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**Policy linkages, interrelations and benchmarking suggestions**

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**DELIVERABLE 2.3**

**Policy linkages, interrelations and benchmarking suggestions**

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## 1 INTRODUCTION

WP 2 addresses the socio-economic performance indicators of ports. Socio-economic indicators built around the following question: “To what extent do ports impact economic households?” In the first place this relates of course to employment (for people) and added value (for firms) which were key to this work package. The first aim of this work package is therewith: to develop a harmonized, top-down calculation tool for the basic socio-economic indicators **employment and added value** with the aim to:

- Incorporate these indicators in a European Port Observatory;
- Provide individual ports with a tool for calculating basic socio-economic performance indicators;
- To lay the foundations to expand the domain for socio-economic indicators to inland ports;
- To combine these basic indicators with other indicators to develop more customized indicators;
- To extend the basic set of socio-economic indicators based on practical value and feasibility criteria (e.g. private investments).

During the execution of the project it became clear that although the socio-economic indicators certainly have their value and are developed and used by a couple of ports already, it is not yet possible to develop a valuable and reliable set of harmonized socio-economic indicators (employment and added value) for all European core ports (see deliverable 2.1 for further explanation). This is due to:

- Only a few ports do develop and report on socio-economic indicators
- Methods and definitions differ too much to enable integration, comparison and extension to other ports
- Statistics needed for a harmonized top-down approach based on known methodologies of Dutch and Belgium port monitors lack at the European level (thus for example available with Eurostat for all members states at the right level of detail, both geographically as in terms of economic activity).

Attempts to use proxies instead of actual numbers to at least provide ports that do not report at all with estimates on their socio-economic impacts have led to the following conclusions:

- Developing proxies that estimate employment related to the transport node function of ports is quite well possible
- Such proxies do not incorporate and represent well the logistics and industrial functions that ports as well have and are thus not sufficiently accurate and reliable
- Improving the proxies by taking land use as an explanatory variable for the employment related to logistical and industrial activities is a very time-consuming effort that finally did not result in high quality outputs.

### *Other indicators*

Although much time was spent on work package 2.1 because the initial strategy for developing the indicators had to be changed and new strategies ended up in very time consuming but non-resulting outputs, we also developed alternative socio-economic indicators that could have value and may be developed in the future. These indicators as private investments, diversity in employment, educational levels, work satisfaction, replacement of labor with capital (outphasing employment categories) will also be taken into account in this task.

This specific task 2.3 will aim at the linkages between the key outputs of the work package and the overall project and also ports policy from a wider perspective. The task consists of:

- The analysis of interrelations of the socio-economic indicators developed with other port performance indicators and port performance in general.
- The analysis of the relation of the socio-economic indicators with European policy objectives.
- The provision of meaningful suggestions for benchmarking, including a global perspective.

One remark is that relating socio-economic indicators to policy and also benchmarking should be done very carefully. First, there are factors outside the control of the port managing body and the port's businesses that have an impact on socio-economic outcomes. Second, ports differ substantially in configuration, working and external context. Third, port regionalization requires a wider geographical scope for the measurement of socio-economic impacts: ports generate activities that increasingly are located in the hinterland of the port while being connected to the port: it is the complete port network that counts instead of only the port itself. And fourth: the socio-economic indicators measures different aspects that sometimes internalize trade-offs: increases of value added are mostly coupled with less employment per ton due to the adoption of technological innovation or scale effects (e.g. through mergers and acquisitions). Employment generation is an important objective, but should not restrict modernization and innovation processes that lead to higher levels of efficiency and effectiveness.

## 2 INTERRELATIONS WITH OTHER INDICATORS

### 2.1 Introduction

Within the PORTOPIA Project, port indicators are categorized into the following six categories: market trends and structure, socio-economic impact, environmental performance, logistic chain & operational performance, governance and port users' perceptions. Each category is being investigated by several research partners, proposing a set of relevant indicators to be implemented at the EU level, which are assessed and accepted by port stakeholders. However the various indicator sets are interrelated as they all relate to the overall port performance. Combining indicators or assessing the interrelationship between them may enrich the insight in the development of the ports' performance and how it may be enhanced. In this chapter we therefore look at the interrelationships between the socio-economic indicators and the other indicators in PORTOPIA. We start in section 2.2 with a short description of the indicators, followed by an assessment of the interrelationships.

### 2.2 Description of the other indicators

#### 2.2.1 Market Trends and Structure Indicators

Indicators on market trends and structure contribute to a better understanding of the dynamics and trends in the port industry. The indicators as selected in PORTOPIA under this category are:

- maritime traffic
- call size
- intra-European traffic
- transshipment in EU ports
- GPD growth vs tons per type of cargo
- traffic forecasts
- modal split
- vessel size
- traffic Growth
- market share

#### 2.2.2 Environmental and OHSS Indicators

This category is divided in two types of indicators: Environmental Performance Indicators (EPIs) and Occupational Health, Safety and Security (OHSS) Indicators.

- The *Environmental performance indicators* that have been selected to be included in the PORTOPIA Service Cloud are classified in four categories: i) Environmental management; ii) Environmental monitoring; iii) Top 10 Environmental priorities; and iv). Services to shipping.
- *Environmental management indicators* are seen as measures of a port authority's capability to deliver environmental protection and sustainability, and as an effective

way in which to demonstrate a port's credentials, competences and programs to manage a wide range of environmental issues.

- Indicators on *environmental monitoring* provide information about the current condition of the environment. This information may help port environmental managers to better recognize the potential impacts of the port authority's activities, products or services that may interact with the environment, and consequently, assist in the planning and implementation of environmental performance evaluation. These indicators investigate whether the port monitor a set of parameters regarding the condition of the environment.

### *2.2.3 Logistic Chain and Operational indicators*

The category of logistical chain and operational indicators relates to the operational function of a port as a node in transport networks. This category comprises four indicators: maritime connectivity, intermodal connectivity, ro-ro connectivity and quality of customs

- Maritime connectivity is the connectivity of a port with container services to overseas destinations.
- Intermodal connectivity is the connectivity of a port with intermodal container transport services to and from hinterland destinations.
- The RoRo connectivity indicator aims at monitoring over time how well the European port system is connected through RoRo services.
- The quality of customs considers the effectiveness and efficiency of the customs operations: the indicator shows how users rate the customs procedures.

### *2.2.4 Port governance indicators*

The set of port governance indicators represent indicators that say something on the working of the port models chosen in the various ports. There are three selected indicators on port governance.

- The first one is the **level integration of port cluster**, which expresses the extent of port authorities' initiatives that aim towards the integration of various stakeholders composing a port cluster.
- The second one measures the extent to which port authorities undertake and report activities in a way that **enhances corporate and social responsibility**.
- Finally, the **level of autonomy of the management** provides information on whether port authorities maintain features that enable it to develop vital initiatives.

### *2.2.5 Inland terminal indicators*

The set of inland terminal indicators characterizes the European inland ports. These indicators cover all 6 performance perspectives:

- Market trends: mainly transshipment of the inland terminals
  - socio-economic: direct and indirect employment
  - environment and safety: monitoring and management actions
  - logistic chain and operational performance: connectivity, services, throughput per quay meter, spatial productivity
-



- governance

### *2.2.6 User's perspective indicators*

The indicator related to this category is to monitor the users' perception of port performance. It shows the level to which the users of the port are satisfied with the performance of the port.

## **2.3 Inter-relationships**

### *2.3.1 General*

Socio-economic indicators as employment and added value can be seen as output indicators, representing the overall performance of the port, related to its socio-economic meta-goal of strengthening regional economic growth. If the ports perform well, they are able to attract and grow the port businesses (transshipment terminals, logistics companies, industrial companies, etcetera), that invest and locate within the port and that together form the port product that is offered to the port users (shippers, shipping lines etc). These port businesses generate the direct and indirect employment and added value. And the port performs well if it:

- sees its maritime traffic and its related transshipment increase and maintain or even grow its marketshare
- shows a sustainable development, complying with the increasing requirements of policy makers but also increasingly port users for reduction of emissions and transition towards alternative energy sources
- has a high level of connectivity that fits the ports users' requirements
- has an effective and efficient governance model that enhances the working, aligning and renewal of the port cluster
- is integrated in a well working inland system of efficient inland terminals
- obtains positive user perspectives, indicating that the users of the port are satisfied with its offerings

### *2.3.2 Market trends and socio-economic indicators*

Market trends as traffic and transshipment developments and also market shares are output indicators just like the socio-economic indicators. They indicate to what extent the port is able to attract business. What type of business that is, is then differently represented by the different indicators. An interesting linkage between the market trends and the socio-economic indicators is the possibility that it enables to assess whether more vessels, more cargo and higher market share in terms of transshipment leads to higher economic impact for the port and its wider region.

Another interesting interrelation is that by combining the market trend indicators with the socio-economic indicators, further insight can be gained in development of efficiency and automation levels. Growing transshipment levels, while stagnating employment levels but increased value added could indicate higher efficiency levels of the penetration

of automation (and therewith substitution of labour with capital). Such interrelations are relevant also in the social dialogue.

### *2.3.3 Environmental Indicators and socio-economic indicators*

Between the environmental indicators and the socio-economic indicators no direct linkage exist, except for the more indirect relation that if the port develops well in terms of sustainability this may be a reason to attract additional business. Positive socio-economic indicators may therewith be an indication of an environmentally well performing port, but reliable and causal relationships cannot be identified here.

From the perspective of the environmental indicators it can be stated that added value may have a substantial relation to the environmental performance indicators. “If the port generates a high added value, it might be understood that the port has a higher budget for environmental issues. Therefore more investments on these topics can be made, for example, on monitoring, training or onshore power supply.”

### *2.3.4 Health and safety indicators and socio-economic indicators*

Employment levels are directly related to requirements for a healthy and safe working environment. The more people employed, the higher the relevance of such a working environment.

### *2.3.5 Connectivity indicators and socio-economic indicators*

There is no direct interrelation between the connectivity indicators and the socio-economic indicators, except for the general link that a well-connected port is an attractive port and will be better able to attract and develop business and thus employment, added value and investments. There should therefore be a positive relation to be expected between the level of connectivity and the level of employment, added value and investments.

### *2.3.6 Inland indicators and socio-economic indicators*

Ports are connected with their inland terminal networks. Both from a user perspective as from a socio-economic perspective they need to be considered in an integrated way. The inland terminal network represents the intermodal part of the ports’ hinterland container network. A growth in employment and added value in the ports transshipment activities should lead to a growth in employment and added value in the inland terminals that are dominantly related to that port. If the ports activities are growing but the inland terminals not this could be an indication of:

- Underperformance of the modalities rail and barge
- Bad performing integration of the terminal with that port
- Underperformance of the inland terminal

This should then be a reason for policy or management action.

### *2.3.7 Governance indicators and socio-economic indicators*

As ports combine both public and private goals port management is for a large part about finding the balance between them. An integrated port cluster needs to be developed, sustained and steered resulting in a competitive port that generates economic value, but that also serves the more public interests of generating the employment that the region needs and of providing good working conditions that fit the requirements of the labor force at hand. Reporting Corporate Social Responsibility (CSR) is another governance indicator that clearly interacts with the socio-economic environment. CSR encourages a positive impact on labor conditions through its activities on the environment, customers, employees, and communities following ethical standards. Autonomous management is a factor underlying an economically well development of the port. From a (socio-)economic perspective a port needs a management that can take decisions which support the economic development of the port best and are not influenced by politics. Such decisions are amongst others decisions on investments, cooperation, commercial transactions, which should be done in principle in an autonomous organization, within a clear framework of conditions safeguarding the public interest. Slowdown of growth in employment and added value figures as well as indicators showing underperforming development of working conditions could indicate a need for reconsideration of the governance model.

#### *2.3.8 User's perceptions indicators and socio-economic indicators*

Users' perceptions indicators may be aligned with the socio-economic indicators to come to further indications for policy. User perceptions should underline what also comes out on the data-based calculated indicators (like the socio-economic indicators are). For example overall dissatisfaction with the port should be reflected in negative or stagnating employment, added value and investment figures. Dissatisfaction with labor conditions should be reflected in a slow pace of adapting working conditions to the requirements.

## 3 RELATION OF SOCIO-ECONOMIC INDICATORS WITH EU PORT POLICY

### 3.1 Introduction

Port performance indicators logically show a relation with port policy. This chapter relates the relationship of the socio-economic performance indicators to the major objectives and actions as set in the inforce EU port policy. Section 3.2 summarizes the EU Transport policy followed by a summary of the EU Port Policy (3.3). These two sections are based on an assessment of the relevant policy documents and reports (see for an overview deliverable 4.1 of PORTOPIA). In section 3.3 we assess the relationship of our socio-economic indicators with the major policy issues and objectives identified.

### 3.2 EU Transport Policy

Transport is a major contributor to the economy (4.8% – or €548bn – in gross value added overall for the 28 EU countries), and sustains over 11 million jobs in Europe. It also is a key sector of the European economy. The European transport system faces challenges that form the base for EU policy: the European Commission aims to develop and promote transport policies that are **efficient, safe, secure and sustainable**, *to create the conditions for a both competitive and sustainable industry that generates jobs and economic value.*

The actual challenges that are identified and therewith underlay the actual EU policy are:

- congestion affects both road and air traffic. It costs Europe around 1% of annual GDP – and freight and passenger transport alike are set to grow.
- oil dependency – despite improvements in energy efficiency, transport still depends on oil for 96% of its energy needs. Oil will become scarcer in future, increasingly sourced from unstable parts of the world. By 2050, the price is projected to more than double compared to 2005.
- greenhouse gas emissions – by 2050, the EU must cut transport emissions by at least 60% compared with 1990 levels, if we are to limit global warming to an increase of just 2°C.
- infrastructure quality is uneven across the EU.
- competition – the EU's transport sector faces growing competition from fast-developing transport markets in other regions.

The main policy recommendations and objectives can be summarized as:

- quality transport that is safe and secure
  - maintained and fully integrated network
  - environmentally sustainable transport
  - Being technologically innovative
-

- developing the human capital
- Smart prices as traffic signals
- improving accessibility

### 3.3 EU Port Policy

Summarizing, the European Commission communicates that “Europe's ports are vital gateways, linking its transport corridors to the rest of the world. 74% of goods entering or leaving Europe go by sea, and Europe boasts some of the finest port facilities in the world. Ports are not only great for moving goods around, they also constitute energy hubs for conventional and renewable energies. In addition, 400 million passengers embark and disembark in European ports every year. With their diverse set of economic activities and the function they fulfil in enabling business to prosper and growth, ports generate employment and added value, also for the wider economic region that they service. Thus it is evident that the EU needs good performing ports across all its maritime regions: bottlenecks in ports and their hinterland due to inadequate infrastructure or services can result in extra congestion, extra emission and extra costs for shippers, transport operators, consumers and society as a whole. Policies should be aiming at stimulating the development of well performing ports and reducing bottleneck as mentioned above.”

The Commission adopted on 23 May 2013 an initiative aimed at improving port operations and onward transport connections at the 329 key seaports (which belongs to the trans-European transport network.) This initiative is progressively implemented through a set of legislative measures and non-legislative measures which is summarised by the commission as follows<sup>1</sup>:

- Regulation (EU) 2017/352 of the European Parliament and the Council of Ministers establishing a framework for the provision of port services and common rules on the ***financial transparency of ports***. The aim is to level the playing field in the sector, protect port operators against uncertainties and create a climate more conducive to efficient public and private investments. The Regulation defines the conditions under which the freedom to provide port services applies, for instance the type of minimum requirements that can be imposed for safety or environmental purposes, the circumstances in which the number of operators can be limited and the procedure to select the operators in such cases. It introduces common rules on the transparency of public funding and of charging for the use of port infrastructure and port services, notably by making sure that the port users are consulted. It introduces in each Member State a new mechanism to handle complaints and disputes between ports stakeholders. Finally it requires all port services providers to ensure adequate training to employees.
- ***Application and modernization of the State aid rules***, in the context of the competition policy. The decisions relevant to ports and forming the decision case practice are available here. In May 2016 the Commission published the Notice on the notion of State Aid, which gives guidance on when public investments do not

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<sup>1</sup> ([https://ec.europa.eu/transport/modes/maritime/ports/ports\\_en](https://ec.europa.eu/transport/modes/maritime/ports/ports_en))

involve State aid. An Analytical grid for ports infrastructure was published on 2 December 2016 to provide further guidance on the rules and case practice applicable in the port sector. The Commission has also adopted on 17 May 2017 an updated version of the General Block Exemption Regulation. The new regulation gives more flexibility to Member States to decide public funding of certain port investments without having to seek a prior Commission's approval.

- **Promotion and support of the European social dialogue** between port workers and their employees and of training. EU Ports employ more than 3 million people (directly and indirectly). Economic research has directly linked growth in port throughput with the creation of jobs in surrounding regions. To succeed and adapt to the changing demands on the workforce, ports must offer good working conditions and improve the quality of the working environment to attract skilled personnel. Industrial disputes that affect relations may damage the image and competitiveness of ports and should be dealt with proactively. Good social climate and genuine social dialogue between the concerned parties is required. The Commission helps the EU Social Dialogue Committee in the Port Sector to work on health & safety, training and qualifications, gender issues and promotion of female employment and attractiveness to young workers. Representatives of port employees and port employers' work together for instance to produce common guidelines for training as well as national health and safety requirements. Another project of the Committee, financed by the Commission, is identifying the key challenges that EU ports are facing and how the industry is adapting to change and preparing for the future.
- Support to **better planning, financing and funding of port infrastructure** and their connexions in the trans-European network. The Commission has integrated ports in the corridor work plans foreseen by Article 46 of the guidelines for the development of the trans-European transport network (Regulation 1315/2013) and provides targeted grants and other forms of financial supports to port infrastructure projects by using the Connecting Europe Facility. More than € 1 billion have already been awarded since 2014 to support rail or inland waterways connecting ports with the hinterland, basic port infrastructure, innovation and green port projects.
- Initiatives to **simplify procedures** in ports. Improving the digital information flows and reducing administrative burden is vital to ensure efficient ship port calls and throughput of cargo. To contribute to this goal the Commission intends to establish a European Maritime Single Window environment with technical and legal frameworks for the submission and re-use of regulatory reporting information, including the eManifest information for customs. This initiative is currently under assessment and the proposal for the way forward is expected to follow in summer 2018.
- Initiatives to raise the **environmental performance of ports** by promoting the exchange of good practices. The Commission welcomes the initiatives taken by the port sector to promote excellence in environmental management and performance by publishing guides to good practices. A number of ports have already adopted plans to better manage their footprint on the environment and such initiatives should be encouraged.

- As part of its research and innovation agenda the Commission launched in 2016 the "Port of the Future" call as part of the Horizon 2020 programme to encourage ***innovation in ports and the links with port cities.***

The key goals that the Commission mentions are:

- Connect ports
- Develop efficiency
- Attract investment
- Promote social dialogue
- Encourage sustainability and innovation

### **3.4 Relation of socio-economic indicators and EU Ports Policy**

The socio-economic indicators for ports center around employment, added value (direct and indirect) and private investments in ports, but extend on indicators relating to issues as diversity, good working conditions and the prospering of the labour force related to the technological developments and changes in the ports working environment (social dialogue). These indicators can help assessing the need and progress of the policy objectives over time. Out of the in 3.2 and 3.3 major policy objectives and actions the following can be supported by socio-economic indicators:

- Better planning, financing and funding of port infrastructure
- Promotion and support of the European Social Dialogue in Ports
- Improving the environmental performance of ports
- Reducing of oil dependency
- Enhancing innovation in ports
- Strengthening the links between ports and cities

#### *Better planning, financing and funding of port infrastructure*

Employment and added value and business investments in ports, are economic impact indicators resulting from (public) investments ports infrastructure. Only if this (public) investment is done in an efficient and effective way, leading to an optimized allocation of resources, this will result in growth of business, leading to growth in employment and added value. Employment, added value and private investments can be used as indicators for evaluating the mechanisms and principles underlying the decisions for the planning, financing and funding of port infrastructure.

#### *Promotion and support of the European Social Dialogue in Ports*

The social dialogue on ports is on creating the right working conditions for port workers. It is also on creating mechanism to deal with the treats laid upon port workers by actual developments in the external context:

- The increased automation and digitization in ports leading to A) potential replacement of labor by capital and B) different skill and educational level requirements for port labor

- Increased liberalization and flexibilization of the markets, allowing the entrance of labor under different, more flexible conditions than under traditional port labor regimes.

Socio-economic indicators can be instrumental in indicating the urgency of the topics put on the agenda in the social dialogue and also in monitoring the progress of measures taken. Growth or decline of employment in particular segments of the ports business, related to the growth of the business in terms of profits and added value, indicates the development of replacement of labor with capital. Insights in changing required educational and skill levels, overall and per segment, indicate whether a mismatch might occur. Indicators on training activities developed and new inflows of different types of labor indicate success of measures taken into this direction.

#### *Improving the environmental performance of ports*

The relationship between the socio-economic indicators and the actions on the increase of the environmental performance of ports is merely an indirect one but can be found in the private investment indicator for ports. Assessing private investments done in the port by distinguishing between investments in existing fossil fuel based activities and investments done in renewables (wind, solar, biobased) and other innovative sustainability enhancing industries (in circular economic activities, for example) gives an indication on the pace of transformation of the port towards a more sustainable port complex. Monitoring such developments enables both policy makers as port managing bodies to set their strategies and actions: does the market take up what is necessary or are additional measures required?

#### *Reducing of oil dependence*

Ports can play a major role in the diminishing of oil dependence. In some of the major ports in Europe large oil based petrochemical complexes are based. The transition of these oil based industries towards new and alternative sources is a major challenge. In addition maritime and surface transport are still to a large extent fossil fuel based. Ports can play a role in enhancing the transition towards the use of alternative energy sources, by providing the right facilities and by giving incentives to port users.

For the relationship between this policy objective and the socio-economic indicators a similar argumentation as for improving the environmental performance of ports hold. Assessing investments, but also assessing the growth in terms of added value and employment of the oil industry in ports indicates whether the oil based industry keeps its strong position.

#### *Strengthening the port-city relationship, enhancement of innovation*

Ports are engines for economic growth but at the same time generate negative external effects on its civil environment. There is always a tension between the port and its adjacent city in terms of acceptance: ports need to fight for their 'licence to operate'. Showing that the port indeed does contribute to the local and regional economy, and supports this 'licence to operate'. Indicators as employment and added value are very much instrumental in this (this was confirmed in the various discussions that the researchers had with the port authorities engaged with PORTOPIA). They underline the



relevance of the port for the local and regional economy and with that gain the acceptance of the public for its existence and development.

Another perspective on the relation between socio-economic indicators and the port-city relationship is in the creation of additional added value for the city and in the enhancement of innovation. Over the last decades, ports have transformed from merely simple nodes in transport networks to divers industrial and logistics complexes, playing different roles in global supply chains. Considering the port and its actors as parts of complete business ecosystems in which interconnectedness becomes more and more important explains the increased importance of a good port-city interface. Port related functions as trade, organisation of logistics, advanced producer services naturally locate rather in cities than in ports, but benefit from a good integration with the actors in the port. Proximity counts here. Additionally, innovation and transition, requires knowledge and the right educational levels which is natural to cities. If employment, added value and investments is calculated for the different port related economic activities while stretching the geographical boundaries, this gives a good indication for the development of 'city-related' port activities, indicating a reason for a more integrated port city relationship. Additional indicators as skills and educational levels stresses the importance and therewith potential presence of a good port-city relationship in which these aspects can be developed positively.

## **4 BENCHMARK OPPORTUNITIES**

### **4.1 Introduction**

The socio-economic indicators are merely in the interest of policy makers and port managing bodies for the evaluation of their policies and strategies. Policy makers want to be able to evaluate their policy against some socio-economic goals (see chapter 3). Port managing bodies need to evaluate their own performance related to the goals set for their organisation. One of these major common goals is to strengthen the competitive and sustainable development of the port with the aim to contribute to the local and wider regional economy. This goal grounds the relevance of the socio-economic indicators for the port managing bodies.

For port service providers and port users socio-economic indicators are less relevant from a benchmarking perspective.

The socio-economic indicators employment, added value and private investments are indicators for the contribution of the port to the wider economy. There are different ways these indicators can be benchmarked. Discussions with the users of the Dutch Port Monitor (both the policy makers and the port authorities) and the discussions in the various PORTOPIA workshops formed the base for identification of the ways in which benchmarking could be valuable. This was further completed by the overall literature study on socio-economic indicators and European port policy making that was done within this workpackage. The methods identified are:

1. As a single absolute number for a particular port in a particular year against the singly absolute number in a particular year of another port
2. As a single absolute number for a port in a particular year against a single absolute number for the region/country the port is located in
3. As a growth indicator over time for a particular port against a growth figure over time of another port
4. As a growth indicator over time for a particular port against a growth figure over time for a range of ports
5. As a growth indicator over time for a particular port against a growth indicator over time for the region/country the port is located in
6. As a growth indicator over time for a port or a set of ports against general economic growth indicators as GDP growth

Next sections discuss the relevance of these different ways of benchmarking for each of the indicators employment, added value and investments.

## 4.2 Benchmarking opportunities for employment

For each of the indicated ways of benchmarking the socio-economic indicator employment the relevance for both the port policy makers as the port managing bodies are summarized in the Table 1.

*Table 1: Relevance of each of the benchmarking methods for employment for both policy makers as port managing bodies*

<b>Benchmarking method</b>	<b>Policy makers</b>	<b>Port managing bodies</b>
1. Single abs. nr. Port-port	Only relevant to get an insight in the ranking in sizes of the ports in terms of people employed	Only relevant to get an insight in the position in the size of the port in terms of people employed.
2. Single nr. Port-region	Relevant, gives an insight in the contribution of the port to the economy of the region, can be used to evaluate investments	Relevant, can be used to stress the relevance of the port
3. % growth port-port	Relevant, shows the difference in employment development. Interpretation should be done carefully as lower increase in employment can also mean higher penetration of automation or higher efficiency	Relevant, enables a comparison with other ports as a start for further investigation into the underlying factors
4. % growth port - range	Relevant as an enabler for the assessment of employment development against a more general trend of this indicator: does the port keep-up or lag behind	Relevant as an indicator to get a feeling for how the port is doing compared to the range in which it is acting, as a start for further investigation into the underlying factors
5. % growth port-region	Highly relevant as an indicator for whether the port grows faster or slower in terms of employment than the growth within the region, enables analysis to the development of the contribution of the port to the economic development in the region	Relevant as an indicator for getting a feeling for the growth of the port compared to the growth in the region
6. % growth port – GDP growth	Relevant as an indicator of the relationship between the employment growth in ports and the general economic growth (when aggregated)	Not so relevant

### 4.3 Benchmarking opportunities for added value

For each of the indicated ways of benchmarking the socio-economic indicator added value the relevance for both the port policy makers as the port managing bodies are summarized in the Table 2.

*Table 2: Relevance of each of the benchmarking methods for added value for both policy makers as port managing bodies*

<b>Benchmarking method</b>	<b>Policy makers</b>	<b>Port managing bodies</b>
1. Single abs. nr. Port-port	Relevant to get an insight in the ranking in sizes of the ports in terms of added value, but also to assess whether a particular port generates many added value activities compared to another port. This benchmark gets higher value if it is rather ratio's like added value per throughput or size of port area that are compared	Relevant to get an insight in the position in the size of the port in terms of added value. Also relevant for discussing the relative value of the port for the economic region
2. Single nr. Port-region	Relevant, gives an insight in the contribution of the port to the economy of the region in terms of added value, can be used to evaluate investments	Relevant, can be used to stress the relevance of the port in terms of added value
3. % growth port-port	Relevant, shows the difference in added value development between the different ports.	Relevant, enables a comparison with other ports as a start for further investigation into the underlying factors
4. % growth port - range	Relevant as an enabler for the assessment of added value development against a more general trend of this indicator: does the port keep-up or lag behind in terms of (economic) growth	Relevant as an indicator to get a feeling for how the port is doing compared to the range in which it is acting, as a start for further investigation into the underlying factors
5. % growth port-region	Highly relevant as an indicator for whether the port grows faster or slower in terms of added value than the growth within the region, enables analysis to the development of the contribution of the port to the economic development in the region, with more value than just employment	Relevant as an indicator for getting a feeling for the growth of the port compared to the growth in the region
6. % growth port – GDP growth	Relevant as an indicator of the relationship between the economic	Not so relevant

	growth in ports and the general economic growth (when aggregated)	
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## 4.4 Benchmark opportunities for investment

For each of the indicated ways of benchmarking the socio-economic indicator investment the relevance for both the port policy makers as the port managing bodies are summarized in Table 3.

*Table 3: Relevance of each of the benchmarking methods for investments for both policy makers as port managing bodies*

<b>Benchmarking method</b>	<b>Policy makers</b>	<b>Port managing bodies</b>
1. Single abs. nr. Port-port	Relevant to get an insight in whether the port succeeds in maintaining and developing an attractive business climate for particular market segments compared to (an)other port(s)	Relevant to get an insight in whether the port succeeds in maintaining and developing an attractive business climate for particular market segments compared to (an)other port(s)
2. Single nr. Port-region	Relevant to get an insight in whether the port succeeds in maintaining and developing an attractive business climate for particular market segments compared to the wider region	Relevant to get an insight in whether the port succeeds in maintaining and developing an attractive business climate for particular market segments compared to the wider region
3. % growth port-port	Relevant to show the development of the attractiveness of the business climate for particular market segments relative to other ports	Relevant to show the development of the attractiveness of the business climate for particular market segments relative to (an)other port(s)
4. % growth port - range	Relevant to show the development of the attractiveness of the business climate for particular market segments relative to the port range in which the port is active	Relevant to show the development of the attractiveness of the business climate for particular market segments relative to the port range in which the port is active
5. % growth port-region	Relevant to get an insight in whether the port succeeds over time in maintaining and developing an attractive business climate for particular market segments compared to the wider region	Relevant to get an insight in whether the port succeeds in maintaining and developing an attractive business climate for particular market segments compared to the wider region
6. % growth port – GDP growth	Not so relevant	Not so relevant

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