CROSS/ ROADS\
LINKING MOBILITY SOLUTIONS

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Smart, Safe and Green Travel - The Essence of Best practice in Developed and Developing Countries (Analysis based on Case Studies)

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INTRODUCTION

- The expansion of road transport network is the most important prerequisite for all round development of regions thereby the country as a whole.
- The improved facilities in transportation also benefit the society by enabling communities to move out freely from rural hinterlands to pockets of urban development, so as to avail better healthcare, education, job opportunities, access to markets, institutions, etc. Thus, the improved network of surface transport is the main pillar for economic prosperity and dynamic social process.
- The expansion of transport network is no doubt a necessity for sustainable and smart mobility of people, goods and services, but, such network of wider connectivity also poses challenges of safety and well-being of the people on the move and in reducing positive impact of a vibrant economy.
- The concept of safety should also necessarily encompass the aspects of adverse environmental impact, as ‘safe travel’ must also be ‘green travel’ and enhanced mobility should mean ‘smart mobility’.

Transport Sector in India

- Roads are the dominant mode of transportation in India today
- India's transport network is one of the most extensive in the world.
- The share of the transport sector in overall infrastructure investments has increased from 2 percent of GDP during 1995-99 to an average of 2.6 percent of GDP between 2007 and 2011.
- It is estimated that the transport sector alone will require an investment of nearly $500 billion (3.6 percent of GDP) over the next 10 years.

Safety aspects of Road sector

- Technical
  - Existing design of road
  - Greenfield design of road
  - Up-gradation of the technology in the designing of roads
  - Interconnection in the designing of other roads
- Adverse Social impact
- Financial losses
- Environmental degradation

Challenges of Road sector in India

The Global status report on road safety 2013 estimates that more than 2,31,000 people are killed in road traffic crashes in India every year. Some reasons attributed to such high rate of casualty are:

- Road congestion
- Low lane capacity
- Unsafe road infrastructure
- Poor Conditions of vehicles
- Under funding of road maintenance work
- Rural areas having poor road access
- Sub-standard quality of roads

Haddon Matrix

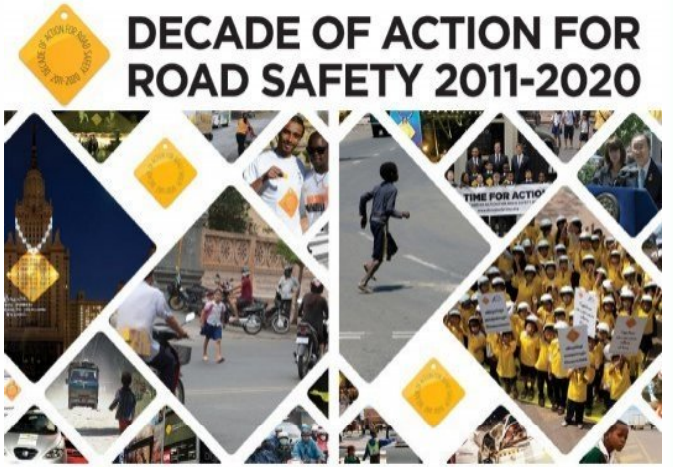
	Human Factor	Vehicle Factor	Environmental Factor	Social Factor
Pre-crash	Information Attitude Police Enforcement	Vehicle Design Vehicle Equipment Vehicle Maintenance Speed management	Road Hazards Weather conditions Pedestrian facilities Speed limit	Enforcement Activities Insurance Incentives Driving attitudes & Habits
Crash	Use of Restrain modes Impairment	Occupant Restraints Functioning of Safety Equipment Fuel absorption	Roadside Features Crash protective Roadside objects	Restraint Laws Attitude & Knowledge about Restraint use
Post-Crash	First-Aid Skills Access to medicines	Ease of Access Fire Risk	Rescue Facilities First-Aid kits Emergency Calls	Information Sharing Emergency Services Response Trauma Care System

Government Initiatives & Best Practices

- Launch of National Highway Development Program
- Launch of Road Development Program for the North East Region
- Creation of Central Road Fund (CRF)
- Operationalization of the National Highway Authority of India (NHAI)
- Launch of Pradhan Mantri Gram Sadak Yojana
- Launch of National Highways Interconnectivity Improvement Project

Global Action for Road Safety

- The launch of the United Nations Decade of Action for Road Safety 2011-2020, under the auspices of the United Nations Road Safety Collaboration (UNRSC), is an important landmark in the direction of the global road safety and to prioritize it as a development and public health priority for low and middle-income countries (LMICs).
- The Decade aims at stabilizing and reducing the number of deaths and serious injuries, in terms of saving 5 million lives and avoiding 50 million serious injuries between 2011 and 2020.
- The Action Plan has the following components:
- Pillar 1: Road Safety Management
- Pillar 2: Safer Roads and Mobility
- Pillar 3: Safer Vehicles
- Pillar 4: Safer Road Users
- Pillar 5: Post-Crash Response

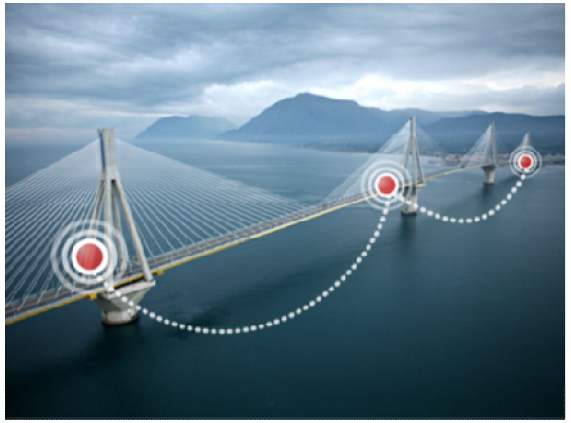


Global road safety projects in India

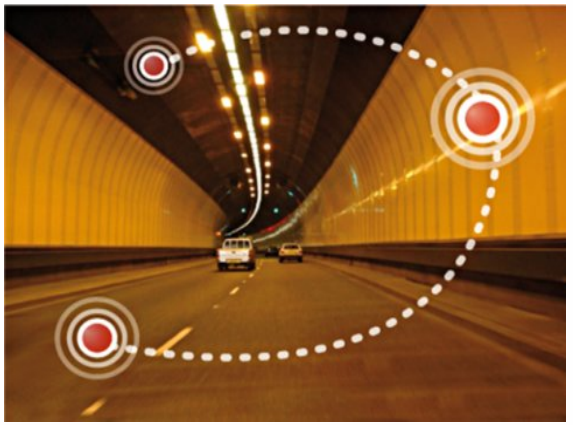
- Global Road Safety Facility (GRSF), a World Bank's global partnership Program at work in India:
- GRSF funding, technical expertise and assistance have helped the Second Karnataka State Highway Improvement Project to become an exemplary of good practices standard in terms of designing and implementing holistic road safety interventions.
- India's busiest Highway Delhi-Panipat NH-1 has been adopted as a "Greener Safer" pilot Project and following the parameters of water harvesting, greening, noise barriers and noise reducer to make an accident-prone zone safer and greener.
- The Global Road Safety Partnership also trains the police on enforcement and supports NGOs in their advocacy efforts, while Johns Hopkins University conducts monitoring and evaluation activities.
- Bloomberg Philanthropies Global Road Safety Programme in India promoted wearing of motorcycle helmets and prevention of drunk driving in the cities of Andhra Pradesh and Telangana.
- In 2012 WHO conducted a review of existing laws and regulations within the Government of India's Motor Vehicles Act, with a particular focus on drunk–driving and motorcycle helmet wearing.

New Technologies in Road Safety

- Smart Roads applications



- Emerging New Technologies



New Technologies in Road Safety

- Radar
- New Lighting System
- Curbing Drunk Driving
- New Lighting System
- System of Digital Support Systems

Green Initiatives in India, USA, UK and Tanzania

India

- Mahindra Reva, an initiative by Mahindra Group, was India's first automatic and electric 2- door car. Now, Government is also planning to bring 7M Electric Vehicles on road by 2020.
- The National Policy on Biofuel, 2008, has earmarked blending of biofuel (ethanol and biodiesel) up to 20 per cent by 2017
- Green Urban Transport Scheme has been adopted to follow the low Carbon path for implementation in cities each with a population of five lakhs and above and all capital cities with a Central assistance of about Rs.25,000 crore in the next five years.

USA

- The Department of Transport (DOT) in its Sustainability Policy Statement in 2014, stressed upon carriers to minimize the environmental impact and make use of green opportunities. UPS, which operates the industry's largest private alternative fuel fleet, tops in the green initiative with more than 2,000 compressed natural gas, liquefied natural gas, propane, electric, and hybrid electric vehicles.
- SmartWay, another innovative program, developed by the Environmental Protection Agency (EPA), a voluntary partnership between shippers, carriers, intermediaries, is also acting on improving fuel efficiency and reducing greenhouse gas emissions.
- Environmental Protection Agency (EPA) and DOT, to increase average vehicle fuel efficiency to roughly 54.5 miles per gallon by 2025 is being implemented.

Green Initiatives in India, USA, UK and Tanzania

UK

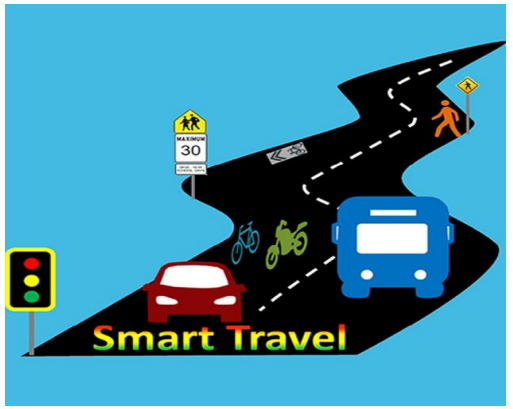
- Department for Transport had adopted a number of sustainability targets, like reducing greenhouse gas emissions by 80% of 1990 levels by 2050, while 22% of those emissions come from the domestic transport sector, of which 94% were from road transport.
- The Department is investing over £600 million over the next 5 years to achieve the aim for almost every car and van to be a zero emission vehicle by 2050.
- The Department also has a plan, to procure 15% of its overall energy consumption, including 10% of its transport energy consumption, from renewable sources in 2020.

Tanzania

- Dar Rapid Transit (DART) Agency had launched a Campaign from 2009 on the use of cleaner fuel to considerably reduce the sulphur content in fuel quality. In the year 2000, the sulphur content in petroleum fuels was 2,500 particles per million (ppm).
- The DART system is to also use Bus Rapid Transit (BRT) buses technology to maintain emission standards with the use of appropriate vehicle technology and Euro III emission class technology that meets the set standards for diesel.
- Government of Tanzania (GoT) is also focusing on the use of Compressed Natural Gas (CNG) in vehicles which is almost emission free.

Recommendations

- An innovation needs to be carried out to bring a new kind of device which can easily be fitted in the vehicle so as to calculate the distance in automated mode of the other vehicles on the roads, in terms of safe distance to avoid accidents.
- In order to overcome the difficulty in assessing the vehicle which is coming from the back and trying to overtake (in a speed over and above 80-100 km/hr), a technology is very much required to take care of the safety of the vehicle running in the front.
- Promotion of auto sensors/cards at all the levels so that a vehicle can cross a Toll plaza paying automatically through the auto sensor card.
- Easy access to be provided at adequate intervals for cyclists and domestic animals on roads.
- To avoid major accidents, suitable geometrical designs need to be provided for the Highways.
- The accountability for the construction and operation needs to be ensured in the real sense and standards, norms and codes are to be modified as per the changes in requirement. The same should be legally incorporated in policy, guidelines, etc.
- The environmental code of practice and green initiatives should be adopted in the construction and maintenance of roads including Highways to mitigate the adverse environmental impact.
- Active participation and close co-ordination both from the government, nongovernmental organizations, member of the civil society including the researchers, students, and community as a whole is the need of the hour to improve the condition of roads, its maintenance, management, encompassing safety of passengers and vehicles and protection of eco-systems in the country



Conclusions

- Safety aspects are now inbuilt in new traffic and transportation mode which automatically eliminate and reduce considerably the chances of accidents.
- Safe technologies are now put into practice which has enabled the change in behaviour of both the drivers and passengers.
- Consistent improvements in the implementation of modern technologies has the potential of reducing the cost in construction, manufacturing, productions and services of various kinds involved in the activity of transportation.
- An appropriate and timely integration of all provisions required for necessary updation of technology and safety norms may ultimately lead to cost saving, optimum utilization of resources, time for reaching the destination and also achieving greater national socio-economic goals for the overall well-being of the citizens.
- There should be transparency and accountably both at the stage of planning and its implementation. The policies, legislations and enforcement should commensurate with the requirement of the specific location, demands of the communities, geographical consideration and environmental concerns.

Way Forward

- Smart applications have a tremendous impact on our lives, livelihood and living.
- The use of smart applications like sensors which can gauge and predict weather conditions, which can alert a driver about adverse or unfavourable weather condition and prevent road accidents and casualties.
- Smart Lighting system like power-saving lights which gradually brighten as soon as a vehicle approaches and then switch themselves off once it passes can save energy and ensure safety of the vehicles on the road.
- Taking into consideration that India has the dubious distinction of having a major share of global road fatalities and loses about three percent of the GDP, the issues pertaining to improvement in road conditions, their timely upkeep and maintenance, stricter enforcement of traffic rulers and sensitization of the road users about safety measures need serious attention at all level of governance and civil society.
- Last, but not the least, we are living in a fragile biosphere, road safety must also include a safe environment.


Thank
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