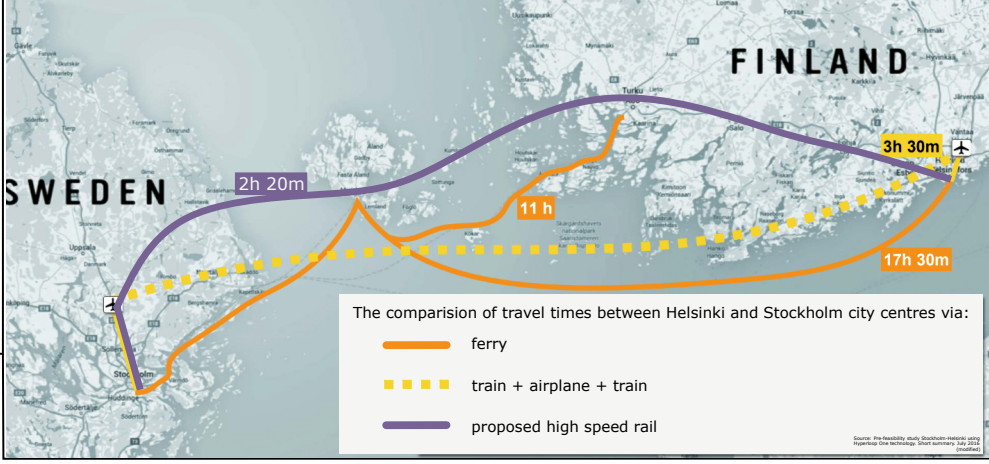


Macro Region Goals



Long Bridges and Tunnel Construction

Long underwater tunnels and bridges technologies are more and more effective and impressive. In 2018 the longest bridge in the world was opened in China. The Hongkong-Zhuhai-Makau Bridge is 55 km long tunnel-bridge structure and significantly increased comfort and shortened travel time between cities. The Seikan Tunnel in Japan is the longest undersea tunnel on Earth. The first train passed in 1988. That tunnel is located under Tsugaru Strait and connects 2 islands - Honshu and Hokkaido. It has 53 km long (23,3 km underwater). In the deepest point Tsugaru Strait has 140 meters undersea level. The tunnel was constructed approximately 100 meters below bottom of the sea.

However, impressive bridges and tunnels are also being built in Europe. A lot of complicated investments are built in Nordic Countries like Sweden, Denmark or Norway. The Öresund Bridge is a road and railway crossing with a total length of 16 km. This construction was the inspiration for the Hongkong-Zhuhai-Makau Bridge engineers. The Öresund Bridge revived the Danish-Swedish border economically and contributed to the creation of the cross-border metropolis Copenhagen-Malmö. Important tunnel investments also include the Stockholm Forbifart ring road being built under the lakes and islands. Currently, many undersea tunnels are built on the Faroe Islands. A very large and innovative investment will be the construction of Coastal Highway (E39) in Norway, which will connect Kristiansand and Trondheim.

In 2020 the construction of Fehmarn Belt Fixed Link will begin. It will be the rail-road tunnel connection between Denmark and Germany. The tunnel will be built by immersion of precast concrete tunnel sections in relatively

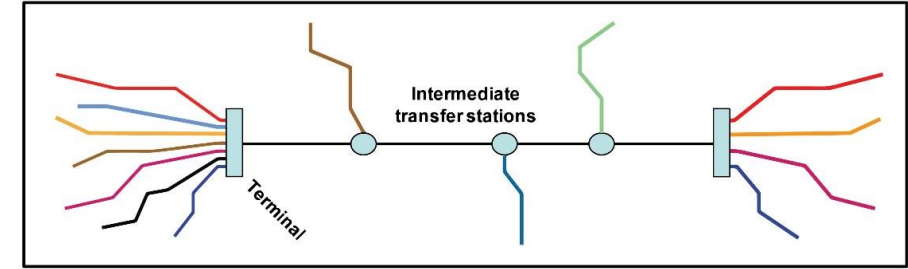
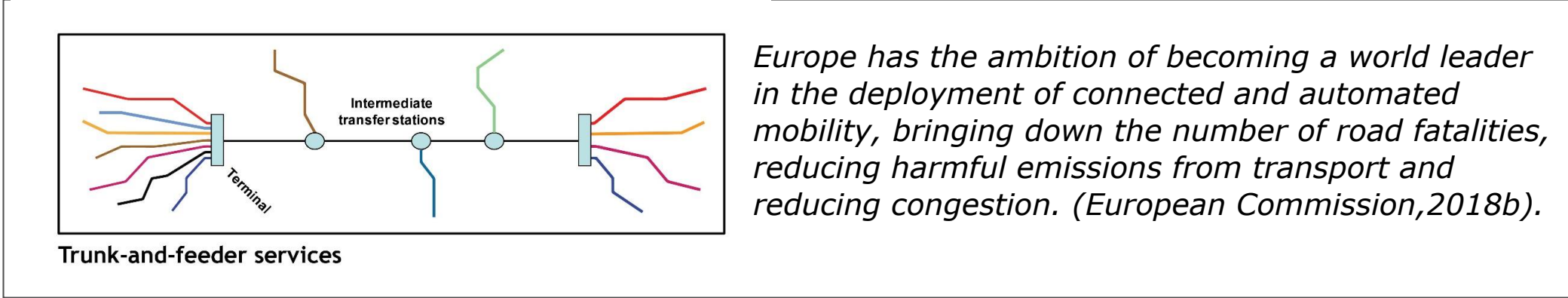
by dredging a trench across the seafloor, laying a foundation bed of sand or gravel. After that lowering precast concrete tunnel sections into the excavation and covering it with a protective layer of backfill several metres thick. The constructed end is expected in 2028. The tunnel will be 17,6 km long.

In the public debate are promoted further concepts of transport tunnel or bridge connections crossing the Baltic Sea. These include the following relationships:

1. Tallinn (Estonia) – Helsinki (Finland): 75 km
2. Sweden – Åland Islands – Finland: 50 km Sweden - Fasta Åland; 130 km through the archipelago of smaller islands
3. Sandhamnaren (Sweden) – Bornholm (Denmark): 38 km

These connections would revolutionise transport between the connected regions. To complete the beltway of the Baltic Sea, only the connection between Bornholm and Poland would be missing. The shortest distance between Bornholm and Poland would start in the near Kolobrzeg. That link would be the biggest infrastructural challenge in Baltic Sea Region. Bornholm and Kolobrzeg are situated 95 km apart each other. It means that there should be built at least 100 km tunnel or tunnel-bridge structure. Probably the most suitable technical solution would be building a tunnel in similar way like Fehmarn Belt Fixed Link. It is justified by geological conditions and should be able to build at the depth up to 65 meters. It should be noted that it would not have been the longest planned tunnel in the world.

If all these investments could be carried out, the interactions between the BSR countries would be multiplied. In this way The Baltic Sun of Interconnectivity would become a fact. The connection between Poland and Sweden would be particularly important, because it would bring about the greatest changes, affecting the whole of Scandinavia and all the countries of Central Europe. **The Baltic Sun of Interconnectivity** is an idea that combines different concepts. Rail Baltica in Baltic States is being built, Finland is planning a more direct connection Helsinki-Turku (ELSA-rata), Sweden is considering the construction of new high-speed rail, in Poland the rail network will be expanded in the context of the construction of Central Transport Hub (CTH).



Europe has the ambition of becoming a world leader in the deployment of connected and automated mobility, bringing down the number of road fatalities, reducing harmful emissions from transport and reducing congestion. (European Commission, 2018b).

Socio-Cultural Transportation Hubs as centres of future urban liveability

