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European Research for Maritime Eco(nomic) clusters governance Strategy - ERMES

Targeted Analysis

Case Study report East Flanders

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Case study report East Flanders

European Research for Maritime Eco(nomic) clusters governance Strategy - ERMES

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1 Introduction

1.1 Background

In this report, the final outcomes of the ESPON Targeted Analysis "*European Research for Maritime Economic clusters governance Strategy*" (ERMES) for the stakeholder region of East Flanders are presented.

The study started on 11 March 2020 and covered a period of 12 months. The study focuses on four stakeholder regions: The Province of Liguria (Italy), Crete (Greece), Malta and the Province of East Flanders (Belgium). Its aim is to analyse the urban-maritime interfaces and cluster development potentials in the stakeholder's regions; to define regional-specific urban-maritime spatial planning scenarios, involving triple helix actors, policy-makers and city-port authorities; to provide policy recommendations for the elaboration of strategies for urban-maritime regions; and to contribute to the production of an Atlas/Roadmap on future polycentric urban-maritime port regions in Europe.

The study centres around a set of four research questions, some of which encapsulate more detailed questions which have been formulated at a lower level.

- Considering the actions undertaken within cooperation networks among city ports, what are the territorial benefits that cluster collaboration can bring in the stakeholders' territories?
- To what extent and how could clusters contribute to the development of urban-maritime regions?
  - How can they benefit insular areas that combine a high number of territorial disparities such as described in Article 174?[1]
  - What kind of actions/policies are needed to ensure a sustainable and integrated management of economic clusters in coastal regions and island territories?
- Are economic clusters able to support local business development in urban-maritime regions?
  - What are the main economic sectors affected?

[1] Article 174 of the Treaty for the European Union reads: 'In order to promote its overall harmonious development, the Union shall develop and pursue its actions leading to the strengthening of its economic, social and territorial cohesion. In particular, the Union shall aim at reducing disparities between the levels of development of the various regions and the backwardness of the least favoured regions. Among the regions concerned, particular attention shall be paid to rural areas, areas affected by industrial transition, and regions which suffer from severe and permanent natural or demographic handicaps such as the northernmost regions with very low population density and island, cross-border and mountain regions.'

- Which schemes can be used to investigate how the agglomeration of firms and related actors has a positive impact on the regional maritime economy (jobs/business creation and sustainable growth)?
- How can framework conditions be created in stakeholders' coastal regions for strengthening the relationship between existing industrial-services assets and strategical infrastructure development?
  - Do economic clusters contribute to the improvement of networking and cooperation of urban-maritime regions?
  - Which opportunities do citizens benefit from in the implementation of cluster policies?

1.2 Interim phase

The information in this document was gathered in the period between March and December 2020. During this period, the following activities were carried out by the consortium:

- qualitative-quantitative analysis of the urban-maritime interface in East Flanders;
- scoping interviews with a selection of stakeholders that represent businesses, government and other organisations linked to maritime activities in East Flanders;
- an extensive survey among a selection of East Flanders's stakeholders;
- a virtual scenario building workshop that took place on 19 November;
- expert analysis of the different inputs by the consortium;
- development of the draft case study report.

During the interim phase Chapters 2 and 3, the urban-maritime interfaces and the urban-maritime scenarios, were largely developed. A draft version of Chapter 4, focusing on guidance and recommendations, was also produced in the interim phase.

1.3 Towards the final document

Between December 2020 and March 2021, additional information was gathered to finalise the case study report. During this period, the following activities were carried out by the consortium:

- a meeting with the Steering group was organised in order to discuss the feedback on the interim report;
- additional interviews have been conducted with a selection with stakeholders in order to further develop and refine the guidance and recommendations formulated in the interim report;

- a horizontal workshop with stakeholders from all four regions was organised on the 11th of February. During this workshop, the overarching recommendations that were identified in the interim report were validated.

Based on the feedback that was received on the interim report, Chapter 2 and 3 have been fine-tuned. Additionally, Chapter 4 on guidance and recommendations was further developed based on the additional interviews and further research.

2 Urban-maritime interfaces in East Flanders

2.1 Port and hinterland structure

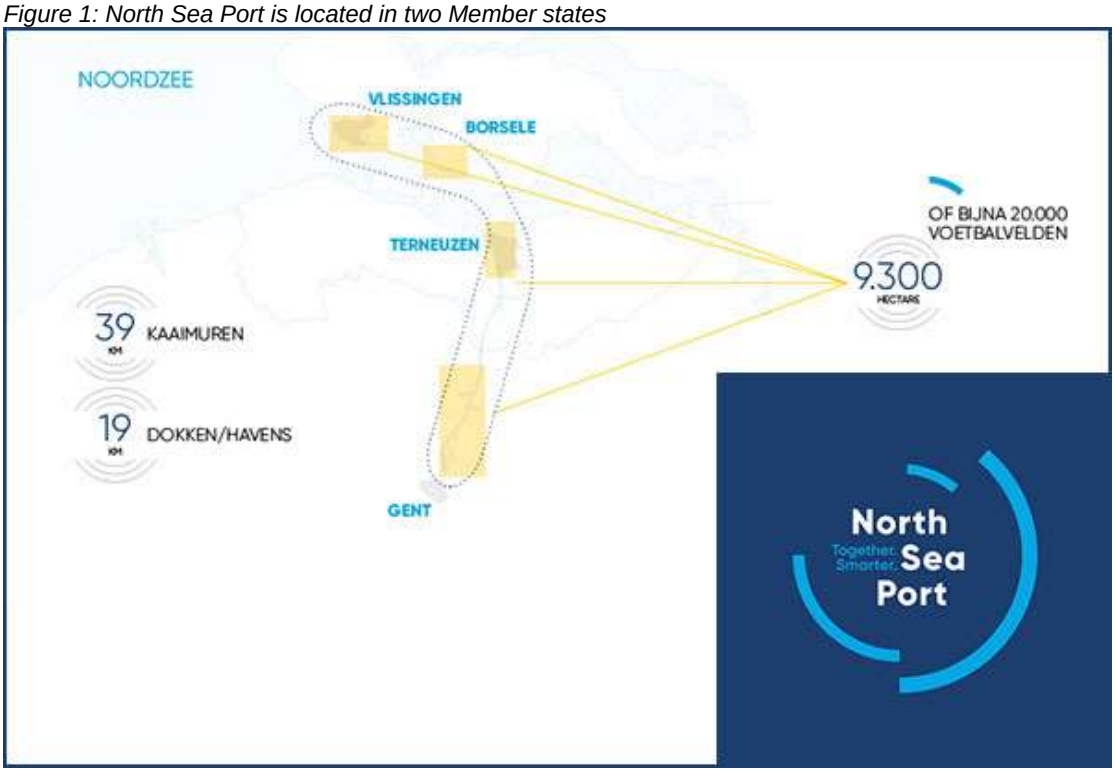
Regional aspects

Besides being a popular tourist destination and one of the main university cities of Belgium, the area of the Port of Ghent contains a Volvo Cars and a Volvo Trucks assembly plant, as well as a steel mill that belongs to Arcelor Mittal. Together with a focus on dry bulk and an increasing importance of bio-based cargo streams and production of biofuels, import and export cargo streams have a local anchorage. The merger between the Dutch Zeeland Seaports and the Flemish Port of Ghent in 2018 was a ground-breaking event in the European seaport scene.

Before the COVID-19 pandemic, North Sea Port experienced significant growth. 10 million tonnes of cargo were added in 3 years, reaching a record total of over 70 million tonnes. The cross-border port area (see figure below) is located in two countries and is more than a transit port. The port area combines a strong (manufacturing) industry and a multimodal transhipment function. In total, 525 companies are located in the area.

The port of Vlissingen, just like Terneuzen and Ghent, are important hubs ("core ports") of two of the nine TEN-T corridors: on the North Sea - Mediterranean and Rhine – Alpine.

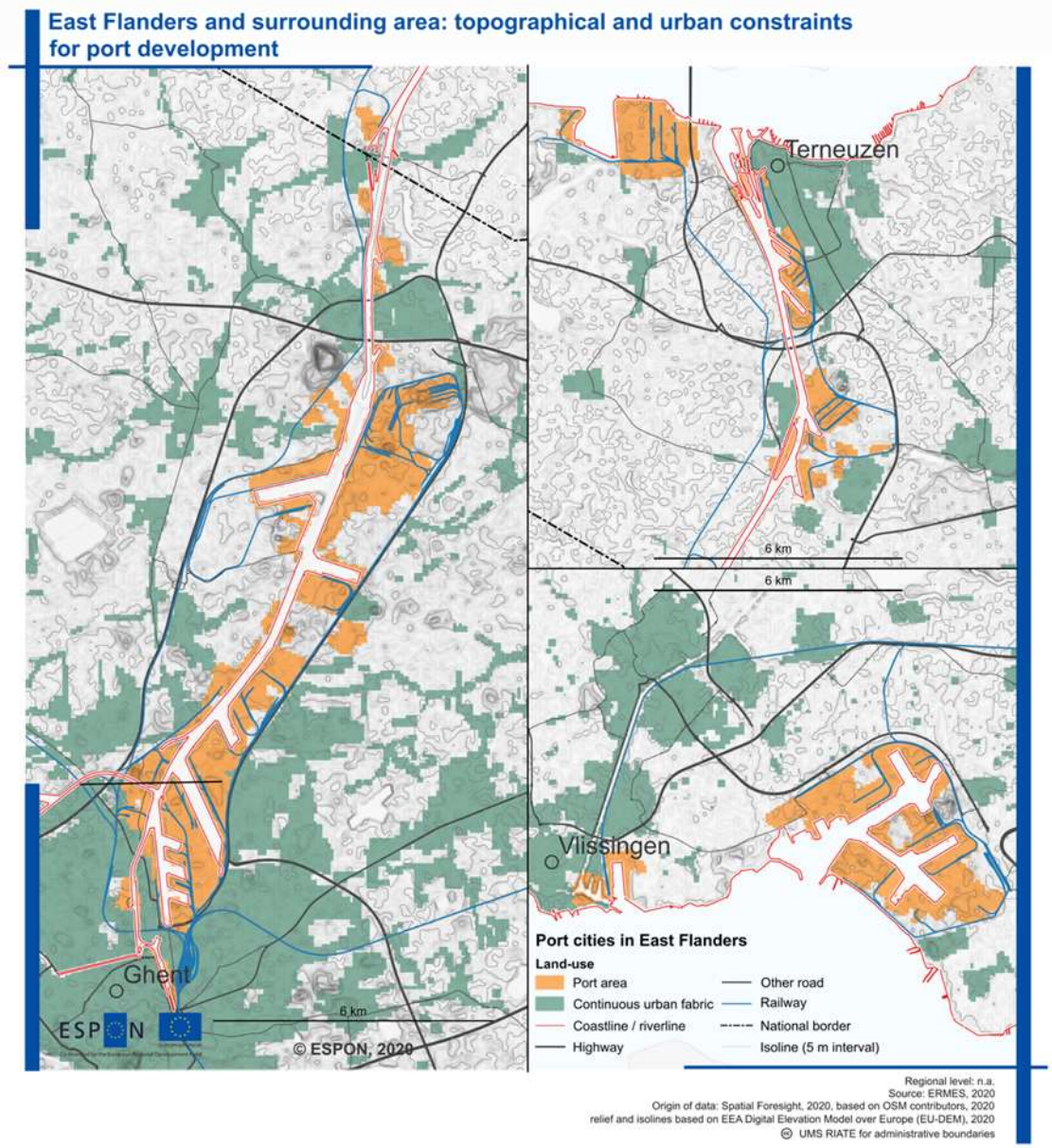
Figure 1: North Sea Port is located in two Member states



North Sea Port is located in the middle of the Flemish Dutch Delta (VND). The VND includes the ports of Rotterdam, Antwerp, North Sea Port, Zeebrugge and Moerdijk; and is the leading supply and export region for North-western Europe. The port area is increasingly accessible for shipping. Inland shipping is strong at North Sea Port. Over 55% of the hinterland volumes goes via IWT. The seaside can grow even further, among other things through European support for the Seine-Scheldt project and the new sea lock in Terneuzen. Mobility in Flanders is expected to come under further pressure due to the increasing volume of trucks, but the multimodal hinterland connections are yet less competitively developed. Current rail service for the hinterland are lagging behind on volumes, destinations and frequency that road transport can offer.

Rail transport is an important point of action for the port. Expansion of rail services can give the port a greater sphere of influence, all the way to Southern Europe and to developing markets in Central and Eastern Europe. Private actors see opportunities in this regard. DFDS invests in a terminal that links Short Sea cargo with continental cargo and existing rail networks further to European destinations, and via Trieste to Turkey. ITG uses the multimodal terminal at the Kluizendok, and can organise 750 meter trains on the Zandeken bundle. The frequency of the connection to Italy was increased to six times a week. With a Volvo train coming from China, the terminal has a unique project. Other players see opportunities, for example De Hoop sees a new rail market for rail ballast; Mammoet can organize project cargo via rail or water; and the announced Ekol terminal may double current volumes.

Figure 2: Topographical and urban constraints for port development in East Flanders



Economic structure of the region

The economic size (measured in Gross Domestic Product (GDP)) of Province of Zeeland (€12 billion) and East Flanders (€50 billion) is combined roughly 5% (equal to €62 billion) of the total Belgian (€460 billion) and Dutch GDP (€774 billion). The added value grew in 2018 by roughly 2% in both regions.[2] [3]

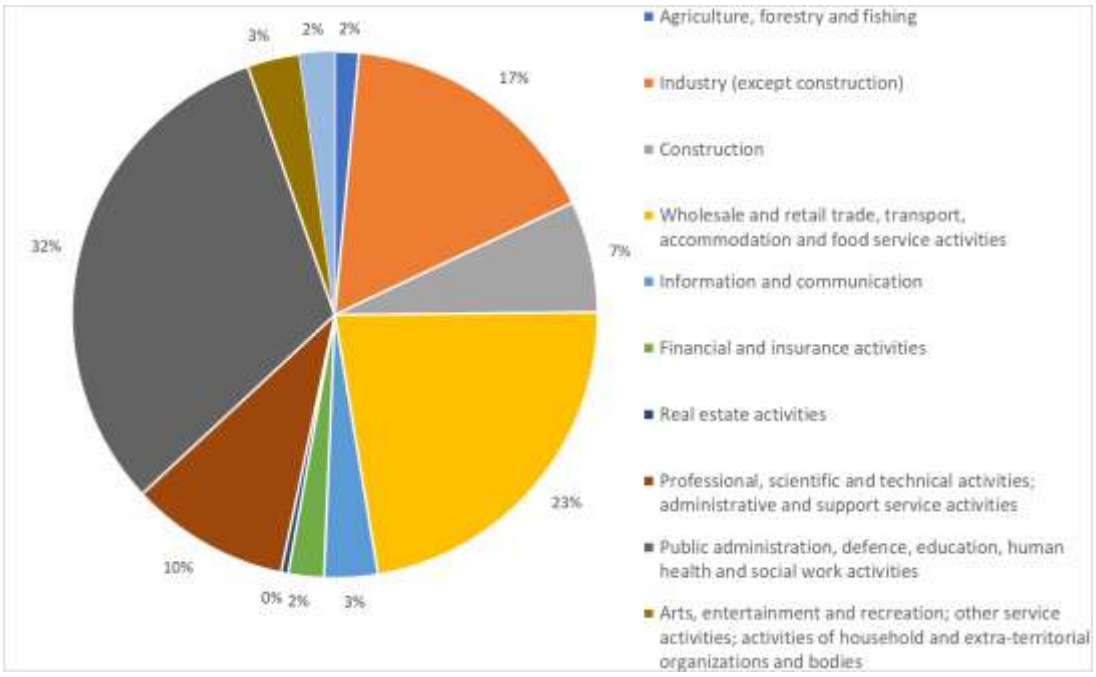
[2] Eurostat (2020), GDP and main components (nama_10_gdp) (link).

[3] Eurostat (2020), Regional gross domestic product by NUTSII region [TGS00004] (link).

North Sea Port is the 10th largest port in Europe in terms of total throughput, and plays an important role in the Hamburg-Le Havre range. The port complex is even more important in added value, ranking third on the list of European ports. This is mainly due to the presence of important industrial sites. Due to, among other things, these production sites, the port area is important when it comes to employment: around 100 000 jobs are indirectly and directly dependent on North Sea Port. The added value that all these employees generate is €14.5 billion in 2018, compared to €13.4 billion in 2016.

Total employment in the East Flanders region is equal to over 690 000 people. Zeeland counts for 165 000 jobs. Most of these employees are active in in the field of (1) Public administration, defence, education, human health and social work activities (roughly 276 000 people of the total of 2 regions, more important in East Flanders than in Zeeland); (2) wholesale and retail trade, transport, accommodation and food service activities (197 000 people); and (3) industry (144 000 people, of which the majority is working in East Flanders)[4]. The figure below presents employment by the economic activity in the two regions combined.

Figure 3: Employment by economic activity in North Sea Port region



Source: Eurostat (2020), Employment by age, economic activity and NUTS 2 regions [lfst_r_lfe2en2]

In the following section, a more detailed description of the port area and maritime indicators in the region will follow.

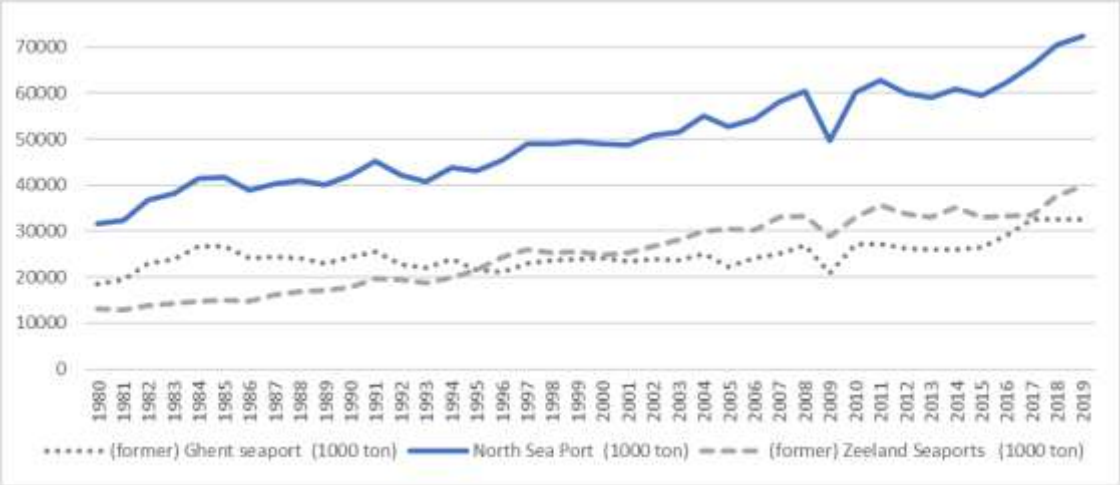
[4] Eurostat (2020), Employment by age (15-65), economic activity and NUTS 2 regions.

Ports characteristics

The first year (2017) of the merged port had a record turnover. North Sea Port traded more in 2018 than 70 million tonnes of maritime goods, especially dry bulk, liquid bulk and breakbulk. Zeeland has always been a trading place for commodities, e.g. coal and liquids. The chemical plant of Dow in Terneuzen is responsible for the bulk share of liquid trades. But in recent years the containerisation of goods, especially cooled supply chains, has grown fast. Moreover, chances are explored in the offshore wind turbine industry. The majority of industrial sites is located in the Ghent port zone, where Arcelor Mittal steel mill and Volvo (cars and trucks) represent a large share of the employment.

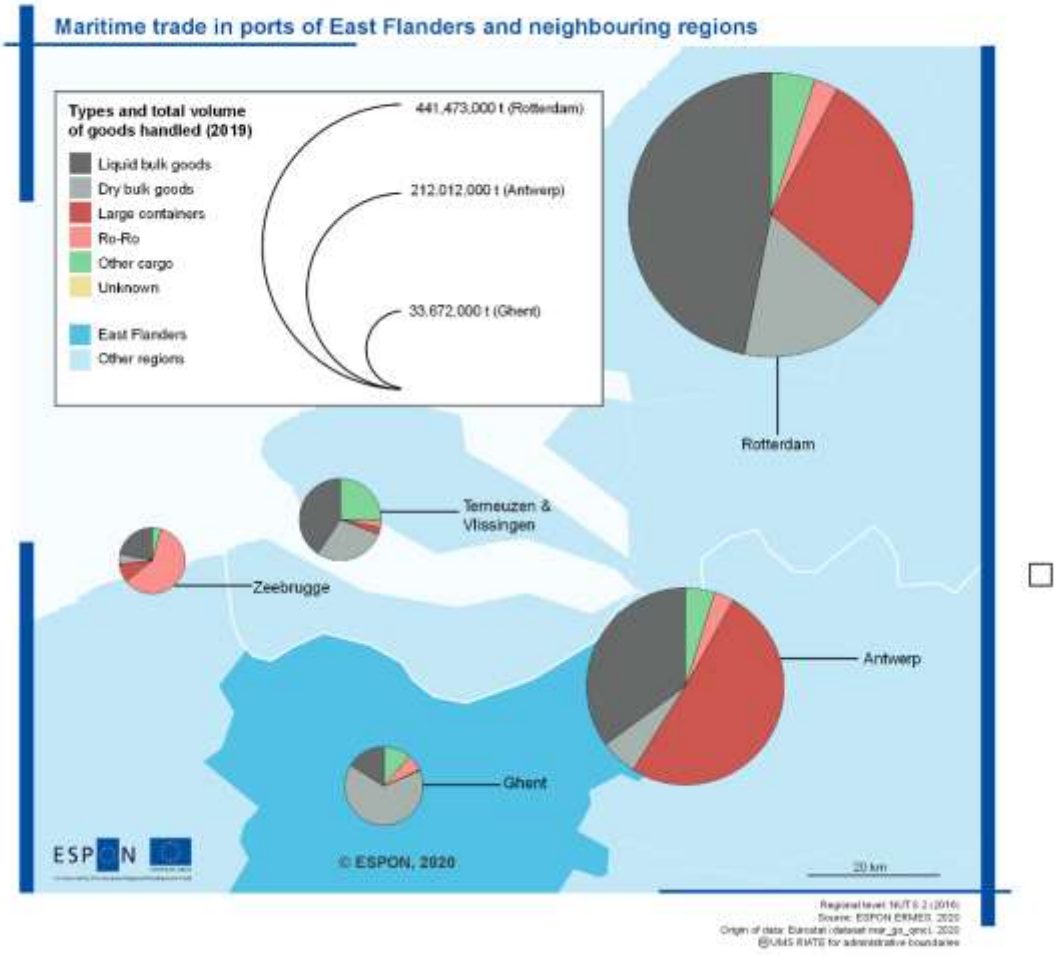
Trading of fuels is a business that has expanded in recent years, always followed by new capacity increases in tank storage.

Figure 4: North Sea Port volumes grew to 70 million tonnes per year



Source: North Sea Port data

Figure 5: Maritime trade in ports of East Flanders and neighbouring regions



Competitiveness and cluster dimension

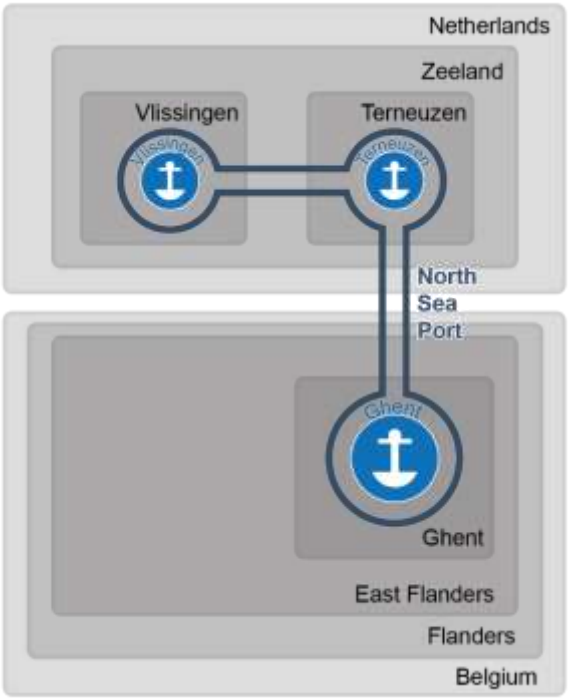
In the regional competitiveness index 2019, East Flanders ranks 31th out of 268 European regions. It is categorised in stage 4 of development, with stage 1 being the lowest, and stage 5 being the highest. East Flanders scores well compared to its peers in the field of the Efficiency dimension and Business Sophistication. There are no fields in which East Flanders underperforms compared to its peers.

East Flanders is placed in the high group of the territorial and economic readiness cluster index, which means it is among the strongest 25% of European coastal regions. The region has a high score on all the four sub-indices. Especially, indicators within the basic pillar (e.g. road and railway accessibility) and innovation (e.g. the number of innovative SMEs and knowledge workers) score substantially higher than the European average. East Flanders scores especially well on productivity and income related indicators, market size and innovative indicators such as creative employees, innovative SMEs, R&D expenditure. The region scores lower on indicators such as early school leavers, lifelong learning, sales of new to market and new to firm innovation. For maritime passengers data is missing, this is a limited activity. The

region is placed in a competitive (maritime) economy in one of the most densely populated and wealthiest regions of Europe and therefore scores high on many indicators. Innovation is a driving force in the economic fabric, but as the port sector is only one economic cluster in the region, it might be hard to fully develop its maritime potential.

2.2 Governance

Figure 6: Institutional embeddedness North Sea Port



In January 2018, the Dutch Seaports of Terneuzen and Vlissingen merged with the Belgian Seaport of Ghent, creating a cross-border port authority known North Sea Port. As a result, North Sea Port has eight public shareholders. On the Dutch side these are the province of Zeeland (25%) and Borssele, Terneuzen and Vlissingen municipalities (8.33% each). On the Flemish side, these are the city of Ghent (48.52%), the municipalities of Evergem (0.03%) and Zelzate (0.005%), and the province of East Flanders (1.444%). The shareholders are involved and informed by means of a shareholders committee, containing representatives of the municipal councils, the Dutch councils and executives, and the provincial councils. In addition, ongoing structural and bilateral consultations are held with the shareholders.

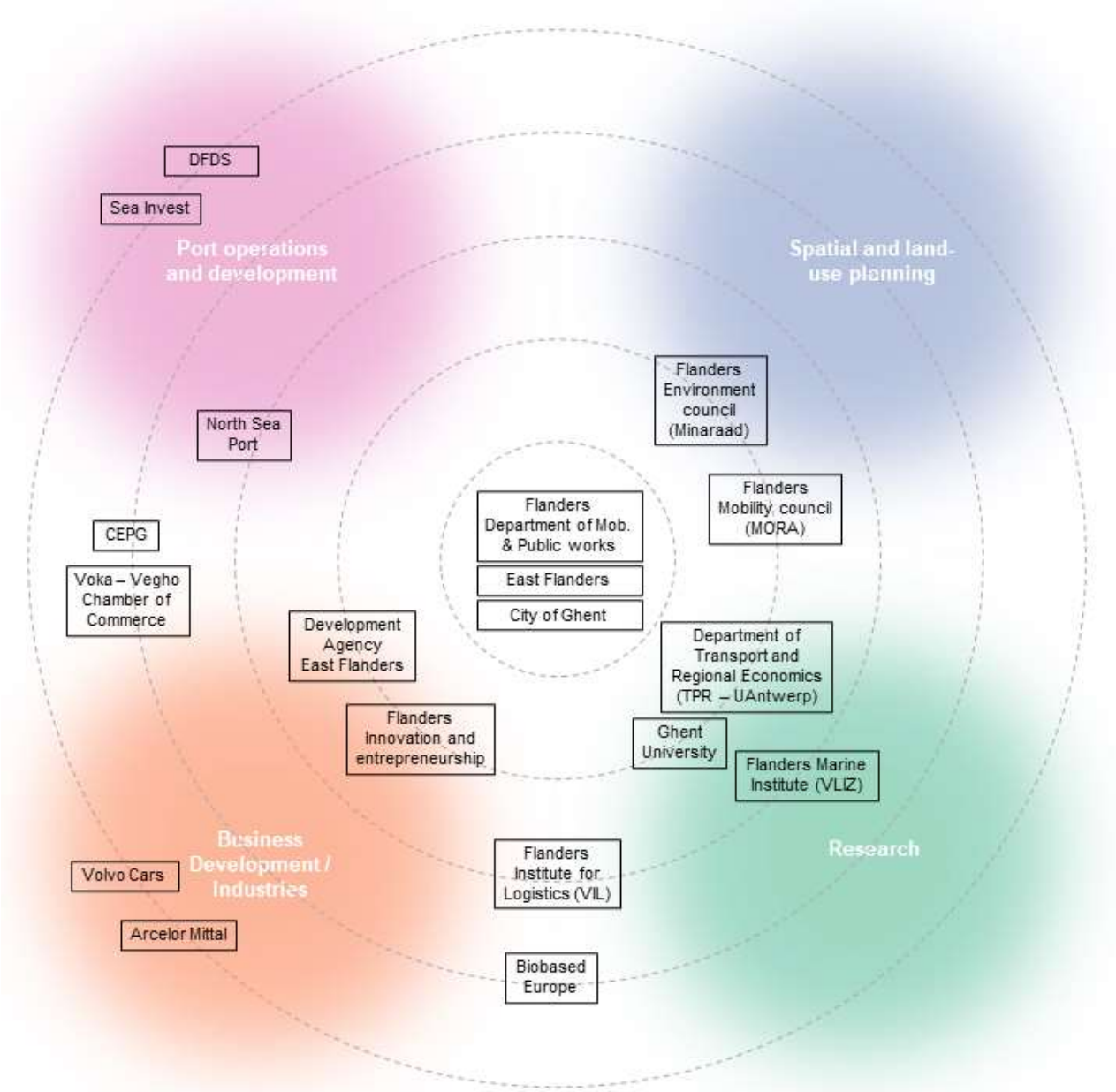
In September 2020, the management structure of the North Sea Port was reorganised. The board of Directors was enlarged from two to four people and now consists of a CEO, a Chief Development & Nautical Operations Officer, a Chief Financial Officer, and a Chief Operating

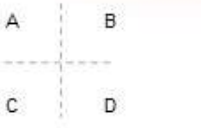
Officer. The most important decisions made by the board of directors are overseen by the supervisory body. Each side of the border is represented by four members, of which a maximum of two may hold a political office.

East Flanders urban-maritime actors

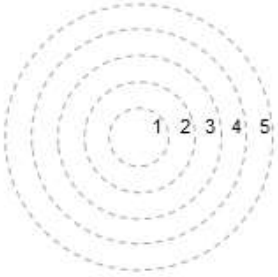
The graph below demonstrates the different types of actors that are involved with urban-maritime activities in East Flanders. They are both governmental and private organisations in different field: research, business development and industry, spatial and land-use planning, and port operations and development. The mapping of these actors was done through contacts with local experts and stakeholders. The map shows a relatively wide coverage of different actor types.

Figure 7: Actor mapping East Flanders





Each quadrant provides for a **field of activity** that can support maritime eco-cluster development: Port operations and development (A), spatial and land-use planning (B), Business development and industries (C), and research (D). The relative position of actors in between two quadrant reflects mixed nature of certains actors that may bridge some gaps between fields of activities.



The distance to the centre of the graph reflects the **relative public-private ownership structure and objectives** of each organisation.
1: public authority, i.e. publicly funded body, rooted in democratic processes and focused on the public interest.
2: other public actor, i.e. publicly funded body, partially or totally independent from political decisions, focused on public interest
3: mixed public-private actor, i.e. of mixed nature, fulfils both public and sectoral or private interests
4: private actors representing collective or sectoral interests, i.e. it is owned/dominated by private entities and fulfils tasks based on collective or sectoral interest
5: fully private actor, i.e. owned by private persons and focused on private interests

2.3 Policies and projects

North Sea Port and the region of East Flanders already have a large number of policies and projects in place that address the regions key challenges. Some of these policies and projects are described below.

- The Provincial Spatial Structure Plan describes the long-term vision of the spatial development of the Province of East Flanders. It concerns a vision of the use of the space for social functions such as living, working and agriculture;
- The Smart Specialization Strategy of the province of East Flanders was developed as base for the elaboration of its economic policy and working with European subsidies in the new programming period;
- Ghent's Spatial Structural Vision 2030 focuses on a 'citizen-centred design approach' to create opportunities and practices for citizens, (social) entrepreneurs and policy makers towards more liveable, sustainable and sociable urban futures;
- North Sea Port Purpose and Vision sets out their vision to grow in terms of sustainable economic activity with high added value by means of high-quality service provision;
- Sustainability ambition 2030 is a sustainability covenant in which agreements have been made on the economic and ecological developments in Vlissingen, Borsele and Terneuzen;
- The province of East Flanders has the climate plan 'Climate-healthy East Flanders' in place, which includes the ambition to become climate neutral by 2050;
- CUST (Clean Underground Sustainable Transport) is a research report from 2019 in which a number of recommendations were formulated on how the construction of underground pipeline infrastructure could contribute to the reduction of CO2-emmissions in the port area.

3 Urban-maritime scenarios

3.1 Introduction

Four scenario trends were presented to a targeted representation of stakeholders for each of the case study regions. These trends were based on potential global trends that seaports may be facing today and, in the future, but also on the influence the ports have on the nearby landscape beyond seaports. The stakeholders were asked to identify which trends applied to their respective region in the upcoming 10 years. The global trends are presented below. In the following paragraphs, the selected trends for East Flanders are described.

Global trends

The four global trends identified were the following:

Trend 1- Optimisation of (port) operations:

The need to optimise operations is becoming increasingly important. When it comes to port operations there is a clear direction towards more efficient operations along with further integration of the supply chain, circular economy, personnel requirements and economies of scale[5]. Regarding the latter, economies of scale at sea have led to the deployment of ever larger containerships[6], which could lead to the potential developments of new terminal infrastructures. Growing container volumes and the increasing ship size could also lead to considerable pressure on cargo terminals, leading to congestion and other negative environmental externalities[7]. This scenario also looks at the potential need to optimise the transport chain (e.g. infrastructures), transportation capacity, and accessibility and/or efficiency.

Trend 2 - Port regionalisation & multimodality:

The competitiveness of seaports depends increasingly on the ability of cargo to reach its final destination[8-9]. Building on that, the main bottlenecks of most ports are in the –direct- hinterlands rather than at the seaside (port terminals). To ensure efficient and smooth access to the market

[5] Kennisinstituut Mobiliteit (2019). Trends en hun invloed op zeehavens.

[6] Wu, W. M., & Lin, J. R. (2015). Productivity growth, scale economies, ship size economies and technical progress for the container shipping industry in Taiwan. Transportation Research Part E: Logistics and Transportation Review. https://doi.org/10.1016/j.tre.2014.10.011.

[7] Acciaro, M., & Mckinnon, A. (2013). Efficient Hinterland Transport Infrastructure and Services for Large Container Ports. JTRC Discussion Paper Series

[8] Ibid.

[9] Merk, O., & Notteboom, T. (2015). Port Hinterland Connectivity. International Transport Forum. https://doi.org/10.1787/2223439x.

in the future, the port system must be integrated in a multimodal (or synchromodal) transportation network that connects port and inland terminals through hinterland connections. This integration should be coordinated between port developments and be in line with TEN-T planning.

Trend 3 - Innovation & digitalisation:

Digitalisation and automation provide many new opportunities to increase port productivity, increase the efficiency of port logistics, and eliminate bottlenecks. Several new digital trends and developments could help, such as: the use of adequate IT systems (truck and barge) to manage congestion, increase capacity, increase the efficiency and effectiveness of gate operations, and to ensure adequate coordination and information exchange among operators[10]; the use of automated and advanced IT systems at terminals to ensure efficient operations, as advanced electronic data interchange (EDI) systems provide real time information to port managers and integrate information flows from several operators[11]; and the use of internet of things (IoT), 3D-printing and even the development of autonomous transportation for various modalities (inland waterways, trucks, trains). These new digital trends and development will also increase the focus and attention towards cyber-security issues[12].

Trend 4- Enhancement of sustainability

The urgency for making an energy transition away from fossil fuels has a tremendous effect on seaports that are often strongly linked with the fossil fuel industry. Over the next decade(s) steps have to be taken to green these port complexes. A bio-based and circular economy offers great opportunities for these port complexes. Also, for the 'license to operate' and the 'license to grow' of seaports it is important that focus is put on more sustainable port development strategies. This especially applies to seaports that deal with a port-city interface.

3.2 Scenario description

From these four global trends, **trend 3 (innovation and digitalisation)** and **trend 4 (enhancement of sustainability)** were selected as the most preferred future scenario trends**. Trend 1 (optimisation of (port) operations)**, especially in what regards to the transport chain, was also mentioned by some respondents, but mostly as a potential barrier to achieving the

[10] Acciaro, M., & Mckinnon, A. (2013). Efficient Hinterland Transport Infrastructure and Services for Large Container Ports. JTRC Discussion Paper Series.

[11] Kia, M., Shayan, E., & Ghotb, F. (2000). The importance of information technology in port terminal operations. International Journal of Physical Distribution and Logistics Management. https://doi.org/10.1108/09600030010326118.

[12] Kennisinstituut Mobiliteit (2019). Trends en hun invloed op zeehavens.

desired scenario or a potential opportunity for offering a more sustainable modal split to their prospects and customers. As such, this trend will be included under the justification of trend 4.

In this regard the North Sea Port has stated its aim to enhance the position of the port and industrial complex in the region in the short and long term, both nationally and internationally. More concretely the North Sea Port has stated that its vision is '*As a newcomer among Europe's leading ports, to enable the new region to grow in terms of sustainable economic activity with high added value by means of high-quality service provision'*. [13]

Trend 3: Innovation & digitalisation

The Smart Specialization Strategy for the Province of East Flanders[14-15] aims to optimise regional innovation policy, starting from the uniqueness and specificity of the existing regional economic structure and attempting to stimulate regional economic development. The Province has identified eight clusters on the basis of available technological, industrial and other competences and, from these, the ICT, Smart Logistics and Eco-innovation clusters could further be developed within the suggested urban-maritime scenario.

Despite the fact that the region houses an active development agency and the different triple helix actors frequently collaborate, the region could strengthen its research, technological development and innovation, but also enhance its process of transferring of the results between academia and market / business through networking activities to bring parties together. The transfer of results between academia and businesses could also be enhanced through liaison officers between universities and private companies (similar to the one that exists in Antwerp) that brings parties together.

The business nearby the port area may also benefit from digitalisation investments as it would also allow other business in the area to improve their efficiencies and reduce their costs. Processes could be done more efficiently, for instance tracking and tracing goods, increasing reliability, shortening reaction times, improving information flow and sharing through the supply chain would benefit many organisations, even outside the logistic sector.

Thus, in terms of digitalisation, digital platforms for the port (and surrounding) businesses and a further digitalisation of the different documents and information streams should get a higher priority for the forthcoming years. In terms of innovation, the further development of the smart

[13] https://en.northseaport.com/purpose-and-vision.

[14]https://dms.oost-vlaanderen.be/download/b1cd1dd3-73cd-4b67-9bf0-7e7a208ebcc9/Sociaal%20economische%20situatieschets%202019.pdf.

[15] Idea Consult, Update Slimme specialisatiestrategie OostVlaanderen, intern document Provincie Oost-Vlaanderen, april 2019, 22 blz.

specialisation strategy towards enhancing innovation, innovative clusters and logistics should get higher priorities for the forthcoming years[16].

Trend 4 - Enhancement of sustainability

In light of the growing attention to sustainability issues, confirmed by the definition of the 17 Sustainable Development Goals (SDGs) of the 2030 Agenda for development sustainable development of the United Nations and other efforts foreseen at the EU Green Deal, the port authority has underwritten a 'Sustainability ambition 2030', in cooperation with Portiz and Zeeuwse Milieufederatie (Environmental Federation of Zeeland), and with the support of the Provincie Zeeland. Furthermore, the Provincial Council approved the 'climate plan' (A climate-healthy East Flanders in 2050). Various projects are currently being developed in this context, across various services (sectors space, environment, economy). Relationships exist especially in the clusters bio-based economy (residual and non-residual flow valorisation), smart logistics (sustainable mobility), eco-innovation (ESCO model) and food (sustainable local food systems and short chains). Eco-innovation efforts will encompass innovation activities that would result in or strive for more efficient and responsible use of natural resources. The aim would be to contribute to more sustainable production and consumption patterns (e.g. renewable energy sources such as wind and solar energy) as the region is pursuing a climate and energy transition to a carbon neutral situation. The Cleantech Cluster Region Ghent[17] is actively seeking this since 2016.

Trend 1 - Optimisation of (port) operations

North Sea Port and the region of East Flanders aim to improve the hinterland connectivity. Situated right in the middle of European waterways, railways and highways, North Sea Port is a truly multimodal port. In line with trend 4, the port aims to use this position in making their ways of transporting goods more sustainable. With a substantial improvement of its rail infrastructure it will be able to offer this mode of improved transport chain to the port's prospects and customers and make the modal split more sustainable.[18] In 2019, the study 'Clean Underground Sustainable Transport' (CUST) was finalised, in which a number of recommendations were formulated on how the construction of underground pipeline infrastructure could contribute to the reduction of CO2-emmissions in the port area.[19] The region is also looking at inland waterway transport solutions so as to promote a modal shift from

[16] See Crossroads 2 project. https://www.crossroads2.eu/.

[17] https://cleantechflanders.com/en. Involving the Province + 5 other partners (City of Ghent, POM East Flanders), i-Cleantech Flanders, Ghent Port Company and Ghent University).

[18] See also www.railghentterneuzen.eu.

[19]https://www.northseaport.com/aanbevelingen-voor-pijpleidinginfrastructuur-in-north-sea-port-om-klimaatambities-waar-te-maken.

road to water[20]. For the latter the development of the Seine-Scheldt inland waterway is important. On the Dutch side of the border, the new lock at Terneuzen is currently under construction. In December 2020, Arcelor Mittal took the first covered loading quay 'All-Weather Terminal' in operation, eliminating the need for 25 000 truck transport movements annually.[21]

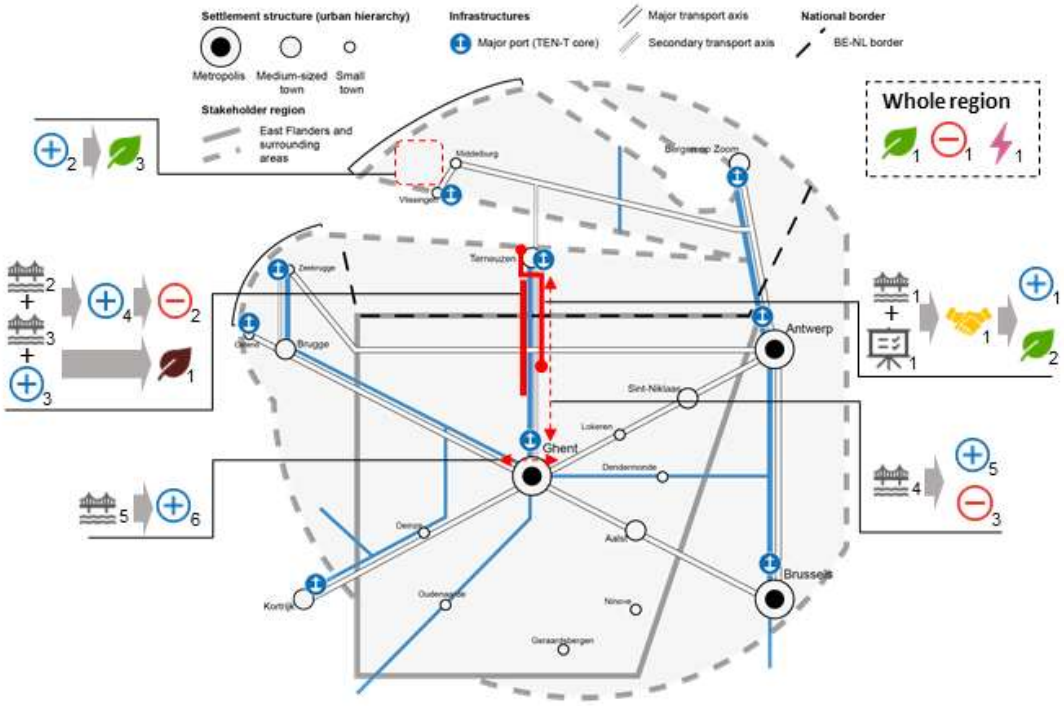
3.3 Opportunities and threats

From the above, 3 main types of actions are foreseen in the future 10 years in East Flanders: improving innovation and digitalisation, enhancement of environmental sustainability, and optimising port operations. For these actions, potential territorial impacts were mapped during the scenario building workshop. They are presented on the map on the next page.

[20] See the IWTS 2.0 project (budget: EUR 3.5 million). https://project-iwts20.eu/.

[21]https://en.northseaport.com/all-weather-terminal-at-arcelormittal-in-north-sea-port-will-keep-25000-trucks-off-the-road.

Opportunities and threats related to the development of port infrastructures and port-related activities in East Flanders and surrounding areas



Actions

Infrastructures

1. Completion of Arcelor-Dow tube connection
2. Completion of the new Terneuzen lock (for post-Panamax seagoing vessels)
3. Deepening/widening channel Terneuzen/Ghent
4. Train/tram Terneuzen-Ghent (for passengers)
5. Conversion of the R4 (East bank - West bank)

New business models

1. Fostering cooperative business models

Actions to be developed or completed are located in red on the map

Opportunities and threats

Socio-economic

1. Competitive costs advantages // becoming a world leader in sustainable technologies
2. Business opportunities in wind energy
3. Well-positioned suitable land for development
4. Increase in employment
5. Easier daily commuting for workers
6. Safer city & reduced travel time for trucks

1. High costs of transition towards sustainability benefit unsustainable models
2. Lack of adequate profiles to fill in specialised positions
3. Competition between passengers / freight on rail

Environmental

1. Social support to environment friendly policy and businesses
2. Reduced CO2 emissions
3. Reduced dependency on fossil fuels
1. Remaining high levels of industrial pollution

Cooperation / conflicts

1. Cooperation Dow-Arcelor on the reuse of CO2
1. Increase in competition between companies on data

3.3.1 Socio-economic threats

A lot of actions are foreseen when it comes to the development of infrastructure in the region. These actions are likely to have mainly socio-economic impacts. On the positive side, development of port infrastructures and port-related activities could make the region a frontrunner in the field of sustainable technologies, which in the long term could also result in competitive costs advantages. Additional socio-economic benefits could be realised if the region would become more attractive for companies to establish themselves in the region, also resulting in increased employment. Furthermore, easier daily commuting and reduced travel time for trucks are foreseen.

On the negative side, the most important socio-economic challenge will be the high costs that come with the climate and energy transition. And although new companies and business models generate employment, there is no guarantee that the future working force in the region has the right skills that are required. Finally, improving rail connectivity for passengers is likely to conflict the freight on rail.

3.3.2 Environmental threats and opportunities

Looking at environmental threats and opportunities, reduced CO2 emissions as well as a reduced dependency on fossil fuels are the main identified opportunities. Additionally, policies and businesses that enhance sustainability will be able to count on social support and in that sense provide a license to operate. A potential threat regarding the environment is that attracting more companies to the region might result in more pollution of the direct environment.

3.3.3 Threats and opportunities in cooperation and conflicts

Finally, when looking into potential cooperation and conflicts, an important opportunity and an important threat were identified. The construction of a tube between Arcelor Mittal and Dow, the plans of which are well advanced, are likely to improve the cooperation between these two companies, who are two of the largest port operators. Their cooperation in reducing CO2 can be stimulated by fostering cooperative business models. An important potential conflict between port operators is increased competition between companies on data. This is an important aspect, since the exchange of data will be important in the innovation and digitalisation of the port.

3.4 Cluster development potential

For the upcoming 10 years, the main challenges for East Flanders relate primarily to making transport smarter and more innovative, most importantly with the use of (big) data. Furthermore, transport and other flows of traffic will need to become more sustainable. Innovation in transport, as well as making it smarter, will contribute into making transport more efficient and therefore greener. However, more will be needed to reach a carbon neutral situation, for example the use of greener fuels. Companies can also complement each other in this transition, for example with reusing each other's CO2. With Biobased Europe and companies like Alco Bio Fuel and Cargill, the port based industrial complex is ideally positioned to facilitate this shift.

In summary, East Flanders seaport stakeholders are looking at developing in the forthcoming 10 years a scenario that aims for:

- **smart** and **innovative** ways to use data in transport (digitalisation, automatization and innovation are leading aspects);
- pursuing a **climate and energy transition** to a carbon neutral situation.

For each of these challenges, strong collaboration between different actors in the industry governmental organisations and academia is necessary. They are potential areas for cluster development.

An important issue regarding the opportunities in trend 3, relates to data. Digitalisation and innovation offer a lot of opportunities to the optimisation of port operations within North Sea Port. The sharing of data among different ports, companies and other relevant actors would provide more insight in logistics flows. These insights could be of great benefit when it comes to optimising these flows. In order to take advantage of the opportunities in this field, a shift in thinking is required. All parties involved need to show willingness to share their data. It should be recognised that parties might be reluctant in this, as their data represents a certain value. Therefore, potential cluster development in the field of data requires thinking about how different ports communicate the data with each other. One example could be to introduce a neutral party that manages the safe storage of and access to the data.

Additionally, the presence of research institutes in proximity of North Sea Port provide a lot of potential to gain momentum in the field of digitalisation and innovation. Although there are already existing forms of knowledge transfer between North Sea Port and surrounding academia, the University of Ghent being the most important one. An example is the existing collaboration in the field of circularity. These forms of collaboration could be further deepened and improved.

Furthermore, companies might be too focused on their own processes, meaning that they only make investments if there is a quick return. Out of the box collaboration is needed.

4 First guidance and recommendations

4.1 Introduction

North Sea Port is unique in Europe given its cross-border nature. It is an industrial port with a strong focus on bulk trade. Due to its location on the European map, North Sea Port has a large hinterland. Furthermore, there is already high-quality infrastructure and connectivity with the hinterland, which makes it a truly multimodal port. Within North Sea Port there is a limited number of large and resourceful companies, namely Volvo and Arcelor Mittal. East Flanders is characterised by high quality and accountability of government services. Finally, the region has the advantage of having the presence of prominent academia and other research institutions in close proximity.

4.2 Overview of key challenges

The scenario developed for East Flanders centres around two things. First, there is a need for smart and innovative ways to use data in transport. Digitalisation, automatization and innovation are leading aspects in this respect. This need relates to the strong focus on bulk trade within North Sea Port. The main challenge relates to the ownership of data and the willingness to share data among companies.

Second, East Flanders has the ambition to make significant progress by 2030 towards climate and energy transition to a carbon neutral situation. The main challenge in this respect are the potential competitive cost disadvantages that companies might face when embracing this development. Especially for companies like Arcelor Mittal (steel production), an international level playing field when it comes to environmental regulations is important in order to remain competitive. In general, companies are focused on short-term investments and profits. This can make them hesitant in embracing long term strategies that include ground-breaking changes in their business model and thus bring uncertainty. Finally, the cross-border nature of North Sea Port offers both opportunities and challenges, most notably in diverging national regulations.

4.3 Draft recommendations

In the interim report, a set of recommendations was presented. These recommendations were then further discussed and finetuned during interviews with a selection of local stakeholders. The draft recommendations are presented below. Paragraph 4.4 describes the final recommendations.

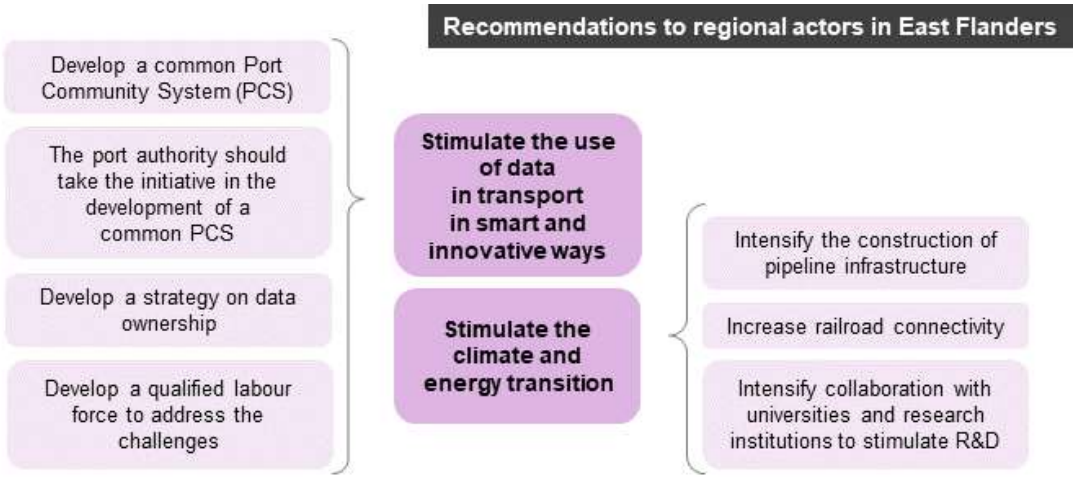
4.3.1. Draft recommendation 1: In order to solve the issue of data ownership, a strategy could be developed that includes all companies that are in need to make their transport flows more efficient. Particular attention should be paid on data ownership, since data are becoming increasingly valuable.

4.3.2. Draft recommendation 2: North Sea Port should join forces with neighbouring ports to develop a common Port Community System (PCS). Using the expertise of the neighbours and a PCS system will advance faster, be used more and be cheaper than when it is developed by the North Sea Port alone.

4.3.3. Draft recommendation 3: North Sea Port should improve cooperation with neighbouring research institutes and universities, for example by introducing a scientific liaison officer between the PA, the port community and the scientific community surrounding the port.

4.4 Case study specific recommendations

The recommendations above need to move one step ahead and be translated into specific recommendations. As such, this section aims to go further beyond these recommendations with the aim of guiding East Flanders stakeholders through concrete steps they may be required to achieve the above-mentioned objectives in due time.



4.4.1 Stimulate the use of data in transport in smart and innovative ways

- **Recommendation 1 - *Develop a common PCS***

  Currently, North Sea Port has a port information system in place that allows clients and terminals to make use of existing services in order to share data concerning the entire supply chain with partners: Enigma+. North Sea Port should join forces with neighbouring ports to develop a common PCS. Especially in the container business

(with PoA and PoR) but also in Roro (with MBZ and PoA) and the break-Bulk (with PoA) the needs are similar. In the neighbouring ports of Antwerp (NxtPort) and Zeebrugge (RX/Seaport) individual platforms have already been created that allow the exchange of data and information of all actors involved in the logistical chain of the respective ports. A PCS for all Flemish ports will make logistics processes more efficient and facilitate supply chains.

In 2009, an initiative was launched for the creation of a PCS for all Flemish ports; however, it was limited to cargo. This Cargo Community System (CCS) was launched by the Flemish government. Its aim is to promote cooperation between the ports in the development of common IT applications aimed at making logistics processes more efficient and facilitating supply chains. So far, this CCS has not resulted yet in an intensive cooperation between the Flemish ports. A clear concrete vision seems to be lacking and partners are not obliged to fully participate. Nevertheless, this existing collaboration could be used as a starting point for the development of a PCS.

- **Recommendation 2 -** ***The port authority should take the initiative in the development of a common PCS***

  Digitalisation enhances the role of port authorities as facilitators of the supply chain. Therefore, the port authority should take the initiative in further mapping the exact needs of its port operators and initiate the development of a common PCS by joining forces with port authorities of neighbouring ports.

  The port of Antwerp and Zeebrugge will merge at the end of the year, creating an interesting partner to collaborate with in the field of digitalisation and energy transition. This opportunity has also been recognised by North Sea Port's CEO.[22] The development of standalone ICT systems will be expensive and take a lot of time. With the use of the expertise available in neighbouring ports, the development of a PCS system will advance faster, be used more and be cheaper than when it is developed by the North Sea Port alone.

- **Recommendation 3 -** ***Develop a strategy on data ownership***

  The third recommendation touches upon the most important stumbling block when it comes to developing a PCS: the question of data ownership. In order to solve the issue of data ownership, a strategy on data ownership should be developed simultaneously that includes all companies that are in need to make their transport

[22] https://www.omroepzeeland.nl/nieuws/125573/Fusie-havens-Antwerpen-en-Zeebrugge-geen-bedreiging-voor-North-Sea-Port.

flows more efficient. Particular attention should be paid to data ownership, since data is becoming more and more valuable. An external (semi)governmental institution in charge of data ownership should be explored as a potential option. Larger companies in the area could serve as an example for smaller parties.

The high accountability of governmental institutions allows them to take a more prominent role in developing a long-term vision on a holistic and integrated approach to use data in transport in smart and innovative ways in the region as a whole. North Sea Port also has the advantage that the provinces and municipalities involved are public shareholders. The need for using data in transport in smart and innovative ways goes beyond North Sea Port and governmental institutions should help facilitating cooperation between Flemish (sea) ports and other actors involved in supply chains. With the launch of the European data strategy, the European Commission should also be considered an important factor in stimulating the development of smart and innovative ways of using data transport in the coming years.

- **Recommendation 4 -** ***Develop a qualified labour force to address the challenges***

A holistic and integrated approach to use data in transport in smart and innovative ways also requires attention to guaranteeing that supply and demand of the labour market of 2030 are in line. Intensified collaboration between the ports and the universities and universities of applied sciences that are in proximity of North Sea Port will be of added value in attracting talented people that can help shape the future of North Sea Port.

4.4.2 Stimulate the climate and energy transition

- **Recommendation 5 -** ***Intensify the construction of pipeline infrastructure***

Intensifying the construction of pipeline infrastructure will not only offer significant opportunities in regard to the energy and climate transition, it will also improve the position of North Sea Port as multimodal port. Within the CUST project, recommendations have already been formulated on how the construction of underground pipeline infrastructure could contribute to the reduction of CO2-emmissions in the port area.[23] From a governance perspective, (cross-border) cooperation was identified as an absolute necessity in order to realise a cross-border pipeline network. Both between Dutch and Flemish public authorities to facilitate the routes in planning and legal terms. In line with the recommendations formulated within the CUST project, the formation of a consortium in which industry, network operators,

[23] https://www.northseaport.com/aanbevelingen-voor-pijpleidinginfrastructuur-in-north-sea-port-om-klimaatambities-waar-te-maken.

governments and North Sea Port can collaborate is included as a recommendation in this study as well.

- **Recommendation 6 -** ***Increase railroad connectivity***

  Increasing railroad connectivity will not only offer significant opportunities in regard to the energy and climate transition, it will also improve the position of North Sea Port as multimodal port. In February 2021, North Sea Port announced that the European Commission accepted its request to include North Sea Port in the Rail Freight Corridor (RFC) 'North Sea-Baltic'. North Sea Port is already part of RFCs 'Rhine-Alpine' and 'North Sea-Mediterranean'. North Sea Port authority should, in consultation with its main port operators, discover the need for a connection with other RFCs as well, for example with RFC Atlantic. In this way, hinterland connectivity with France and Spain will be further improved.

- **Recommendation 7 -** ***Intensify collaboration with universities and research institutions to stimulate R&D***

  The climate and energy transition will require significant effort in the field of R&D. The port authority could take the Port of Antwerp as an example for its use of a scientific liaison officer between the Port Authority, the port community and the scientific community surrounding the port. The port eco-system consists of a few big players (Arcelor Mittal, Volvo) but even mid-sized players like DFDS and the multitude of small companies do not have the resources or the management time available to spend on R&D. The Port Authority should take a supporting role in this regard.

ESPON 2020 – More information

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