High Speed Rail in India-a perspective after a decade of Planning

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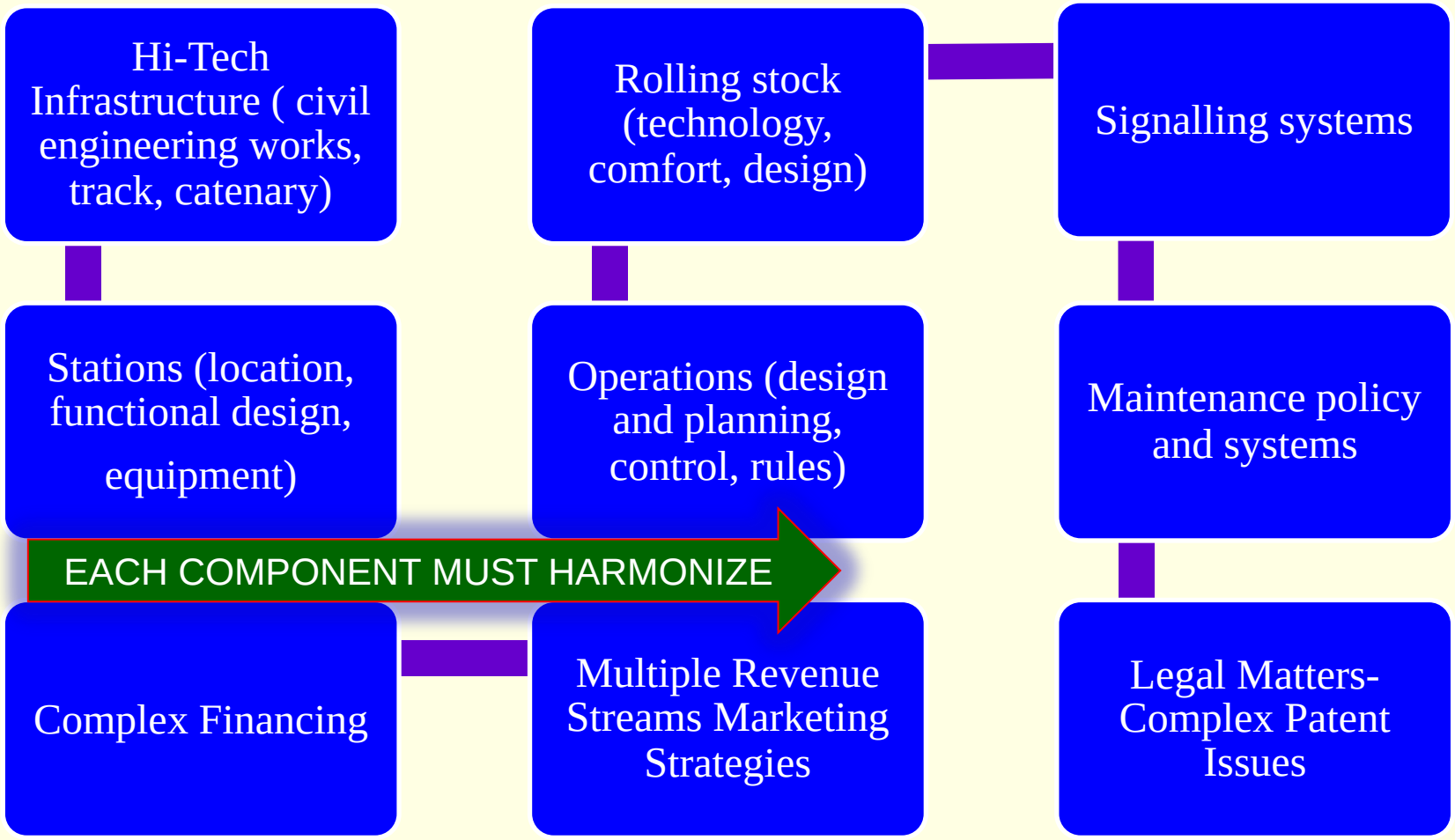
19th December 2013

India needs a National Policy on HSR

- **Public Debate-** a Railway Project or a new Mode of Transport ➡
- **Legislation** –Act of **Parliament and State legislatures** covering
  - Definition of High Speed
  - Corridor Selection criteria ⇨
  - Commercial intent, Subsidies to HSR
  - Government levies and grants
- **Need to position HSR-** beyond a faster train service - Urbanization and Regional Development through Railways expansion and speed upgrades, High end industrialization based on Advanced Rail Technology ➡
- **Technology Acquisition Policy**

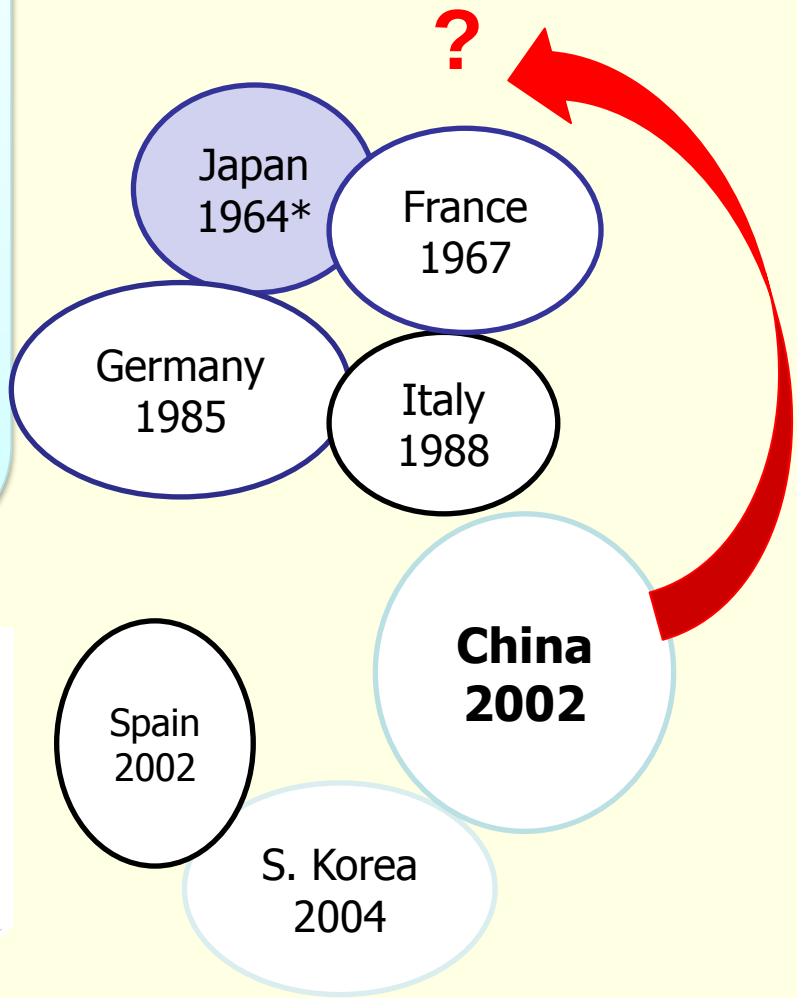
HSR- A complex mix of State of the Art Technology



Block I: HSR Technology Leaders, Techno-Commercial Innovators

Objective:Domestic Mode of Transport,- eye on Innovation Mercantilism
Exclusive Residency of Technology Leadership,
Commercial Success –Robust Domestic Manufacturing Industry base
Export of Product/Projects
Nurture own GDP

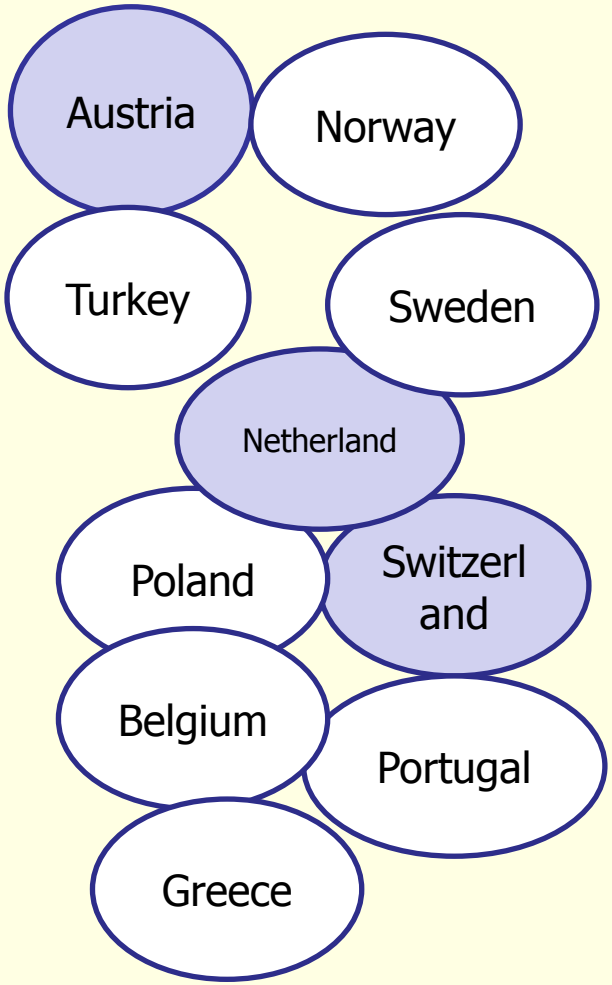
Method: Develop Nation Wide Network,
Established HSR Technology Residency
Commercial Success –
Built up National Wealth through Export,
Retained Technology Leadership through R&D



Block II: Smaller players with Techno Commercial Appetite but HSR for EU access

Objective: Access to EU – International Connectivity within EU and pass through domestic network with an eye on smaller degree of Techno- Commercialism by a few countries like Austria, Netherlands

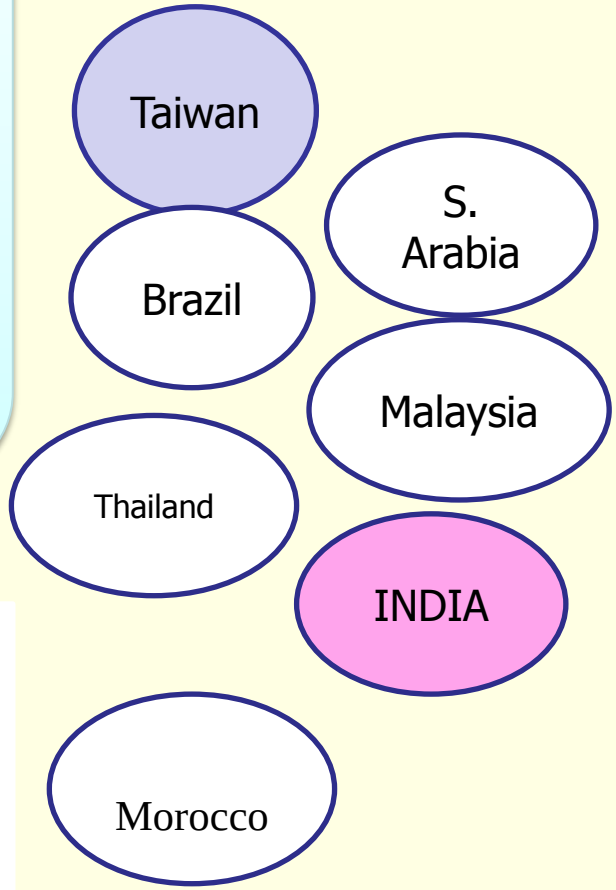
Method: Adopt HSR only to gain access to EU/
Establish Limited Domestic Network as a through transport mode



Block III: HSR only as Transport Mode through procurement of projects

Objective: Limited Domestic Corridors- No Technology capabilities, No Techno- Commercial ambitions

Method: Buy and Operate mode
Mostly at various Stages of Planning



National Technology Acquisition and Residency policy

Quest for Advanced Rail Technology will require

- ✓ Targeted increase in contribution of Science & Technology to Economic Growth (GDP) and share of High Tech in Manufacturing Industries
- ✓ Techno- Nationalism Driven Active role of Central Govt - catching Up with Frontier Technologies of desired areas/sectors
- ✓ Stated National Technology Policy - supports absorption and diffusion of acquired foreign Technology-Stated policy on Localization- target phased 80% share in joint ventures, designated Nationally Accredited Design Institutions
- ✓ Support Policy for indigenous innovation
- ✓ Pro-Active Role of Central Govt in Tech Transfers, Patents, R&D benefits and support for selected priority Sector Industries

CONCLUSIONS

- Conventional investment models variables like travel demand forecasting, money value for time, inter modal transport shifts, ridership revenues etc. fail to capture the complexities of HSR. Can give misleading results and make for very costly mistakes
- These models also fail to capture the transformational impact of HSR on economic activities and regions.
- Committed Funding has long been seen as the only hurdle to HSR in India. Even funding requires a policy.

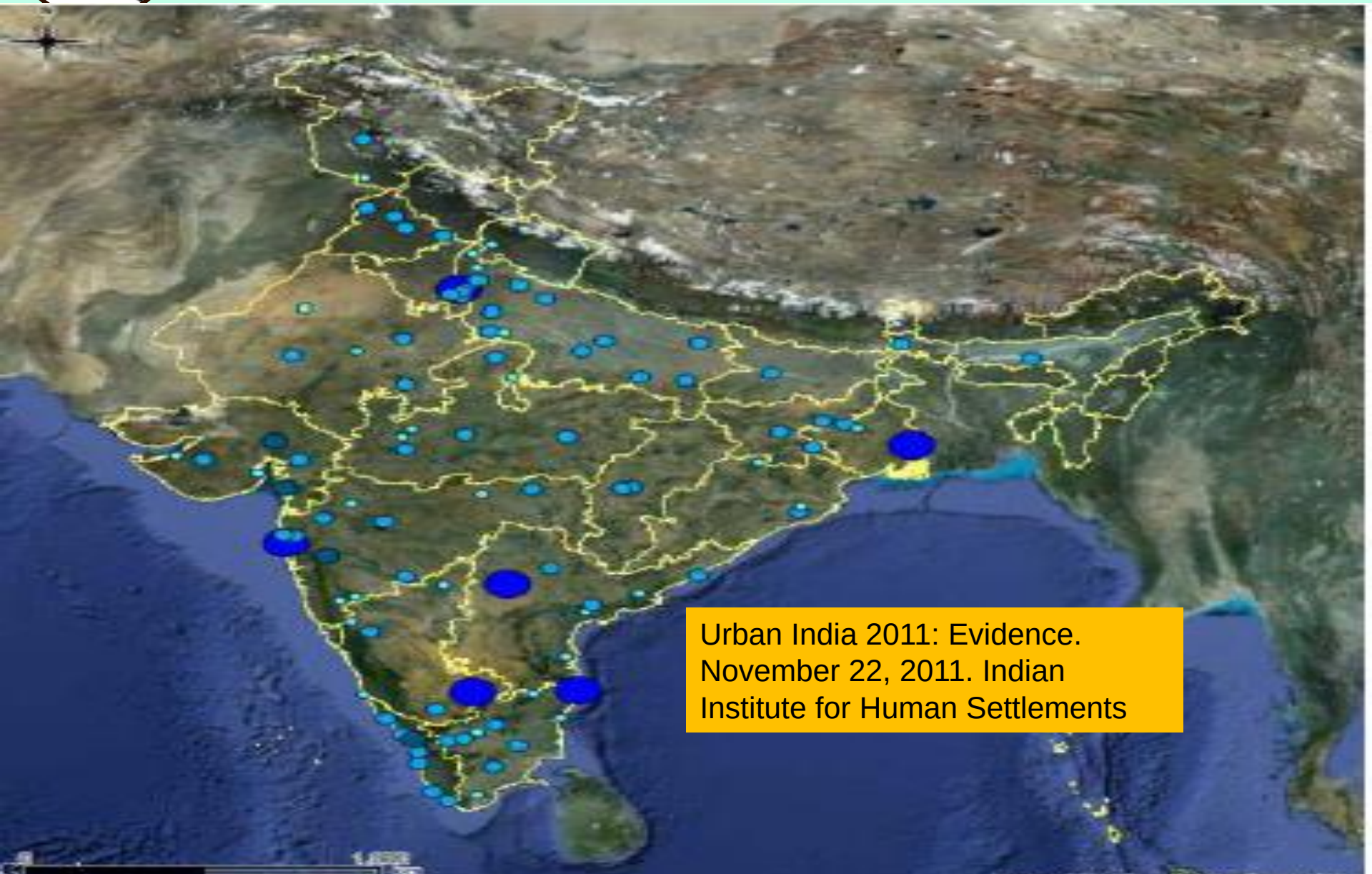
Thank you

Public Debate on HSR- lessons from USA

- **US Government needs to state the Rationale for HSR in USA-** need to develop a ***written strategic vision*** for high-speed rail- role high-speed rail systems in national transportation system.
  - Identify potential objectives and goals for HSR
  - Roles federal and other stakeholders
  - Guidance on Methods for reliability of ridership/ viability forecasts
- b) There is need for **long-term dedicated funding** with Federal backing as protection from changing political priorities.
- c) The FRA must assess **total cost commitments and detailed financial plans** with committed sources of funding must be addressed.
- d) FRA will face intense **political pressure to spread funds country w**ide- thus the need for transparent, objective criteria for selection of only worthy corridors

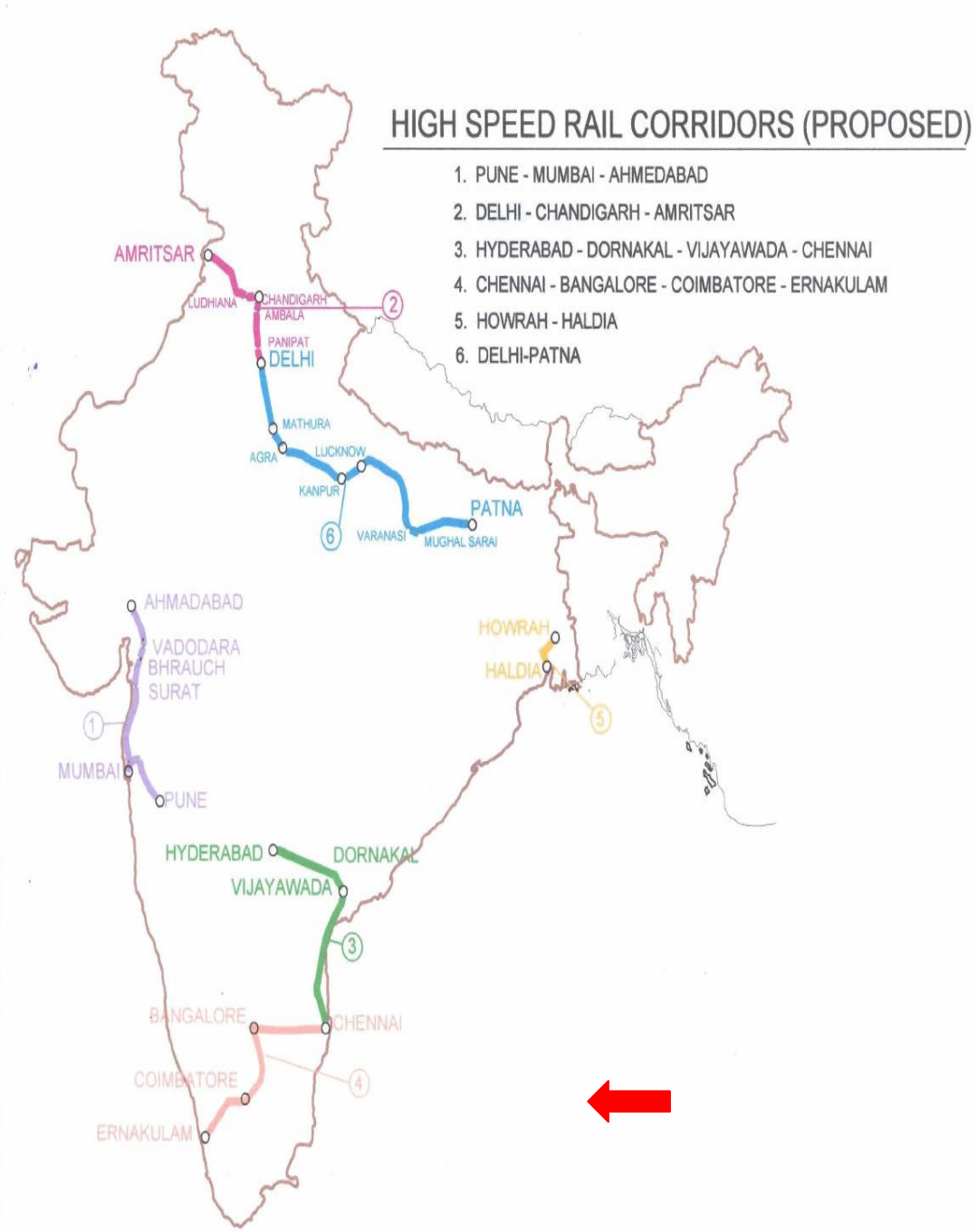
2011- 53 Million Plus Cities

2031: Six 10 Million+ cities

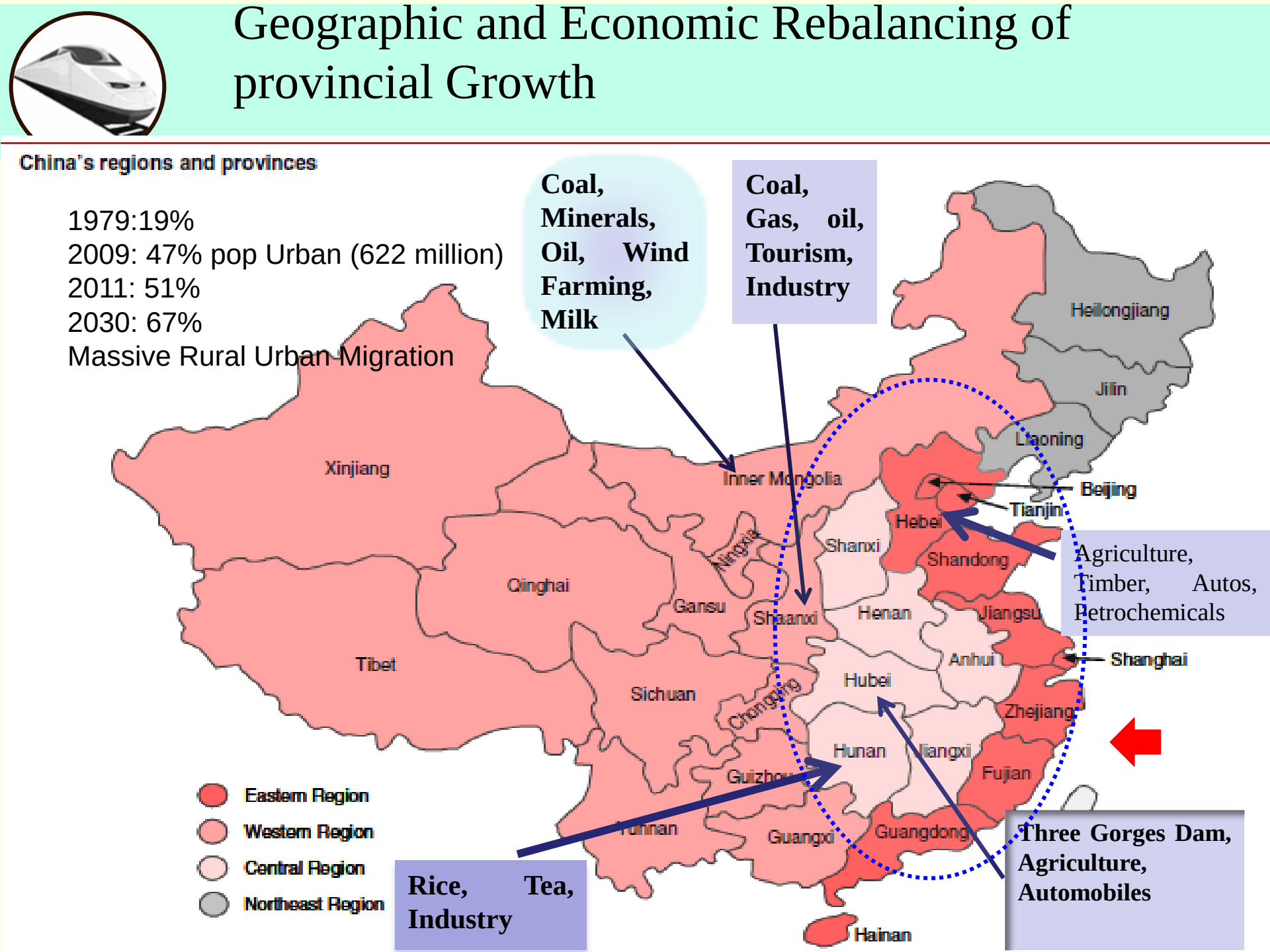


Urban India 2011: Evidence. November 22, 2011. Indian Institute for Human Settlements


Mangalore
Kasaragod
Kannur
Thalassery
Wayanad
Kozhikode
Malappuram
Valancheri
Palakkad
Thrissur
Ernakulam
Idukki
Kottayam
Alappuzha
Chengannur
Pathanamthitta
Kollam
Thiruvananthapu
N
LEGEND
Proposed High Speed Rail Corridor
High Speed Rail Stations
Future High Speed Rail Stations

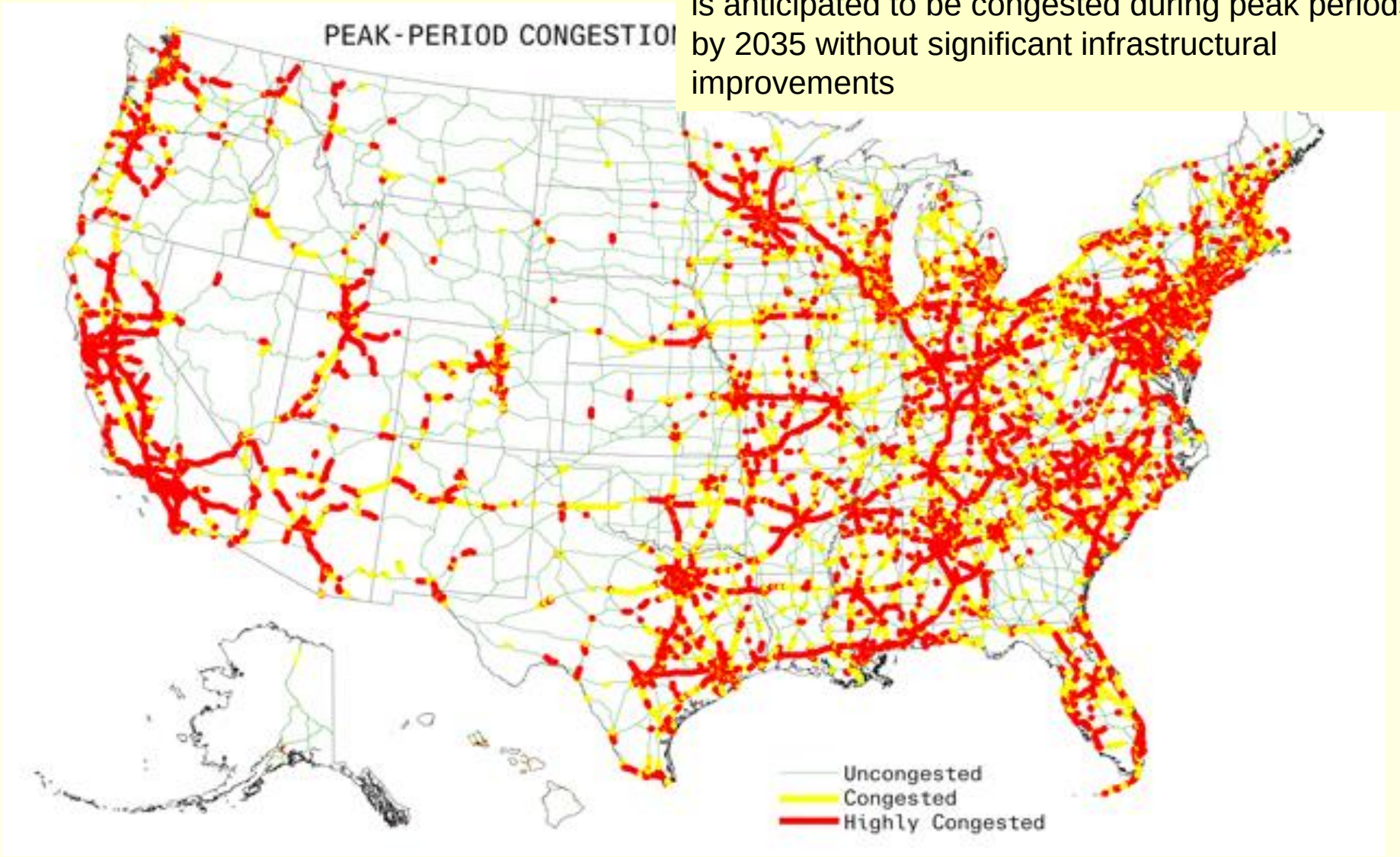

HIGH SPEED RAIL CORRIDORS (PROPOSED)
1. PUNE - MUMBAI - AHMEDABAD
2. DELHI - CHANDIGARH - AMRITSAR
3. HYDERABAD - DORNAKAL - VIJAYAWADA - CHENNAI
4. CHENNAI - BANGALORE - COIMBATORE - ERNAKULAM
5. HOWRAH - HALDIA
6. DELHI-PATNA
AMRITSAR
LUDHIANA
CHANDIGARH
AMBALA
PANIPAT
DELHI
MATHURA
AGRA
LUCKNOW
KANPUR
VARANASI
MUGHAL SARAI
PATNA
AHMADABAD
VADODARA
BHRAUCH
SURAT
MUMBAI
PUNE
HOWRAH
HALDIA
HYDERABAD
DORNAKAL
VIJAYAWADA
BANGALORE
CHENNAI
COIMBATORE
ERNAKULAM

Geographic and Economic Rebalancing of provincial Growth




INDIAN RAILWAYS - Some Highlights .....
☆ Indian Railways is the largest railway system in Asia and largest railway system under a single management.
☆ Indian Railways is the second largest railway system in the World.
☆ The Total Railway Route Length is 63,140 km.
☆ Number of Railway Stations - over 7,500
☆ Number of Locomotives -over 7,800
☆ Passenger Service Vehicles - 39,236
☆ Coaches - 40,000
☆ Wagons - 3,26,000
☆ Passenger traffic has increased from 1,284 passengers in 1950-51, to about 13 million passengers per day.
☆ Indian Railways carries 1.3 million tons of freight every day.
☆ 14,300 trains ply every day in India.
☆ IR is the largest employer in the country, with about 1.6 million people
INDIA
Srinagar
Udhampur
Jammu Tawi
Kathua
Pathankot
Jogindarnagari
Amritsar
Jalandhar
Firozpur
Shimla
Ludhiana
Chandigarh
Hindumalkot
Bathinda
Dehra Dun
Ambala
Hanumangarh
Kurukshetra
Kathgodam
Anupgarh
Panipat
Meerut
Tanakpur
Hisar
Rohtak
Moradabad
Sardarshahr
Churu
Delhi
Bikaner
Rewari
Bareily
Dudhwa
Kolayat
Ratangarh
Aligarh
Shahjahanpur
Jaisalmer
Phalodi
Ringas
Alwar
Mathura
Sitapur
Jaipur
Agra
Farrukhabad
Gonda
Munabao
Jodhpur
Phulera
Lucknow
Gorakhpur
Luni
Sawai
Madhopur
Samdari
Gwalior
Kanpur
Sultanpur
Marwar
Kota
Sheopur
Jhansi
Allahabad
Varanasi
Chittaurgarh
Udaipur
Palanpur
Gandhidham
Mahesana
Bhuj
Gandhinagar
Ratlam
Bina
Katni
Okha
Ahmadabad
Bhopal
Jabalpur
Anand
Godhra
Ujjain
Itarsi
Karonji
Dwarka
Rajkot
Vadodara
Indore
Nainipur
Anuppur
Porbandar
Bhavnagar
Bharuch
Khandwa
Amla
Balaghat
Bilaspur
Veraval
Dungar
Surat
Jalgaon
Nagpur
Gondia
Durg
Raipur
Silvassa
Chalisgaon
Akola
Wardha
Manmad
Aurangabad
Rajhara Dalli
Titlagarh
Thane
Kalyan
Chandrapur
Mumbai
Ahmadnagar
Parbhani
Nanded
Purna
Roha
Pune
Daund
Latur
Jagdalpur
Kurduvadi
Solapur
Kirandul
Koraput
Kazipet
Warangal
Naupada
Ratnagiri
Miraj
Vikarabad
Secunderabad
Vizianagaram
Kolhapur
Wadi
Hyderabad
Vishakhapatnam
Sindhudurg
Nalgonda
Vijayawada
Rajahmundry
Raichur
Guntur
Arabian Sea
Panaji
Londa
Gadag
Tenali
Machilipatnam
Madgaon
Hubballi
Ballari
Gooty
Giddalur
Repalle
Hosapete
Guntakal
Talguppa
Chitradurga
Dharmavaram
Chikjajur
Gudur
Birur
Pakala
Renigunta
Mangaluru
Arsikere
Banigarapet
Chennai
Hassan
Bengaluru
Arakkonam
Kannur
Mysuru
Jolarpettai
Chamrajnagar
Viluppuram
Puducherry
Udagamandalam
Salem
Coimbatore
Erode
Vriddhachalam
Kavaratti
Shoranur
Palakkad
Karaikal (PUDUCHERRY)
Ernakulam
Tiruchchirappalli
Dindigul
Madurai
Karaikkudi
Virudunagar
Manamadurai
Tenkasi
Rameswaram
Kollam
Tuticorin
Thiruvananthapuram
Tirunelveli
Nagercoil
Tiruchchendur
Kanniyakumari
LAKSHADWEEP (INDIA)
Lakshadweep Sea
Bay of Bengal
Andaman Sea
ANDAMAN & NICOBAR ISLANDS (INDIA)
Port Blair
Indira Point
New Moore I. (INDIA)
Raxaul
Darjeeling
Gangtok
Shiliguri
Rangia
Jorhat
Dangori
Itanagar
Simaluguri
Naginimara
Dispur
Tezpur
Guwahati
Kohima
Shillong
Lumding
Imphal
Jiribam
Muzaffarpur
Purnia
Hajipur
Katihar
Patna
Balurghat
Dehri On Son
Bhagalpur
Ngraj Bazar
Karimganj
Azimganj
Kumarghat
Gaya
Agartala
Bhairabi
Aizawl
Asansol
Chandrapura
Karonji
Ranchi
Puruliya
Raurkela
Haora
Kolkata
Bilaspur
Kharagpur
Jharsuguda
Sambalpur
Talcher
Cuttack
Bhubaneshwar
Khordha Road
Paradwip
Puri
RAILWAY ZONES
Railways | Headquarters
Central | Mumbai CST
Eastern | Kolkata
Northern | New Delhi
North Eastern | Gorakhpur
North East Frontier | Maligaon (Guwahati)
Southern | Chennai
South Central | Secunderabad
South Eastern | Kolkata
Western | Church Gate, Mumbai
East Central Railway | Hajipur
East Coast Railway | Bhubaneshwar
North Central Railway | Allahabad

In 1982 the only city considered by the Texas Transportation Institute to be congested was Los Angeles. By 2005, 27 additional cities met such criteria. The image illustrates that much of the National Highway System, even on intercity routes, is anticipated to be congested during peak periods by 2035 without significant infrastructural improvements



US DOT Federal Railroad Administration Map

HSR Nations- UIC 2013 (http://uic.asso.fr/IMG/pdf/20130701_high_speed_lines_in_the_world.pdf)

	In Operation	Under Construction	Planned	Total	Max Speed
Austria	93				250
Belgium	209				260/300
France	2036	757	2407	5200	320
Germany	1334	428	495	2257	250/300
Italy	923		395	1318	250/300
Netherlands	120				300
Poland	712				300
Spain	2515	1308	1702	5525	250/300
Switzerland	35	72		107	250
UK	113		204	317	300/360
China	9760	9081	3777	22618	200/350
Japan	2664	779	179	3622	260/320
Taiwan	345			345	300
South Korea	412	186	49	647	300
Turkey	444	603	1758	2805	250
Saudi Arabia		550		550	300
Morocco		200	480	680	300
Portugal			1006	1006	250/350
Russia			650	650	300
Sweden			750	750	300
India			495	495	250
Brazil			511	511	300
USA			777	777	300
	21715	**13964**	**15635**	**50180**	

USA and India- intent expressed but unable to take a decision- on Technology Acquisition or Network expansion benefits