



Worldwide Issues with HSR: What Questions, What Answers?

Keizai Society and U.S. Japan Business Forum

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A disclaimer and a Thank-you

- I am NOT here as a member of the Peer Review Panel. All facts and opinions are my responsibility
- Long relationship with Japanese railways as U.S. Government official
- World Bank connection



What (and where) is HSR?

- Japan
- Taiwan
- Korea
- China
- E.U.
- U.S. (Acela)



World HSR

Profile of Higher Speed Railways					
Country	Miles of Higher Speed Line			2008 HSR Passengers (000)	2008 HSR Passenger- Miles (000)
	V Max > 150 Mph	V Max 100 to 150 Mph	Total		
Japan (3 JRs)	1,482		1,482	310,237	50,710
China	20	4,724	4,744		
Taiwan (THSRC)	214		214	30,581	4,077
Korea (KTX)	149		149	38,016	6,308
France (RFF/SNCF)	1,051	3,215	4,266	116,054	32,642
Germany (DB)	537	977	1,514	74,700	14,490
Italy (FS)	330	1,718	2,049	23,882	5,513
Spain (ADIF/RENFE)	773	483	1,255	22,955	6,514
Belgium (SNCB)	108		108	9,697	670
UK (/Eurotunnel/Eurostar)		70	70	9,100	617
Sweden (Banverket/SJ)		1,600	1,600	8,764	1,858
Netherlands		120	120	5,966	538
U.S. (Acela)		450	450	3,399	631
U.S. (NEC Regional)		450	450	7,489	1,145
World Total	4,665	13,356	18,021	660,840	125,714

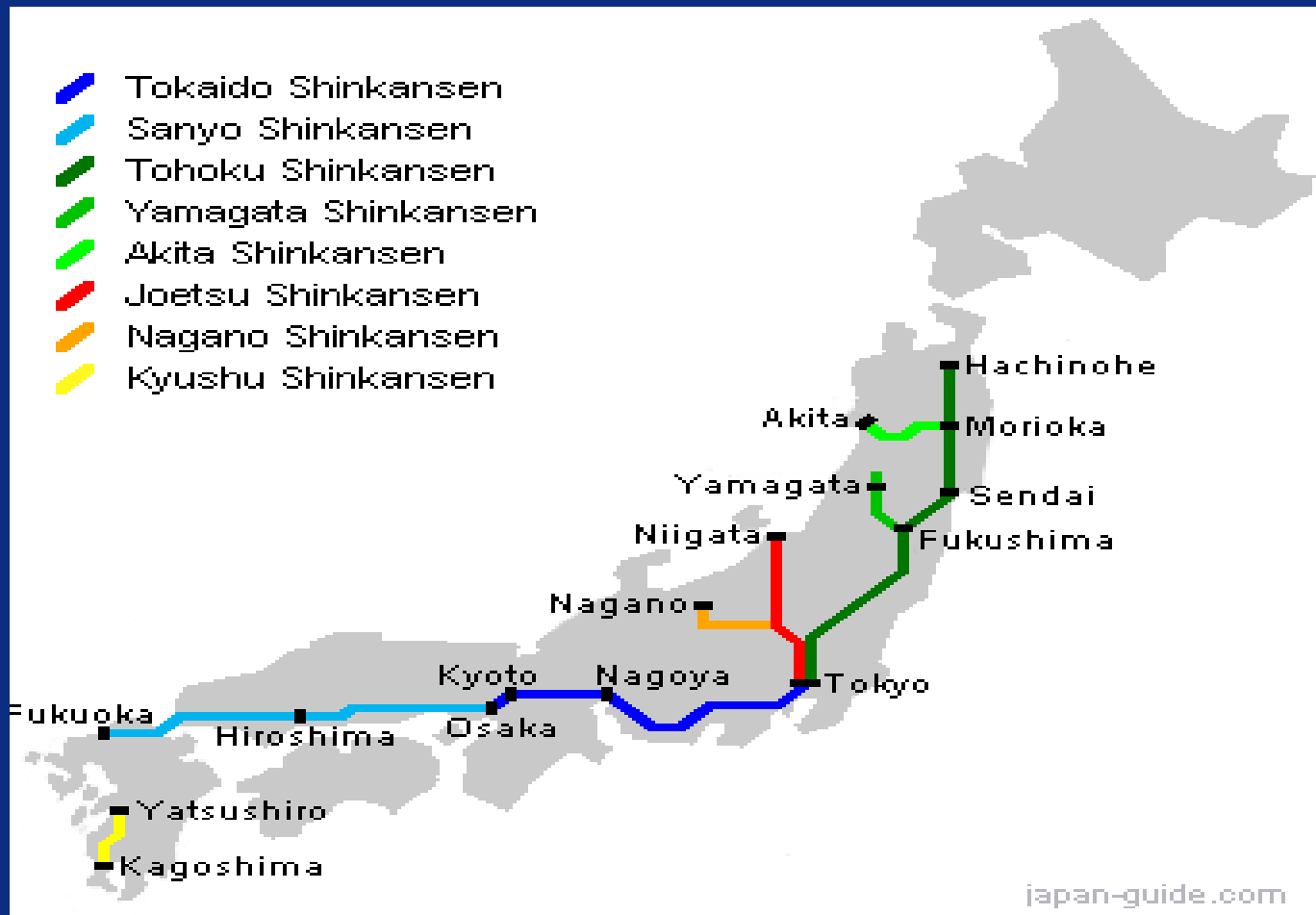


JAPAN

- The Shinkansen was the first to provide true HSR (1964)
- By far the largest ridership and passenger-miles (today)
- Began as a traditional, monolithic state-owned corporation (JNR)
- Broken up and privatized in 1987
- Now, the HSR service predominantly provided by 3 privatized “JRs”
- HSR **CAN** be profitable!



The Japanese Shinkansens





TAIWAN

- The only fully private (at first) HSR project
- Demand has been much less than forecast (only 30%)
- Delays and cost overruns in completion due to rolling stock and infrastructure integration issues
- Survival in private sector is not assured



Taiwan



Max Speed 185 Mph

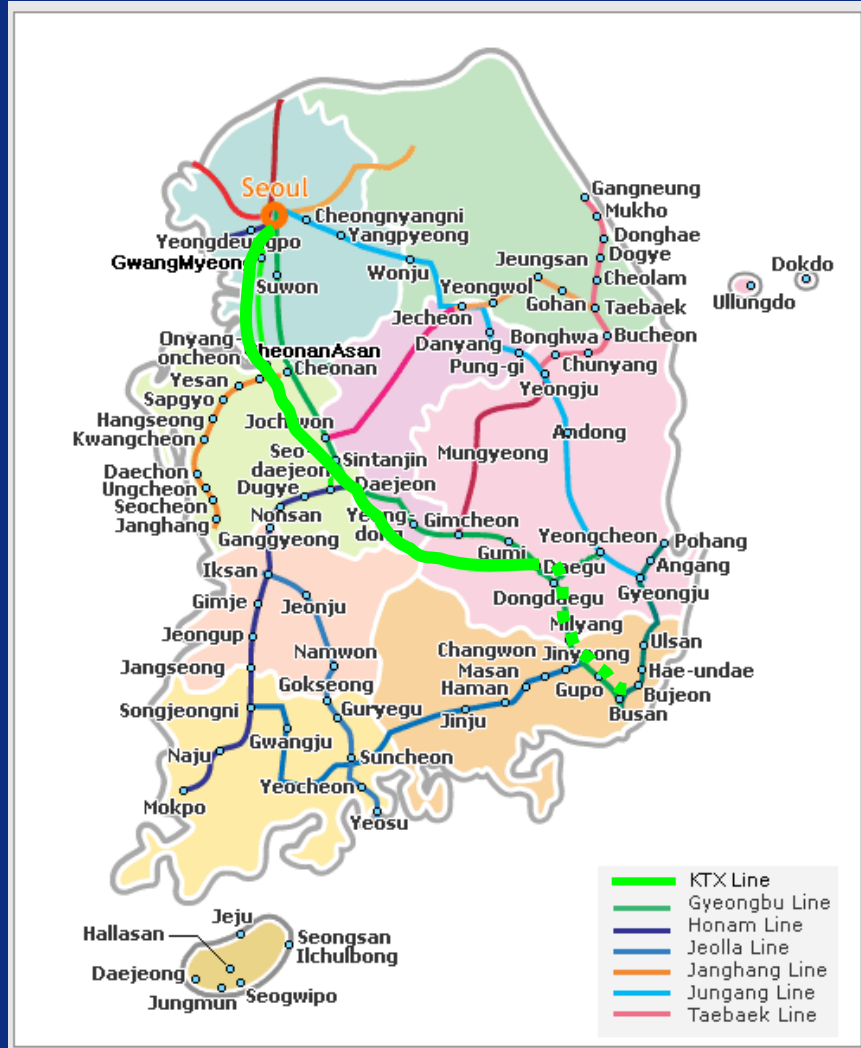


KOREA

- HSR (KTX) is part of a new Government Railway operating company
- Phased project: Seoul to Daegu HSR 2004, Daegu to Busan (upgraded line) 2004; then new line Daegu to Busan 2010.
- Demand has exceeded projections and KTX services are profitable



Korea



Max Speed 185 Mph



China

- Rail has two problems: huge population and congestion on the existing network from both freight and passenger traffic
- Probably impossible to build automobile and air traffic on the same scale as western countries and Japan
- Solution: build new, passenger-only rail services, all higher speed
- Program is unprecedented in size and speed – but the need is massive and immediate
- Completion planned for **2016**

Dedicated Passenger Lines in China

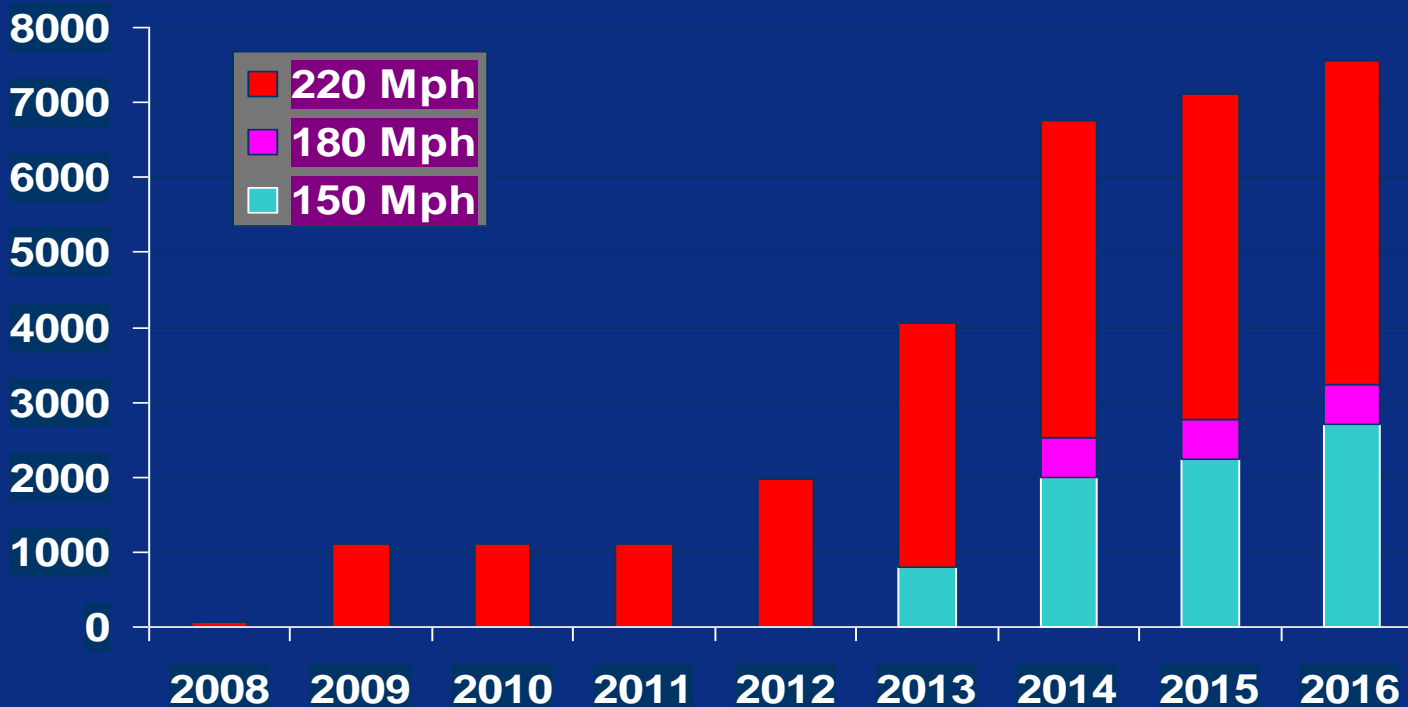
Planned Completion in 2016



Major Cities: 103 million population

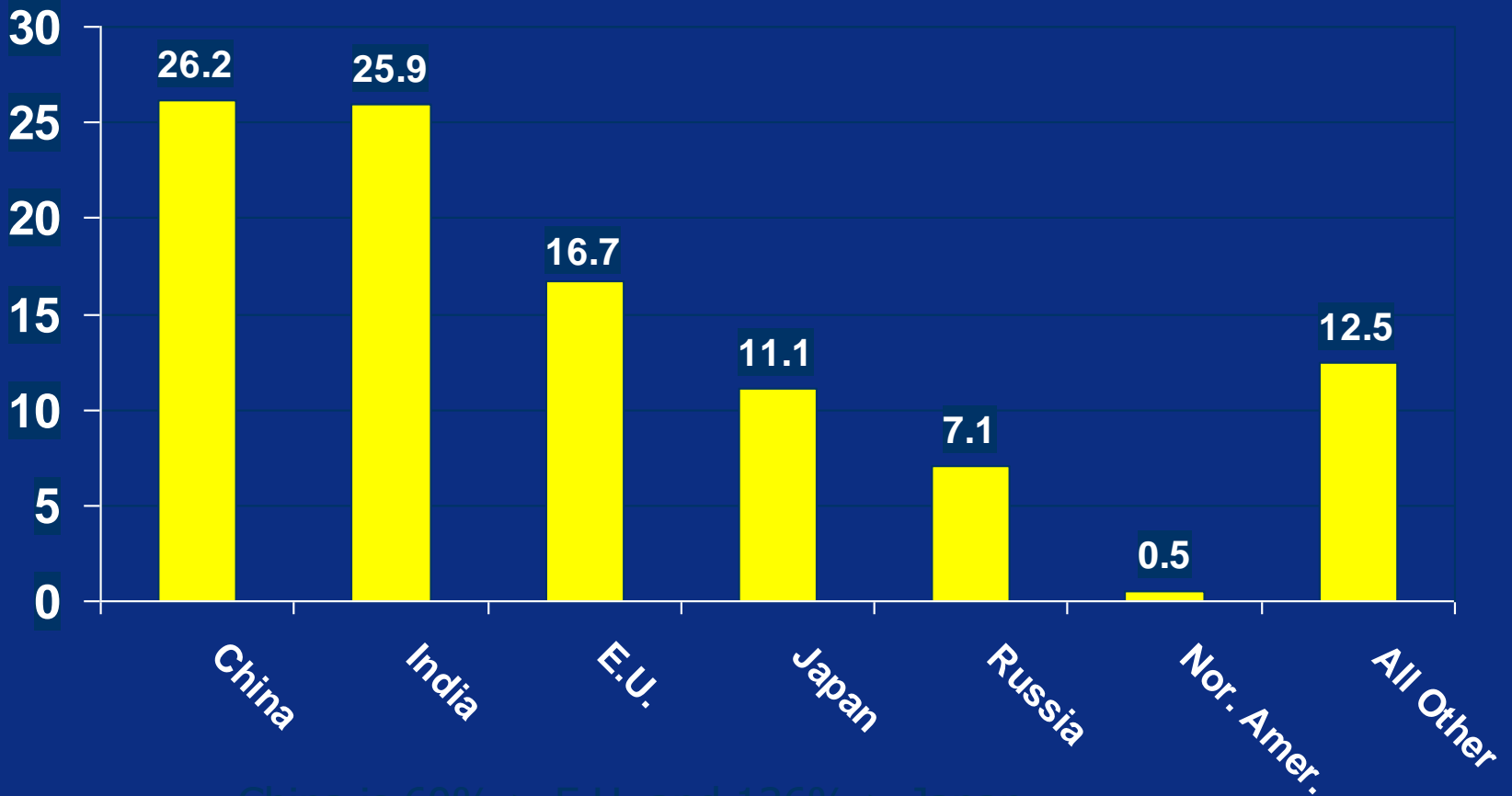


Miles of HSR Lines in China





Potential for HSR in China: Percentages of the World's Total Rail Passenger-Km (2005)

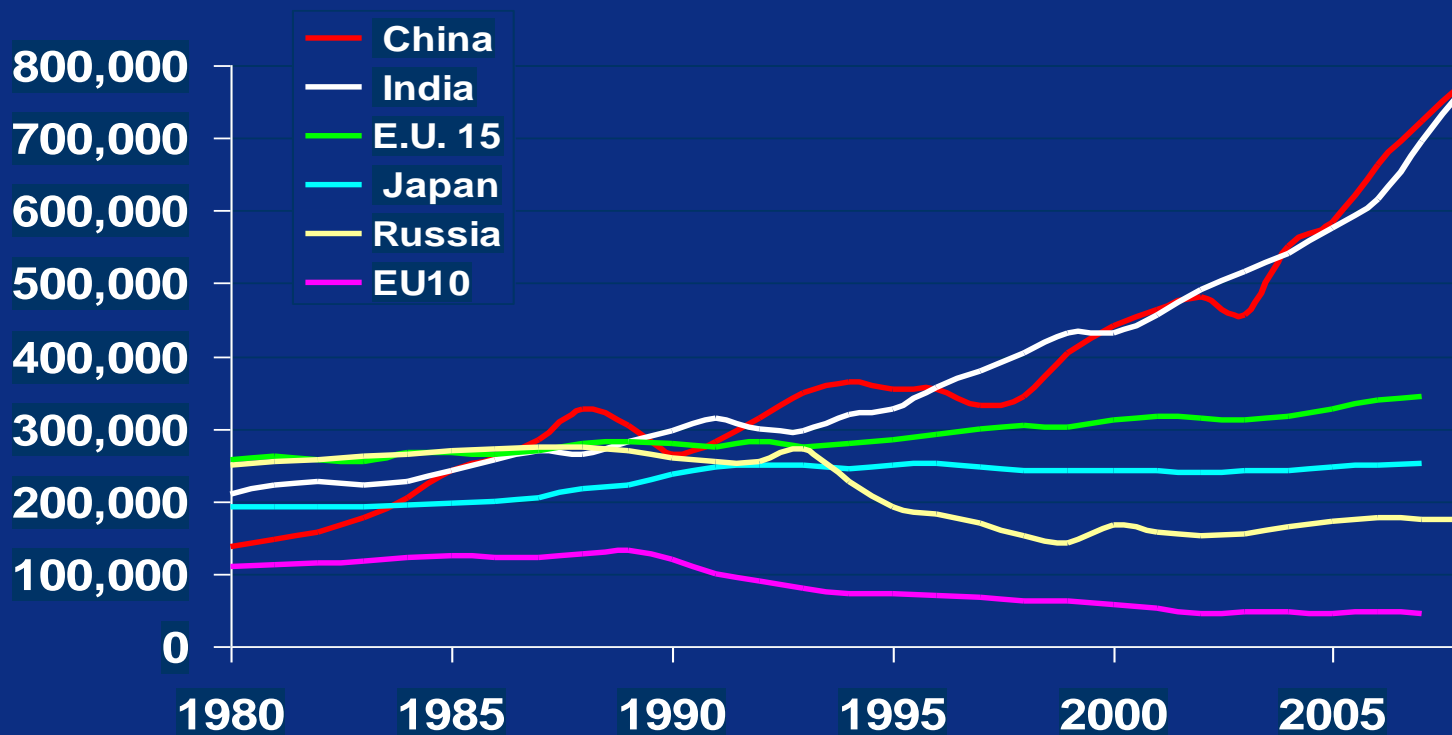


China is 60% > E.U. and 136% > Japan



Passenger Traffic Trends

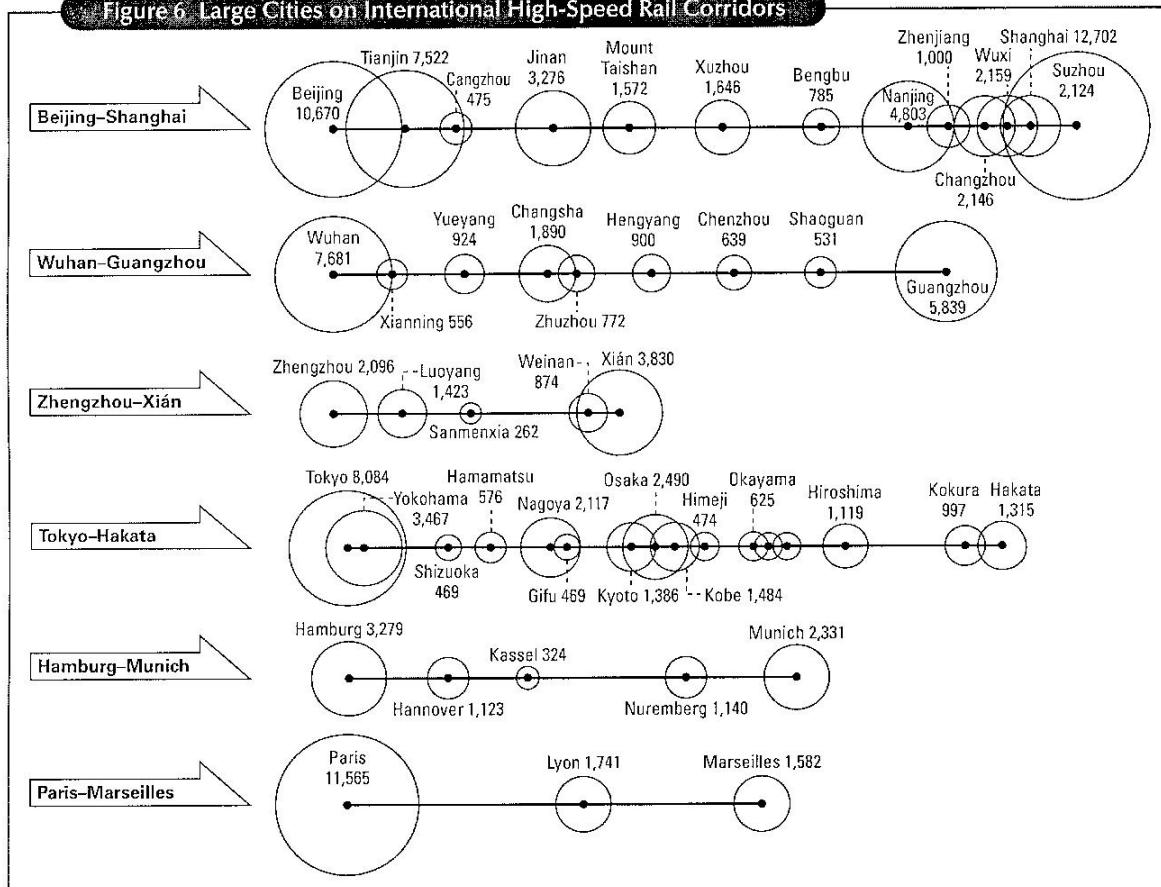
(Million Passenger-Km)





China HSR Compared with Japan, Germany and France

Figure 6 Large Cities on International High-Speed Rail Corridors





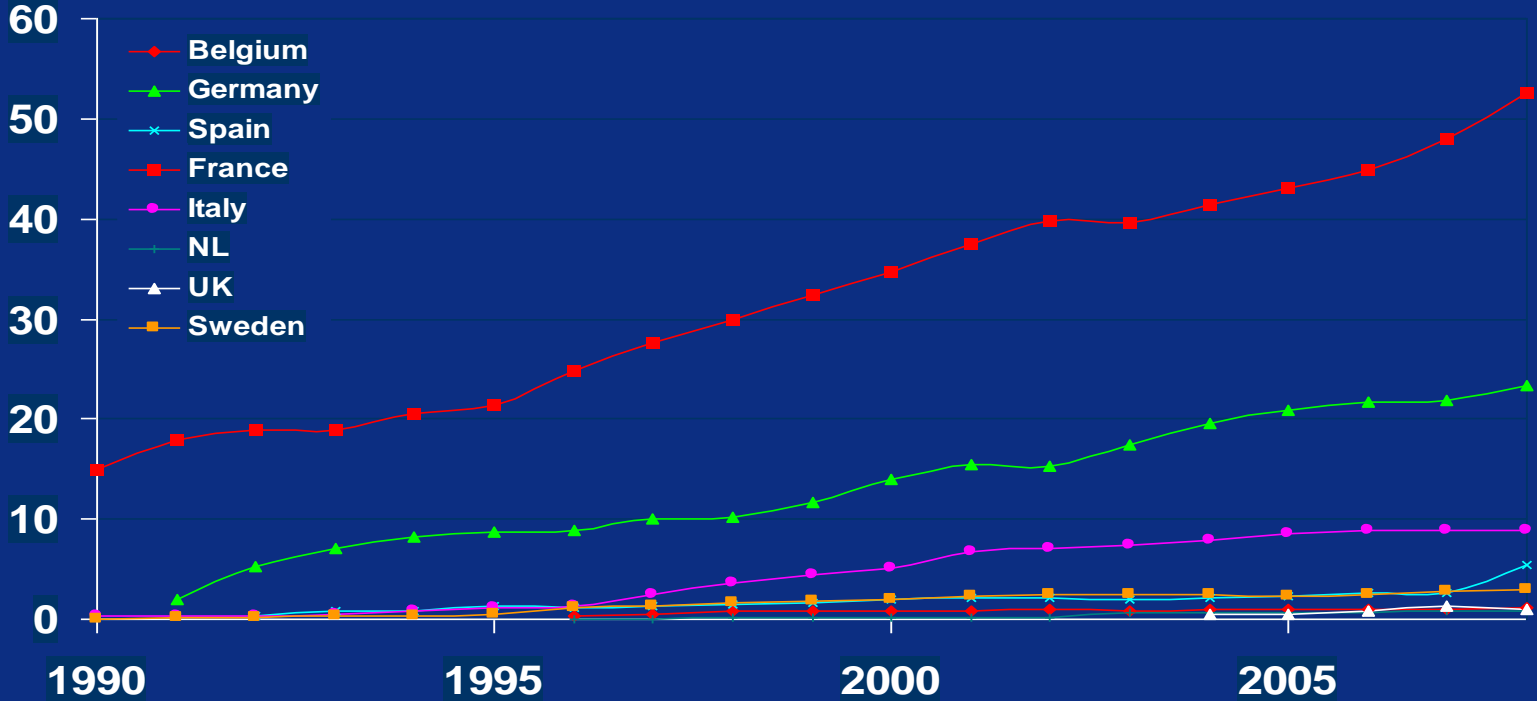
The General E.U. Approach

- Mandate: infrastructure separated from operations; access charges for all operators.
- Access charges based on “marginal” cost, with Government making up the difference.
- Mark-ups are allowed to permit recovery of some or all of the full financial costs. No E.U. position for or against private sector funding or involvement.
- Most E.U. railways are Government owned corporations.
- Some private sector operators are starting. Air France, Lufthansa and Virgin Air are considering competing in HSR.
- There is a long term E.U. plan for transport (TEN-T)
- E.U. level funding is significant
- These overall structure and expansion plan forms the framework within which all E.U. HSR development will proceed.



E.U. HSR Traffic

(billion passenger-km)





E.U. HSR Line Km





E.U. HSR Lines (Categories I and II) in 2020





Future E.U Rail Network Development: Ambitious Plans (but slower than China)

E.U Rail Network Development						
Category of Line	Max Speed (KM/Hr)	Length in 2008 (Km)	Length in 2010 (Km)	Length in 2015 (Km)	Length in 2020 (Km)	Planned Total after 2020
I	>250	5,583	6,359	11,343	15,028	21,023
II	~200	3,971	4,205	5,204	7,115	9,728
III	Specific	139	169	298	1,055	1,104
Total		9,693	10,733	16,845	23,198	31,855

Note significant use of ~200 Km/Hr systems

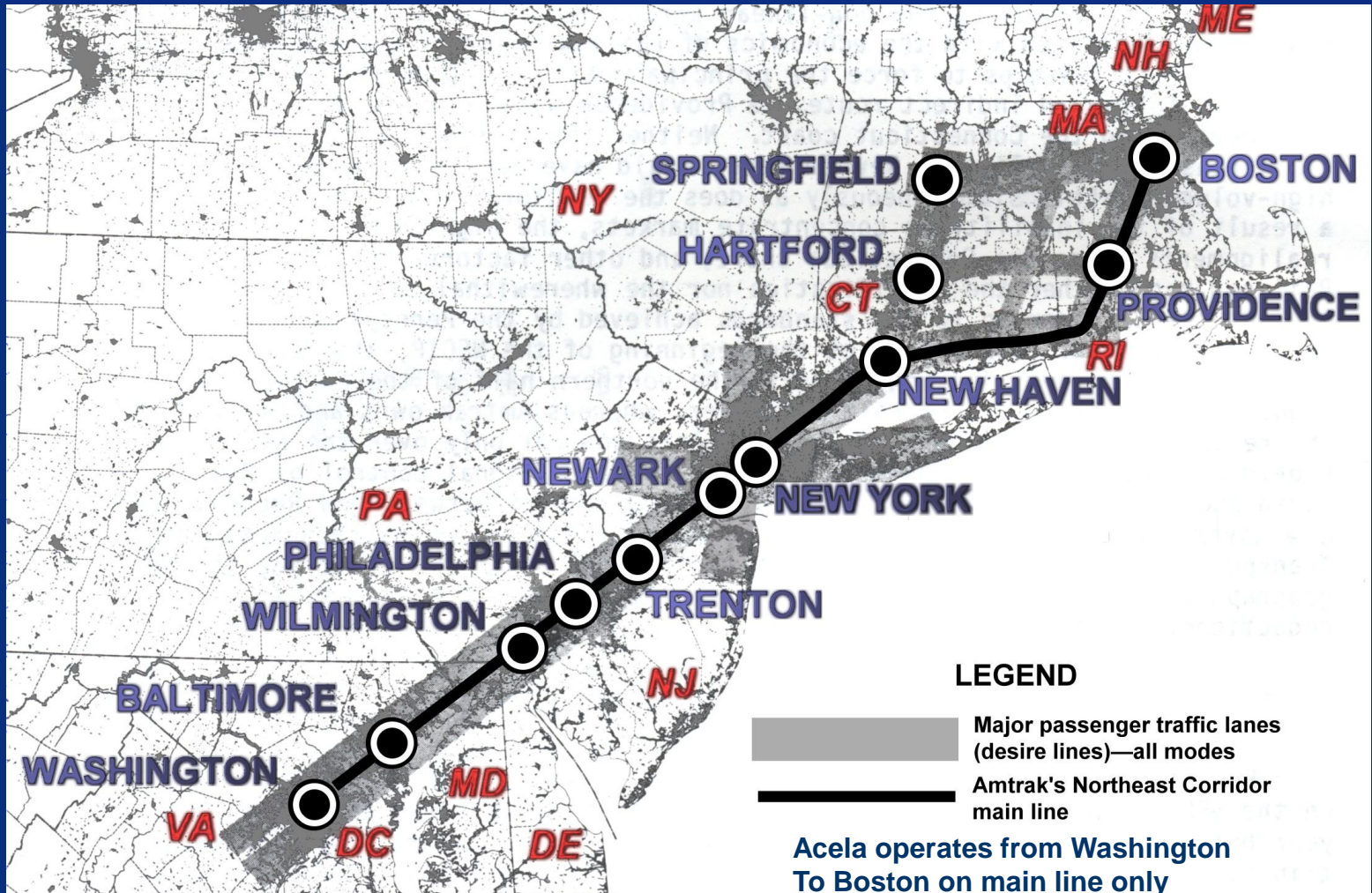


Amtrak – Acela and NEC Regional

- Amtrak is supported by national government and, on specific services, by state governments
- Amtrak has three types of service: 15 Long Haul trains (“national system”), 25 Short Haul trains, and Northeast Corridor (NEC)
- Amtrak owns and manages the NEC infrastructure, whereas most of the long haul and short haul trains operate on infrastructure owned and managed by private freight railroads
- Amtrak currently contracts with 13 states to provide short haul trains with state support, and 4 states to provide commuter services
- NEC (Acela and Regionals) is the only HSR operation in the U.S.
- Depending on cost allocations, the NEC is the only service that covers its operating costs and (possibly) most of its fixed and allocated costs. Acela is significantly “profitable,” Regional is marginally so
- The NEC infrastructure has benefited from multi-billion \$ Federal investment that Amtrak does not have to repay.



The Northeast Corridor





So, why not real HSR in the U.S.?



Higher Speed Rail Issues in the U.S.

Federal transportation policy and financing

- Has been pro-highway and air, inadequate support for rail
- May be changing: HSIPR \$8 billion plus follow-ons; FRA “Vision for High-Speed Rail in America” (Apr 2009); FRA “Preliminary National Rail Plan,” Oct 2009; and, U.S. DOT “Strategic Plan FY 2010-2015: Transportation for a New Generation,” April 15, 2010.
- A new and more aggressive Federal approach to improved rail passenger service, including explicit support of HSR
- Increased Congressional interest in improved rail passenger service
- BUT, beyond HSIPR, existing sources of funding are limited and will not support a sustained program, nor can any current HSR project be completed with existing HSIPR funding (or other existing funding)
- Adequate and stable Federal share will be vital. **BUT no new taxes**
- Creating urban linkages will require better coordination and clearer policy among U.S. DOT, FRA, FTA and state transit agencies.



Higher Speed Rail Issues in the U.S. **State** level policies and financing

- Only 13 States currently support intercity passenger rail.
- State funding has been limited and is now even more so due to the economic turndown. **And no new taxes.**
- Many states have only limited experience with PPPs
- Program formulation and management can be difficult across state boundaries, multi-state operational support even harder
- The necessary urban linkages of HSR with bus or rapid transit do not exist or are not effective. States will need to raise priority compared with intercity roads

Higher Speed Rail Issues in the U.S.



Jurisdictional Issues affect the HSR Management Model

- Amtrak is currently the only agency with mandatory authority to acquire operating access, but Amtrak is Federal not state agency
- Freight Class I railroads prefer dealing with Amtrak rather than other contract operators (there are exceptions)
- If Federal funding is used, all new HSR systems will probably have to comply with costly Federal safety and labor requirements
- Currently, Amtrak is the only agency that can provide liability coverage for major accidents, so competition by other operators is hindered.
- BUT, under existing policies, Amtrak cannot be a significant at-risk partner in PPPs, though it could be the operating partner if compensated on a cost-plus basis
- New institutional framework is needed



Higher Speed Rail Issues in the U.S.

Public and Private Benefits and Costs

- Federal and state experience with public **or** private projects is strong, but experience with public/private projects is limited
- Improved rail almost always has **both** public and private benefits and costs, making clear definition and quantification critical. How much are they worth, and who should pay?
- Without answers and new policy, PPPs in HSR are unlikely
- Problem is especially difficult in new, “green field” HSR where all risks are higher, and the balance of public/private benefits and costs less clear
- Particular question: how much is it worth to reduce GHG emissions in transport?
Related questions:
 - ◆ Value of time saved, if not captured in revenues of the system
 - ◆ Value pollution reduction
 - ◆ Value of lives saved
 - ◆ Value of reducing congestion on roads and air
- The PPP Challenge: identifying net benefits for both and finding a way for both to come out ahead



The Ten FRA Designated Corridors and the NEC: The Long Term **VISION**





Summary Program

Corridor	HSR Line Miles	2050 Corridor Population (million)	2050 Corridor Trips (millions)	Total CO2 savings (metric tonnes)		Low Infrastructure Cost (2009\$ Millions)	High Infrastructure Cost (2009\$ Millions)
				Low	High		
California	1,088	54.1	101.0	1,292,113	3,878,697	35,904	63,104
Pacific Northwest	467	14.5	12.3	76,070	245,354	7,005	9,340
Florida	478	31.6	28.9	135,212	509,228	7,170	26,768
Chicago Hub	2,137	39.1	66.0	544,612	1,502,751	49,151	74,795
South Central	1,202	33.0	63.9	759,691	2,416,287	14,424	52,888
Southeast	1,659	33.2	84.4	795,858	2,604,359	29,862	49,770
Gulf Coast	1,024	22.0	21.6	219,380	688,417	18,432	30,720
NEC	457	54.5	35.0	289,370	874,338	11,425	26,049
Keystone	486	16.6	9.9	34,030	166,381	11,178	17,010
Empire	630	28.1	22.6	188,070	722,979	12,600	17,010
Northern New England	665	15.3	9.9	54,681	185,283	13,300	17,955
TOTAL	10,293	277.0	455.5	4,389,087	13,794,074	210,451	385,409



Si, se puede, BUT

- New institutional approach with long-term vision and stable financing needed
- Better understanding of PPPs (advantages and disadvantages) will be critical
- Those (Japan and others) who know how to build and run HSR will have to be prepared to become full partners in the U.S. Not just export equipment, but actually be at-risk partners!