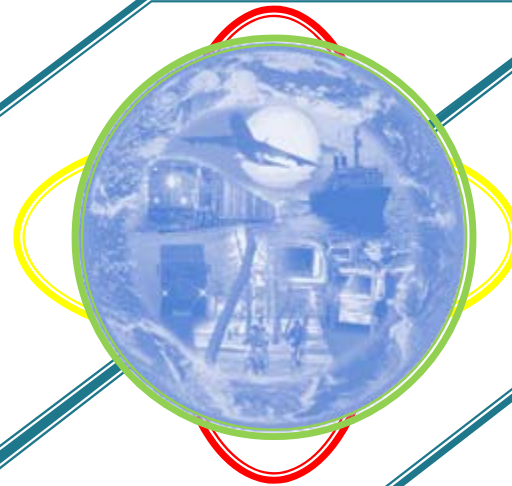


ENVIRONMENTALLY SUSTAINABLE TRANSPORT: INDIA INITIATIVES



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ENVIRONMENTALLY SUSTAINABLE TRANSPORT: CONSENSUS ON THOUGHT PROCESSES.



“Transportation which does not endanger public health or ecosystems and meets needs for access consistent with (a) use of renewable resources below their rates of regeneration, and (b) use of non-renewable resources below the rates of development of renewable substitutes

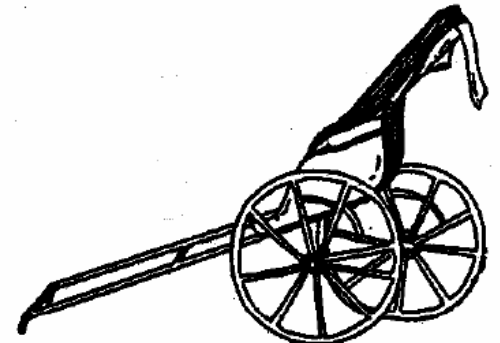
OECD, 2001



“An Environmentally Sustainable Transport System will meet today's needs for mobility, access and economic growth without compromising the ability of future generations to meet their needs and environment protection . ”



There is a need for a holistic and balanced approach for achieving Environmentally Sustainable Transport. Strategies must account for short and long term needs for the Three E's of sustainability i.e environment, economic growth and equity.

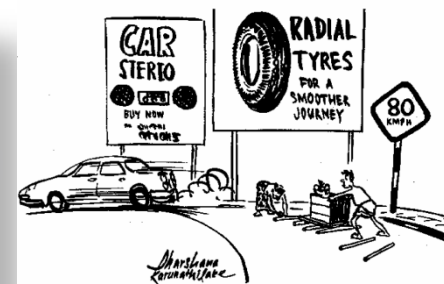




This will require a comprehensive, long term programme that encourages rapid transit systems, low emission technologies and increased efficient use of highways and transit facilities.

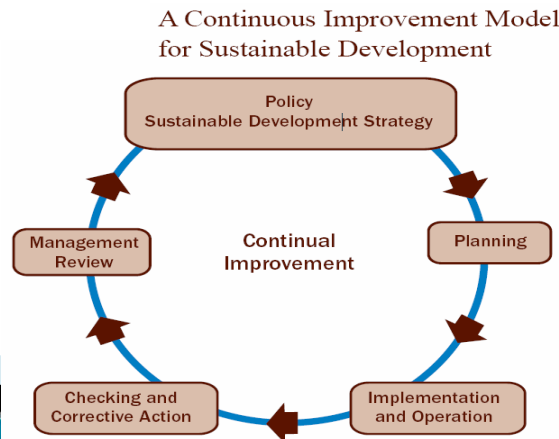


The initiatives and policies must preserve economic vitality, provide flexibility that determine the best ways to meet targets, emphasize market based solutions rather than Government regulations.



ADDRESSING CONCERNS

- ◆ Agenda 21 highlights transport in several Chapters including Chapter-7 on Human Settlements and Chapter-9 on Atmosphere
- ◆ During the course of its review in the Special Session 1997, the General Assembly noted that transportation is expected to be the major driving force behind the growing world demand for energy
- ◆ Adequate, efficient and effective transport systems are important for access to markets, employment, education and basic services critical to poverty alleviation.
- ◆ However current patterns of transportation development are not sustainable and may compound both environmental and health problems








In 2001, the Commission on Sustainable Development discussed this in its 9th Session and countries agreed that international cooperation is required to ensure transportation system to support sustainable development and laid emphasis on efficient and affordable systems for poverty alleviation along with support for greater use for public and non-motorized modes




As part of plan implementation, at the World Summit on Sustainable Development, this was further discussed where countries agreed to promote integrated approach to policy for land-use, infrastructure, public transport etc with a view to providing safe, affordable and efficient transportation, increasing energy efficiency, reducing pollution, congestion, adverse health effects and limiting urban sprawl.




SITUATIONAL ANALYSIS: *INDIA IS PLAGUED WITH NUMEROUS TRAFFIC AND TRANSPORTATION PROBLEMS:*

-  The population of India's six major metropolises increased by about 1.9 times during 1981 to 2001, the number of motor vehicles went up by over 7.75 times during the same period.
-  Cost of travel, especially for the poor, has increased considerably. This is largely because the use of cheaper non-motorized modes like cycling and walking have become extremely risky, since these modes have to share the same road space with motorized modes.
-  India has witnessed massive growth in the number of vehicles



 There were 0.3 million vehicles in 1951 and there are around 90 million vehicles today.

 India is the second largest in terms of total road network in the world. Its road network constitutes around 3.34 million km.

 Travel in the city *per se* has become more risky with accident rates having gone up from 1.6 lakh in 1981 to over 3.9 lakh in 2001.

 Increased use of personalized modes has led to increased air pollution.





Unplanned and haphazard development has occurred in city core and periphery lacking adequate infrastructure, transport, and other public services.



Limited network of roads.



Road transport accounts for 65% of the cargo transportation and 85% in respect of passenger transportation.



Congested roads with an incompatible mix of modes traveling at widely different speeds.





Inadequate roadway accommodation for buses and non-motorized transport.



Elementary traffic control and management, often without even the most basic street signage.



Extremely high and rapidly rising traffic fatalities, especially among pedestrians and two wheelers.



Overcrowded, uncomfortable, undependable, slow, uncoordinated, inefficient, and dangerous public transport.



Extremely high levels of transport-related pollution, noise and other environmental impacts, especially in metropolises.

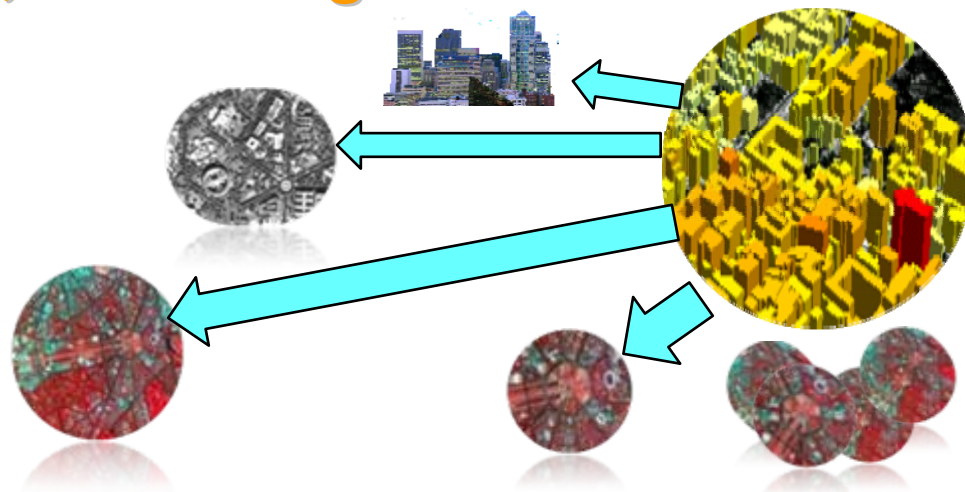




Rampant sprawl extending rapidly in all directions, far beyond city core into the suburban/ peri-urban areas. This has resulted in increased number and length of trips forcing increasing dependence on motorized transport. Longer trip distances make walking and cycling less feasible, whereas increasing motor vehicle traffic makes walking and cycling hazardous.



Expansion of global trade has brought in the need for development of vehicles, road design etc.





India has joined WP-29 (World Forum for Vehicle Regulation) a body of UN-ECE to enable it to embrace global standards/specifications for motor vehicles.



Bharat Stage-III emission norms akin to Euro III norms in respect of Four Wheeled vehicles are in force in the National Capital Region and the cities of Mumbai, Kolkata, Chennai, Bangalore, Hyderabad including Secundrabad, Ahmedabad, Pune, Surat, Kanpur and Agra. In the rest of the country, Bharat Stage –II norms are in force.





Large cities face major problems, which the smaller ones have, so far, not been noticeably affected by. Most prominent among them is the high level of air pollution caused by motor vehicles.



CAUSES OF VEHICULAR POLLUTION

- High vehicle density in Indian urban centers.
- Predominance of older vehicles.
- Inadequate inspection and maintenance facilities.
- Predominance of two stroke engines.
- Adulteration of fuel and fuel products.
- Improper traffic management system and road conditions.
- High levels of pollution at traffic intersections.
- Absence of effective mass rapid transport system & intra- city railway networks.
- Large in-migration to metropolises.





Suspended Particulate Matter (SPM) levels in the six major metropolises are well above the National Ambient Air Quality Standards.



Nitrogen Oxides and Sulphur Dioxide are currently within limits but could cross acceptable levels unless kept under control. Delhi, the national capital has experienced decrease in level of pollution as buses, taxis and auto-rickshaws have to mandatorily use CNG.



Pavement dwellers, road side hawkers, cyclists and pedestrians are most dangerously exposed to motor vehicle exhaust fumes.



A lot has to be done to curb vehicular pollution



Air Quality in Major Cities in India

City	1998			2003			2007		
	SO ₂	NO ₂	RSPM	SO ₂	NO ₂	RSPM	SO ₂	NO ₂	RSPM
Delhi	15.60	35.10	342	12.20	43.30	315	7.00	70	133
Mumbai	15.90	14.70	211	7.70	18.70	219	35.00	103.00	293
Kolkata	47.20	39.70	507	18.00	75.50	244	--	--	--
Chennai	10.30	15.40	131	6.60	7.50	149	7.00	12.00	94
Bangalore	41.60	28.40	239	6.60	7.50	149	--	--	--
Hyderabad	7.60	22.10	152	9.70	19.50	139	--	--	--

NATIONAL STANDARD – SO₂ : 80, NO₂ : 80, RSPM : 100
 UNITS IN µG/CUBIC METRE
 SO₂: SULPHUR DIOXIDE
 NO₂: NITROGEN DIOXIDE
 RSPM: RESPIRABLE SUSPENDED PARTICULATE MATTER.

SOURCE: CENTRAL POLLUTION CONTROL BOARD.



HYDERABAD

CHENNAI



DELHI

MUMBAI

KOLKATA

BANGALORE

INDIAN SCENARIO



India is the

- **7th largest country in the world**
- **spread over 2.4% of the world's area (330 million Sq. Km.)**
- **Consists of 16.7 % of the world population and**
- **Sustains 1,027 million population (2001) in 28 States and 7 Union Territories (UTs).**



According to Indian Census 2001

No. of towns/ cities	= 5161
No. of Villages	= 6,07,491





As per the road map drawn by the Committee on Auto Fuel Policy, set up by Ministry of Petroleum & Natural gas, Bharat Stage-IV emission norms are to be enforced in the 11 mega cities and Bharat Stage-III norms in the rest of the country with effect from 1st April, 2010.



For in-use vehicles the pollution under control (PUC) norms have been made stricter w.e.f 1st October, 2004



Code of practice for Bus body design and approvals notified on 16.09.05 and the rules for accreditation of bus body builders notified on 23.03.07. The entire system would be established by March, 2008. Finalization of truck body code is at an advanced stage.



Special focus is being given on development of integrated public transport system. A broad scheme for providing requisite central assistance to the States for development of better public passenger road transport system is in force (JNNURM).



Proposal to set up an independent road safety organization for road transport sector to ensure best practices in India to promote road safety is also in an advanced stage to promote sustainability.

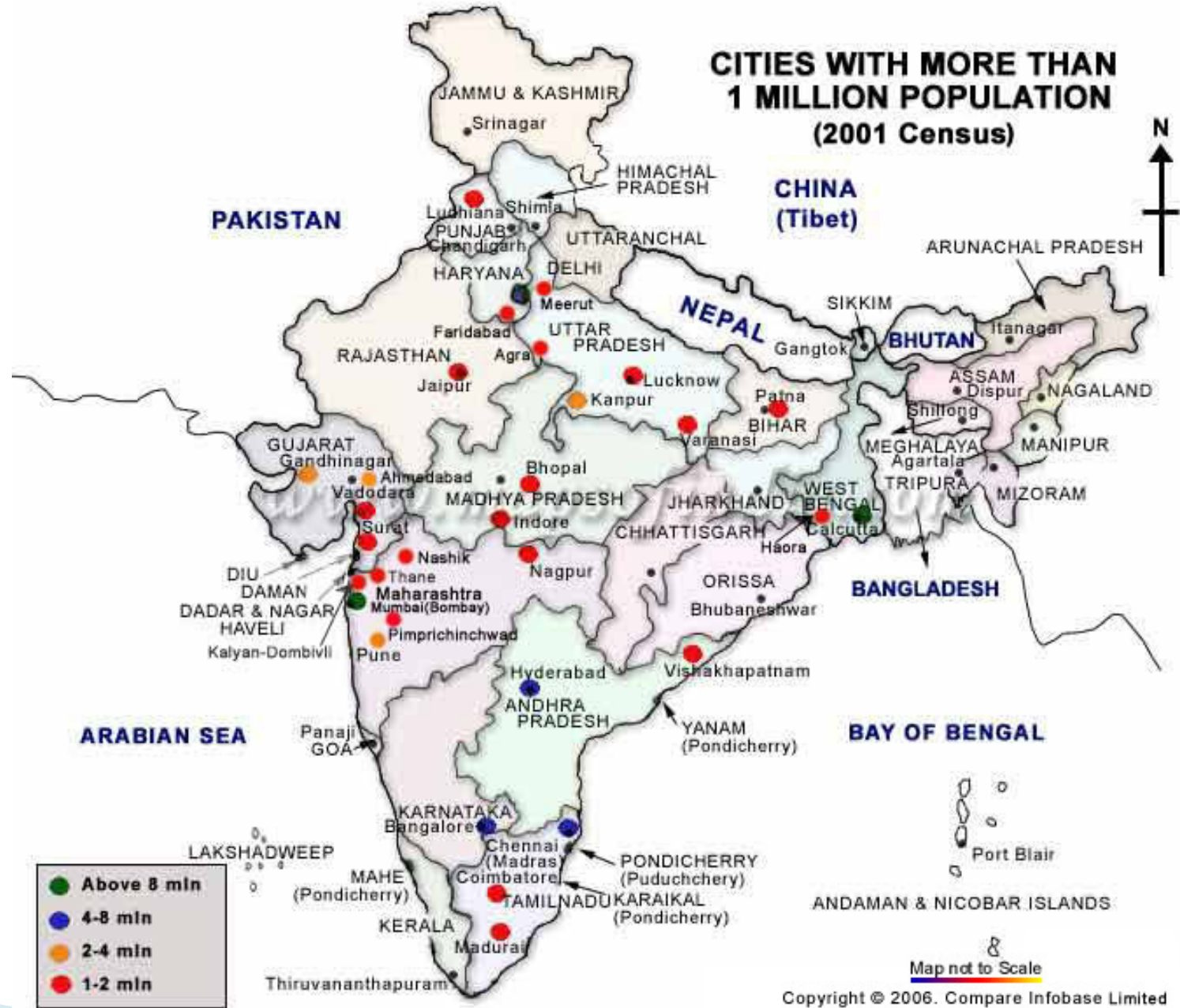


COUNTRY FOCUS: URBANIZATION

S.N.	Census Year	Statutory Towns	Census Towns	Total Urban Centres	Towns within UA	Towns outside UA	Total Towns/ UA
i.	1981	2578	1271	4029	927	3102	3378
ii.	1991	2996	1693	4689	1302	3387	3768
iii.	2001	3798	1363	5161	1162	3986+ 10*	4368+ 10*

** Unclassified Towns (these towns are from Gujarat, no census held due to calamity)*

Source: Census of India 1981, 1991 and 2001.



Spatial distribution of 35 Million Plus Cities

TCPO, MoE&F, MoST

Five Year Plans and Urban Development

S.N.	Five Year Plans	Remarks
i.	1st Five Year Plan (1951-56)	Housing was introduced as a major sector and the Ministry of Works and Housing was established along with NBO.
ii.	2nd Five Year Plan (1956-61)	Awareness towards planned development of towns and cities emerged. A statement of Housing Policy, 1957 was laid before Parliament. The various departments under M/o Works and Housing were established to look after housing schemes, DDA, various Housing Boards and Development Authorities were set up.
iii.	3rd Five Year Plan (1961-66)	The emphasis was on acquisition, development and control on urban land, enhancement of housing stock,
iv.	4th Five Year Plan (1969-74),	The emphasis was on town planning works and preparation of Master Plans for better urban development.
v.	5th Five Year Plan (1974-79)	Minimum Needs Programme and 20 Point Programme were launched.
vi.	6th Five Year Plan (1980-85)	More emphasis was on balanced urbanization. The Task Force on Urban Development was constituted in 1983.



S.N.	Five Year Plans	Remarks
vii.	7th Five Year Plan (1985-90)	National Housing Policy was framed on the line of adoption of global shelter. BMTPC was also set up.
viii.	8th Five Year Plan (1992-97)	Indira Awas Yojana and movement of Building Centres were started.
ix.	9th Five Year Plan (1997-2002)	The role of Govt. was recognized as facilitator.
x.	10th Five Year Plan (2002-07)	The main emphasis was on infrastructure development both in rural and urban areas.
xi.	11th Five Year Plan (2007-12)	Inclusive growth through development of social infrastructure and eradication of poverty by generating more jobs.

URBAN

FREIGHT

MARINE



OUTCOME : NATIONAL URBAN TRANSPORT POLICY



It is estimated that India's urban population would grow to about 473 million in 2021 and 820 million by 2051.



Hence, cities must not only meet the mobility needs of the current population but also provide for the needs of the future.



The Government of India has launched the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) in December, 2005, that *inter-alia* seeks to bring about comprehensive improvements in urban infrastructure, committing substantial funds for this purpose and requiring a series of reforms to be undertaken by Urban Local Bodies that would promote ownership and make investment viable.





The objective of this policy is to ensure safe, affordable, quick, comfortable, reliable access for the growing number of city residents to jobs, education, recreation and such other needs within cities.



POLICY VISION



To recognize that people are development partners in our cities and all plans would be for their common benefit and well being



To make cities the most livable in the world and enable them to become “engines of economic growth” that power India’s development in the 21st century.



To allow cities to evolve into an urban form that is best suited for the unique geography of their locations and is best placed to support the main social and economic activities.



MEASURES

- ❖ Establishment of Ambient Air Quality Monitoring throughout India .
- ❖ Notification of Ambient Air Quality Standards under Environment (Protection) Act,1986.
- ❖ Notification of vehicular emission norms for year 1990-91,1996, 1998, 2000, 2001 and 2005.
- ❖ Improving fuel quality by phasing out lead from petrol, reducing diesel sulphur, reducing gasoline benzene etc.
- ❖ Introduction of alternate fuel vehicles like CNG/LPG.
- ❖ Improvement of public transport system.
- ❖ Phasing out of grossly polluting commercial vehicles.
- ❖ Public awareness & campaigns.






Government of India with three Ministries, viz. Finance, Petroleum and Surface Transport, cleared the first “National Auto Fuel Policy” setting out the roadmap for the next decade on the quality of fuels and the standards for vehicles. According to the Policy, the 11 most polluted cities including Ahmedabad, Hyderabad, Surat, Pune, Kanpur, Agra and Bangalore will have stricter pollution control norms complying with international standards



 **Priority for non-motorized transport**

 **Safety concerns of cyclists and pedestrians addressed by encouraging the construction of segregated right of way for bicycles and pedestrians.**


 **Priority for the construction of cycle tracks and pedestrian paths in all cities, under the Jawahar Lal Nehru National Urban Renewal Mission (JNNURM), to enhance safety and thereby enhance use of non-motorized modes.**


 **Formulation and implementation of specific “Area Plans” in congested urban areas that propose appropriate mix of various modes of transport including exclusive zones for non-motorized transit**



 **Use of CNG for Buses and cleaner fuel: non-lead fuel.**

 **Encouragement of battery driven vehicles.**

 **Laying down a clear and time bound schedule of progressively tighter emission norms, with adequate lead-time, to allow the auto and oil industry to make the required investments.**

 **Statutory provisions would also be introduced requiring all in-use vehicles in a city, including personalised motor vehicles, to undergo a periodic check up and obtain specified certification.**



PROMOTION AND DISSEMINATION



Campaigns for public support for initiatives like greater use of public transport and non-motorized vehicles, the proper maintenance of their vehicles, safer driving practices, etc.



Encourage individuals, families and communities to adopt “Green Travel Habits” that would make travel less polluting and damaging.



Emphasis on bringing about such awareness amongst children through inputs in their school curricula.



IMPACT: BEHAVOURIAL CHANGE

-  **Comprehensive Mobility Plan is envisaged for a long-range transportation package designed to improve the city and its region, environment, land-use, and economic development.**
-  **The Plan strives to create an efficient and seamless transportation network with the following objectives:**
 -  **To improve connectivity and travel throughout the city and its region.**
 -  **To improve mobility within neighborhoods, wards and zones and satellite towns so as to take care of intra-city and inter-city transportation needs.**





Cities have to prepare Comprehensive Mobility Plan (CMP) so as to access Government funds for Traffic and Transportation Projects.



To make viable and reliable transportation options which aim at reducing dependence on automobiles with widespread use of non-motorized modes and mass rapid transit system.



CMP will ultimately lead to Environmentally Sustainable Transport System.





THANK YOU