Gröna Tåget [grœːna 'tɔːɡɛt] to make train travel more attractive

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What are specific Nordic conditions?

- Harsh winters
- Elks and deers on track
- Conventional lines incl. new links up to 250 km/h, but many sinuous slower lines
- Mixed heavy freight and passenger traffic
- Varying travel demand
Market segments for long-distance journeys

- High fare
- Low fare
- Long travelling times
- Short travelling times

- Full service airlines
- Low cost airlines
- High-speed trains
- Ordinary trains
- Coaches/buses
- Luxuary tourism travelling

Gröna Tåget’s Business Case
Most important factors for economic train operations

• High occupancy
  Flexibility of train concept, services, sales (yield management)

• Effective space utilisation
  Furnituring and seats, more seats in each car

• High commercial speed
  A modern infrastructure a prerequisite
  High top speed and curving speed, acceleration, short station stops
Attractive services

Long train set and low frequency during the day

Results
Revenues−Costs=Index
100−100=0

Short train sets, multiplied in peak hours, and low frequency

100−96=4

Short train sets and high frequency in peak hours

115−105=10

Short units = increased flexibility, higher occupancy
Increased travel as a result of a more attractive supply is often more important than possible cost savings
Space efficiency and costs

• Wide-body trains have 25% more seats than Continental carbody
• Space efficient seats and train layout
• An EMU is lacking a locomotive/power unit (cf. the X2/SJ 2000)

Wide-body trains have 15% lower total costs than narrower trains (and 20-25% lower than the X2)
Effective space utilisation

Effective seats
- Individual armrests on each seat
- Space-efficient seats – thin seatbacks and legroom

ICE3
European continental profile

Gröna Tåget
Wide body
Norway, Sweden, Denmark

Wide body includes 9 cm of increased width made possible by Active Lateral Suspension (ALS)
Gröna Tåget’s operational range

Examples from different lines in Sweden, 1 to 5 hrs travelling time

Travelling time (h) vs Distance (km)

- Fast regional
- Long-distance

Speeds:
- 110 km/h
- 130 km/h
- 145 km/h
- 180 km/h
- 210 km/h
What should the Gröna Tåget characteristics be?

• More attractive to passengers (travelling time, price etc.)
• Better economy of operations
• Interoperable in Scandinavia in fast regional and long-distance services
• Flexibility for variations in demand and services
• Short and punctual station stops, also at peak load
• Improved environmental ”green” performance
• Made for Nordic climate conditions
Infrastructure upgrading
for speeds up to 250 km/h (Swedish examples)

Examples of measures
• Grade separated road crossings
• Bridges and geotechnical stability
• Track and catenary
• Signalling (ERTMS >200 km/h)
• Strengthen capacity

Very profitable on recently rebuilt lines
• West Coast Line Gothenburg–Malmö–Copenhagen, 305+41 km
• East Coast Line and Bothnia Line Stockholm–Umeå, 737 km
• Stockholm-Mälar region

Profitable to upgrade, but capacity constraints
• Western Main Line Stockholm–Gothenburg, 455 km
• Southern Main Line Stockholm–Malmö–Copenhagen, 614+41 km
# Gröna Tåget’s effects on the supply

<table>
<thead>
<tr>
<th>Effect</th>
<th>Shorter travel times</th>
<th>Increased frequency</th>
<th>Lower fares</th>
<th>More environment friendly</th>
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<tr>
<td>Higher top speed (250+ km/h)</td>
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<td>Tilting capability</td>
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<td>Wide body (2+3 seating in Economy)</td>
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<tr>
<td>Shorter trainsets, flexible train length</td>
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Travel demand with 250 km/h on the conventional network compared to 200 km/h in Sweden (base year 2020)

Up to 30% increased travelling, due to
- 10% shorter travelling times,
- 10% lower fares,
- A few more departures, some direct without change
Market effects of Gröna Tåget

- Increased travel demand
- Improved economy of operation
- Less car travel

*Especially for fast regional* (commuting, leisure, business)
- Counterbalance deficits in housing and labour markets

*Especially for long-distance* (leisure, business)
- Less air travel – sustainable environment, airport capacity
- Better accessibility to regions could spark regional growth