in demand

<table>
<thead>
<tr>
<th>Mode</th>
<th>2011/12</th>
<th>2032/33</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freight transport (btkm)</td>
<td>2,000</td>
<td>10,500 - 13,000</td>
</tr>
<tr>
<td>Domestic air traffic</td>
<td>60</td>
<td>400</td>
</tr>
<tr>
<td>(millions of passengers)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>International</td>
<td>40</td>
<td>200</td>
</tr>
<tr>
<td>(millions of passengers)</td>
<td></td>
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</tbody>
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Designing an integrated transport network

Governance structures

- Railways
- Ports
- Civil aviation

Organizational culture

Seamless inter-modal and hierarchical connectivity

Source: NTDPC, Feb 2014
Existing Challenges in Institutional and Policy Framework in India

• The transport policy environment is fragmented between modes and level of government

• allocation of liability is not clear due to multiple handling and transporting agencies in an intermodal chain

• Infrastructure investment planning, policymaking, regulatory and financing strategies are scattered across and within levels of government.
India’s National Transport Development Policy Committee (NTDPC) Approach

• Coherent system-based strategy adopted which cuts across modes of transport, administrative geographies, and integrates capital investment with regulatory and policy development.

• Highlighting Inter-modal linkages between the different transport systems.

• More focus on developing human resources capacity and responsible institutions.

• Promoting connectivity within South and South East Asia regions.

• Special attention to the transport needs of the North-East
Highlights of NTDPC Recommendations

• Integrated transport strategy guided by drivers of patterns of transport demand.

• Find an optimal modal mix reflect the full resource costs of each transport mode for each type of commodity transported over various distances and terrains.

• Pricing for transport services and for associated inputs like fuels should be de-politicised and set by market or by independent regulatory authorities

• Subsidies should be limited to those areas where their retention on societal considerations is overwhelmingly justified.

• Evolve common data standard and provide for immediate collection and dissemination of the data.

• Common standards on the shipping units and ensure goods transport on all modes can accommodate units both on rolling stock as well as on fixed infrastructure.
Rules and regulations governing the carriage of goods by road, air, sea, rail or any combination of these should be amended to ensure equal administrative treatment.

Establish the true nature and extent of transport externalities, the relative incidence of cost and benefit, and how these fit with the government’s wider distributive and allocative agenda.

• A new central body, the Central Logistics Development Council should be set up with the mandate of promoting the logistics industry.
The Desired State of Indian Infrastructure

PIPESINES
- Presence of National Pipeline Grid
- Pipelines are multi-commodity and multi-user

ROADS
- Provision for last-mile connectivity to terminals
- Linkage of national and state highways

PORTS
- Presence of coastal terminals at 200 km intervals
- Sufficient capacity to handle domestic cargo

ECONOMIC/TRADE ZONES
- Free trade warehousing zones
- Assembly and light manufacturing services

MULTIMODAL FREIGHT CORRIDORS
- Dedicated networks of rail and road routes
- Provision for high-speed cargo movements with high tonnage capacities

LOGISTICS PARKS IN REMOTE AREAS
- Multimodal parks serving inaccessible areas

VESSELS
- Sufficient number of vessels to handle bulk and container cargo

MULTIMODAL LOGISTICS PARKS
- Identify zones for multimodal hubs at intersection between rail-road, rail-port and road-air

Source: Submission by Cyrus Guzder to the NTDPC and KPMG (2012)
Prescription for Achieving an Integrated Transport and Logistics Strategy in India

a) Establish traffic flows and unit transportation costs across the various modes for the various commodities;

b) Identify existing distortions in the market for transport;

c) Identify other government development and distribution priorities and the role of transport in these matters;

d) Arrive at the desired optimal modal mix;

e) Install sufficient capacity and maintain both old and new infrastructure to ensure that no mismatch between actual and rated capacities;

f) Use economically sensible pricing policies that are determined either by the market or by independent tariff-setting authorities to encourage a mode-choice driven by efficient markets;

g) Install nodal infrastructure and promote technologies that reduce the costs of mode

Source: NTDPC report, 2014
Bhutan’s Development Profile

- Population (2014) : 687,520
- Total vehicles : 69,602 (2014)
- Road Length : 10,578 km (2013)
  - National highways (2438 km), District Roads (1178 km)
- Airports : Domestic (3), International (1)
- Airlines operating : International (2), domestic (1)
- Air passengers
  - International : 296,422 (2014)
  - Domestic : 3007 (2014)
Trends in Growth Pattern by 2040 - Bhutan

- Real per capita income: increase from 2000 USD to 10,000 USD
- Population: increase from 700,000 (2014) to 1 million
- Urban Population: increase from 30% (2014) to 75%
- Tourism to increase at 100,000 arrivals per year from existing 40,873 (2010)
- Vehicle population: increase by 10 times
Issues and Challenges in Transport Sector

- Increasing trend in growth of vehicles
- Fragmented transport industry
- Inadequate public transport services
- Absence of freight logistics facilities
- Lack of technical capacity and resources
- Lack of coordination in planning and absence of integrated transport policy
Guided by Gross National Happiness (GNH) supported by four pillars

i. Sustainable and equitable socio eco development

ii. Preservation and promotion of culture

iii. Conservation and sustainable utilisation and management of environment

iv. Promotion of good governance
The overall transport vision can be summarized as follows:

- To provide the entire population with a safe, reliable, affordable, convenient, cost-effective, and environment-friendly transport system in support of strategies for socioeconomic development.

The goals of the transport vision are:

- accessibility to activities and supplies needed by people and enterprises,
- efficient use of economic resources,
- environmental sustainability, and
- transport safety especially on roads.
Nine transport strategies that constitute the overall Transport Vision 2040 have been developed. These are:

- road network,
- civil aviation,
- intercity passenger transport,
- freight transport,
- regional connectivity,
- urban transport,
- road safety,
- road transport regulation, and
- transport sector management.
Road Network Strategy

The development of the road network will be based on integrated strategy covering all roads (except urban roads) from national highways, through feeder roads, to farm roads and access roads.

The Road Network Development Strategy covers:

- **national highways** (primary and secondary), which provide connections to border crossings and links to all dzongkhag centers;
- **dzongkhag roads** (previously feeder roads), which provide access within each dzongkhag to all gewogs, and major villages;
- **farm roads**, which provide access to individual communities not otherwise served; and
- **access roads**, which provide access to hydro plants, schools, health facilities, forestry land, among others.
Civil Aviation Strategy

Comprises seven main activities:

• expansion of international links with other Asian hubs and regional centers;

• provision of air carrier services and airport facilities sufficient for growth targets;

• availability of domestic scheduled services linking main population centers;

• construction of airstrips in remote areas for short take-off and landing and helicopter services;

• provision of helicopter services for search and rescue, emergencies, and charter services;

• private sector participation in services and facilities; and

• effective regulation and compliance with international safety and environmental standards.
Passenger Transport Strategy

The Passenger Transport Strategy aims to provide safe and affordable interdzongkhag public transport services to all significant population centers based on demand.

Specific policies and strategies required for the following services and facilities:

- **Inter-dzongkhag bus services**—size and condition of vehicles, including promotion of larger vehicles where and when road conditions permit; availability of luxury premium services.

- **Inter-dzongkhag taxi services**—regulation of fares, identification of appropriate vehicle types, determination of fares on a seat per kilometer basis, and regulation of loading.

- **Local (rural) services within dzongkhags**—introduction of minibus services in areas of low demand; identification of appropriate vehicle types; determination of fares on a per-passenger basis.

- **Terminal facilities**—provision of appropriate terminal facilities in major centers for bus and taxi services in coordination with local authorities.
Freight Transport Strategy

The Freight Transport Strategy aims to provide cost-effective and seamless freight services in response to demand.

• introduce tax incentives for new large trucks that are fuel efficient and comply with stringent emission standards;

• continue its efforts to improve the quality of the road network, and to build inter-modal transport facilities including warehouses, cold storage, and inland container depots and dry ports;

• support the establishment of management information system and global positioning system tracking;

• assist with the development of the logistics industry; and

• investigate the potential for connections to the Indian rail network and the use of ropeways (aerial lifts) for specific commodity movements.
Regional Transport Connectivity Strategy

Overall goal is to facilitate trade and vehicle movements between Bhutan and other countries in the region

- aims to reduce transport costs and travel times between Bhutan and other countries in region through
  - improved infrastructure,
  - easier transit and customs procedure and
  - implementable transport and transit agreements
Suggested Integrated Transport Policy Objectives for Bhutan

• Provide seamless intermodal and hierarchical connectivity
• Ensure effective participation of all regions of the country in economic development through transport accessibility
• Ensure Capacity augmentation, quality and productivity improvements
• Increased generation of internal resources
• Devise optimal intermodal mix that reflects the full resource costs of each transport mode for each type of commodity transported over various distances and terrains.
• Increase overall economic efficiency
• Pricing should conform closely to the cost of services and actual resources used in its production, subsidy to be ‘explicit’
• Promote sustainable transport system with increased emphasis on safety, energy efficiency, environment conservation and social impact.
Suggested Integrated Transport Strategy Development process

The integrated transport development strategy has to be in sync with country’s urbanisation and settlement development policy and also the industrial growth and socio-economic development policy.

- Need to evolve the country’s urbanisation and socio eco development policy based on its Gross National Happiness (GNH) principles
- Rational assessment of transport demand, both for passengers and freight traffic, both in terms of generation and their spatial pattern (within and outside Bhutan)
- Evolve an optimal modal mix which can cater to the transport demand in most efficient manner
- Develop necessary multi-modal integration strategies to provide seamless connectivity
- Assess the likely impacts of the proposed strategies
Transport systems must be viewed as an integrated structure in which various modes complement each other, interface appropriately and provide healthy competition to each other.

Integrated Transport Strategy must not develop in mode-specific silos, but address the agenda for national socio-economic development in an organised manner.

Policy integration is essential – between levels of government (national, regional and local) - vertical integration; between units, departments and ministries at different levels of government; horizontal integration – at the same level

Need to develop data base on transport system and demand patterns (national, regional and urban)

Need to set up systems for information flow (Transport demand ), knowledge generation, and interactive dialogue between relevant organisations in transport sector