

Parallel Session 1B – Sustainability



Location of station is an important factor that influences the sustainability of High Speed Rail



UIC next station
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Hubs & Intermediate Stations

- **Central Location**

- benefit of high accessibility
- environmental impact

- **Suburb Location**

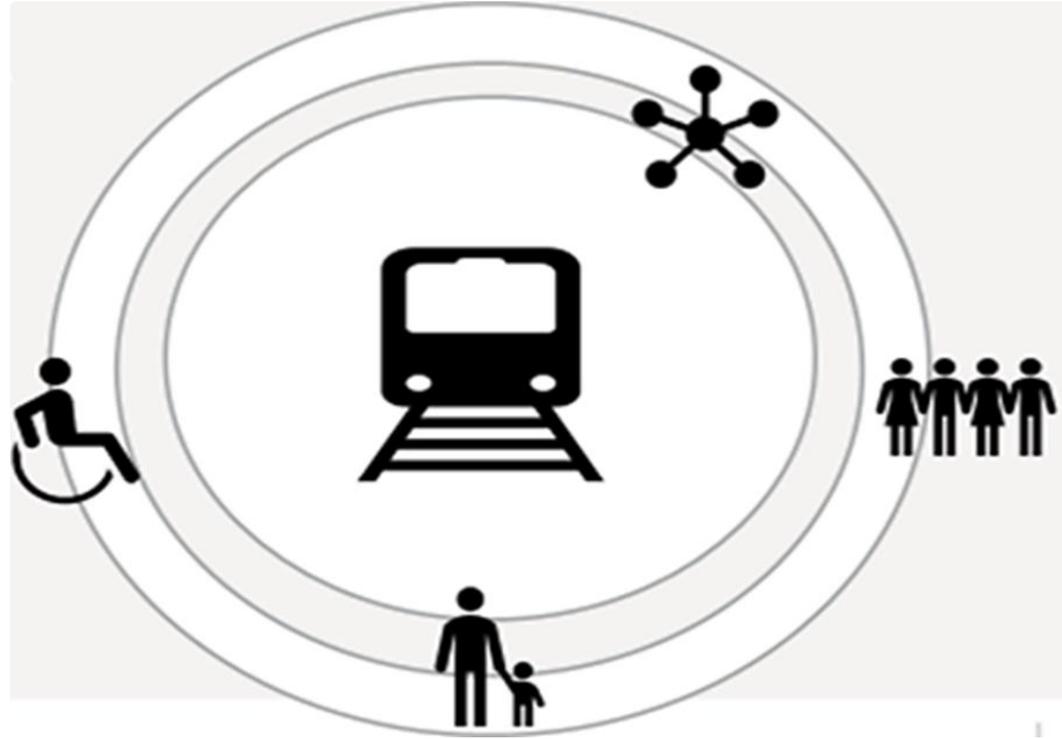
- regeneration of surrounding areas
- create new intersection of activities

The choice of station location is crucial to the potential accessibility benefits and other economic effects.

Transportation Hub

Consists of:

- Infrastructure,
- Services,
- Passengers



Paris Gare du Nord

- **Good access by car and public transport**
- **Punctuality of train**
- **Consistency of departure and arrival platforms**
- **Optimized timetables for different transportation modes**



Transportation Hub

Intensity of transportation and multimodality define stations as a Transportation Hub.

Focus On:

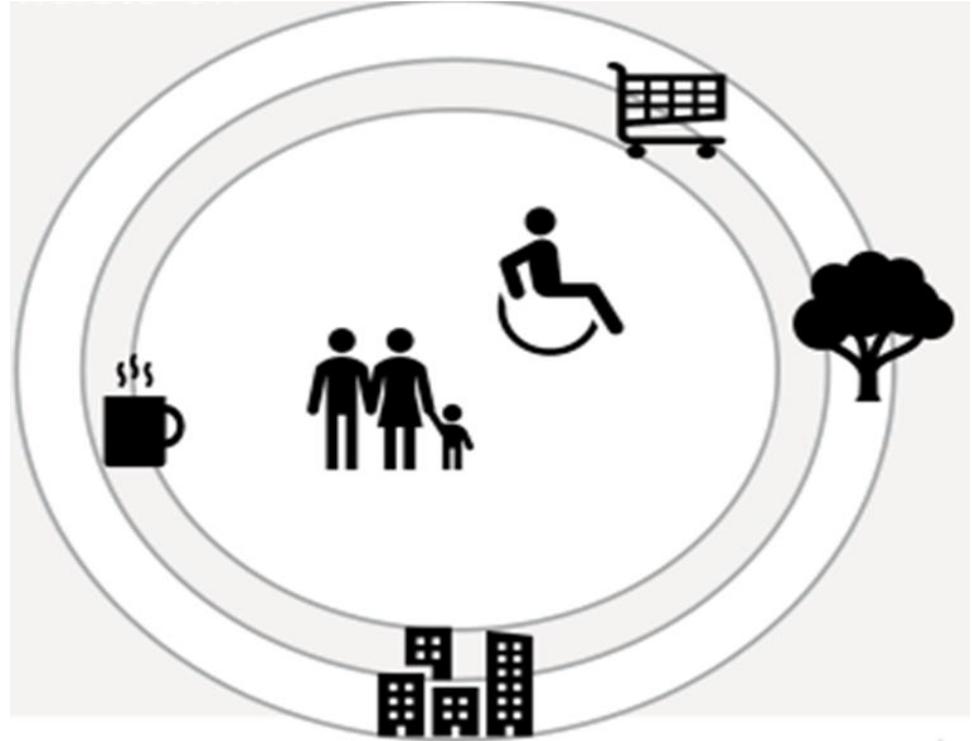
- **frequency**
- **schedules**
- **level of services**

Importance of the sustainability of Transportation Hub: connectivity, accessibility and quality of services.

Economic Hub

Economic Hub consists of:

- Users,
- Business,
- Neighbourhood



London St Pancras Station

- Represents HSR
- Encourage interactions and recreations
- Improves quality of life for users



Economic Hub

Changes in productivity

- Changes in labour market
- Changes in land and property market

Economic activity of neighborhood area defines stations as an Economic Hub.

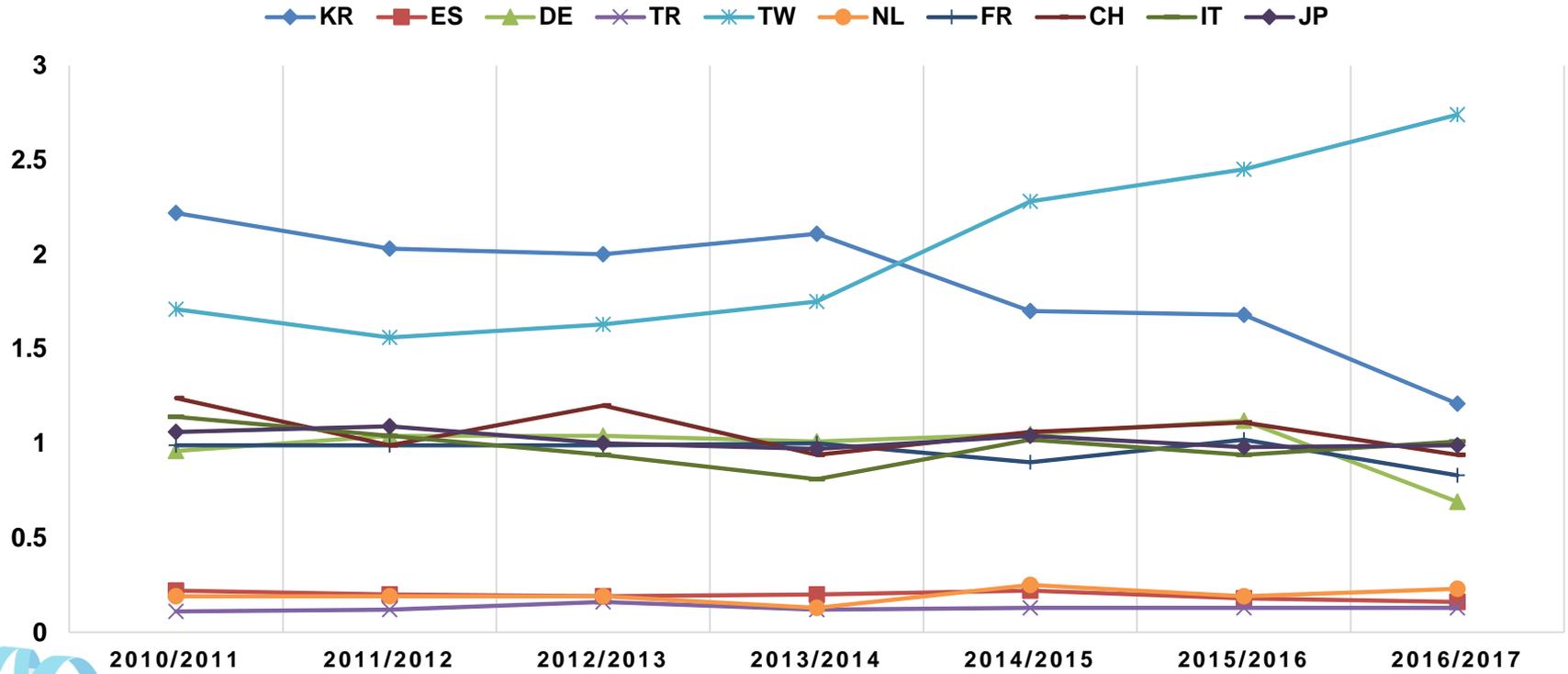
For Economic Hub sustainability, the important factors are the intensity & diversity of land users.

Intermediate Stations

Intermediate Station Approaches

- **Build new railway station**
 - centrally located
 - suburb located
 - rural located
- **Adopt old railway stations**
- **Each additional station increases local demand and decreases global demand. Increasing accessibility will mostly benefit major metropolitan areas.**
- **Each intermediate stop adds 5-10 minutes to travel time and this reduces the attractiveness of HSR for inter-city passengers.**

Productivity change by selected HSRs



Selected variables that influence economic sustainability of HSR

HSR	Level of Productivity of HSR	Overall Technical Efficiency	Length of HSR lines	Average Distance per Passenger	Average Time in Vehicle	Number of Passengers
KR	1.21	50.83	887.00	249.00	1.61	59669.00
ES	.16	16.35	2852.00	386.00	1.91	40259.00
DE	.69	51.59	1658.00	328.00	1.95	86732.00
TR	.13	9.19	724.00	317.00	2.12	7160.00
TW	2.74	100.00	354.00	183.00	1.20	60570.00
NL	.23	19.96	120.00	100.00	.76	4098.00
FR	.83	62.16	2814.00	464.00	1.90	108720.00
CH	.94	64.52	26869.00	380.00	1.35	1517800.00
IT	1.01	43.53	896.00	322.00	1.69	41276.00
JP	.99	100.00	3041.00	233.00	1.14	377743.00



Summary of exploring the relationship between selected variables and OTE

OTE	Variables	Relationship	Type of Relationship
	Length of HSR line	No relations	
	Surface area of country	No relations	
	Population	No relations	
	Density of population		positive
	GDP per capita	Low correlation	
	Average distance per passenger		negative
	Average time in vehicle		negative
	Average power		positive
	Land taking by HSR	No relations	
	Mean annual staff	No relations	
	Number of seats	No relations	

Station location is influenced by:

- **Population**

 - Number of passengers

 - Number of users

- **Technical difficulties**

- **Environmental impact**

- **Level of connection with regional transport system**

Thank you
for your kind attention