Transport for Regional Integration

Insights from three
Nordic cross-border regions

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Preface

As part of the Nordic Co-operation Programme for Regional Development and Planning 2017–2020, three thematic groups have been established in the following areas:

1. Sustainable rural development
2. Innovative and resilient regions
3. Sustainable cities and urban development

The groups have been set up by the Nordic Committee of Senior Officials for Regional Policy (EK-R), under the Nordic Council of Ministers for Sustainable Growth, and the members are representatives of relevant ministries, national authorities, regional authorities, and cross-border cooperation committees.

This report is a synthesis of the Transport for Regional Integration in Border Regions (TRIBORDER) project. TRIBORDER consists of three studies that were carried out under the thematic group Sustainable Cities and Urban Development (TG3) from the Nordic Co-operation Programme for Regional Development and Planning 2017–2020. The purpose of TRIBORDER is to analyse the potential challenges of planning and developing transport connections across national borders in the Nordic region. The first study focuses on how small and medium-sized (SMS) cities can benefit from the introduction of a high-speed train (HST) connection between Oslo and Stockholm. The second study focuses on the Kvarken region and the effects of the ferry connection between Umeå and Vaasa on their surrounding regions. The third study focuses on accessibility to and from SMS-cities in the cross-border region of Greater Copenhagen.

The topic of the report is an important part of the Nordic agenda, concerned with strengthening cohesive border regions that promote development, innovation, and growth (Nordic Council of Ministers, 2017). The border committees in these three areas are active partners in the projects along with Nordregio and members of TG3. The issues of integrated transportation were reemphasised in March/May 2020, when the Nordic Council announced that they wanted to strengthen the countries' cooperation around transport (Nordic Council of Ministers, 2020a).

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Summary

Acknowledging that cross-border transport infrastructure is paramount for the Nordic Region to reach the vision of becoming the most sustainable and integrated region by 2030 (Nordic Council of Ministers, 2020), this report discusses the challenges of planning and developing transport connections across national borders.

It draws on the outcome of studies of transport infrastructure in three cross border areas. The first case study discusses what could be the effects of the introduction of faster train service on the urban development of small and medium-sized (SMS) cities located along the Oslo -Stockholm corridor (Grunfelder et al., 2019). The second analyses the impact of the ferry link between Umeå and Vaasa has in the cross-border cooperation and integration of the Kvarken region (Stjernberg and Sigurjónsdóttir, 2020). The third explores the planning challenges and opportunities resulted from the different transit-oriented development strategies employed by four SMS-cities from Sweden and Denmark to handle their engagement in the railway system of Great Copenhagen Region (Grunfelder et al., 2020).

The review of these studies suggests that cross-border flows are diverse and can differently affect the development of SMS-cities. The variety of aspects that play out in the different contexts do not allow for generalisations to be made but suggest that SMS-cities, acquire new functions with their engagement in regional infrastructure networks. Nevertheless, the higher levels of accessibility they enjoy do not guarantee a successful development but rather, stress the need these cities have to employ strategies to balance the in-out flows of commuters to avoid adverse consequences.

These studies were also the basis to conduct semi-structured interviews and carry out a focus group with experts from national transport authorities from Denmark, Sweden and Finland. The dialogue with these stakeholders revealed that the integration of the Nordic Region relies on improving transport links between the Nordic countries. Still, the success of these new accessibilities is not only dependent on spatial interventions but equally important are aspects related to overcoming legal, physical and practical barriers to creating a better quality of life for people who lives in these regions. The findings also suggested that despite challenges national transport authorities face when working together on cross-border transport infrastructure, the cooperation between the Nordic countries has developed significantly, and the authorities perceive the joint projects as opportunities for learning from each other.

The report concludes outlining the role of Nordic institutions to facilitate the work of the national transport authorities. Commission studies that investigate the value of cross-border links for the development of the countries and create forums to mediate discussions between stakeholders from different governance levels, are pinpointed as mean to overcoming obstacles and improving the integration of the Nordic Region.

Sammanfattning

Med utgångspunkt i att gränsöverskridande transportinfrastruktur är av yttersta vikt för att Norden ska nå visionen att bli den mest hållbara och integrerade regionen fram till 2030 (Nordiska ministerrådet, 2020), tar denna rapport upp utmaningar med att planera och utveckla transportförbindelser över nationella gränser.

Rapporten bygger på resultatet från tre studier om transportinfrastruktur i tre gränsöverskridande områden. Den första studien diskuterar vilka potentiella effekter det kan få för stadsutvecklingen om snabbare tågtrafik införs i små och medelstora städer längs Oslo-Stockholm-korridoren (Grunfelder et al., 2019). Den andra studien analyserar vad färjeförbindelsen mellan Umeå och Vaasa betyder för det gränsöverskridande samarbetet i, och integrationen av, Kvarken-regionen (Stjernberg och Sigurjónsdóttir, 2020). Den tredje delstudien undersöker planeringsutmaningar och de möjligheter som uppkommer med olika stationära planeringsstrategier i fyra små och medelstora städer i Sverige och Danmark. Studien undersöker vidare hur planeringsstrategierna kan förstås ur ett större perspektiv, nämligen det gränsöverskridande regionala infrastrukturnätverket för Stor-Köpenhamn.

Resultaten av studierna visar på en stor variation i gränsöverskridande flöden av människor och gods och att de påverkar utvecklingen av små och medelstora städer på olika sätt. Variationen i de olika exempel som studerats gör det svårt att dra generaliserande slutsatser, men det framkommer att städerna får nya funktioner när de ingår i regionala infrastrukturnätverk. Ändock, den högre tillgänglighet som de får garanterar inte nödvändigtvis en framgångsrik utveckling. Istället skapar ökad tillgänglighet behov för strategier som kan balansera pendlingens in- och utflöden med syfte att undvika negativa konsekvenser.

Som en del av projektet genomfördes semi-strukturerade intervjuer och fokusgrupper med experter från nationella transportmyndigheter i Danmark, Sverige och Finland. Ur dialogen med de nämnda aktörerna framkom det att förbättrade transportförbindelser mellan de nordiska länderna är avgörande för integrationen av den nordiska regionen. Tillgängligheten till transportförbindelserna handlar inte bara om fysisk planering och infrastruktur, lika viktiga är juridiska, fysiska och praktiska barriärer för att skapa bättre livskvalitet och tillgänglighet för gränsregionernas invånare. Resultaten antydde också att trots de utmaningar som nationella transportmyndigheter står inför när de arbetar tillsammans kring gränsöverskridande transportinfrastruktur, har samarbetet mellan de nordiska länderna utvecklats avsevärt och myndigheterna uppfattar att de gemensamma projekten skapar goda möjligheter att lära av varandra.

Avslutningsvis ges i rapporten en beskrivning av de nordiska institutionernas roll för att underlätta de nationella transportmyndigheternas arbete. Uppdragsstudier som undersöker värdet av gränsöverskridande länkar för ländernas utveckling, och som faciliterar dialog mellan intressenter från olika styrningsnivåer, pekas ut som verktyg för att överbrygga hinder och förbättra integrationen i Norden.

1. Introduction

Becoming the most sustainable and integrated region in the world by 2030, is the vision that has guided the activities of the Nordic Council of Ministers since August 2019. In this vision, sustainability and integration will be pursued through cooperation between the Nordic countries in different strategic areas, including the joint work to promote a green transition towards carbon neutrality and sustainable circular and bio-based economy. Green growth will be sustained through knowledge, innovation, mobility and digital integration, whilst supporting an inclusive, equal and interconnected region with shared values and strengthened cultural exchange and welfare (Nordic Council of Ministers, 2019).

Achieving this vision, requires cross-sectorial collaboration between the Nordic countries, including on transport. The vision specifically addresses aspects related to transportation through an action to support the development of a green region that outlines the need to develop 'knowledge on spatial planning and transport systems and strengthening the Nordic municipal cooperation on green urban planning and development' (Nordic Council of Ministers, 2020b: 7). The development of competencies and well-functioning labour markets that meet the demands of the green transition, as well as digital development that supports free movement in the Nordic countries, is another goal promoted critical to the vision that is expected to deliver a competitive region (Nordic Council of Ministers, 2020b: 16). The vision's focus on spatial and economic integration through free movement of people and goods, puts cross border transport investments at the centre of the debate. In fact, promoting mobility in the Nordic Region is mentioned as the foundation of Nordic cooperation (Nordic Council of Ministers, 2020b).

The fixed link between Copenhagen and Malmö that enables reliable road and rail transportation, is undoubtedly the most robust investment to promote the spatial integration of the Nordic Region. However, as can be seen in Map 1, there are many other initiatives that have not yet become reality. Railway investments account for most of them. The largest in extent is the Bothnian corridor that will bring together several rail networks and enable East-West transport along the Swedish and Finnish sides of the Gulf of Bothnia. On this route, the system bifurcates at some points: in Haparanda, a branch of the railway system extends to Narvik in Norway; in Umeå a branch goes to Mo i Rana in Norway, and in Sundsvall another branch stretches to Trondheim, this is one is called the Mid-Nordic corridor. The Bothnian corridor includes the new coastal railway line between Umeå-Luleå, called the North Bothnia line¹, and enables intermodal connection in East-West² directions along the Kvarken ferry link Vaasa – Umeå. The Arctic railway³ connecting Rovaniemi in Finland to Kirkenes in Norway, and the fast train connection Stockholm-Oslo^{4,5}, are also part of the political agenda of Nordic cross-border transportation. In relation to air transport, a new airport in Mo i Rana in Norway has been proposed. When it comes to road investments, the pre-eminent initiative is the Helsingor-Helsingborg H-H tunnel⁶ between Denmark and Sweden. The Swedish and Danish transport authorities are about to conclude the first analysis sponsored by both governments and Interreg funds, that investigates the viability of this investment. It is also worth mentioning two high technology projects promoting regional integration: the Hyperloop between Helsinki and Stockholm (KMPG, 2016) and the electric powered regional flights in the Kvarken Region⁷.

Despite lacking effective implementation, the significant number of projects indicate that stakeholders at different levels, have been collaborating to put forward initiatives to strengthen Nordic cross-border integration. Among them, the official cross-border operators co-founded by the Nordic Council of Ministers, have been important organisations in expressing the needs, desires and concerns of these regions, when it comes to the implementation of these infrastructures and their associated impact on the life of people who live in these areas.

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1. <https://www.trafikverket.se/en/startpage/projects/Railway-construction-projects/north-bothnia-line/>
 2. <http://midwayalignment.eu>
 3. <https://arcticcorridor.fi/>
 4. <http://www.tentacle.eu/>
 5. <https://www.oslo-sthl.se/>
 6. <https://hh-gruppen.org/>
 7. <https://www.kvarken.org/projects/fair>

Given this background, this report initiates a dialogue between the findings from the studies of transport infrastructure in three cross border areas of the Nordic Region: Värmland-Østfold, Kvarken and Great Copenhagen Region (Grunfelder et al., 2019, 2020; Stjernberg and Sigurjónsdóttir, 2020). Focusing on these cases, considerations for the planning and development of SMS-cities that are or will be engaged in the transport corridors, are teased out. It should be noted that three Cross Border committees from these three areas, were active partners in the projects along with Nordregio and members of TG3.

Box 1: The Värmland-Østfold Border Council (by Alf S. Johansen, a Senior planner at the VärmlandÖstfold Border Council)

The Värmland-Østfold Border Council is formed from a number of municipalities in Värmland and Västra Götaland in Sweden and within the Viken region in Norway, mainly from the former Østfold county. Since its foundation in 1990, there has been a heavy emphasis on transport infrastructure, such as the E18 and the railway system between Oslo and Karlstad-Stockholm. In addition, there have been a number of projects undertaken with a focus on tourism development, environment, adolescence, and culture. The council joined the TENTacle EU-project and carried out a pilot project focused on cross-border transportation and how the border region can benefit from better connections towards the TEN-T core network. It introduced the option concerning funding an investment into the Trans Nordic High Speed Railways by other means than through the standard state budget allocation mechanism. This effort is going to be continued during the next years.

Box 2: The Kvarken CB Council (by Mathias Lindström, Director of Kvarken Council)

The Kvarken Council was founded in 1972. Since then, the Council has been involved in approximately 100 different projects dealing with various themes such as tourism, university programmes, infrastructure, food, business, education, and culture. The Council supports the development of the region by mediating the cooperation between various actors in the Region; reducing and eliminating border barriers; increasing the visibility of the region at national, Nordic and European levels; working actively in several European networks and utilising the region's strengths, and supporting its development. The Kvarken Council will form the first fully Nordic EGTC at the end of 2020.

Box 3: The Greater Copenhagen Committee (by Matilda Sommelius, Senior Advisor Greater Copenhagen Committee)

The Greater Copenhagen Committee is the political organisation, whose members are Region Zealand, the Capital Region of Denmark, Region Skåne and Region Halland, 46 Danish municipalities, and 39 Swedish municipalities. Greater Copenhagen is a partnership with the joint ambition of making our metropolis a global hub for growth, sustainable solutions and innovation. To achieve this goal, we need to attract international investments, companies, tourists, and talent and build a stronger trans-national ecosystem for innovation. An efficient and robust infrastructure makes it easier for citizens and companies to get to, from and around Greater Copenhagen. This is vital to meet our ambition of accelerating growth.

These studies are also the basis for initiating a discussion with politicians and experts about cross-border issues in the Nordic Region. While the politicians expressed their opinions regarding the obstacles and challenges of making Nordic borders more permeable and the region more integrated, the experts revealed challenges to cooperating in joint transport infrastructure

across the borders, and also reflected on how cross-border projects and initiatives can impact the territorial development of their respective countries.

Analysis of the TRIBORDER studies (Grunfelder et al., 2019, 2020; Stjernberg and Sigurjónsdóttir, 2020), six semi-structured interviews with politicians and experts and a focus group with experts from the transport agencies from Denmark, Finland and Sweden, provided the basis to explore the following research questions:

- What lessons can be learned from these studies that are useful to make the Nordic Region the most sustainable and integrated region in the world?
- What are the main barriers for developing and sustaining cross-border projects through Nordic collaboration?
- How can Nordic national transport authorities work towards achieving the Nordic Vision in becoming the most sustainable and integrated region by 2030?

After discussing these questions, the report concludes with some recommendations about what the Nordic level can do to support the implementation of the vision.

Nordic cross-border infrastructure projects identified by Nordic cross-border committees in 2020

Road:

1. Road improvements Kaamanen (FI) to Kirkenes (NO)
2. Midway Alignment of Bothnian Corridor, improved E12 road connection (SE/FI)
3. Improved roads connecting to Scandinavian Mountains Airport
4. Improvements of E16, especially the NO-SE border area
5. Improvements of E18, especially between Oslo and Karlstad (NO/SE)
6. New tunnel between Helsingør and Helsingborg (DK/SE)
7. Improvements of E6, Helsingborg-Trelleborg via Flädie (SE)

Rail:

1. Arctic railway Kirkenes-Rovaniemi (NO/FI)
2. Upgrade of railway Narvik-Luleå (NO/SE)
3. Electrification of railway Haparanda-Laurila (SE/FI)
4. Midway Alignment, upgraded railway and ferry corridor connecting Umeå, Vaasa and Helsinki (SE/FI)
5. Bothnian corridor railway and road network w. branches (NLC) (NO/SE/FI)
6. Mid-Nordic corridor with road and railway upgrade Sundsvall-Storlien-Trondheim (NO/SE)
7. Mid-Nordic corridor, railway Långsele-Nyland
8. Proposed hyperloop Stockholm-Norrköping-Mariehamn-Turku-Helsinki (SE/AX/FI)
9. Cargo link Bodø-Malmö, improved stretch Kil-Kongsvinger-Elverum-Hamar (NO/SE)
10. Railway Oslo-Kongsvinger-Gardemoen
11. New high speed railway Oslo-Stockholm, Gothenburg connection in Grums (NO/SE)
12. Railway Oslo-Gothenburg, completion of double-tr. railway Halden-Öxnered (NO/SE)
13. New main railway Lund-Hässleholm
14. Upgrade of Södra Stambanan Malmö-Lund
15. Double-tr. railway Hässleholm-Helsingborg
16. Väst kustbanan Ängelholm-Helsingborg
17. Öresundsmetro CPH-Malmö (DK/SE)
18. Double-tr. railway Ringsted-Rødby
19. Double-tr. railway Hässleholm-Kristianstad

Map 1: Nordic cross border project 2020

Source: Nordregio (Map by Shinan Wang)

2. Transportation in three Nordic cross-border regions

2.1 High-Speed Train between Stockholm and Oslo

The implementation of High-Speed Train, or a faster train connection, between Oslo and Stockholm, has been part of the Nordic public debate for some years. An example of this is two current studies that strive to promote such investment: the Interreg Baltic Sea Region TENTacle project (Andersson et al., 2019), and Oslo–Stockholm 2:55 AB (Mälardalsrådet et al., 2018). The TENTacle project is led by the Värmland–Østfold cross-border committee which involves local and regional decision-makers, civil servants from the cross-border region and transport experts from both Sweden and Norway. The 2:55 initiative includes the participation of decision-makers and civil servants at the regional level in some Swedish regions, as well as at the local level for some medium-sized cities. The diversity of stakeholders involved in both initiatives also suggests that this investment is well-grounded in different arenas and at different levels. Map 2 illustrates the routes of both initiatives.

Despite being driven by different stakeholders, both initiatives make similar claims about the benefits of the faster connection, such as boosting the economic competitiveness of the region, to provide a more environmentally friendly travel alternative – as the HST is expected to reduce flights between both Nordic capitals, and to enhance the development of the SMS-cities that will be connected to the new transport corridor.

Reviewing the literature on the effects of HST and based on the outcome of workshops undertaken with stakeholders from Värmland–Østfold Border Council, Grunfelder et al. (2019) discuss some of the consequences of HST for the development of SMS-cities. A clear outcome of the engagement of SMS-cities in transport corridors is regional integration through the enlargement of labour market areas. Decreasing travel time increases the possibility that people live and work in different places. As Grunfelder et al. (2019) propose, the implementation of the HST would enable the merging of some of the existing labour markets. The new travel time of about one hour between Karlstad and Oslo would allow residents of this city to be included in the labour of the Norwegian capital. Kristinehamn would become better integrated into the labour market of Örebro with the faster train connections.

While the integration of labour markets is a sign of regional development, the effects on the socio-economic profile of the cities connected to the transport corridor can be adverse. Gains in travel time could change the demographic structure of these cities, as the population may increase. It can also cause rises in housing rental prices and property values which can disadvantage locals who would pay more, but become attractive for newcomers who would pay less than in bigger centres, while maintaining the possibility of reaching more competitive labour markets. The urban quality of some SMS-cities may decay as they could become dormitory or satellite towns, potentially functioning as suppliers of labour for larger cities. On the other hand, local assets such as closeness to nature, quality of life, and the presence of cultural heritage could play an essential role in attracting individuals and maintaining the balance between day and night populations, turning SMS-cities into enjoyable and dynamic places to live and work.

The impacts of increasing accessibility in local economies are also diffuse. As Grunfelder et al. (2019) discuss, better travel connections are likely to attract a larger number of tourists. True this may be, the behavioural patterns of tourists are likely to change with better accessibility, as in some cases increased numbers of tourists comes at the expense of shorter visits – as they may prefer a day trip rather than more extended stays. Nevertheless, it can be argued that the prospect of reaching a city more easily, increases the possibility of this place becoming more popular with visitors.

Map 2: Oslo-Stockholm corridor: TENTacle and 2:55 alternatives

Source: Nordregio (Map by Julien Grunfelder)

Grunfelder et al. (2019) also touch upon the role new train stations could have in delivering new centralities to the urban development of SMS-cities. The choice of locating stations close by or peripheral of the city centre, can have different consequences for the spatial restructuring of the city. While closeness to the urban core can offer opportunities to regenerate and revitalise the centre, boost the liveability of the city and promote inclusive access, it is usually more costly and, if poorly planned, can disturb urban life (e.g., noise, pollution). On the other hand, peripheral locations can provide a new direction for urban development but require a readjustment of the local transport system to provide good connections between the station and the city centre, including not only buses but also bicycle paths and sidewalks. In addition, the new station can initiate a competing centre, negatively impacting on the existing urban core.

Outlining advantages and shortcomings that SMS-cities experience through their engagement in transport corridors, the study highlights important messages to be taken into account by local authorities, such as:

- Identify the main rationale behind the HST project in each domestic context;
- Identify the existing and future development potential of SMS-cities;
- Understand who the users of the HST service might be, with the purpose of identifying urban development potential;
- Create a forum for collaboration;
- Consider the national borders and wider regional context as an opportunity.

Box 4: The added value of TRIBORDER (by Alf S. Johansen, a Senior planner at the Värmland-Östfold Border Council)

Research by Nordregio about the three cross-border case studies (TRIBORDER), has generated knowledge about cross-border transportation, and contributes to raising awareness on Nordic transport in general; and in particular about options and impact from high-speed railways as well as from other transport infrastructure and services. There is a strong relationship between regional development and infrastructure. However, current policy on this relation is mainly limited to national strategies and plans. The effort for TRIBORDER, is to enhance views and perspectives within the public debate in order to look at the whole Nordic territory and how to strengthen transport corridors within Nordic subregions.

2.2 The Kvarken ferry link between Vaasa and Umeå

The narrowest section of the Gulf of Bothnia, between Sweden and Finland, is called Kvarken. The distance from coast to coast is about 80 km, and only about 25 km between the outermost islands. Kvarken divides the Bothnian Bay in the North from the Bothnian Sea in the South, and forms a shallow marine threshold in the Gulf of Bothnia. The inland geography of the Kvarken region includes the counties Ostrobothnia, Southern Ostrobothnia, and Central Ostrobothnia in Finland, and the County of Västerbotten and the municipality of Örnsköldsvik in Sweden (see Map 3).

Focusing on the ferry that connects Umeå in Sweden to Vaasa in Finland, Stjernberg and Sigurjónsdóttir (2020) provide an overview of the cross-border cooperation in the Kvarken Region over the last 50 years, and discuss the potential for strengthening this cooperation in the future.

As Stjernberg and Sigurjónsdóttir (2020) explain, ferry traffic between the countries has existed without major interruption for more than 50 years. Regular traffic began in 1958 and flourished from the 1970s onwards, with a steady increase in the number of passengers and freight cargo over the years. Nevertheless, when Sweden and Finland both joined the European Union, the tax-free trade which was allowed during the ferry trips was abolished, which resulted in a sharp decrease in the number of passengers. In addition, other factors such as the ferry connection being perceived as unreliable during the early 2000s and the Swedish tax incentive for road trips over 401 km, made ferry freight less attractive.

Both facts had a profound impact and led to a significant decline in the number of passengers and cargo freight in the strait. This resulted in an unreliable ferry connection operating in Kvarken between 2001 and 2011. The partnership between Vaasa and Umeå to re-establish the ferry connection in 2012 was a turning point in the decline of the ferry link. The operation of the jointly owned shipping company WasaExpress (Wasaline) in 2013, and the shared port company for the ports of both municipalities in 2015, were essential for the renaissance of the cross-border flows between both countries. The re-establishment of the transport link strengthened cooperation between the countries and led to a noticeable increase in passenger and freight traffic during the past decade. In 2018, Umeå and Vaasa signed a contract for purchasing a new ferry, which will begin operation in 2021. The cooperation between both municipalities has reshaped cross-border collaboration which can be observed in several aspects.

Enabling weekly commuting, the ferry link extended the labour market, with many Finnish people travelling to work or study in Sweden. Before 2000, Finnish students were the most important foreign student group at Umeå University. The share of students dropped during the early 2000s, but it has increased since.

Map 3: Kvarken Region

Source: Nordregio (Map by Oskar Penje)

Besides being the workplace of many Finnish healthcare professionals, Umeå also provides specialised health care research and education in medicine for the Kvarken Region. Since 2019, it has introduced the possibility of treating stroke patients from Finland in the University Hospital. Another example of cooperation within healthcare that has recently been agreed upon, is the possibility for Swedish medical students to complete their period of general practice in Vaasa. When it comes to research, there are possibilities for collaboration, which can be observed in numerous projects involving Finnish and Swedish universities. Nevertheless, differences in national policies and funding models still hinder cooperation between Finnish and Swedish universities.

Stjernberg and Sigurjónsdóttir (2020) also pinpoint the value of the ferry for tourism, as the High Coast and Kvarken Archipelago are listed as World Heritage sites by UNESCO. The increased number of overnight stays in both Västerbotten in Sweden and Ostrobothnia in Finland, suggests that changes in the travel patterns improved the tourism industry. In the 1990s when the ferry was very popular due to the tax-free opportunities, a large proportion of the passengers mainly travelled back and forth between the countries.

The ferry link also provides the basis for stronger synergies and enables new forms of cooperation between businesses. It is also of great significance for freight transportation for many companies on both sides of the Kvarken. In an extended territorial context, the ferry link is increasingly seen in connection to surrounding and adjoining transport infrastructure, and its potential to serve not only the immediate regions but also as a means to facilitate the trade with the European, Russian and even the Chinese markets.

Stjernberg and Sigurjónsdóttir (2020) conclude their analysis by reinforcing the importance of the transport link for maintaining and developing cross-border relations in the Kvarken region. The possibility to commute between both cities has enabled the coordination of joint activities and initiatives that, in the absence of the ferry link, would not be possible.

Poor national support for cross-border cooperation at the regional level was raised by the authors. Initially, neither Sweden nor Finland supported the joint efforts of Umeå and Vaasa to re-establish the ferry link, and the lack of financial support from Sweden to purchase the new ferry were the main reasons given for this. In this respect, the authors highlighted the vital role of regional and local actors to shape the region.

Box 5: TRIBORDER project added value for the Region (by Mathias Lindström, Director of Kvarken Council)

The TRIBORDER report, in a very objective manner, has helped explain how effective and fruitful cross-border cooperation can be. This has helped explain all the steps from the conception to the actual building of the essential ferry that connects our region, and allows for fully extended cross-border cooperation in our region. The report can usefully serve as a road-map for future analogous mega-projects. It has revealed how much work the Kvarken Council and the region has put into this project and made it available for our actors in the region, our members and our nations. It also shows that cross-border cooperation is not something that just happens, but rather demands hard and dedicated work, and a stable platform to uphold the cooperation during difficult times. Here the cross-border committee serves an extremely important role. It shows that if there is trust and confidence in what you are undertaking, everything is possible, and the report has helped to open the eyes of the significance of cross-border cooperation in our region. In fact, interest in cross-border cooperation has never been stronger in our region, and the TRIBORDER report has contributed to this by highlighting what can be achieved when we work together in a strategic way. It also points out the positive side-effects of an improved connection between our region and our Nordic countries, and emphasises what we can still improve to achieve even better results in the future.

2.3 Regional accessibility of four SMS-cities in the Greater Copenhagen Region

Greater Copenhagen is a metropolitan region with 4.3 million inhabitants that spans Eastern Denmark and Southern Sweden. Currently, there is no formal forum or strategy for joint infrastructure planning between Denmark and Sweden. In response to this challenge, and with the aim of strengthening the cross-border perspective on mobility and transport, the Greater Copenhagen Committee developed the traffic charter (Greater Copenhagen, 2016). This document has been used as a basis to mediate dialogue between regional and national politicians and other stakeholders, with the ultimate aim of striving for a better and more integrated transport system in the Greater Copenhagen Region. The Charter is structured around three themes⁸: international connectivity; internal mobility in Greater Copenhagen from a labour market perspective; and green mobility and fossil-free transport. It also includes several initiatives such as the expansion of the Copenhagen Airport, the Fehmarn Belt Fixed Link, high-speed rail from Stockholm to Malmö, with a potential onward connection to Copenhagen Airport and Hamburg, and new connections across the Øresund.

One of the goals expressed in the Charter is that 'it should take a maximum of one hour from all parts of Greater Copenhagen to get to either Copenhagen or Malmö by train'. This goal was one of the criteria for selecting four SMS-cities that had a maximum train trip duration of 45

8. <https://www.greatercph.se/infrastruktur>

minutes plus 15 minutes trip to the local train station from/to Copenhagen or Malmö (see Map 4). The small cities of Höör, SE and Lejre, DK and the medium-sized cities of Landskrona, SE and Ringsted, DK were case studies to explore the planning challenges and opportunities, resulting from the different transit-oriented development strategies they employed to handle their engagement in the transport infrastructure railway system of Great Copenhagen Region.

Grunfelder et al. (2020) conclude that these cities have limited cross-border integration, expressed by very few inflows and outflows of cross-border commuters. Nevertheless, thanks to good accessibility to larger urban areas, all the cities are well integrated within the region or sub-regional labour market in which they belong. Thus, they contribute to enlarging their functional regions. Despite the impossibility of making generalisations, this study provides several insights on the challenges SMS-cities face and the strategies they adopt to deal with changes in regional accessibility.

Map 4: Travel time by train from Copenhagen or Malmö

Source: Nordregio (Map by Julien Grunfelder)

As the authors describe, the cities brand themselves differently, with the small Swedish city of Höör relying on its' local natural assets, affordable housing prices and quality of life as a means to attract visitors and newcomers. Taking advantage of its unique context from a mobility perspective, the municipal plan regards Höör as 'a small town with a larger metropolitan area'. While this statement reflects the possibility of reaching larger labour markets and better education opportunities in the surrounding areas, it also reveals challenges to counteract the adverse effects of a 'dormitory city', as a large proportion of the population commutes to other places to work and study.

A location on the periphery of Copenhagen's labour market and proximity to Roskilde, gives residents of Lejre the opportunity to enjoy high levels of mobility while maintaining its rural residential identity. In fact, the municipality has a large proportion of in and outflowing commuters (10,000 out of 13,000 workers) who travel larger distances than the average Dane. The decentralised spatial pattern of Lejre is the result of administrative reform in 2007, that merged three different municipalities into one. With this reform, Lejre ended up with two train stations. Due to the spreading spatial pattern of Lejre, these stations do not deliver better

opportunities to reach the train service. As a consequence, many commuters use private vehicles to access the stations.

Despite its strategic location between Malmö/Copenhagen and Helsingborg and improvements in rail access, Landskrona, a Swedish medium-sized city functions as a 'dormitory city', suffers from a perceived lack of attractiveness and faces challenges related to segregation and criminality. As Grunfelder et al. (2020) put it, 'Landskrona has been a town where people move away from rather than to'. To address these threats, the municipality is improving the quality of housing and urban spaces in the main urban core. Investments to develop the train station which, despite its peripheral location, is easily reachable from the city centre due to the compact urban development, have been postponed. Nevertheless, the revitalisation of the train station and surrounding areas with the development of housing, office spaces, services (supermarkets), and a public square, is intended to boost the attractiveness of the city. To avoid competition with the historic urban core, retail will not be allowed in the new development.

The medium-sized Danish city of Ringsted, has a quite different development profile. The city connects Zealand with the region bordering Germany, and is part of the periphery of Copenhagen's labour market. The privileged location, and its regional function since the mid-19th century when the railway link to Copenhagen was established, has helped Ringsted experience the largest population growth in the region, as well as experience economic growth. Attracting new companies, educational institutions and services, the city manages to maintain a balanced flow of in and out commuters. The city embraces the possibility of offering affordable house and brands itself as 'Ringsted – at the centre of opportunities'. As a rail hub in Denmark, Ringsted is confronted with the double role of serving outer regions whilst remaining attractive and sustainable for the growing population.

These cases adopted different transport-oriented developments around their train stations, reflecting differences in spatial strategies and priorities. For example, the location of the train stations close to historic urban cores require more resources for implementation but are easily accessible by the residents and more appealing for potential visitors as they do not need other local transportation to reach the centre. On the other hand, stations located in the periphery of urban cores create new centralities and possibilities for further development. Nevertheless, they can also divert urban function competing with the existing centre, enhance urban sprawl, and require local public transport to become reachable. The latter is often pretty unattractive due to low density, infrequent timetables and is often shunned in favour of using private vehicles. The study also highlights soft measures employed by the different cities to increase their attractiveness. In this respect, the provision of free parking opportunities and the implementation of commercial activities in the stations is a strategy geared to attract people from other localities to park and spend money in the municipality.

Box 6: The added value of TRIBORDER (by Matilda Sommelius, Senior Advisor Greater Copenhagen Committee)

To ensure good mobility and shorter travel times, it is necessary to think transnationally. Transport is an enabler of exchanges between regions and across national borders. Public transport not only helps integration processes but also enhances the sustainability of cross border connectivity. Public transport should appear as a coherent and unified system to be attractive. Efficient and robust transport infrastructure makes it easier for citizens and companies to get to, from and around Greater Copenhagen. A coherent public transport system is a key objective for the entire Greater Copenhagen across the Øresund. Thus, it is of great interest that the Nordregio TRIBORDER-study not only stresses the cross border dimension of infrastructure planning, but also investigates one of the goals in the joint traffic charter of Greater Copenhagen – that it should take a maximum of one hour from all parts of Greater Copenhagen to reach either Copenhagen or Malmö by train as the primary means of transportation.

2.4 Insights from three Nordic cross-border regions

The examples of public transport projects in the three case study regions of Värmland-Østfold, Kvarken and Greater Copenhagen illustrate the potential challenges of planning and development across national borders in the Nordic context. This section brings these studies into dialogue, highlighting how they inform the planning of SMS-cities in the Nordic Region. Discussing them in relation to each other also allows for insights to emerge concerning aspects that appear to be prioritised when it comes to Nordic cross-border infrastructure.

Despite dealing with cross-border transportation infrastructure, the studies differ from each other in some respects. A fundamental aspect is the type of cities that the different cross-border transport infrastructures connect, as well as the shape and length of the network. In the Great Copenhagen Region, the railway links the Danish capital Copenhagen to Malmö, a city that plays a regional role in Sweden. The connection between these two nodes is relatively straightforward, as just a few stations located in the suburbs of both Malmö and Copenhagen are situated in between them.

On the other hand, plans to connect the capital cities of Sweden and Norway through a faster railway connection, engages several SMS-cities in the rail network. In this case, the limited cross-border integration, expressed by few inflows and outflows of cross-border commuters verified in the study of Danish and Swedish SMS-cities (Grunfelder et al., 2020), may not apply. On the Stockholm-Oslo fast train connection, Karlstad is one of the cities that may profit. The possibility of daily commuting due to the shorter travel time would probably make the city attractive to a share of the workforce from Oslo, who could benefit from lower housing prices.

Railway

Photo: Pixabay.com

The Kvarken ferry connects cities that have regional importance both in Sweden (Umeå) and Finland (Vaasa). Rather than looking at the local planning challenges for both cities, Stjernberg and Sigurjónsdóttir (2020) focused on the functional outcomes of the cross-border connectivity in terms of the labour market, business, education, tourism, and health care. Nevertheless, the territorial contexts of Umeå and Vaasa, which are characterised by sparsely populated and ageing hinterlands, makes cross-border cooperation a vital asset to encourage the joint provision of specialised services (e.g., health care), while maintaining a skilled and competent labour force. This suggests that the cross-border flows between cities that have regional importance and are located far from the main economic centres of their own countries, is a strategy that may enhance territorial cohesion. The sharing of services creates the demand needed for their maintenance, which helps to improve the economic conditions of the region and its competitiveness.

The stakeholders that have initiated and/or established the cross-border infrastructures in the three cases, also deserves some attention. Two proposals undertaken by different organisations, introduced the urgent need to better connect Stockholm and Oslo into the Nordic political agenda. On the other hand, regional and local actors in the Kvarken region have struggled to re-establish the ferry link between Vaasa and Umeå. As Stjernberg and Sigurjónsdóttir (2020) highlighted, there was some resistance from the national authorities to support the initiative. The commitment of local and regional actors in the Kvarken region, also contrasts with the lack of representativity of some of the SMS-cities that would be affected by the implementation of the fast train connection from Stockholm – Oslo (Grunfelder et al., 2019). In this case, it becomes evident how the purpose and scope of the cross-border infrastructure shapes the network of actors that are involved. While Umeå and Vaasa cooperate to gain access to specialised services and enhance synergies, the HST project aims to improve inter-metropolitan flows of passengers and offers an alternative to air travel between the Nordic capitals. In such infrastructure projects, the regional integration of SMS-cities becomes secondary.

The new Kvarken ferry

Photo: Kvarken Link

Grunfelder et al. (2020) showed how the fixed link between Malmö and Copenhagen barely influences the commuting patterns of the SMS-cities of both Sweden and Denmark. This suggests that most cross-border flows are absorbed by the main cities that they connect with, Copenhagen and Malmö. For the SMS-cities, what comes into play is not the cross border flows, but rather their engagement in transport corridors and the possibility of enjoying better regional accessibility. As the study reveals, the connectivity of cities through the transport corridor has brought many challenges to local planners. The implementation of advanced regional transportation system broadens the mobility of people, scatters consumption patterns within the region and boosts the competition between regions. While efficient transport infrastructure may attract people to move into a particular city, it also provides conditions for people to leave cities that do not manage to respond efficiently to the new demands introduced by higher levels of accessibility. This phenomenon was seen with the implementation of the Regional HST Svealand Line in the southern part of Mälardalen Region in Sweden, where some small cities prospered while others did not (Fröidh, 2003).

SMS-cities can acquire new functions with their engagement in regional infrastructure networks. Nevertheless, higher levels of accessibility do not guarantee their successful development. Landskrona is an example of a city that despite its strategic location between Malmö-Copenhagen and Helsingborg, with commuters being able to reach Malmö with a train journey of 29 minutes and Copenhagen in 71 minutes, still struggles with a perceived lack of attractiveness and social problems. On the other hand, Ringsted in Denmark flourishes with the largest population growth in the region, managing to attract new businesses and urban amenities, such as educational institutions.

The small cities of Höör in Sweden and Lejre in Denmark offer good accessibility to larger labour markets and rely on their local endowments to attract newcomers and visitors. Nevertheless, they face challenges to maintain good services to their residents and struggle to find suitable strategies and niches that most suit them.

As Grunfelder et al. (2019) suggested, SMS-cities need to understand which role they may play in larger functional regions and be prepared to employ strategies to balance the in-out flows of commuters, to avoid becoming a dormitory city. Relying on their local assets, understanding which ways they can compete and how they might complement others to boost regional integration, are also valid strategies they can employ to cope with their new role in functional regions. In addition, exploring the possibility of diversifying their economic basis and considering their capacity for growth – uncontrolled expansion can result in diseconomies (e.g., higher infrastructure and housing costs, pollution) that can negatively impact people's quality of life – are also aspects that should be noted.

The role train stations can play in the city is an important consideration. As Grunfelder et al. (2020) outlined, the location of stations can boost or hinder urban life. This is particularly true for smaller cities, where lower demand for services combined with the peripheral location of stations that have other functions than a gateway (e.g., commercial activities and services), can threaten the attractiveness of the city centre. The associated demands that arise with the choice of the location of these stations, such as strengthening the local transport network to connect the station to the city centre, are also debated. This can create new centralities by inducing the construction of new residential and commercial areas around them. Stations located close to city centres, however, also have benefits and drawbacks. They can provide better accessibility, no need for other local transportation, and complement the urban centre. Nevertheless, train tracks are also barriers and create divides that condition the further development of the city. Choosing a location that may bring the best benefits for the city, requires consideration of different aspects to deliver integrated planning that connects people and urban spaces, through efficient transport combined with walking and cycling. Table 1 highlights and summarises the main aspects analysed when discussing the studies together.

ASPECTS	VÄRMLAND-ØSTFOLD	KVARKEN	GREATER COPENHAGEN
Existing cross-border transport infrastructure	Road and air connection	Ferry link Umeå - Vaasa	Oresund Bridge
Projects/planned cross-border transport infrastructure	TENTacle 2:55	Intermodal connection with Bothnian Corridor	H-H fixed link
Type(s) of cross-border flows	It will enable daily commuting between some cities in the corridor (passengers, tourists, freight)	Enables weekly commuting (freight, passengers, tourist)	Enables daily commuting (passengers, tourists, freight)
Type of regions and stakeholders involved	Capital to capital National authorities, regional actors	Regional centre to regional centre Local and regional actors with support of national authorities	Capital to regional centre National authorities, regional actors
Integration of SMS-cities	Two medium-sized cities and several small cities will be connected along the corridor	Direct link between Umeå and Vaasa via ferry through the strait	Few suburban stations intermediate the connection between Copenhagen and Malmö. The railway system spread throughout a network of SMS-cities after connecting the main cities
Main opportunities for SMS-cities	Access to cross-border labour markets; Sharing services and amenities; Profit from housing demands	Provision and maintenance of specialised services. Increase possibility to cooperate and explore synergies	Access to cross-border labour markets; Sharing services and amenities; Profit from housing demands
Main challenges for SMS-cities	Balance in-out flows of commuters to avoid becoming dormitory cities; The location of the train stations can have adverse consequences for local planning.	The maintenance of the ferry link relies heavily on local and regional actors.	Balance in-out flows of commuters to avoid becoming dormitory cities; The locations of the train station can have adverse consequences for local planning

Table 1: Summary of the main characteristics and findings of the three Nordic cross-border regions

3. Barriers to cross-border mobilities

This section discusses barriers to cross-border mobilities. It is based on interviews with experts and politicians from Denmark, Finland, Norway and Sweden, and a focus group with professionals from national transport authorities from Denmark⁹, Sweden¹⁰ and Finland¹¹. The Nordic Region vision for 2030 was the basis for the discussion with politicians, who expressed their opinions about how their countries, through cross-border investments, are contributing (or not) towards regional integration. The challenges the different countries face with cross-border mobility, instruments needed to overcome these obstacles, as well as the benefits and drawbacks with the intensification of cross border mobilities and the impacts of the improvement of public transportation system across the borders, were also debated.

Interviews with experts and the focus group with professionals explored how the national transport agencies dealt with cross-border flows, their collaboration with other local and international planning authorities, and the knowledge gaps they encountered. Obstacles and solutions to overcome them, as well as the effects of increasing cross-border flows on the territorial development, were also discussed. From these dialogues, four main aspects are distilled in the following sub-sections.

3.1 Political will to support integration is needed

Nordic collaboration has reduced the impact of national borders in many areas, but in issues related to transportation and mobility the presence of these borders are still evident, especially when it involves broader issues such as the immigration policies and health issues (COVID-19). As some of the interviewees highlighted, the borders solidified in both situations resulting in several diseconomies and revealing a lack of unity in the region.

They also agreed on the opinion that political will is paramount to promote regional integration. The political commitment of Prime Ministers, Ministers and, most importantly, the parliament is necessary for strengthening regional integration. All Nordic countries need to agree on common legislation and policies to remove borders and barriers. The Danish politician vehemently criticised the inertia of the public sector and their unwillingness to open the borders. He mentioned his experience as Minister and the implementation of a measure that opened the Danish border to Swedish workers from the health sector. Despite fears that this policy would not be well received by labour unions, the implementation was smooth and without protest, simply because there was a demand for health competencies that could not be addressed by the Danish unions. He did not advocate for employment only for Swedish workers' accessing the Danish labour market. Nevertheless, as soon as his mandate as minister ended, the mobility of specialised health labour from Sweden to Denmark ceased.

Challenges with everyday issues, such as the inability to provide access for broadband connections across Nordic borders, or the higher tariffs imposed when using a mobile telephone in another Nordic country, were examples of diseconomies and issues that require a quick solution to enhance regional integration. In fact, in the digitalised Nordic region, it is odd that primary access to the Internet across countries still constitutes a barrier. Removing these obstacles depends on the coordination of countries and also implies additional costs. As one interviewee wisely pinpointed, it requires more than planning and foregrounds the debate on how much people are willing pay to overcome cross-border costs.

Improving the mobility of the labour force was also mentioned by all politicians. One of them highlighted that Nordic countries have great advantages, such as a highly educated populace,

9. The Danish Road Directorate

10. The Swedish Transport Administration, Trafikverket

11. The Finnish Transport and Communications Agency - Traficom

are frontrunners in technological adoption, possess stable democracies and strong economies. In his opinion, strengthening integration and cooperation would undoubtedly add more value to the region. This call for integration was followed by a desire to respect national identities, as the interviewee expressed disapproval for the creation of a 'United States of the Nordic Countries'.

Despite some progress needed to overcome some of the barriers, such as the ongoing standardisation of job licenses so that workers from the health sectors could participate in both the Swedish and Finnish labour markets, the need for further actions to promote better integration of systems to enhance cross border mobilities remains. As a Norwegian politician highlighted: 'If someone lives in one country and works in another, we need to ensure a smooth system of taxes, social benefits and so on'. One of the ideas to guarantee easy access to services cross-border, is the establishment of a Nordic security number which would replace the national identification currently in use in Nordic countries. Another interviewee mentioned that a 'Nordic Minister' responsible for Nordic affairs would ensure that the efforts towards better integration would be properly addressed.

Mobility of the labour market

Photo: Pixabay.com

3.2 Cross-border transport infrastructure: need for strategic approach?

Integration is engendered through different levels, from access to services to lack of more efficient transport infrastructure. The lack of a proper railway connection between Oslo and Stockholm is regarded as a disgrace by the Norwegian politician, who added:

"If I go to Stockholm today, I need first to take the train to Gardermoen, pass the security control, fly, land in Arlanda, security control and another train to Stockholm city centre. It takes at least five hours but if there was an efficient railway connection this trip could be made in three hours, and this is a significant difference that could strengthen very much the integration and collaboration between the countries."

Norwegian politician, interview on the 19th August 2020

The Finnish politician mentioned that national resources had been allocated to electrify 20 kilometres of rail from Kemi to Tornio, which further connects to Sweden, but progress has been slow. The fact that sometimes cross-border projects are not entirely aligned with the strategic

agenda of national transport infrastructure development, also impacts on the implementation of cross-border projects. An interviewee explained that the Oresund Bridge has changed the transport flows and dynamics in the Skåne region, and has added complexity to Swedish transport infrastructure planning. This fixed link generated new demand for additional transport infrastructure and thus has required the allocation of extra resources for this region. This may be reasonable from a regional perspective, but is not always so from a national transport planning point of view. He added:

"If the Swedish border were closed the focus would be the improvement of the northern, southern connections but cross-border collaboration focuses on the west- eastern geography. This brings new possibilities but also new demands on national transport planning. The result is that resources are allocated to other projects and geographies, leaving fewer funds for other projects that would have a higher impact on the transport and communications within the country."

Swedish expert 1, interview on the 30th September 2020

In fact, cross border integration is complex, and its impact multi-faceted. As noted by an expert, the absence of Oresund Bridge would have redirected the residential demand from Copenhagen to Sweden to other regions of Denmark, as around 10 000 Danes have moved to the Swedish side of the border. The lack of a Nordic strategy for cross-border infrastructure implies that the national transport agencies of the different countries collaborate on a project by project basis. In the absence of such a document, the involvement of the cross-border committees and lobbying becomes important assets to anchor the planned projects across different political arenas, and not only in the regions. As an interviewee highlighted, the ideas must be adopted by the national parties; otherwise, it is challenging to acquire resources for implementation. Another interviewee declared the importance of acknowledging planned transport corridors and infrastructures in strategic national documents, so that they become part of the debate and can eventually be implemented.

The absence of a proper department that deals with cross-border issues within the national transport agencies, was identified as a challenge by two experts. As cross-border issues are dealt in different regions, transport administrations and different departments, the information becomes scattered, and it is difficult to gain an overview about what is going on and who is working with different cross border projects. Centralising the information and knowledge would be beneficial not only to coordinate the internal workings of the agencies, but would also facilitate Nordic cross-institutional cooperation. Such a department would probably offer a more neutral view when it comes to the objectives of cross-border integration and national interests.

Regardless the challenges in implementing cross-border transport infrastructure, the ongoing preparation of the first Finnish National Transport System Plan, which will define long-term national priorities and help coordinate the activities of the institutions that deal with transportation issues in Finland, is a step forward to coordinate cross border initiatives at the Nordic level. This is because this document will add the Finnish long-term objectives to the existing national transport plans from the other Nordic countries.

3.3 Cross-institutional cooperation is challenging

Cultural closeness between the Nordic countries was regarded as positive, but not a powerful enough factor to accelerate cross-border integration. As the Finnish expert stated, 'we are similar but as close as we look to each other the differences get bigger'. Another Swedish expert also mentioned that:

"Even though we understand each other fairly well there are clashes in the way we are governed, and that is something that we have to learn. It takes time to realise this and how to work along these lines and how to solve problems, and to understand how different countries and different agencies solve this kind of problems using their own politics."

Swedish expert 2, interview on the 30th September 2020

According to the experts, one of the main challenges in dealing with cross-border planning, is the lack of detailed knowledge about the flows. As the main objectives of the national authorities lie with projects that happen inside their country, whatever happens along the borders are often considered marginal to the problems that they face. While traffic flows and travel behaviour are continuously monitored within the countries, data on cross border flows are scanty. In addition, the impossibility to define the geographies of travel pattern in terms of origin and destination also contribute to lower quality data.

The Finnish expert highlighted that there is useful information about the type of vehicle (e.g., trucks, cars) and the weight of cargo. Still, public authorities often lack the knowledge about who owns it, what are its contents, from where it come from and where it goes, and this is a challenge to developing efficient transport systems. Big companies possess this information, but they keep it confidential to sustain their market competitiveness. In comparison with the internal flows, the cross-borders are rather marginal and less relevant to traffic management. As the Danish expert pointed out, the 20,000 vehicles that cross the Oresund Bridge daily do not contribute much for the traffic jams, in comparison with the traffic generated from the suburbs of Copenhagen.

Another issue brought up by all experts was the different models employed by the different countries to estimate cross border flows. Despite having similar scientific and methodological basis, the transport models are adjusted to respond to national priorities and strategies. As the models are tailored to national needs, they do not provide an explicit representation of the border, but instead include quite different understandings of the effects of the transportation infrastructure for both sides of the border. The lack of common overview jeopardises the potential of having quantifiable knowledge of current and future traffic flows, and weakens interpretation of the gains and losses across borders. As the economic and social assessment of the implementation of cross border infrastructure differs between countries, important issues such as how to split the risks and benefits between countries, or the distribution of responsibilities and risks in terms of a budget, remain unclear. Moreover, as cross-border projects are sporadic and context-dependent, it is even more challenging to develop a framework that can handle these uncertainties.

The different dynamics on both sides of the border, the distinct evaluation of traffic flows, different financial policies and currencies, makes cross-border collaboration significantly challenging. As the Danish expert stated: 'Even though we are close, bridging between different culture and different ways of doing is difficult. Our focus is national, which means that when we deal with the border, we have half of the knowledge, and this is a challenge'.

3.4 Impacts of cross-border infrastructure on territorial development

The debate about the effects of the implementation of the cross-border transport infrastructure on the territorial development of the Nordic countries, sparked interesting discussions among the experts. In fact, cross-border infrastructures can exert a great influence in shifting the hierarchy and importance of cities at different levels of governance. For example, while the Oresund Bridge has benefited Copenhagen with a stronger market and customer bases in relation to other European cities, it has also increased disparities between Copenhagen and other Danish cities. This cross-border link has also raised Malmo's competitiveness as, among other effects, it enabled the creation of specialised jobs and higher wages for Swedish workers (Butikofer et al., 2019) and, to some extend, has changed the power relations and increased and competitive advantages that prior to the Oresund bridge being built, were centralised in Stockholm (Hasselgren and Lundgren, 2014).

Investments in cross-border transport infrastructure can have a profound impacts on territorial development. As an interviewee mentioned that 'it is all about which kind of society you want to have: shall we have a country or a society with a number of strong regional economies or should we be unitary national state with a strong centre and a few strong cities connected with good transport infrastructure?' Using Sweden as an example, he added that up until 1970 when the

national borders were less permeable, the unitary national model dominated strategic transport infrastructure policy. When the political landscape began to shift in 1980 with new ideas about regionalisation and the engagement of the country in the EU in 1995, the establishment of strong regions dominated the political debate. In his opinion, Sweden is currently in between both models, and faces the political dilemma of deciding which strategy it should pursue in the future.

Discussing the possibilities of enhancing strong regional economies, another Swedish expert added that this could be true for Skåne and Gothenburg as these regions can take advantage of the Danish economy. Nevertheless, it may not be feasible for other regions such as Umeå - Vaasa and Östersund – Trondheim, as neither of these cities are part of the economic centre of their respective countries. On the other hand, a politician from Österbotten Region in Finland perceived the cross-border connections between regional centres, as a great measure to boost the development of regions with less competitive advantages. Referring to Torneå and Haparanda, the twin cities located in the Finnish-Swedish border, the interviewee highlighted that cross-border collaboration holds more possibilities than threats, as together these small towns located in a remote area can have a more significant impact than acting alone.

Svedjehamn

Photo: Kvarken link

4. Final considerations

Drawing on the outcomes of three studies (Grünfelder et al., 2019, 2020; Stjernberg and Sigurjónsdóttir, 2020), this report has discussed some lessons for the planning of SMS-cities that are or will be connected through cross-border transport infrastructure investments. These cases have shown that cross-border flows are diverse and can differently affect the development of cities that are engaged in transport corridors. The variety of aspects that play out in the different contexts do not allow for generalisations to be made, but undoubtedly shed light on some issues that need to be considered in the local planning of SMS-cities that are exposed to changing regional mobilities. In this respect, the analysis of these has contributed to one of the actions to support the development of a green region (Nordic Council of Ministers, 2020b: 7).

These studies were also the basis for initiating a discussion with experts and politician about cross-border challenges in the Nordic Region. As the interviews revealed, the integration of the Nordic Region is, of course, dependent on overcoming spatial barriers, through the improvement of transport links between the different countries. Nevertheless, the success of these new accessibilities, is not only dependent on spatial interventions, but equally important are aspects related overcoming legal, physical and practical barriers to creating a better quality of life for people who lives in these regions.

Despite these obstacles, the cooperation between the Nordic countries on issues regarding cross-border mobilities has developed significantly, with new possibilities to network and activate different funding opportunities (e.g., Interreg, ESFI). Currently, there are many interagency partnerships at the national level, as well as regional and local cooperation. Nordic cross-institutional collaboration is proceeding in the study of the fixed link between Helsingborg – Elsinore with the financial support of both countries and Interreg funds. The Swedish and Finnish national transport agencies are also partnering to pursue EU structural funds on issues related to transport safety in the EU TEN-T corridor. Nordic funding has been equally important to support the network of local and regional actors through the cross-border committees, that strive to address the challenges these regions face.

Regardless of the challenges national transport authorities face when working together, joint cross-border projects are perceived as opportunities for the different agencies to learn from each other. As an expert highlighted: 'One way forward is often to learn to from each other to understand the other country, the other region, what kind of goals do they have in the collaboration'. The Nordic vision also plays an important role in encouraging Nordic cross-institutional collaboration, as it emphasises the need for making cross-border connections more effective and for better aligning cross-border projects with national goals.

Box 7: Main aspects highlighted by experts

- Establishment of specific departments within national transport authorities that deal with cross-border transportation issues;
- Cooperative structures, procedures and instruments that facilitate the removal of obstacles and foster the elimination of divisive factors;
- Learn from each other (different methodologies).

Nordic institutions are important for facilitating the work of the national transport authorities towards implementing the Nordic vision. Commissioned studies on good practices of implementation of transport infrastructure in other European cross-border regions, as well as lessons learned from following-up the collaborative work done by Nordic transport authorities, can be valuable for guiding the building up of competencies for working together. It is also crucial to carry out studies that investigate the value cross-border links can bring to the development of

the countries, as well as on the quality of life of people who live in the border regions. Last but not least, creating forums and mediating discussions between national transport authorities, stakeholders and planners from different levels, is also paramount for overcoming obstacles and improving the integration of the Nordic Region.

Box 8: Nordic level contribution to facilitate the joint work of national transport agencies

- Commission further studies and/or analysis;
- Create forums that bring together infrastructure authorities from different countries;
- Mediate discussions between stakeholder from different organisations.

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Insights from three Nordic cross-border regions

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