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

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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

<table>
<thead>
<tr>
<th>HSR</th>
<th>Level of Productivity of HSR</th>
<th>Overall Technical Efficiency</th>
<th>Length of HSR lines</th>
<th>Average Distance per Passenger</th>
<th>Average Time in Vehicle</th>
<th>Number of Passengers</th>
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Summary of exploring the relationship between selected variables and OTE

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<tr>
<th>Variables</th>
<th>Relationship</th>
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<td>Length of HSR line</td>
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<td>GDP per capita</td>
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<tr>
<td>Average time in vehicle</td>
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<td>Mean annual staff</td>
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<tr>
<td>Number of seats</td>
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</table>
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