

ENSURE – European Sustainable Urbanisation through port city Regeneration

Targeted Analysis

Final Report

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This document is a final report.

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The final version of the report will be published as soon as approved.

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Abbreviations

100 RC	100 Resilient Cities (Thessaloniki, Greece)
EBRD	European Bank for Reconstruction and Development
EC	European Commission
EIB	European Investment Bank
ENSURE	European Sustainable Urbanisation through port city Regeneration
ESIF	European Structural and Investment Fund
ESPON	European Territorial Observatory Network
ESPON EGTC	ESPON European Grouping of Territorial Cooperation
EU	European Union
GDP	Gross Domestic Product
ISIF	Irish Strategic Infrastructure Fund (Cork, IE)
LDA	Land Development Agency (Cork, IE)
LSEZ	strategic development zone
NGO	non-governmental organisation
OECD	Organisation for Economic Cooperation and Development
PPN	Public Participation Network (Cork, IE)
SDGs	Sustainable Development Goals
SEMs	Société d'Économie Mixte (Mixed Ownership Company)
Zac	Zone d'Aménagement Concerté (Strategic Development Zoning)

Executive summary

ENSURE (European Sustainable Urbanisation through port city Regeneration) is a targeted analysis aimed at providing better insights into the potential regional impacts of port city regeneration and a better understanding of the appropriate methods and tools. The research involved a comprehensive literature review, a pan-European desktop analysis of port city regeneration in small and medium-sized cities and in-depth case studies in four stakeholder cities, as well as a series of workshops and conferences.

An important potential for port city regeneration in Europe

The research shows that a main driver for the development of ports in Europe was the industrial revolution and the continued industrial growth until the mid-20th century. Similarly, a retreat from the waterfront became evident during the last part of the century as the deindustrialisation gathered pace, driven by increased global competition, spatial relocation of industry, and technological changes in both industry and transport. Another key aspect was the collapse of socialism in eastern Europe. Many cities in this part of Europe had active ports that became militarised during the Soviet era and later de-militarised as these states transitioned to a new political-economic structure.

The desktop research indicated that about a third of small and medium-sized European port cities (48 of 144) show no evidence of regeneration. Some of these cities may be thriving and have no need for regeneration, but there is likely to be a significant latent potential across the European territory.

The regeneration plans in European seaport and riverport cities shall be seen against this backdrop. Some of the main drivers for regeneration in small and medium-sized port cities have been the need to redevelop brownfield sites through land recycling, and a desired re-integration of port and city. Other drivers have been the policies of the cities to encourage modal shifts in urban transport to more sustainable approaches. Also, population and economic growth, innovation branding or national strategies have been indicated as drivers for the redevelopment efforts in European port cities. Finally, the delivery of areas for new commercial and residential use, often in attractive waterfront locations close to the city centre, is an opportunity that has worked as a driver for the regeneration.

The 'outcomes' of the regeneration process—defined as the observed and expected immediate, direct results—are varied. The analysis shows that the outcomes are mainly seen in the fields of environment, amenities, infrastructure, housing and business. In many cases, the outcomes have been indicated as a mixture of these categories.

With a few exceptions, it has not been possible to clearly identify or assess impacts, defined as longer-term indirect results. There have been some indications that in a few cases employment,

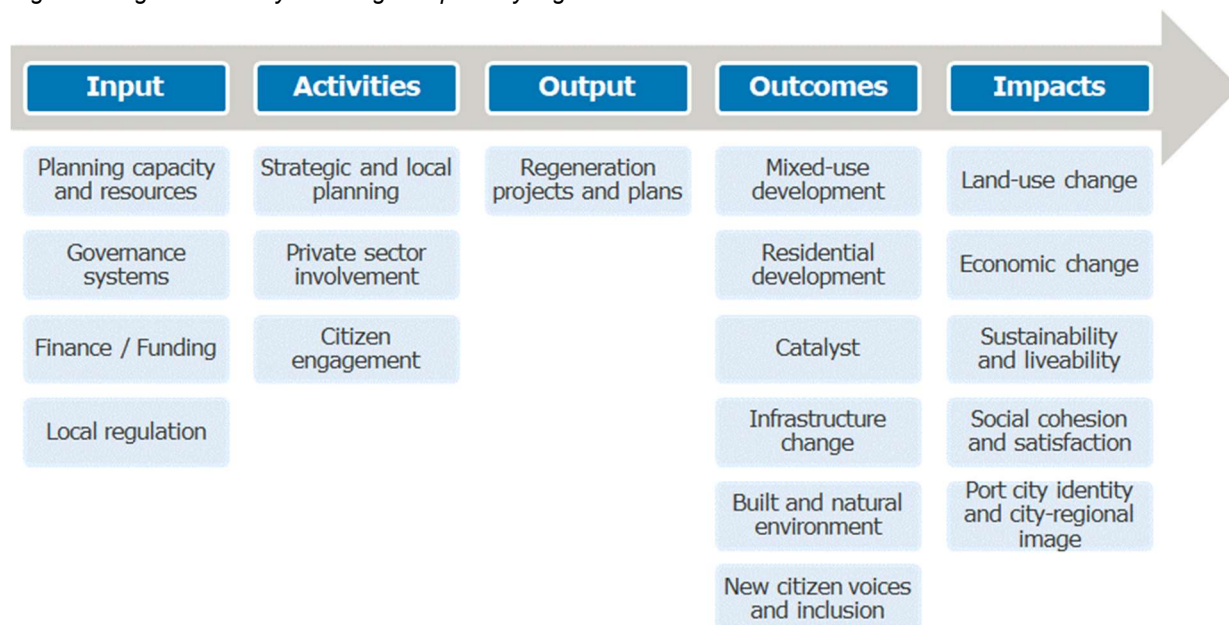
tourism or a renewed identity have been affected as a long-term impact of port city regeneration. In Bilbao, the unemployment rate fell considerably during the period of regeneration where jobs were created in the cultural industries.

According to a desktop study of 44 cases where online data was available, and 17 sample cities that were analysed in more depth, the challenges and opportunities have been many and varied in port city regeneration plans and projects. It is therefore difficult to generalise, but the challenges and barriers that have been seen in most cases concern the funding, governance, planning, and competition between port and city. The funding options depend on many factors, such as the availability of funds among public and private sector agents and on the attractiveness of the potential projects. The governance and the planning systems are often given in a country and may be difficult to change, but a more or less flexible approach and cooperation among involved public actors may make a difference. In general, the more the planning and implementation competencies are concentrated in one public authority, the easier and faster it is to take decisions and proceed. Good examples are here seen in Aalborg (DK) and Brest (FR), whereas in Cork (IE), the multi-level public planning creates complications when different public bodies have different plans and priorities. More specific challenges and opportunities may be physical and infrastructural barriers or improvement options; challenges related to environmental, functional and identity changes are also seen in some port cities. Finally, a few have indicated challenges related to landownership and speculative developments.

A variety of approaches in different context: lessons learned from Aalborg, Brest, Catania and Cork

The four stakeholder cities of Aalborg (DK), Brest (FR), Catania (IT) and Cork (IE) are all small and medium-sized cities with urban populations of between 120 000 and 312 000. They are all old cities, between 400 and 2 800 years old, but they are different in many respects. They vary considerably concerning regeneration drivers and challenges, as well as planning and implementation models, the planned and realised outcomes and the expected impacts. But despite considerable differences, it is possible to draw a generic picture of the regeneration process (see Figure 1 below), and some general conclusions concerning the regeneration process may be derived.

Figure 1. A generic theory of change for port city regeneration



Source: Author's own elaboration

The regeneration of the waterfronts in the four cities follows the relocation or shrinkage of former industrial and port activities. Regeneration plans were then developed by the local or regional authorities (in the case of Catania by the port authorities), and were done under due regard to the government structures and planning hierarchies of the respective countries. In Aalborg, the planning was done by the city without significant restrictions from regional and national plans, whereas in Brest and Cork the plans were prepared in the framework of a broader multi-level public planning with the limits and complications this implies. For example, in Cork, the division of roles means that infrastructure that is needed for the regeneration will have to be provided by the national government, which of course is a serious potential barrier. In Catania, the regeneration plan requires an agreement between the port authorities and the city in order to ensure coherence with the urban plan. This did not succeed until quite recently, and no approved plan for the regeneration is therefore currently in place.

Both in Catania and in Brest there is a strong interest in continued maritime operations in the port with the potential tensions and conflicts that may follow from this. In Cork and Aalborg, new ports are developing outside the city, and it is possible to plan for a waterfront independently from any traditional maritime activities.

The main overall drivers of regeneration in the four cities are mixtures of public and private interest in the utilisation of deindustrialised brownfield areas for new urban purposes with a desire to improve the liveability, the profile and the aesthetic appearance of the city by integrating port and city to attract new residents, commercial activity and tourists. At the same time there has been the intention in all four cities to preserve maritime elements in the

regenerated waterfronts. In Catania and Brest this may be continued traditional port activities, but in Aalborg it is mainly as maritime and industrial leftovers and heritage.

The implementation and funding models that have been used vary a great deal between the case cities and types of regeneration projects. The main categories of implementation and funding models are illustrated in the table below. In Brest and in Catania, where most of the regeneration projects have been non-commercial, a purely public investment model is applied in most cases. The opposite is the case in Cork, where private investors have been the primary source of development funding. In Aalborg, both models have been applied and have been combined in some innovative mixes of private and public implementation and funding models.

Table 1. The use of implementation and funding models

Model	Characteristic	Examples	Pros (+) and cons (-)
1. Local authority as sole developer	Traditional model, in particular for non-commercial areas	Aalborg, Brest and Catania	+Under public control - Requires public funding - Limited competition
2. Private developer-driven development	Typical for viable projects in areas developed by the owner	Aalborg and Cork	+Less public funding required - Less public control - Risk of slow development
3. City owns and plans; private actors develop/invest	A model based on negotiations to ensure viability and required quality	Brest and Aalborg	+Under public control +Less public funding required +Clear demand/supply roles
4. Development in public-private partnership	A model based on competition, allowing quality and/or profits for both parties	Aalborg and Cork	+Under public control +Shared costs and profits - Public funding needed - Mixed and unclear roles

Source: Authors' elaboration, ESPON ENSURE (2020)

As a consequence of the different implementation models, the role of the private sector varies from clear-cut contracting (Brest and Catania) to active involvement in negotiations with the planning authorities (Aalborg).

The degree of citizen involvement also varies a great deal; from Catania, where this is almost non-existent, to Aalborg, where citizens and other stakeholders are actively involved, which takes place under a strong public leadership in the urban planning process. The city often goes further than the statutory public consultations in regeneration projects, as well as in other urban development projects. Also in Cork, the public consultation is an important statutory element of the planning system. In Brest, it is mainly the private sector and institutional actors that have been involved, but for larger projects, the Declaration of Public Interest prescribes a procedure that involves public consultation. In general, there is an increasing understanding of the added value of involving citizens in the planning process.

With a few exceptions, the outcomes, i.e. the immediate, direct results of the regeneration processes in terms of implemented projects, whether they were planned or unplanned, are generally in line with the defined strategies and visions in Aalborg and Brest. In Cork, the regeneration has been more incremental with a strong focus on commercial construction rather than housing, which is leading to tension and a potential limit on future economic development. In Catania, the regeneration project might be characterised as nascent; there has been some planning and a few individual projects have been implemented, but the project is still at the very early stages.

There are major uncertainties related to the assessment of impacts of regeneration projects. In many cases an apparent impact may be the result of internal movements of inhabitants or jobs, leaving the overall impact very small or negligible. Instead of estimating quantitatively, the potential impacts have therefore been identified and qualitatively assessed in the framework of a Theory of Change approach (TOC), which describes the pathway between input and impact as a succession of causality links that can materialise in various combinations depending on the local regeneration objectives and context. With the help of the TOC, the logical relationships between initiatives and activities to the resulting and expected outcomes and impacts are identified, allowing to compare the long-term goals with the outcomes and impacts. The expected impacts are mainly population increases in Aalborg and Brest, resulting from a broader variety and a larger supply of housing, but there are also expectations and to some extent evidence concerning identity change and employment increases in the longer term.

The main lessons learned from the case studies are:

- It is important for the successful regeneration process, that
 - there is a plan with formulated goals and visions;
 - there is broad support to the regeneration plan from the main stakeholders having key roles in the implementation;
 - the plans are realistic in the sense that they are feasible, based on realistic estimates of investment costs and operational budgets;
 - there is a viable operational strategy for the regeneration projects to ensure their longer-term survival.
- The need or the demand for a project may be assessed by actively involving citizens, which may have the additional benefit of building up public support and trust in the project and giving citizens a sense of ownership.
- The same may be achieved, and an area may be opened up for new uses, by inviting the public to make use of the areas for early permanent or temporary pilot projects before the full implementation of the regeneration project.
- Regeneration projects that are deemed economically feasible or politically desirable, but not financially viable for potential private investors, may still be implemented by private investors, but this requires the financial viability to be somehow improved.

- A regeneration project may be made more attractive for investors by improving the infrastructure of the area by carrying out the necessary decontamination, lifting requirements to the planned buildings, accepting a lower quality of construction, increasing the maximum capacity of the buildings, etc., so long as this doesn't reduce the value and the resulting demand, and thereby the corresponding financial viability.
- Public agencies may also increase the profitability and the financial viability of planned regeneration projects, e.g. through long-term rent agreements with an investor.
- If the development of an area is already (very) profitable, it may be possible to leave more investments in infrastructure or decontamination to the investor, to require a higher quality of construction, or reduce its maximum capacity, thereby reducing the financial rate of return but still being able to attract investors. Alternatively a land value capture tax may be applied, e.g. by charging a planning tax, as seen in Brest.
- An important driver or catalyst for the regeneration process can be a flagship project, successfully implemented early in the process, which may attract other projects and investors.

Further research will be needed in the coming years to follow up on the impacts that are being monitored in concrete cases at both district, city, and regional level in order to better understand the economics of the area.

A supportive policy framework for port city regeneration in Europe: three key recommendations and an operative guide

ESPON research reveals that port cities are relevant in sustainable urban regeneration. Taking into account the sensitivity of urban and port contexts, and the solutions adopted across European port cities, the research delivers a set of key policies in order to plan and manage the regeneration process.

An operative guide is a key output of the research. It is built up around three key policy recommendations, highlighting that political commitment and active leadership are crucial in supporting regenerations processes. In this context, approaches centred on pre-planning, planning, governance and funding models should be drawn to ensure the long-term commitment of stakeholders, ideally before shaping any specific regeneration projects.

The first key policy recommendation to start an integrated regeneration process is to understand existing port city relationships using spatial analysis tools and evaluating plans and policies at national, regional and local levels. It is especially important to define realistic goals and the limits of future development.

The second key policy recommendation is for planning ports and cities as systems with interlinked components. Shared strategic plans, integrated masterplans and aligned land use plans for the port and the city hold the key to resolve the port city mismatch caused by the absence of, or competing, port city relationships, and to help address port city regeneration as part of a wider urban development strategy.

The third key policy recommendation is for establishing suitable governance models and funding arrangements for each of the regeneration projects or plans. It is critical to the successful implementation of the city port regeneration vision. Engaging all stakeholders, including civil society organizations, citizens, landowners, and local businesses is essential to ensure that all relevant perspectives are taken into consideration and that a planned regeneration receives widespread support and benefits all.

Each of the three key policy recommendations consists of specific recommendations concerning how key policy recommendations should be applied: the suggested actions finally depend on the specific recommendations.

Going through the guide, these suggested actions generate some key questions for self-reflection. They are supported by tips and are explained by a repository of good practice examples from the small- medium-sized cities in question of the ESPON research.

The structure of the Operative Guide is based on the specific policy recommendations entailed by three key policy recommendations

Table 2. Policy recommendations and structure of the Operative Guide

Key policy recommendation	Specific policy recommendation	Good practice examples
Conduct a pre-planning analysis of the port city	<p>1.1 Assess the current and projected transformation trajectory of the port, city, and their relationship.</p> <p>1.2 Analyse how the port city is currently addressing identified challenges and opportunities.</p> <p>1.3 Analyse the stakeholder landscape.</p>	<p>In Brest (FR), the 1994 Reference Plan for the port of Brest was preceded by 3 years of studie. Since 2017, local actors are engaged in a strategic process named Brest Port 2040 which started with a comprehensive and thorough diagnosis combining backward and forward looking economic and spatial analyses.</p> <p>In Aalborg (DK), a map of the main regeneration projects (1989-2019) provides a comprehensive and dynamic overview of realised and ongoing transformation.</p>
Adopt a suitable planning approach	<p>2.1 Develop a strategy for regeneration based on shared visions and actions.</p> <p>2.2 Strengthen land-use compatibility and integration of port and city through urban planning and zoning.</p> <p>2.3 Address sustainability challenges in the regeneration planning.</p>	<p>In Bilbao (ES) after the realisation of the Guggenheim Museum, the strategic plan provided a new vision for the Abandoibarra district, following the relocation of the riverport.</p> <p>In Bremerhaven (DE), after the relocation of port activities, a common operative master plan and zoning for both old and new ports and the industrial wasteland between the two ports was adopted.</p> <p>In Thessaloniki (GR), environmental solutions have been applied through involvement in the 100 Resilient Cities (100RC) programme.</p>
Adopt suitable governance and funding models	<p>3.1 Establish governance structures aligned with the specific purpose of the regeneration plan.</p> <p>3.2 Incorporate public participation processes in the planning and implementation as a broader engagement activity.</p>	<p>In Cork (IE), the newly established Land Development Agency (LDA) has afocus on managing the state's own lands to develop new homes, and regenerate under-used sites.</p> <p>In Catania (IT), a steering group meeting in 'permanent session' is set up to approve the most important waterfront projects.</p> <p>In Reykjavik (IS) consultation processes were integrated into the project planning from the</p>

Key policy recommendation	Specific policy recommendation	Good practice examples
	3.3 Develop suitable funding/financing models for the regeneration projects.	<p>outset, and the public was engaged at the earliest stages to generate ideas.</p> <p>In Aalborg (DK), different sources of funding have been used for the various regeneration projects: national and local contributions are combined with private investments.</p>

1 Introduction

1.1 Context

Port cities have historically been an essential element of European society and economy. Despite overall growth in maritime transport, many European port cities are experiencing the relocation of port-related activities from central areas to other locations. The loss of this economic activity is resulting in deteriorating inner city areas. Today, brownfield waterfront sites are strategically valuable but their development can be hugely constrained by costs of decontamination treatment, plot fragmentation and complex landownership.

The challenge of port city regeneration has been a topic of debate in several Committee of the Region workshops in recent years and the subject of at least two policy briefings to the European Parliament, in November 2016 and May 2017. Globalisation offers an opportunity for port cities to use these old industrial waterfront locations to revive their economy, to strengthen their magnetic pull, to become hubs of innovation and to act as leading examples of sustainable urban planning, ensuring their long-term competitiveness as economic drivers within the EU (European Parliament, May 2017). With the ability to tackle some of the constraints, port cities are ideally positioned to act as beacons of sustainable urbanisation, meeting the global development challenges associated with increasing urbanisation.

Smaller cities with a thriving economy and high quality of life are often the location of choice for millennials across Europe. The sustainable regeneration of port cities can drive EU growth in the modern economy while leading the way in urban liveability.

1.2 Methodology

ENSURE's targeted analysis learns from port cities which have had success in the regeneration of their former port areas, and helps to better define the contribution which regenerated smaller port cities can make to the collective socio-economic health of the EU. It builds on a comprehensive literature review, a screening of all European small and medium-sized port cities where regeneration was undertaken, an in-depth analysis of a sample of 17 small and medium-sized port cities through city fiches, and an in-depth analysis (including site visits) of four case study cities, which are reflective of Europe's territorial diversity but share the same challenges and opportunities of implementing a vision to their port city regeneration: Cork (IE), Aalborg (DK), Catania (IT) and Brest (FR).

This activity results in a unified repository of the critical enabling elements of transformation and development within smaller European port cities, focusing on funding, knowledge, regulation, citizen engagement, governance and other catalysts. It builds the evidence base for policy-making to support the redevelopment of port city areas across Europe.

2 Trends in small and medium-sized port cities' regeneration in Europe

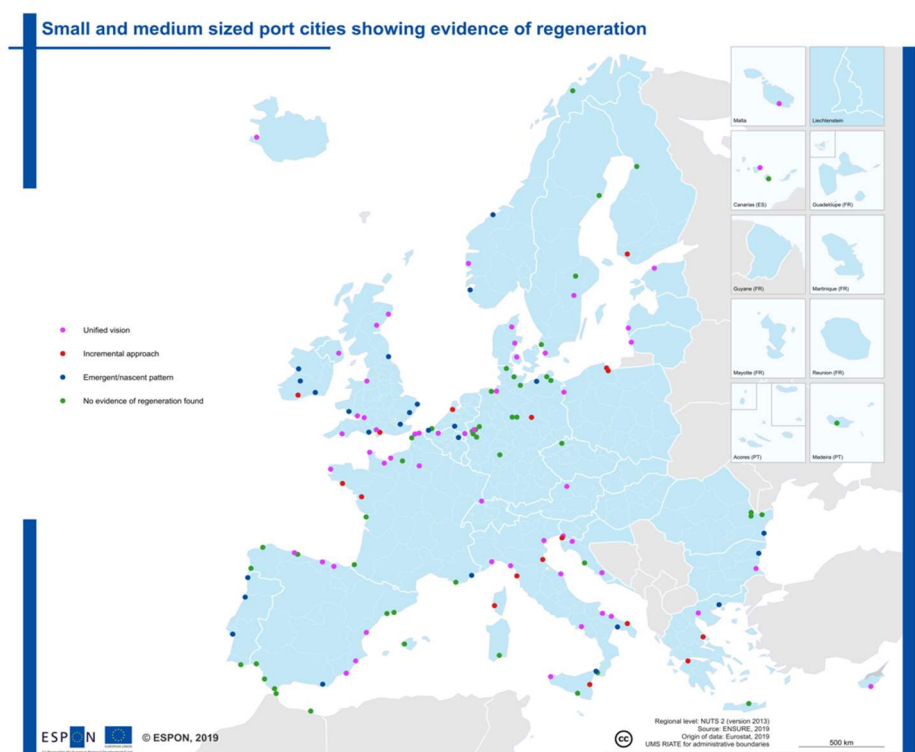
2.1 A typology of small and medium-sized port cities' regeneration in Europe

The focus of this research is on small and medium-sized port cities in Europe based on the EU-OECD harmonised definitions of small (population of 50 000 to 200 000) and medium-sized (population of 200 000 to 500 000) cities. These are geographically spread across the territory but there is a clear clustering of cities in the former industrial heartlands of Europe, such as the British Midlands and the Ruhr valley. Based on an analysis of EUROSTAT population and maritime data, 144 small and medium-sized port cities were identified. A desktop analysis, based on available online documentation in English, French or Italian, was then undertaken to identify whether evidence of port city regeneration could be detected. Ninety-six cities were identified as showing some evidence of regeneration activity and three **implementation typologies** of waterfront regeneration were derived:

- **Unified vision (54 cities):** an overarching strategic line of development based on a coherent vision, master plan or other strategic document is evident;
- **Incremental approach (16 cities):** this has evolved either on a project-by-project basis or in separate phases over significant periods of time;
- **Emergent / nascent pattern (26 cities):** plans or policies are in place, but concerted implementation has not yet got underway.

The spatial distribution of these different typologies is illustrated in **Error! Reference source not found.** which includes cities that have shown no evidence of regeneration.

Map 1: Typologies of port city regeneration in Europe



Each of the three typologies has its own challenges, including managing the tensions between master-planning versus more flexible planning; the benefits of a ‘big-bang’ regeneration impact versus a more organic evolution; and how to progress from effective planning to efficient implementation.

2.2 The significant potential for European small and medium-sized port city regeneration

Of the 96 cities showing evidence of regeneration, a sample set of 44 cities was studied in more detail. A set of 17 fiches was produced, representing different geographical territories, maritime basins and regeneration trajectories. These are included in Annex 1.

The analysis suggests that there is significant potential for European small and medium-sized port cities to further harness the opportunities of waterfront regeneration and port city reintegration in Europe. Almost a third of the cities that meet the definition of a small and medium-sized European port city do not demonstrate as yet any evidence of regeneration based on our desk-top analysis. While some cities may be thriving and have no need for regeneration, there is likely to be significant latent potential across the European territory.

2.3 Trends in European port city regeneration

Seaports are the dominant type of port that have undergone or are undergoing regeneration, relocation and/or expansion across Europe. A *seaport* is a harbour or port that can facilitate

seagoing vessels and is usually co-located with a major city. Riverports are also important port types in central and western Europe given the scale and significance of the Rhine, Danube and other major waterways. A *riverport* is defined as a port co-located along a river or lake that is normally a central element within a city or town.

In northern, western and parts of southern Europe, most ports were developed during the period of the industrial revolution. Shipbuilding was critical to the port economy in cities such as Bremerhaven (DE), Aberdeen (UK), Reykjavik (IS) and Klaipeda (LT), while industries such as textiles, wool, cotton and sugar dominated Norrkoping (SE), Calais (FR), Liepaja (LV), Reykjavik (IS), Valletta (MT) and Le Havre (FR). Hoyle (1988) defines this period as the expanding port city where the growing economy and industrialisation often forced the port beyond the urban core and encouraged the outward growth of the city. However, during the mid-20th century a retreat from the waterfront became evident as deindustrialisation gathered pace driven by increased global competition, the spatial relocation of industry, and growth in technology. Since the 1970s, cities have been confronting the need to redevelop and reposition themselves within the global market as locations for the service and cultural economy, such as in Liverpool (UK) and Bilbao (ES).

Although, industrialisation and deindustrialisation were a phenomena that affected many of Europe's ports, another key aspect was the collapse of socialism in former Eastern Europe. Many cities in this part of Europe had active ports that became militarised during the Soviet era and later de-militarised as these states transitioned to a new political-economic structure. Cities where this had a particularly strong influence were Tallinn (EE) and Liepaja (LV). During and after transition, these ports had to expand, develop and in many cases were privatised in an attempt to integrate more fully into the global market economy. In some cases, port spaces played an active role in the collapse of communism, one example being the Gdansk shipyards (PL). This has given these particular port cities an added layer of identity that is being harnessed through regeneration programmes. The end of the Cold War also affected port cities in western Europe that had a military port, including Brest (FR).

For the most part, regeneration projects aim to redevelop brownfield sites through land recycling, deliver mixed-use spaces, and encourage modal shifts in urban transport to more sustainable approaches. These are represented in the plans of many cities, including Bremerhaven (DE), Norrkoping (SE) and Basel (CH) among others. A variety of catalysts have therefore shaped the changing dynamic between ports and their urban context across Europe, as outlined below.

2.3.1 Global competition and the need to re-brand and innovate

Each port city faces economic challenges and must thus continually evolve and innovate to ensure their economic success. For example, Dunkirk (FR) has become home to Europe's largest energy platforms, housing nine different forms of energy-generating companies, including wind farms, a nuclear power plant, subsea gas lines and coal. The city has used the

energy platform to re-brand and market the city for foreign direct investment. To attract workers and companies, the regeneration of deindustrialised sites into mixed-use housing, amenities and open spaces is required. This trend to re-brand and market a city internationally is also evident in Liepaja (LV), which markets itself as one of the only ice-free ports in the region and a Trans-European Network Transport hub in the East-West Corridor, thus giving it unique accessibility to European and Asian ports. As port cities regenerate and innovate, it is also clear that they begin to compete directly with each other. For example, Aberdeen (UK) is competing with Dunkirk (FR) to attract energy industries. Aberdeen recognises that its industrial base for the oil and gas industry may cease or relocate and thus is regenerating the port area to accommodate offshore renewable energy activities.

2.3.2 National or strategic importance

Across Europe, port cities are recognised as sites of strategic or national economic importance and thus significant development potential. Port city regeneration is often part of a boosterish agenda to retain and enhance global competitiveness and attract foreign direct investment, students, workers and tourists to the city, city region and sometimes the country. This strategic positioning is clearly evident in Limerick and Waterford (IE), Aberdeen and Dundee (UK), Liepaja (LV), Split (HR), Bilbao (ES) and Klaipeda (LT), among others.

2.3.3 Population and economic growth

Planning for future population growth and supporting a compact growth agenda has driven the regeneration of brownfield sites across Europe, many of which are waterfront sites. For instance, by 2030, 39 % of the entire population of Iceland will be in Reykjavik (IS). The city is regenerating numerous sites, including three in the old harbour space to ensure an adequate housing supply that is sustainable and will enhance urban liveability. Other examples where changing demographics have acted as a driver include Le Havre (FR), Basel (CH) and Limerick (IE).

Post-economic crisis growth has also influenced port city regeneration plans and reignited implementation for the first time since 2008 in cities such as Waterford (IE), Reykjavik (IS) and Bilbao (ES), countries all devastated by the global financial crisis. Regeneration has also occurred as the port city relationship has been re-evaluated by policy-makers who recognise the need for cooperation and integration in order to deliver more sustainable economic and urban developments.

2.3.4 Re-integration of the city and the port

From the mid-20th century until relatively recently, the port city relationship has been weakening (see Table 3), producing a fragmented functional urban area.

Table 3. Hoyle's typology of waterfront development

Stage	Period	Characteristics
1. Primitive port and city	Ancient and medieval to 19 th century	Port near to city and trade link important for city prosperity
2. Expanding port and city	19 th to early 20 th century	The rapid growth of port function; ports develop beyond the city
3. The modern industrial port	Mid-20 th century	Separation of port and city; containerisation, industrialisation, ro-ro ships
4. Retreat from the waterfront	1960s-1980s	Further separation: growth of the port and industrial areas away from the city; deep water berths
5. Redevelopment of the waterfront	1970s-1990s	Older waterfront areas become derelict due to the departure of port functions: renewal of these sites begins, including attempts to integrate with the city
6. Renewal of port and city links	1980s-2000+	Promotion of 'liveability' and multiple functions for older waterfront areas in globalised age – further integration with rest of city

Source: Hoyle (1988; 2000)

For environmental – decontamination of contaminated land, enhancing productivity of under-utilised sites – and other reasons, there is renewed interest in removing or working around natural and physical barriers to re-integrate ports and cities and harness their full economic, environmental and amenity potential. This has been central to regeneration in Koper (SI), Le Havre and Creil (FR), Rijeka (HR), Catania, (IT), Brest (FR), Santander (ES), Swansea (UK) and Aarhus (DK), among others.

Contrary to the linear and singular relationship between the port and city portrayed in some of the existing literature, we highlight a more complex set of port city relationships that exist where regeneration is taking place. Broadly four types of relationships are evident:

- Regeneration of city waterfront areas facilitated by the **relocation of the functional port**, usually involving infrastructural upgrades to keep pace with changing international shipping trends. Examples include Cork (IE) and Aberdeen (UK).
- Regeneration of city **waterfront areas to be filled in around existing port functions**, sometimes along with the expansion of the port. Examples include Gdansk (PL) and Aarhus (DK).
- Regeneration of deindustrialised waterfront areas **to replace port functions**, for example, Bilbao (ES) and Brest (FR) in the case of military ports.
- Relocation or proposed **relocation of port areas triggered by the development of a regeneration plan**, the change of functional purpose and the latent asset value of port lands. Examples include the commercial port of Brest (FR) and the Tivoli Docks area of Cork (IE).

These differences play a role in determining the potential of any particular city to engage in a regeneration project, and also have an influence on the outcomes and impact of such programmes.

3 Outcomes and impact of port city regeneration

The Organisation for Economic Cooperation and Development (OECD) (2014) suggest that the outcomes and impacts of public policy at the port city interface can be classified according to their economic or development orientation, with many market-oriented outcomes and impacts evident in the form of new commercial enterprises and high-end housing developments. Other forms of orientation include those that are more publicly focused such as the recapturing of the waterfront for public use and recreation, a trend evident in some of our Mediterranean sample cities (see Annexes 1 and 2), such as Barletta (IT) where a new public park has been created from Margherita di Savoia to Bisceglie, or in Split (HR) where the Riva promenade has been developed into a new public square. A third orientation can be financial, in terms of intensifying land use to create value. As a result of these differing and sometimes conflicting orientations, obtaining an optimum functional mix, desired outcomes and long-term positive impacts can be a significant challenge.

Our sample city analysis generated an overview of the outcomes and impacts of port city regeneration, a theme that is under-studied in the academic but also in the policy literature where there appears to be less emphasis on monitoring and evaluation of plan implementation, than on plan development. We define **outcomes** as the **direct, immediate consequences** of the regeneration process, mostly functional and physical changes within the regenerated areas. **Impacts** are the **indirect, longer-term consequences** of the regeneration process, mostly economic, social, environmental and identity changes within the broader city region or metropolitan area.

Figure 1 (p. 3, Executive summary) is an attempt to integrate outcomes and impacts into a wider **theory of change of port city regeneration**. The pathway between input and impact is a succession of causality links, which can materialise in various combinations depending on the local regeneration objectives and context. The various components of the theory of change are discussed in the subsequent chapters of the report, starting with outcomes and impacts. The theory of change is also applied to the stakeholder cities of Aalborg, Brest, Catania and Cork, as illustrated in the case study reports in Annex 4.

3.1 Outcomes

3.1.1 Mixed-use development

Mixed-use development is a key outcome of port regeneration across a range of different contexts. For instance, in Bremerhaven (DE), Gdansk (PL), and Aarhus and Aalborg (DK), the regeneration comprises a mix of hotels, residential and recreational (leisure) uses. Bremerhaven (DE) is also developing a technological park to complement other activities, while Aarhus and Aalborg (DK) recognise that mixed-use spaces lead to a more diverse residential profile, which can act as a catalyst for further innovative development. Other cities, such as Thessaloniki (GR) and Dundee (UK), have a multiplicity of uses co-existing through the development of cultural amenities along with recreational, leisure, sports and other spaces.

3.1.2 Residential development

A key outcome of most port city regeneration projects has been the construction of new residential complexes and neighbourhoods, partly as new developments on brownfield lands are one way in which housing supply can be delivered in relatively central locations. A key challenge facing cities who engage in port city regeneration is that while new residential spaces are opened closer to the city centre, such as in Tallinn (EE), affordability issues can create tensions between those who can afford to live there and those who can only afford to live at greater distances. A further outcome of regeneration, linked to housing issues, are tensions that arise when an active port remains close to the residential property, which can result in traffic, air quality and noise issues. This has been the case in cities such as Bari (IT), Le Havre (FR) and Reykjavik (IS). Residential development is not always a core priority within or an outcome of port city regeneration, as evidenced in Belfast (UK).

3.1.3 Catalyst/building support for further projects

Port city regeneration projects take a variety of forms and often these are driven by the specific catalysts underpinning the project. The designation of these projects, cities and/or ports as sites of national or strategic importance can support both initial regeneration and subsequent development. This strategic positioning, which is evident in Limerick (IE), Aberdeen and Dundee (UK), Liepaja (LV), Split (HR), Bilbao (ES), Klaipeda (LT) and Aarhus (DK) enhances the visibility of the city and port, and is often supported by accompanying investment in residential and recreational infrastructure. Further, regeneration in Malmo (SE), Trieste (IT) and Bristol (UK) occurred because of broader urban projects supported at various levels.

3.1.4 Infrastructural change

Some of the most visible outcomes of regeneration projects, and often a key enabler of wider development, are the upgrading of road networks, railways, public transport, cycle paths and walkways. In Basel (CH), Aberdeen (UK), Creil (FR), Catania, (IT), Gdansk (PL), Norrköping (SE), and Koper (SI), the delivery of key infrastructure – such as roads and railways – was a critical part of redevelopment planning and implementation. However, Belfast (UK) is an example of a port city regeneration project where development did not sufficiently address key infrastructure requirements alongside other elements. Although it developed commercially and has become an attractive tourist destination, the road network leading from the city centre to the regenerated Titanic Quarter is difficult to navigate and there is limited public transport access.

3.1.5 Built and natural environment

Across Europe, a changed built and natural environment is a significant outcome of port city regeneration. In Aberdeen and Bristol (UK), special attention has been placed on the ecology, habitat, heritage and geological features and potential of cities and ports. A well-documented outcome has been the recycling of brownfield and Seveso sites, as decontamination enables

repurposing new urban spaces. Often they facilitate new cultural infrastructure such as the Centro Cultural Internacional Oscar Niemeyer in Aviles (ES), the Titanic Museum in Belfast (UK), the Guggenheim Museum in Bilbao (ES) and the Museum of Bristol (UK), The House of Music, Aalborg (DK), Le Ciminiere Expo centre in Catania (IT) and SS Britain in Bristol (UK). In Thessaloniki (GR) old warehouses have been restored and now accommodate the Museum of Photography and the Centre of Contemporary Art. Adapting the built environment and enhancing the natural amenity to improve quality of life has a transformative effect. The building of the courthouse and library, as well as the landscaping of public space and development of canoeing and kayaking bases in Caen (FR), ensure an urban environment that is more attractive for residents and visitors. Similarly, in Cherbourg (FR), new public spaces include a shopping mall and a promenade that runs along the canal towards Cité de la Mer.

Open and green spaces are also a key outcome of waterfront regeneration, especially in cities adopting sustainability principles such as Gdansk (PL), which is transforming its factories and warehouses into mixed-use developments but has a particular focus on enhancing open and green spaces. Split (HR) has developed a new public square to host a range of public events from sporting to religious events. Re-opening access to the waterfront in this way is a key trend in Adriatic port cities. Thessaloniki (GR) has also created new public spaces, such as large multipurpose rooms, restaurants, green spaces and outdoor amenities, e.g. sports courts, amphitheatres and playgrounds. Sculptures, water features, 2 353 new trees, 118 432 new plants and 58.75 acres of green space have been added to the urban environment to support the development of a greener and more sustainable city profile.

3.1.6 New citizen voices and inclusion

The scale of transformation occurring in neighbourhoods undergoing regeneration often draws the attention of local residents and the urban citizenry more broadly, and depending on how public engagement is managed, regeneration can act as a conduit for hearing new voices and perspectives. In Norrköping (SE), the Baltic Urban Lab worked closely with numerous groups from developers to citizens during the planning process to ensure sustainable, equitable development. Social media was used to facilitate knowledge sharing and coordination between stakeholders. In other cases, a key outcome of regeneration can be enhanced usability to create more inclusive urban spaces. The creation of the Titanic Quarter marked the first post-conflict space created in Belfast where all residents, irrespective of tradition or background, were welcomed and could feel a sense of belonging. Meanwhile, in cities where an enhanced public realm has been a key aim, such as in Bari (IT), increased feelings of belonging and social inclusion also emerge. Nonetheless, outcomes are not always positive and some projects have exacerbated social exclusion and because of their governance, can exclude particular voices. Social stratification is still an issue in Gdynia (PL), Belfast (UK) and Bilbao (ES) amongst others, where regenerated spaces often out-price native and/or lower working classes formerly associated with port activity.

3.2 Impacts

While there is some discussion in the academic literature on the outcomes of waterfront or port city regeneration, less emphasis has been placed on evaluating the longer-term impacts. In their review of the global competitiveness of port cities, the OECD (2014, p. 29-30) recognised that while port cities benefit from some impacts, such as the clustering of industries, 'most of the indirect and catalytic effects of ports take place outside port-regions. Backward and forward linkages of port clusters stretch out over the whole country; these impacts are usually fairly small in the port city itself.' This suggests that while the costs and negative effects may be localised, the benefits of ports accrue at wider geographical levels, often at the national level.

Across our sample cities, data to assess the impacts of regeneration is relatively limited. However the following general impacts of port city regeneration can be identified.

3.2.1 Land-use change

How land is used and transformed has significant impacts on the city and port relationship as well as the success of waterfront regeneration. In cities such as Swansea (UK), Limerick (IE), Aviles (ES) and Bristol (UK), the regeneration involved the transformation of industrial, disused or abandoned brownfield sites into post-industrial mixed-use spaces such as residential, commercial, tourist or recreational. There is a diversity of land ownership patterns evident in port cities across Europe, ranging from mainly public ownership (Bremerhaven, DE and Norrköping, SE), to diversified ownership (Dunkirk, FR and Bilbao, ES) and some examples of disputed land ownership, particularly around port relocation/regeneration (Koper, SI). Where regenerated land remains in public ownership, the impact appears to be the retention of port-related or maritime activities alongside some new urban functions. This has been the case in Aviles (ES) where the quality of commercial and fishing services has been enhanced, and also in Koper, (SI), Split (HR) and Valetta, (MT) where the port and its services have been expanded, including the development of new berths, container capacity and terminals. Where land is in diversified or private ownership, the land-use changes tend to be more dramatic and favour urban high-value land uses, such as commercial development. The longer-term impact of this is an intensified severing of the port city relationship.

3.2.2 Economic development and employment

Economic impacts can be measured through the value of the area, its buildings and new tourist attractions, which are expected to impact on the gross domestic product (GDP) and create new long-term employment. As a result of its regeneration project, Ancona (IT) expects the creation of over 1 000 new jobs, while Basel (CH) expects port city redevelopment to benefit the entire city-region. Jobs and activities related to new economic sectors are evident, for example, in Bilbao (ES) in the cultural industries. In this city, unemployment has fallen from 25 % to 10.4 % between the 1980s and 2000, aligning with the period of regeneration. Tourism is also another growth industry following port city regeneration. The impact from the redevelopment of the Titanic Quarter on Belfast's (UK) tourism and commercial sector is an additional 800 000

visitors and the creation of 25 000 new jobs. Furthermore, port city regeneration is often an element of a broader economic growth strategy involving the modernisation of the port, enhancing international competitiveness and sustaining growth. For instance, in cities such as Bourgas (BG), Brindisi (IT), Dundee (UK) and Klaipeda (LT), the impact of economic development is evident from structural changes in the maritime economy. Other forms of economic restructuring include the development of new industrial clusters such as in Dunkirk (FR) and Aberdeen (UK), which have become Europe's leading port cities for energy platforms. Enhanced competitiveness is a desired impact of regeneration for many cities including Aviles (ES), which envisions becoming more marketable through the redevelopment of its brownfield sites, and Liepaja (LV), which created a strategic development zone (LSEZ) to attract more international shipping companies and indirect commercial activities.

3.2.3 Liveability and sustainability

In line with the principles of sustainable urban development, enhanced liveability and sustainability is a desired impact of regeneration. For example, port city regeneration can provide the necessary funding and governance framework to remediate Seveso and other challenging, potentially contaminated sites, thus bringing them back into productive re-use as spaces for living, working and socialising.

In cities where the commercial port is still active, liveability must be considered with regard to the impact of an active port on human health and well-being. The reduction of noise pollution, enhanced air and water quality, as well as enhanced well-being through the creation of new green and blue infrastructure, are all potential impacts of port city regeneration.

3.2.4 Social cohesion and satisfaction

The impact of regeneration on social cohesion and satisfaction are challenging to identify, as they are often relatively intangible, but in Ancona (IT), residents have indicated general satisfaction with the improved public amenities delivered through the regeneration project. In Brest (FR), previously deindustrialised areas of the commercial port have now become attractive spaces with new cultural and leisure amenities available. In addition, the opening of waterfront areas formerly owned by the navy offers citizens and tourists new views of the city and access to the water. As a result, Brest has received positive feedback from citizens with regard to the social cohesion and satisfaction of the regenerated spaces. However, there are also examples where regeneration projects have generated some dissatisfaction as they have been considered exclusionary. For example, in Malmo (SE), regeneration was driven by an international housing expo that created tensions as it was perceived to have ignored housing affordability and contributed to gentrification. No social housing or public amenities were included in phase 1 but as a result of disquiet, these issues were addressed directly in phase 2 of the project.

3.2.5 Port city identity and city-regional image

Port city regeneration is often part of a boosterish agenda linked to enhancing global competitiveness and the attraction of foreign capital, workers and tourists to the immediate city and wider region. This is clear in the regeneration plans for Ancona (IT) branded as 'waterfront Ancona 3.0'. Other cities that are using port city regeneration to rebrand and transform their identity are Limerick (IE), Aberdeen and Dundee (UK), Liepaja (LV), Split (HR), Klaipeda (LT) and Belfast (UK). Bilbao (ES) is an extreme case of how regeneration can create an entirely new urban identity, and the city is now known for the cultural 'Guggenheim effect' rather than for any former shipbuilding activity. Identity change in European port cities can also be linked to broader attempts to address past political as well as economic legacies. Belfast (UK) is an example of how waterfront regeneration has been used to alter the identity of the city and produce a post-conflict urban landscape. The Titanic quarter is designed to be a politically 'neutral' space, where urban dwellers irrespective of their identity or political perspective are equally welcomed. The project uses Belfast's history as the home of the Titanic to re-brand the city away from its conflict or Troubles-related history. Similarly, in post-Socialist cities such as Tallinn (EE), Liepaja (LT), Gdansk and Gdynia (PL), port city regeneration projects are being used to rebrand and undo some of the legacy of Soviet-style planning and urban development over the longer term

4 Challenges and opportunities of port city regeneration

Waterfront or port city regeneration has become relatively ubiquitous across Europe, North America, Australia and increasingly parts of Asia, but this has created challenges as well as opportunities for policy-makers and other stakeholders (Breen and Rigby, 1996; Brownill and O'Hara, 2015). A third of the port cities we identified as small and medium-sized in Europe show no evidence of waterfront or port city regeneration. In some cases, this may be because the urban and port areas are functioning optimally, but it is also likely to be related to the scale of challenges that cities face when they consider regeneration programmes. Based on our analysis, key challenges and opportunities emerged in the planning and implementation of port city regeneration programmes. We have categorised them under 10 headings, which are discussed in more detail in the sections that follow:

- Changing economic functions,
- Governance arrangements,
- Funding and finance,
- Managing environmental change,
- Landownership,
- Infrastructure provision,
- Changing urban identity and functional use,
- Speculative urban development,
- Port city interface within the wider metropolitan and regional context,
- Public participation, engagement and cohesion.

The most frequent challenge identified relates to the governance of port city regeneration, both in terms of how public-private relationships are structured and how public agencies engage with each other and organise their interactions. In many cases, this is closely related to available finance and the funding models in place to deliver on particular projects. Prioritisation and the changing relationship between the port and the city (both physically and from a governance perspective) can result in competition for economic supremacy as the needs and aspirations of the port and city can diverge significantly.

However, where there is challenge, there is often also opportunity. Innovative methods to address a challenge can produce significant and sometimes unexpected opportunities. While it has been relatively easy to identify challenges facing stakeholders involved with port city regeneration as they are common and often well documented, it has been more difficult to identify opportunities in our descriptive analysis. We offer some insights into potential opportunities that may be available to cities based on our four case studies of Cork (IE), Aalborg (DK), Catania (IT) and Brest (FR), and our 17 sample cities, although we are mindful that these will always be context-specific. The challenge and opportunity are often inter-twined, enhancing the complexity of the project, as discussed below.

4.1 Changing economic functions

Regeneration can occur both within the functional port and on former port land or dockland land. In both scenarios the relationship between the port and the city is undergoing transformation, and different ports have retained greater or lesser degrees of economic importance in broader regional development. Regeneration plans therefore play a role in rebalancing the port city relationship in a variety of ways. This can have significant implications in terms of the prioritisation of one set of economic functions, land use and infrastructure (either port or urban) over the other. The lack of integrated spatial planning between city and port can often exacerbate this challenge and make the process of prioritisation opaque.

Where full or partial port relocation is a driver or part of the regeneration plan, brownfield land and Seveso sites can be opened up and harnessed for new economic functions that are either primarily 'urban' in nature or complementary, for example maritime leasing activities. In Cork (IE), the proposed relocation of the active port from Tivoli Docks over the next decade has generated much interest from the port authority and city council in terms of future potential uses and economic strategy. The opportunities that changing economic roles and functions bring to cities are evident in cities like Catania (IT) and Aalborg (DK) where there is a new emphasis on the development of mixed-use, open, connective and liveable spaces.

4.2 Governance arrangements

While the general observed trend in the governance of waterfront regeneration is towards public-private partnerships or other form of joint arrangement, selecting the appropriate governance framework can be a major challenge. Port city regeneration requires the interaction of an array of stakeholders and managing these multiple interests can be challenging. The diversity of experiences in relation to multi-level governance frameworks, land and port-ownership structures, and the relative power of private sector actors, makes direct comparison between cities difficult. Determining best practice is not always possible given the contingent nature of stakeholder arrangements. However, the preliminary analysis suggests some significant factors.

At regional and national level, the regeneration project can be significant in stimulating a wider set of stakeholders, particularly when clearly articulated through formal plans or frameworks, as it provides a regulatory framing and certainty that builds confidence. While recognition in high-level plans is important, the crucial determinant of behaviour relates to the source of funding, which can impact governance arrangements. For instance, in Bremerhaven (DE), port regeneration was funded by the state of Bremen, a court battle having ruled that the Federal Government had given insufficient resources to the port during the 1990s. More common was the approach taken by Bilbao (ES) to create the development agency Bilbao Ría 2000 to oversee project delivery. However, this does not imply that top-down governance models are inherently positive. In the case of Valletta (MT), for example, high-level support for the

development of a new cruise terminal was economically a success, but led to the erosion of local resources. In the absence of robust governance models, development can be more incremental. This presents challenges in managing the overall coherence and design of the project, particularly where projects are exposed to the cyclical nature of property markets, as in Swansea (UK).

Governance models that offer flexibility have been a major catalyst for waterfront regeneration in Brest (FR) and Aalborg (DK). For instance, Brest's 1994 Reference Plan outlines agreed goals for regeneration, but these were not overly defined, ensuring that the city and different stakeholders could respond to urban, economic and social changes or opportunities swiftly and without burdening layers of bureaucracy. As a result, this form of flexible governance resulted in a smoother than normal regeneration process for Brest (FR). Meanwhile, in Aalborg (DK), a strong public-private cooperation was a catalyst for development allowing the city to focus more on its role as a planning authority but leaving significant investment to the private sector. Evidence suggests that in cities where multi-agency governance was effectively structured and steered, good relationships between the port and city authorities acted as a catalyst for wider urban redevelopment and regeneration, as it produced a development momentum and revision of the city's identity. An example is in Brest (FR), where the city and the navy built new working relationships to ensure the appropriate regeneration of former naval lands.

4.3 Funding and finance

Port city regeneration can involve significant costs; how it is funded is often closely linked to the types of governance arrangements in place. The absence of public funding sources can be a challenge for some cities, for example in providing the basic infrastructure necessary to attract the private sector. In other cases, a 'hands-off' approach by the state can generate reliance on the private sector, which not only creates vulnerabilities in terms of economic and development cycles, but also risks relying on speculative and exclusionary forms of profitable development. An over-reliance on private-sector funding can also result in a lack of citizen buy-in and engagement. For instance, in the case of Gdynia (PL), a private entity developed the area without much input from public stakeholders. While still in its early stages, it remains to be seen whether this model can navigate the challenges related to encouraging more inclusive use of the redeveloped area.

It is clear from our analysis that diverse funding frameworks and financial models have been used to catalyse and support regeneration across Europe's port cities. These range from complex combinations of public funds (e.g. Brest, FR) to almost primarily private sector-driven development (e.g. Gdynia, PL and Cork, IE). In Brest, the development of semi-public/private vehicles known as Société d'Économie Mixte (SEMs) or mixed economies were created to support public action and coordination with the private sector and carry the financial risk, thus alleviating the risk on the city and private sector. In Aalborg (DK), funding for housing was left

to the private sector with the exception of public funding for social housing. Both Brest (FR) and Catania (IT) have benefitted from public funding from European, national and regional funding streams, particularly with regards to infrastructure. Cork (IE) is expected to benefit from funding via the Irish Strategic Infrastructure Fund, which is a financial arrangement drawing on loan funding from the European Investment Bank. In Ireland, central government funds, such as the Urban Regeneration and Development Fund or Disruptive Technologies, may be drawn on depending on the project proposed. Despite the availability of these public funding streams, regeneration in Cork (IE) is dominated by private equity-based finance models.

A funding arrangement that we have not seen deployed to any great extent in our sample cities and the four case studies is land value capture or tax increment financing. These models essentially provide ways to finance future development based on the anticipated land value uplift from infrastructure provision and development, and are increasingly being used in US and UK contexts.

4.4 Managing environmental change

A further set of risks and challenges exist around managing environmental change in regeneration areas. Regeneration usually involves the transformation of industrial, often polluted or contaminated, land to post-industrial land uses such as residential, tourism or leisure. The risks associated with this transition include how to decontaminate sites from former industrial uses. Le Havre (FR) provides an example of successful remediation through the Port 2000 project between city and port, which repurposed former industrial land successfully in support of a transition to the green economy, including wind turbine production. It has also become a model for managing ship waste through the e-COPORT system involving co-operation with fifteen local public and private partners. Remediating former industrial sites can present legal risks in terms of future liability (Moore, 2004), financial risks and challenges in terms of funding. In Cork (IE), it is expected that the private sector would fund remediation and some argue that this can generate significant development delays. However, there are examples where the public sector has undertaken all of the remediation work, such as in Brest (FR), where the industrial and military ports were remediated by public agencies or the military itself. The regeneration of former port areas also presents other environmental challenges, such as those related to climate change issues and the need to mitigate flooding risks, as the city of Creil (FR) has been doing. Environmental sustainability is an increasingly important element of planning strategies and development plans, driven in large part by European directives and guidance. In some cases, such as Aberdeen (UK) and Limerick (IE), specific measures to protect areas of biodiversity from the impacts of redevelopment have had to be introduced. Managing and adapting to environmental conditions as they relate to land-use patterns, economic priorities and societal norms (Borriello, 2013) is a key challenge for port city regeneration.

As demonstrated in Catania (IT), port city regeneration provides an opportunity to protect natural structures such as cliffs and beaches, as well as to better manage and remediate Seveso sites. In Cork (IE), discussions on regenerating the south docks have been the impetus for significant work on how to address complex flooding in the area. A new Levels Strategy has been developed that outlines a number of innovative strategies for dealing with pluvial, fluvial and tidal flooding. Regeneration has also provided an opportunity to enhance the volume and role of green infrastructure in the urban environment, including additional tree planting. In Thessaloniki (GR), this has been an important element of the regeneration plan and has benefits in terms of health and well-being. Most cities are also regenerating with sustainability principles front and centre; Cork (IE) and Brest (FR) are promoting sustainable and active transport modes to minimise car usage, something that Aalborg (DK) has already implemented. This will promote shared public transport and healthier active lifestyles, and contribute to the reduction of greenhouse gas emissions.

4.5 Landownership

Landownership can be a major barrier for cities undergoing port city regeneration, especially where it is fragmented and in private ownership. Coordinating and implementing a coherent regeneration plan is easiest for those cities where the port and waterfront lands are already in public ownership, for example in Bremerhaven (DE) and Aalborg (DK). Similarly, Norrköping (SE) port is owned by the city, therefore allowing – at least in the planning stage – the development of an integrated planning framework for extending the port and transforming brownfield land into districts for cultural and other similar uses. In Bilbao (ES), a paradigmatic example of entrepreneurial urban regeneration, the state intervened through a development agency to take control of vacant land and then used public and speculative private investments to transform the use, function and economy of the city. A more extreme case is that of Thessaloniki (GR) where the state transferred its ownership to a private entity in order to enable the necessary port upgrades to happen, in the context of economic crisis and austerity.

In other places, landownership is more fragmented and the south docks of Cork (IE) provide an excellent example. Here the city has limited capacity to steer development other than through site-by-site planning permissions, because private sector landowners can determine the scale and pace at which they wish to engage in regeneration, if at all. Similarly, regeneration in Split (HR) has been slowed down because of the fragmented nature of land ownership in the Koplilica district.

The ability to control access to, and the value of, land was a key opportunity in Brest (FR) and Aalborg (DK). As the cities owned the land, they were able to develop infrastructure (cable car and smart energy grids in Brest), create an overall development plan with an opportunity to then sell it to the developer (The City Campus, Aalborg, DK); La Carène (Brest, FR) and Le

Ciminiere Expo centre (Catania, IT) or invite private investors to share the ownership of a building and its future revenue from selling it on (Stigsborg Harbourfront in Aalborg, DK).

4.6 Infrastructure provision

In all of its guises, connectivity is perhaps the most significant barrier facing port city regeneration. Based on decades of dis-integration, physical connectivity between the port area and the city is generally poor and requires significant infrastructure investment. While the construction of new infrastructure is often viewed as a way to reconnect the port and city, the experience of Dundee (UK) is a cautionary tale. A new bridge constructed in the city in the 1990s resulted in a further severing of the port city relationship rather than assisting with re-integration.

The delivery of strategic infrastructure thus presents a key risk and challenge in a number of respects. Port city regeneration can entail both the relocation/upgrading of the functional port and the redevelopment of brownfield land. Both of these require significant infrastructural provision. For the former, this can include the deepening of existing harbours to accommodate larger vessels as in Klaipeda (LT) or alternatively, where relocation is involved, the provision of new transport infrastructure like road and rail links to facilitate the continuation of port activities. This can require the remediation of Seveso sites, as in Le Havre (FR), and the construction of infrastructure to protect against flooding or to enable new forms of public transport. While some cities were already better provisioned with regard to transport infrastructures prior to regeneration (depending on the historical relationship between the port and the city), investment in public transport has been a key challenge for almost all cities undergoing regeneration, as exemplified in Swansea (UK) where the delivery of infrastructure is deemed crucial but has not been enabled.

In Aalborg (DK) and Catania (IT), the development of infrastructure such as road, parks, underground lines and amenities are understood as not only important catalysts for regeneration but also for attracting people to live, work and play in the area. In Brest (FR), important physical barriers (high cliffs and the wide river) were overcome through innovative transport infrastructure (urban cable car and, in the future, an urban elevator).

4.7 Changing urban identity and functional use

In many cities, the development of flagship or landmark facilities, such as the Bilbao Guggenheim Museum (ES), the V&A Museum of Design in Dundee (UK) or the proposed cable car and aquarium in Tallinn (EE), plays a key role in facilitating urban transitions and rebranding. While many port city regeneration projects focus on shifting the former port or industrial identity to a new mixed-use 'urban' identity, our sample cities demonstrate a diversity of approaches or strategies for delivering this. For example, Aarhus (DK) has sought to create

a leisure identity by developing recreational activities in the redeveloped waterfront; Reykjavik (IS) has attempted to use the regeneration project as a means to promote a more compact city form; while Santander (ES) has aimed to position itself as a benchmark city for waterfront regeneration in relation to sustainability, sports, culture, innovation and as a 'smart port'. Translating these rebranding initiatives into new uses is complicated by the dual challenge of making these new areas inclusive – through, for example, including affordable housing – and financing the necessary physical upgrading of the built environment.

In some eastern European examples, there is the extra challenge of how to deal with the legacies of the Soviet era. In Liepaja (LV), for example, a major focus of the Special Economic Zone has been to promote the city as an economic engine and focus for job creation. In other places such as Bari (IT), a standardised, generic approach to regeneration has meant the emergence of a rather omnipresent form of urbanism, or a sense that many cities are beginning to look and feel the same, and the loss of maritime identity.

In contrast, regeneration in Brest (FR) has retained a key focus on the maritime identity of the city and, as a result, port service activities and the naval base remain in place and are harnessed to promote this heritage, as well as future economic development. In Aalborg (DK), the vision focused on developing a new urban identity with two particular projects of note. The development of the university and the attraction of new knowledge-based activities have globalised the city, with the result that the city has created a new identity for itself and achieved a higher ranking amongst Danish cities in terms of educational level, population increase and business development .

4.8 Speculative urban development

Since the move from a more managerial to entrepreneurial approach to urban governance in the late 1980s (Harvey, 1989), speculative urban development has been a key feature of waterfront or port city regeneration projects where the state does not fully control the land (Leger et al., 2016). Regeneration projects are speculative in that they involve strategic bets from a range of stakeholders on the basis that transitioning from one set of urban and economic functions to another will have net benefits for the city as a whole. In some cases, the public risk can be particularly high as public investments in infrastructure and flagship developments are frontloaded (Smith & Van Krough Strand, 2011). This was the case, for example, in Bilbao (ES), Gdansk (PL) and Reykjavik (IS) where the state played the driving role in funding large-scale catalytic projects. The risks and challenges associated with this approach include the possibility that the regeneration will not have the envisioned pay-offs. The difficulty in accessing impact data suggests that this is often not well monitored.

Furthermore, regeneration projects are speculative in the sense that they are facilitated by the speculative activities of financial and property development actors, as their financial orientation means that land use is intensified as a way of capturing value (OECD, 2014). The risks and

challenges associated with this type of approach more specifically relate to the cyclical nature of property markets. In cities such as Cork (IE) and Norrköping (SE), the implementation of port city regeneration projects was negatively affected by the 2008 global financial crisis. However, in the case of Reykjavik (IS), the new regeneration plan, which aims to rebrand the city as 'City by the sea', is seen as an opportunity and one of the first signals of economic recovery after that country's crisis.

4.9 Port city interface within the wider metropolitan, regional and transnational context

While regeneration projects tend to focus on the relationships and impacts at the port city interface, the positioning of the waterfront within the wider metropolitan and regional context is critically important. The regeneration project in Valletta (MT) has been designated as a national priority with the promotion of cruise tourism at its core, leading to the erosion of significant local resources within the area but contributing more widely to the national economy. Similarly, regeneration in Bourgas (BG) is closely aligned to its role as a strategic node on the Black Sea linking Europe and Asia. This wider strategic positioning can act as both a challenge and an opportunity. In the case of Cork (IE), the regeneration of the docklands has been identified as a strategic priority at the metropolitan and regional level. This may smooth the path for the local authority to harness support from other levels of government to leverage resources and funding for the development of key infrastructure.

4.10 Public participation, engagement and cohesion

The experience of waterfront regeneration in many port cities across Europe, North America and Australia highlights the limited role of public and citizen engagement in both the development of regeneration plans and in their implementation (Brudell and Attuyer, 2014). Public participation within property-led regeneration, even if the 'official discourse' is one of a 'bottom-up approach', still tends to be limited or tightly controlled (Taşan-Kok, 2010:133; Frantzeskaki et al 2014). Across our sample cities, the extent of public engagement is diverse. For example, in Gdynia (PL), a private entity developed the area without much input from any other stakeholders, including local communities

While critiques of public participation in port city regeneration projects are plentiful in the academic literature, there are examples where it has been harnessed well. In Aarhus and Aalborg (DK) for example, consultation processes were integrated into the project planning from the outset. However, even where the public is involved and supports an idea, success is not guaranteed. This was the case in Turku (FI) where a test project to co-locate urban and port activities, although broadly supported in principle, proved challenging to implement as citizens were not convinced about living in an area of shared port/urban space.

While there are a range of examples where communities have been involved and actively participated in regeneration processes, Wang (2014) argues that the role of the community is limited, with little evidence being able to substantially impact change when the redevelopment has significance on a broader scale. However, the case of Brest (FR) illustrates that when development is governed via a strong and cohesive group of public actors, it can be easier to steer development towards the needs of citizens. The Capucins redevelopment has received widespread support from urban residents because it addressed the needs of the community in terms of providing amenity space, library facilities and other community assets. Citizen engagement was expanded during the final phases of regeneration, specifically around how space would be allocated and used, creating the conditions to ensure that the completed regeneration scheme was accepted and quickly became embedded in the urban fabric and local mindsets.

5 Lessons learned from the stakeholder cities of Aalborg, Brest, Catania and Cork

The four stakeholder cities of Aalborg (DK), Brest (FR), Catania (IT) and Cork (IE) were subject to case studies in order to analyse the drivers, implementation challenges, outcomes and impacts in more detail. They provide good examples that support and illustrate the findings of our research.

5.1 A snapshot of the four stakeholder cities

The four cities are all small to medium-sized cities with urban populations of between 120 000 and 312 000 people. They are all old port cities, between 400 and 2 800 years old. Brest was established as a military base in the 17th century and is the youngest, and Catania from the 8th century BC is the eldest. Cork was founded around 600 AD, and Aalborg was established as a Viking settlement in the 11th century. Today, they are all regional centres or regional economic hubs, located in provinces relatively remote from the capital cities of their respective countries.

The contexts of the four port cities vary considerably with regard to drivers and challenges for regeneration, as well as the applied implementation models, the planned and realised outcomes and the expected impacts.

Aalborg is located along the southern shore of the Limfjord in the region of North Denmark with the city of Nørresundby to the north of it. Together they constitute the total urban area of Aalborg. The two cities are connected with a railroad bridge, a road bridge and a highway tunnel, as well as a newly established bridge for cyclists and pedestrians. The city's port has been important for the development of Aalborg. Over time, trade has been dominated by fish, agriculture, shipbuilding, minerals and energy. At the end of the 20th century, many industrial activities in the port area closed down or moved away from the harbour, mainly due to trends in transport patterns and industrial development. This created the brownfield areas along the fjord that initiated thoughts on planning the regeneration and integrating port and city in the 1990s. The development of a new port 10 km east of Aalborg provides areas and facilities for new port activities and has thus strengthened the urbanisation of the former port areas.

Brest is located at the confluence of the English Channel and the Atlantic Ocean. The port of Brest was born as a royal military infrastructure in the 17th century. The port is physically located between the city and the water, and divided into three parts: an area along the Penfeld river and west of the river has been owned by the navy, a commercial port lies east of the river, and a marina is located further east. The commercial port flourished after the Second World War until the 1970s and 1980s, after which port activities declined. Economic difficulties reduced the activities in the commercial port area and left brownfield areas behind, and the decline of navy budgets and activities further provided space for new urban functions along the waterfront.

This development created a consensus between the involved stakeholders in the 1990s that there was a need to regenerate these brownfield areas.

Catania is located on the east coast of Sicily, facing the Ionian Sea. Its waterfront is divided into three sectors: the central area with the port of Catania, the northern area where the railway station is located, and the southern waterfronts. The port is still functional and is important for the export and import of the region – IT hardware and pharmaceuticals in particular are exported through the port of Catania. Many industrial areas and buildings in the port and in the neighbouring areas have been abandoned since the 1980s and are available for new uses, but no plan for regeneration currently exists.

Cork city is located within the River Lee valley on the south coast of Ireland with docklands east of the city centre. The docklands are divided into North Docks, South Docks – both adjacent to the city and now referred to collectively as City Docks – and Tivoli Docks further to the east. The city grew successfully as a port city from the medieval era. In the 19th century, textiles, brewing and distilling all became major industries. The butter trade also flourished, and Cork harbour grew in importance as a trading point for trans-Atlantic trade. During the early to mid-20th century, the port became heavily industrialised with chemicals, steel and pharmaceutical products, particularly in the lower harbour away from the city centre. In the early 1980s, the city was adversely impacted by de-industrialisation with the closure of factories. Also, the ferry terminal was relocated to Tivoli Docks and then subsequently to a new port at Ringaskiddy, 14 km east of the city. With this process, the north and south docklands gradually became obsolete, and plans for the regeneration of the docklands were prepared.

5.2 Main conclusions

Despite major differences between the four case cities and their respective contexts (see Annex 3 for the synopsis report of the four case studies, and Annex 4 for the individual case study reports), the following conclusions concerning the regeneration process may be drawn.

The regeneration of the waterfronts in the four cities follows the retreat of former industrial and port activities, mainly as a result of market trends in the respective sectors and in the transport patterns, but also because of a need by companies to relocate to more appropriate ports. In Brest, the main port activities were related to the navy, which has been in a process of withdrawing part of its activities, thus opening up the space for regeneration.

The visions and plans of the four cities are different. In Catania, there is no approved plan for the redevelopment of the waterfront as there has been in Aalborg, Brest and Cork. In both Catania and Brest there is a strong interest in continuing the maritime operations in the port with the potential tensions or conflicts that may follow. In Cork and Aalborg, new ports are developing outside the city, making it possible to plan for a waterfront independent of any traditional maritime activities.

The main overall drivers of regeneration in the four cities may be described as a mixture of public and private interest in the utilisation of de-industrialised brownfield sites for new urban purposes with a goal to improve the liveability, profile and aesthetic appearance of the city by integrating the port and city in order to attract new residents, commercial activities and tourists. At the same time, there has been a general intention to preserve maritime elements in the regenerated waterfronts. In Catania and Brest, this has been achieved through the continuation of traditional port activities in or close to the regenerated areas. But in Aalborg and Cork it has mainly been done by maintaining elements of maritime infrastructure and heritage.

Regeneration plans have been developed by local or regional authorities, but in the case of Catania by the port authorities. This has been done with due regard to the government structures and planning hierarchies of the respective countries. In Aalborg, the planning has been done by the city without significant restrictions from regional and national plans, whereas in Brest and Cork, the plans have been prepared in the framework of a broader multi-level public planning with the limits and complications this implies. For example, in Cork, the division of roles means that the infrastructure needed for the regeneration will have to be provided by the national government, which is a potential barrier. In Catania, the regeneration plan requires an agreement between the port authorities and the city in order to ensure coherence with the urban plan. This agreement has only recently been reached, so no approved plan for the regeneration is yet in place. The implementation and funding models that have been used vary a great deal between the case cities and types of regeneration projects. In Brest and in Catania, where most of the regeneration projects have been non-commercial, a purely public investment model is applied in most cases. This makes the availability of public budgets at all administrative levels a limiting factor, but in Brest, the city has been able to attract both state and EU funding. The opposite is the case in Cork, where private investors have been the primary source of development funding. However, the general market conditions following the financial crisis and collapse of the construction sector in Ireland, low financial returns and dispersed landownership have been barriers for the development, thus delaying regeneration. Both models were applied in Aalborg along with some innovative mixes of private and public implementation and funding models.

Image 1. A view from the city centre of Aalborg over part of the open urban space between the city and the Limfjord, which was paid for by the city



Source: Henning Thomsen, 2018

The infrastructure, parks, open urban areas and recreational amenities were paid for by the city of Aalborg, in some cases with support from private and public foundations. The city also contributed with the statutory public co-funding of social housing investments. Cultural institutions have mainly been implemented by private foundations with support from the city and from private companies. Private investors have funded the major part of the investments in housing, commercial and university buildings. Private investors, having negotiated with the city, are also increasingly involved in the implementation of non-commercial parts of the projects.

Table 4. Investment and funding patterns

Implementation and funding models	Characteristic	Examples	Pros (+) and cons (-)
1. Local authority as sole developer	Traditional model, in particular for non-commercial areas	Aalborg, Brest and Catania	+Under public control - Requires public funding - Limited competition
2. Private developer-driven	Typical for viable projects in areas developed by the owner	Aalborg and Cork	+Less public funding required - Less public control - Risk of slow development
3. City owns and plans; private actors develop/invest	A model based on negotiations to ensure viability and required quality	Brest, Catania and Aalborg	+Under public control +Less public funding required +Clear demand/supply roles
4. Development in public-private partnerships	A model based on competition allowing quality and/or profits for both parts	Aalborg and Cork	+Under public control +Shared costs and profits - Public funding needed - Mixed and unclear roles

As a consequence of the different implementation models, the role of the private sector varies from clear-cut contracting (Brest and Catania) to active involvement in negotiations with the planning authorities (Aalborg). The degree of citizen involvement and the involvement of other stakeholders varies a great deal from Catania, where this is almost non-existent, to Brest and on to Cork and Aalborg, where citizens and other stakeholders are actively involved in the urban planning process through statutory public consultations. Also, the public consultations in Cork are an important statutory element of the planning system. In Brest it is mainly the private sector

and institutional actors that have been involved, but for larger projects, the Declaration of Public Interest prescribes a procedure that involves public consultation. In general, there is an increasing awareness of the benefit of involving citizens in the planning process.

The outcomes are defined as the immediate, direct results of the regeneration processes in terms of implemented projects, whether they were planned or not. With a few exceptions in Aalborg and Brest, the outcomes are generally in line with the defined strategies and visions. The projects are mainly mixed-use areas, including buildings for residential, cultural, educational and business purposes, as well as recreational amenities. In Cork, where the private sector dominates the regeneration process, implementation started late and has been incremental with a strong focus on commercial buildings rather than residential housing, which was what the city wanted. In Catania, the regeneration project might be characterised as nascent; there has been some planning and a few individual projects have been implemented, but the project is still at the very early stages.

Image 2. Conceptual design of the future Capucins Neighbourhood in Brest, a mixed-use neighbourhood with eco-housing, offices and the Capucins Workshop



Source: Brest Metropole Aménagement

There are major uncertainties related to assessing the impacts of regeneration and of individual regeneration projects. The impacts are defined as the long-term, indirect results of regeneration, and will often have to be measured at the macro, city level because outcomes and impacts in the project area may be counterbalanced by opposing developments elsewhere in the city. In many cases, the regeneration is only one among other urban development projects and may only constitute a small part. It is then difficult to distinguish between the impacts of the various parallel projects. It therefore makes more sense to assess the expected impacts in the framework of a Theory of Change approach so that the logical relationships between the regeneration initiatives and activities to the resulting and expected outcomes and impacts are identified and assessed.

Positive impacts in terms of an increased population growth and more jobs are expected in both Aalborg and Brest; and in Cork, where positive expectations depend on a better balance of the functional and demographic mix. The impact on population growth is dependent on the improved attractiveness of the cities and their broader supply of residential housing. The impact

on the number of jobs is more uncertain, but in the case of Aalborg, the attraction of university students through youth accommodation along the waterfront is believed to have a positive impact on the growing sector of technology enterprises that need engineering staff.

Lessons learned through the planning and implementation of these projects are briefly described below.

5.3 Lessons learned

5.3.1 Defining visions, goals and plans

A first condition for a successful regeneration process is the existence of a plan with formulated goals and visions. The plan may be formulated as a vision, concrete goals, or a more concrete and detailed plan for the regeneration. Both in Aalborg, Brest and Cork, regeneration plans have been in place with different levels of detail. Typically, the initial visionary plans are further elaborated in the detailed master plans and local area plans. But this doesn't mean that no regeneration is seen without visions and plans. Catania is such a case.

Image 3. Two regeneration projects in Catania: the new FCE underground station Giovanni XXIII and Le Ciminiere expo centre, despite no regeneration plans



Source: Daniele Ronsivalle, 2018

5.3.2 Creating a broad consensus

Just as important as the existence of a realistic regeneration plan is broad support for the plan from the stakeholders that will have key roles in implementing it. To some extent, this has been the case in Aalborg, Brest and Cork. In the case of Brest, however, private investors have been reluctant to support and actively participate in the implementation, whereas the public stakeholders have supported the plans and contributed to the implementation. In Cork, the support from the private sector also seemed to be rather limited for some time until, according to their assessment, the market conditions were in place for some of the planned projects. To some extent, the plans also seem to be undermined by other public stakeholders and lack support from some of the landowners in the docklands. This has led to delays and to the implementation of construction projects that are not in full compliance with the plans of the city.

In Aalborg, the local authorities have strived to achieve a broad consensus and support from all stakeholders from the early planning stages, and they have maintained close contact and communication with stakeholders in all the implementation processes. Together with other factors, this has led to a faster implementation of the plans and a high level of goal achievement.

5.3.3 Adopting realistic plans and budgets

It is of course also important for the value of the plans to be realistic in the sense that they are feasible, and based on realistic estimates of investment costs and assumptions on the future operations and demand. This is the case both for the regeneration plan as such and for the individual elements and projects of the plan.

It is therefore important to critically study the investment costs before the plan is approved. Large and visionary projects, designed by creative architects, tend to become more expensive than planned, and the costs of foundations, decontamination or protection against flooding may be considerable and higher than anticipated. The House of Music in Aalborg ended up with an investment budget that was twice as high as initially expected, which is not an unusual situation for major investment projects.

In the case of the “Between the Bridges” project in Aalborg, an ambitious and visionary plan resulted in a neighbourhood that was very different from the planned visions. The original plan provided for small shops and lively streets. Apparently, though, the priorities and behaviour of citizens and entrepreneurs had not been sufficiently analysed in the beginning, which is why the plan was never realized.

Like other projects, regeneration projects also need sufficient demand and a viable operational strategy to survive. This is the case for private investment projects, where the investors must be assumed to have ensured a satisfactory profitability over a given period. But it is also important for projects implemented with public budgets, particularly when they depend on continued public support. The question is then, if it will be possible to ensure continued public support, and if such support will be taken from budgets that would have been spent on other projects, which will consequently lack financial support? There may also be too much focus on the investment phase and the first few years of operation, which was the case with the Utzon Centre in Aalborg. Sufficient budget was in place for the initial years of operation, but the Centre had to seriously change strategies to ensure financial sustainability.

5.3.4 Testing demand through public involvement and pilot projects

A better assessment of the need or the demand for a project may be achieved by actively involving citizens, which may have the additional benefit of building up public support and trust in the project and giving citizens a sense of ownership. The involvement of citizens through hearings and other types of communication has reportedly, in many cases, changed regeneration plans in Aalborg. The need or the demand for activities in an area may also be assessed, and the area may be opened up for new uses by inviting the public to make use of the areas via early, permanent or temporary pilot projects before the full implementation of the

regeneration project. This has been done, for example, by arranging public events in Brest while regeneration was under way, and by allowing temporary use of the Eastern Harbour area in Aalborg during regeneration implementation.

5.3.5 Attracting private investors

Regeneration projects that are considered economically feasible or politically desirable, but which are not financially viable, may still be implemented. However, if the financial viability is considered insufficient or uncertain, e.g. due to the current expectations or market fluctuations, it can be hard to attract private investors. The late start of private investments in the regeneration of the docklands in Cork was due to an inability to access funding and an insufficient financial viability of the planned, particularly residential, projects. It seems reasonable to believe that in Brest, a much higher share of the investments might have been implemented by private investors had they been (slightly) more profitable. This might have been obtained by adjusting planned projects and thereby making the investments more profitable for the investor. This may be achieved, for example, by improving the infrastructure of the area, doing the necessary decontamination, lifting requirements to the planned constructions, accepting a lower quality of construction, or by increasing the building rate and the maximum capacity of the buildings. However, this will only work if it doesn't reduce the value, and thereby the resulting demand and market prices correspondingly.

Public agencies may in other ways increase the profitability or reduce the risk of planned regeneration projects, for example through long-term rent agreements with an investor. This tool was widely used in cultural projects along the central harbourfront in Aalborg. By moving rent agreements from existing facilities to planned new buildings, like Nordkraft and the House of Music, the viability of the new projects improved.

On the other hand, if the development of an area is already profitable, it may be possible to improve a project by increasing the requirements or charging a land value capture or planning tax, as seen in Brest, and still be able to attract investors. The experience from Aalborg shows that it is also possible to make private investors pay for non-commercial parts of the regeneration, such as infrastructure and urban areas, when this is compensated for example by allowing higher building rates.

5.3.6 Using flagship projects to attract other projects

An important driver or catalyst for the regeneration process can be a flagship project successfully implemented early in the process. After a successful case, many potential investors may be attracted to be a part of it. This has been seen with the Grand Large building in Brest and the House of Music in Aalborg. Both projects have made it more interesting for other projects to locate along the same harbourfront. One Albert Quay in Cork is a major commercial building, which is similarly viewed as an important first step in the development of the dockland.

Image 4. One Albert Quay is highly significant in kick-starting a new phase of development interest in the Cork docklands



Source: One Albert Square (2019)

5.3.7 Estimating long-term impacts

The impacts of regeneration and of individual regeneration projects is very uncertain, and in many cases it will not be possible to measure or even estimate them. This is due to a variety of reasons. Measuring the impacts will require knowledge about the alternative situation without the regeneration and about causes and effects in the process. It is also relevant to ask whether the impacts are caused by the regeneration or by other urban development projects.

The ENSURE Targeted Analysis is a first attempt to assess the outcomes and impacts of port city regeneration in four European small and medium-sized cities. Further research will be needed in the coming years to follow up on the impacts in concrete cases at district, city, and regional level so as to better understand the economics of the areas, and further adjust the urban regeneration and development plans.

5.3.8 Proposals for sustainable city regeneration for similar port cities

Some general recommendations for small and medium-sized port cities with plans for a sustainable waterfront regeneration are developed from the case studies. The importance of an early involvement of citizens is stressed, and it is suggested to start the planning by identification of opportunities and constraints and then to involve planners in a dialogue with all stakeholders in a regeneration process. It is further proposed to prepare an outline time plan with distribution of roles and responsibilities and to define the steps of the process as well-defined regeneration projects. For each of these projects, the possible involvement of the private sector, and the various public-private partnership models should be considered on the background of the ownership of land, the availability of funds and the financial and economic viability of the projects. Finally, the monitoring and evaluation of the implementation on the background of defined visions and goals is recommended as well as current adjustment of plans, if needed to achieve the best possible outcomes and impacts.

These proposals have been used as a started point for a good practice framework for port city regeneration. This framework is presented in the following chapter.

6 A good practice framework for port cities' regeneration

The ENSURE 'framework of good practice' for port cities' regeneration consolidates the most relevant results from the ENSURE project to inform how port city relationships should be analysed, interpreted, planned and managed in a regeneration process (see Annex 5).

The pan-European analysis of small and medium-sized European port cities, and the case studies of the four stakeholder cities provide the background information for the framework of good practice. It was developed based on desk research, interviews with stakeholder cities and local actors, the evidence presented in this report, internal discussions within the project team, and the outcome of workshops and interviews with policy-makers and planning practitioners in Aalborg, Brest and Cork.

The analysis of 17 sample cities shows a wide diversity of approaches to managing the port city relationship, ranging from full relocation of the port to infilling around existing (and/or remaining) functions, and a wide diversity of funding approaches, ranging from combinations of public funds to private sector-driven development. In addition, there is a variety of governance approaches with a trend towards public-private partnerships as an implementation vehicle.

The port city contexts in the four stakeholder cities of Cork, Aalborg, Brest and Catania are diverse and the interfaces between each port and its city are different in nature. These interfaces can be places of conflict (e.g. in Catania in relation to the provision of infrastructure or in Brest, where recreational activities put pressure on traditional port activities). They may also be sensitive areas due to the co-location of port and industrial activities, and the coastal landscape and marine ecosystem.

Despite the different models of planning and regeneration implementation (as described in the Synopsis of case studies, Annex 3), all four stakeholder cities aim to promote mixed-use functions for regenerated port city areas, the integration of former port lands into the city or further integration between the port and the city, and liveability.

Geographical, functional, economical, institutional and social contexts differ greatly across European countries, regions and cities. Several differences are found between the four cities in terms of governance structures, degrees of separation of port and urban functions, land ownership, the speed of phasing out port and industrial activities along the harbourfront, all of which influence the approaches to, and implementation of, urban regeneration. Yet, as described above, common key challenges, opportunities and good practices emerge.

The following are our suggestions for tackling key challenges in the regeneration of port cities:

1) Conduct a pre-planning analysis of the port city

- a) Assess the current and projected trajectory of the port and city and their relationship;
- b) Analyse how the port city is currently addressing identified challenges and opportunities;

c) Analyse the stakeholder landscape.

2) Adopt a suitable planning approach

- a) Develop a strategy for regeneration based on shared visions and actions;
- b) Strengthen land-use compatibility and integration of the port and city through urban planning and zoning;
- c) Address sustainability challenges in the regeneration planning.

3) Adopt suitable governance and funding models

- a) Establish governance structures aligned with the specific purposes of the regeneration plan;
- b) Incorporate public participation processes in the planning and implementation as a broader engagement activity;
- c) Develop suitable funding/financing models for the regeneration projects.

These recommendations structure the framework of good practice presented in Annex 5 of this report. Ultimately, the framework of good practice is structured as an operative guide offering **policy recommendations** as well as detailing specific *methods, tools and instruments*, which can enable, inspire and facilitate implementation, and support the regeneration of small and medium-sized port cities.

While the general recommendations can be shared **by all small and medium-sized port cities, their application should always be adapted by the local stakeholders to each specific local situation.**

In the present chapter, we summarise the key recommendations resulting from the ENSURE Targeted Analysis.

6.1 Key policy recommendation #1 | Conduct a pre-planning analysis of the port city

Towards a sustainable port city regeneration: specific context

A key element to initiate an integrated regeneration process is **to understand existing port city relationships** by conducting spatial analysis and assessing plans and policies at national, regional and local levels. It is especially important to define realistic goals and set the boundaries of future development.

For regeneration to be successful, a detailed analysis of the current situation and projected trajectory is needed. This will contribute to establishing a baseline in economics, demographics and land use that can be shared with the broader community of stakeholders, and constitute a sound evidence base for future decisions and development.

Understanding the current situation of the port and city, and their relationship will inform a common vision and highlight gaps between the current situation and the vision.

Understanding the specific context of the port and city is an obvious, necessary first step, but there is a risk that planners and policy-makers will ignore this pre-planning analysis, assuming that they already have the required knowledge. The main challenges relating to the analysis of the specific context include the lack of a suitable evaluation framework, time, resources or capacity to assess, monitor and evaluate regeneration plans, and the **lack of data** at the necessary level.

RECOMMENDATION 1.1 | Assess the current and projected trajectory of the port and city, and their relationship

In order to identify the existing challenges and opportunities, a systematic review of the current status and the projected trajectory is required. This includes two elements:

- Understanding the **current socio-economic role of the port** associated with port activities, development trends, and the local, regional, national and supra-national governance frameworks;
- Undertaking a **thorough spatial analysis of the city in terms of economic, social and environmental factors** to inform policy / plan development.

Finally, it is also necessary to consider not only the roles of the port and the city separately, but also to understand the type of **relationships that have developed in the evolution of the port city**. This phase of assessment concludes by defining challenges and opportunities as they currently exist in the port city.

To achieve the above, the following actions should be considered by planners:

- **Conduct a comprehensive, in-depth analysis of the port**, looking for example at the development of port throughput, maritime connectivity, land surface of the port; port activities; port-related employment, spatial impacts of the port activities and availability of empty port spaces, external macro-challenges (e.g. in global maritime transport innovations such as larger containers, changes in global shipping transport; potential roles of the port in regional/national/international transport strategies, etc.) related to local conditions. The following questions might be addressed:
 - What are the main areas (zones) and activities at the port?
 - How is the port positioned within the wider regional, national and European spatial and socio-economic system?
 - What is the potential for developing the port activities? How will the economic and regulatory context influence the port development?

- What are the potential vulnerabilities for the port city regeneration projects (e.g. landscape, land use, cultural heritage, flooding or tide conditions, ownership, relocation of port activities, contaminated land remediation)?

Conduct a comprehensive, in-depth analysis of the city, looking for example at the territorial and administrative role and functional relevance of the city, urban statistics and demographics such as population growth, GDP per capita, unemployment rates and trends, international events or exhibitions, etc.. The following questions might be addressed:

- What are the trends for the development of the city?
 - What type of spatial transformations have been undertaken in the (recent) past (e.g. major urban transformation projects)?
 - What are the current trends on the real estate market, land supply and demand?
- **Analyse the port city relationships** in spatial and functional terms and identify potential for integration and development of port city relations. This raises the following questions:
 - In what way does the separation between port and city manifest itself? Is it recognisable, e.g. physical barrier, customs limits, restricted access due to protected or dangerous port activities, etc.?
 - Are there shared functions between the port and the city districts (e.g. nautical and recreational activities, fishery markets, etc.)?
 - What is the nature of relationships (governance, planning, etc.) operating between the port and city?

Assessment of the current and projected trajectory of the port, city and their relationship: some examples

In Tivoli (Cork), an urban framework plan was undertaken to inform a future Local Area Plan; in Catania, an in-depth land-use analysis was produced for the Municipal Regulatory Plan. In Aalborg, the Fjord Catalogue defined the areas along the fjord that had major regeneration or urban development potential. At a later stage, when local area plans were prepared, more planning-oriented expertise in terms of physical, landscape, infrastructural, cultural and visual analysis and planning was produced. In Brest, the 1994 Reference Plan for the port of Brest was preceded by 3 years of studies to understand the situation of Brest and its commercial port from the urban and economic standpoint, which also involved architects and urban planners in workshops organised over several days. More recently, the draft Reference Plan for the Brest Port 2040 builds on an impressive pre-planning diagnosis.

In Bourgas (BG), the preliminary step of the regeneration project was an in-depth analysis of all factors related to the development of trans-European transport networks to Asia. As a result

of this link to the east, the regeneration project could have been exposed to significant external shocks due to economic or geopolitical crises and thus this needed to be considered at an early stage.

RECOMMENDATION 1.2 | Analyse how the port city is currently addressing identified challenges and opportunities

In order to define a comprehensive and sustainable regeneration, it is necessary to analyse in what way previous or current plans and projects are addressing challenges and seizing opportunities. By analysing the ongoing transformations, it is possible to understand what alternative approaches might be required. Finally, this evaluation of current approaches, plans and projects will help define strengths and opportunities to be used, and weaknesses and threats to be mitigated. This will enable a bespoke and effective planning approach, and the efficient and productive use of available resources.

The following suggested actions are proposed:

- **Develop an ‘ongoing transformations’ analysis** to identify:
 - Is there a regeneration process ongoing?
 - What are the objectives of the current process? What has been achieved so far, and what are challenges encountered along the way?
- **Evaluate the transformation process currently planned and achieved**, assessing:
 - Effectiveness – to what extent are the current plans achieving their objectives?
 - Efficiency – to what extent are the current plans achieved with reasonable resources? Is (public/private) funding available?
 - Relevance – is the ongoing/planned regeneration project addressing identified needs and challenges?
 - What factors (internal/external) explain success and failure of the transformation progress to date?
- **Synthesise** available knowledge in the form of a prospective diagnosis that summarises strengths and weaknesses and key challenges and opportunities:
 - What are the strengths in the city and port that the regeneration should build on?
 - What are the weaknesses that the regeneration needs to be aware of and develop solutions for?
 - What are the main opportunities that regeneration can seize?
 - What are the main threats that the regeneration should address or be aware of?

Address identified challenges and opportunities: some examples

Some planning frameworks use the structure of a ‘catalogue of opportunities’ to prevent projects running the risk of missing some unaddressed opportunities. In Aalborg (DK), the overall plan, together with a map of the main regeneration projects (1989-2019), provides a good example of ongoing and realised transformation. It is designed to generate a common understanding and share the development trajectory for the waterfront before new planning activities are begun, and to check the current status of implementation. Similarly, Ancona’s (IT) strategic plan called ITI Waterfront di Ancona 3.0 included a significant part about the actual opportunities derived from ongoing planning and funding activities. This framework of planning activities by local and regional authorities is built to verify the coherence of the new vision with the previous ones, and to extract challenges and opportunities for the new strategic plan.

RECOMMENDATION 1.3. | Analyse the stakeholder landscape

Stakeholder analysis is a well-documented methodology and a good practice in project management that can be usefully deployed in the design and implementation of integrated port city regeneration plans. Every plan and/or project in port city regeneration interacts with different stakeholders. Various actors are either directly involved or indirectly influence the plan or policy through their position or their specific resources. In general, stakeholders wish to protect their own interests. The material resources, social position and knowledge of these stakeholders make them particularly powerful, enabling them to wield significant influence over the design, planning and implementation of the regeneration project.

Against this backdrop, the following actions are proposed:

- **Identify all stakeholders.** Stakeholder groups typically include the public sector, the private sector, the research and education sector, and citizens. In the case of port city regeneration, the **public sector** is often involved **at multiple levels** (local, regional, national, etc.). **The private sector is particularly relevant due to its various potential roles** (e.g. landowners, potential investors, port operators, local economic actors in port and non-port activities, contaminated land remediation responsibilities):
 - Who are the key stakeholder groups in your port city?
- **Assess stakeholders’ relevance,** to consider their capacity to take part in the regeneration process, their ability to self-organise, influence the process and contribute to it:
 - What interest do stakeholder groups have? Can we identify conflicting interests in port city regeneration?
 - What influence do stakeholders have in the process? How is this used or managed?
 - Are there groups that have difficulties expressing themselves?
 - What stakeholder involvement strategy should be implemented?

The analysis of the stakeholder landscape is critical to the successful implementation of recommendation 2.1 and recommendations 3.1, 3.2 and 3.3.

6.2 Key policy recommendation #2 | Adopt a suitable planning approach

Definition of key components of the regeneration of small and medium-sized port cities

Ports and cities are systems with interlinked components. Port development has important socio-economic and environmental impacts on cities and significant impacts on the urban identity, mental maps and capacity for urban expansion. Conversely, a city with various activities, such as cultural events and flagship projects on the waterfront, could limit or prevent port activities. **Shared strategic plans, integrated master plans and aligned land use** for the port and the city hold the key to resolving the port city mismatch caused by the absence of, or competing relationships, and to help address port city regeneration as part of a wider urban development strategy.

The outcome of the ENSURE research suggests that the re-integration of the port in the city has been a key desire of planning and policy, but fostering a link between the port and the city remains a major challenge. This is caused by the absence of, or competing, relationships between, for example, local authorities and the port authority. The main challenge is to ensure that the strategic planning process is used to involve stakeholders and build a shared vision, and to facilitate alignment between the port and the city development strategies.

RECOMMENDATION 2.1 | Develop a strategy for regeneration based on shared vision and actions

More emphasis needs to be placed on strengthening the alignment between port and city spatial planning. Strategic planning can support the integration of a port city regeneration plan into a wider urban development strategy. A strategic planning process recommends the involvement of stakeholders (public and private actors and citizens) at all stages (see recommendation 3.2). It develops a long list of development options, considers project alternatives, establishes priorities for implementation and selects port city joint actions.

The following actions are proposed:

- Identify a **suitable strategic planning approach** and planning techniques:
 - Does the city have a clear vision and what does it look like? Is it a conservative or a radical approach? Is this picture of a desirable future shared among stakeholders?
 - Is the envisioned future consistent with current trends, ongoing land-use transformation or is it necessary to take a new path?

- Is the planning process adopting a bottom-up approach – or is it top-down and tightly controlled?
- Draft the **general strategy**, shared by port and city. This requires determining:
 - What type of ‘depiction’ of the strategy is being developed? For example, a simple topographic map, an overarching high-level master plan or a vision statement?
 - Does the strategic plan propose the urban planning phases?
- Develop and share an **action plan** for implementation. This asks for:
 - What would be a reasonable timeline to achieve the proposed phases of development?
 - What urban development catalysts could be used to trigger and accelerate the port city regeneration and integration?

Develop strategies based on a shared vision and actions: some examples

The Reference Plan for the port of Brest (FR), approved in 1994, is a typical strategic top-down approach. It was a short document resulting from interinstitutional collaboration between public authorities and port authorities. The preparation of the document involved architects, urban planners and economists in workshops organised over several days, as well as consultations with institutional stakeholders to develop the vision for urban regeneration in synergy with the port’s economic development.

Another example is the ‘parallel assignment’ that was launched in Aalborg (DK) in 2016, where the city invited groups of advisors, including architects and market development experts, to present their ideas. Three groups were then selected to propose a more concrete spatial, economic and strategic plan for the development of the Stigsborg Harbourfront. In 2017, on the basis of inputs from the winning proposal and from some hundred participants in public meetings in the area, an overall development strategy for the Stigsborg Harbourfront was prepared.

Within our sample cities, the strategic plan of Aberdeen (UK) is one of the most complete and articulated available. It was developed by a dedicated authority (the Strategic Development Target Authority) that drafted and updated the general map of strategies, and monitored each step from visions, periodical updates, participation and local area plans. Similarly, the development of the strategic plan of Ancona (IT) is a significant example of how a multi-level vision of authorities and stakeholders can be connected, and desired outcomes translated into a shared strategy map. The regeneration of Bilbao (ES) also provides an example of strategic planning: after the realisation of the significant tourism catalyst development – the Guggenheim Museum – the strategic plan provided a good sense of place in the Abandoibarra district, after the relocation of the riverport.

In some eastern European cities, there is the extra challenge of how to deal with the legacies of the Soviet era; adopting a strategic approach can be useful for re-branding the city identity. In Liepaja (LV), a major focus of the Special Economic Zoning, using a strategic approach, has been to promote the city as a place of growth and job creation.

RECOMMENDATION 2.2 | Strengthen land-use compatibility and integration of port and city through urban planning and zoning

Stakeholders and planners need to identify the ways in which the city and port interact. In some cases, cities need an interface area for the port and the city; in others they need a connection with the port. In some cases, the port authority is responsible for the port plan while the city authority conducts the city plan, but they need to apply mechanisms for consultation, cooperation and planning alignment. The port and the city plans should define ways to realise the joint evolution of city and port. In relatively few cases, the city authority produces the statutory plans for both city and port areas.

In all cases, it is important to evaluate the pressures and interactions that proposed land-use changes may generate. Three discrete aspects should be considered:

- **Functional zoning of the most sensitive areas**, for example where port and industrial activities take place, zoning must guarantee safety and protection to all activities.
- **Zoning of multi-functional areas**, for example for cruise passengers and tourists, in which the plan can envisage some form of co-location. In these areas the regeneration project focuses on the safety of travellers and on the construction of secure restricted areas between the port and the city.
- **Zoning of areas integrated with the city**, for example by public open spaces, with reference to the urban planning/building rules and parameters (e.g. in a local area plan or an urban regulatory plan) in force in the urban district and outside the port district so as to avoid conflict. The zoning of these areas will describe functions capable of adapting to the changing needs of the city.

The following suggested actions are proposed:

- **Use urban planning techniques** that consider the different conditions and challenges in both port and city. This raises the following questions:
 - How are the future spatial functions defined? Is the local plan suitable for addressing challenges in both port and city or is a special development zone needed, e.g. Strategic Development Zoning (in French Zone d'Aménagement Concerté or ZAC)?

- Do the regeneration challenges require specific plans (e.g. a mobility and/or transport plan, landscape plan, social housing plan, heritage conservation plan?) or an integration of some aspects in one plan?
- **Apply the zoning**, as described above, considering the port city relationship, ensuring interaction and symbiosis, but also preserving and distinguish between competing functions. This raises the following questions:
 - Does the regeneration require a clear separation of port and city activities (e.g. protection of sensitive industrial areas such as Seveso sites or security areas for passengers or freight traffic)?
 - Does the regeneration plan include an area which is entirely or partially open to port city interaction?
- **Activate catalysts**, such as a new flagship building or the restoration of historical buildings in waterfront areas, to replace the existing physical and environmental quality. This raises the following questions:
 - If the plan envisages a flagship project (e.g. the maritime station in Tallinn, EE), could a world-wide famous architect be attracted for its design?
 - help the creation of a new urban identity? Is there a need for an architecture competition?
 - If the area includes historical buildings (e.g. Trieste Old Port, IT), can a restoration project improve the urban quality? Could the restoration project contribute to supporting a modern identity, enable competitiveness but also retain a sense of the past?

Planned land-use compatibility and integration: some examples

Considering the different conditions and challenges in both the port and city, the stakeholder cities applied different tools, suitable for specific conditions. For example, Cork (IE) has developed the Cork Metropolitan Area Strategic Plan and Cork Metropolitan Area Transport Strategy as a strategic way to underpin all of the proposed development at the city-regional level and provide a framework for thinking about how development might unfold in City Docks, Tivoli Docks and other regeneration sites throughout the city.

In Brest (FR), the ZAC was created in the commercial port area within which different sectors and objectives were envisaged. This planning tool directly serves to implement the Reference Plan by supporting the functioning of the commercial port's activities, but also managing brownfield regeneration.

In the city of Bremerhaven (DE), starting with the SEAPORT project (Stimulating Economic Regeneration and Attractiveness of Port Towns), the state of Bremen contributed to the planning for 'the transformation of its older port at the interface with the active port'. In order to

start the regeneration of the old port after the relocation of port activities, and taking into account that the space between the old and new ports was an ‘industrial wasteland’, the adopted solution was a common operative master plan and zoning for both old and new ports. In addition, the German Emigration Centre by Andreas Heller in the older port was the catalyst for the regeneration.

In Dunkirk (FR), many programmes and strategies have been used to regenerate a very wide interface between the city and the port. The municipality and local communities have incorporated the partial plan and solutions in the Local Plan for Economic Development, in order to improve interaction between redevelopment projects, the port (the third largest in Europe) and the new renewable energy platform (one of Europe’s largest). This solution links the strategic framework to an economic development plan, changing the way of thinking about regeneration.

RECOMMENDATION 2.3 | Address sustainability challenges in the regeneration planning

It is becoming increasingly clear for citizens, companies, planners and politicians that their behaviour and actions must be sustainable in relation to the climate challenge as well as to the Sustainable Development Goals (SDGs). Addressing sustainability challenges is, however, a multi-faceted demand, covering several aspects such as decontamination of old industrial areas, zero emission construction, impacts on the risk of flooding, health impacts, infrastructure and impacts on transport patterns, social equity impacts and many others.

The following actions are proposed:

- **Review the proposed plans** and their expected outcomes and impacts. Compare them to the most likely alternative development(s), such as ‘business-as-usual’ or an alternative approach. This raises the following questions:
 - What are the *main economic impacts* of the project or the plan? Will the regeneration contribute to creating jobs in the city, the port, and/or the region as a whole?
 - What are the *main social impacts* of the regeneration plan? For example, does the regeneration contribute to the resettlement of jobs and people? Does the plan raise social equity issues? What about gentrification? Have the regeneration areas been suitably serviced meeting education needs, health needs, needs for open space, sport and recreation, shops, etc.?
 - What are the *main environmental impacts* of the project or the plan, e.g. due to impacts on land use, mobility, energy consumption, construction material, and the lifetime of the construction? How is the risk of flooding reduced/increased?
- **Enhance environmental sustainability in the proposed regeneration strategy.**
This requires the integration of the following specific solutions:

- Are there provisions for green infrastructure (e.g. green corridors, floodplains, etc.), renewable energy, district heating and cooling in the planning area?
- In what way does the project contribute to global sustainability and climate action agendas? (For example, promoting net zero emissions building programmes, assessing their alignment and contribution to the SDGs, cooperating and exchanging good practices in stakeholder platforms such as the Global Network for Urban Resilience, etc.)

Sustainability challenges in the regeneration planning: some examples

As demonstrated in Catania (IT), waterfront regeneration provides an opportunity to protect natural structures such as cliffs and beaches as well as to manage Seveso-like sites. The management and decontamination of Seveso sites is also an excellent opportunity for regeneration within Cork (IE), which also wishes to drive more compact development across the city-region and create innovative nature-based solutions to deal with flooding risks in the South Docks. The sustainability challenge is increasingly integrated in regeneration strategies as a main goal. For instance, the Plan Strategy in Aalborg (DK) in 2011, as well as in 2016 and 2019, was focused on growth and sustainability.

Beyond the mandatory environmental assessment and mitigation for plans, programmes and projects (see the EIA Directive 2011/92/EU and subsequent amendments, and the SEA Directive 2001/42/EC and subsequent amendments), port city regeneration needs to focus on the environment: green infrastructure, biodiversity and marine life are beneficial components for the water-land interface and for port cities. Only a few cities point at the environmental challenges as positive leverage for the regeneration of the waterfronts. In Malmö (SE), the environmental challenge was the focus for the regeneration project in Västra Hamnen International Housing Expo. The Expo 'Quality Programme Bo01' final master plan outlines sustainability requirements for the development of individual plots. In some other cities, such as Aberdeen (UK), specific measures to protect areas of biodiversity from the impacts of redevelopment have been introduced. Environmental solutions have been applied in Thessaloniki (GR) through its involvement in the 100 Resilient Cities (100RC) programme. The 100RC methodology provides an innovative model for the local authority to develop a holistic city strategy in collaboration with adjacent municipalities, local academic institutions, the non-profit sector, private stakeholders, and the citizens and communities of the city. One of the four goals of the Resilience Strategy is to 'Re-discover the city's relationship with the sea and integrate the economic and urban development of Thessaloniki Bay by investing in the cultural and natural capital of the Bay for improved city life, restoring the ecosystem, monitoring environmental resilience, and designing a new governance system for managing these activities.' The actions put in place to realise this ambition were: the mapping of relevant players and roles; the decentralisation of authority from Athens to stakeholders in Thessaloniki; forming

consensus on a vision around a Memorandum of Understanding with government, for a long-term goal; and the creation of a new entity to manage the bay's activities.

6.3 Key policy recommendation #3 | Adopt suitable governance and funding models

How to manage sustainable port city regeneration

Establishing suitable governance models and funding arrangements for each of the regeneration projects or plans is critical to successful implementation of the port city regeneration vision. Engaging all stakeholders, including national, regional and local governments, civil society organisations, citizens, landowners and local businesses is essential to ensure that all relevant perspectives are taken into consideration, and that a planned regeneration receives widespread support and benefits everyone.

Cooperation between the port entity and the municipality takes on a key role, while the other dimensions of cooperation (with entities at other levels and the citizens) are also very important. Managing public sector relationships appropriately is key to enabling change and to realise **good governance**, particularly when governance structures require one of the bodies, typically the port authority, to operate in a commercial manner to sustain their core operations.

Successful port city regeneration requires sufficient **public or private funding**. Different **types of funding** depend on the location and attractiveness of the planned projects and are temporally contingent and dependent on economic and development cycles and the broader institutional and financial context. Joint developments, negotiations with investors, property or land value taxes, tax increment financing, betterment levies and development agreements are some examples to grant a viable regeneration process.

The choice of suitable governance and funding models is one of the most pressing issues in port city regeneration processes. Port city regeneration requires involvement from an array of stakeholders (detailed above), but managing multiple interests is challenging in a dynamic setting. The diversity of experiences in relation to, for instance, multi-level governance frameworks in different countries, ownership structures in terms of land and port functions, and the role of private sector actors are significant factors. Sometimes the lack of a suitable governance framework presents challenges in managing the overall coherence and design of the regeneration process.

Alongside governance and funding, public participation is also a management and implementation challenge of port city regeneration. The experience of waterfront regeneration in many port cities across Europe highlights the limited role of the public and citizen engagement in not only the development of regeneration plans but also in their implementation.

RECOMMENDATION 3.1 | Establish governance structures aligned with the specific purpose of the regeneration plan

The recommendation concerns two interrelated challenges: to strengthen public leadership, which must always be clear within the governance models, and to manage key stakeholders, who could influence the process. In order to address these challenges, it is appropriate to establish a governance model based on clear relationships between public and private actors. This can be established, for example, through specialised steering bodies, development agencies or satellite organisations managing real estate development processes.

The following suggested actions are proposed:

- **Demonstrate public sector leadership.** Strong public sector leadership can be catalytic in facilitating the preparation and management of regeneration projects, and providing the conditions to attract private sector investment, especially in circumstances where the private sector may be reluctant to invest in urban regeneration. A strong and cohesive public sector with a strong vision and speaking with one voice in the communication and negotiations with private stakeholders can leverage investment, and ensure an appropriate and desirable urban development. Specialised development agencies or satellite organisations managing real estate development processes can help to drive more sustainable large-scale regeneration programmes. Key questions to consider include:
 - What are the competent public institutions for urban regeneration? Who should lead the regeneration process and operational implementation plan?
 - What are the regulatory and/or financial tools that the local authorities can use to steer, influence and accelerate the process?
 - Is there a need for additional competence and dedicated organisation and resources, e.g. in the form of specialised agencies?
- **Involve the key stakeholders who have an interest and/or could influence the process.** A good understanding of the stakeholders, their interest and influence on the process is the basis for an appropriate engagement strategy. Key questions to consider include:
 - Taking into account their relevance, when is the stakeholder involvement effective?
 - Is a formal governance system/consultation platform needed or are ad hoc consultations sufficient? For what type of stakeholders? (See also recommendation 1.3)
- **Develop a cohesive and inclusive governance model.** Port city regeneration processes require responsible leadership, ensuring that all relevant parties are onboard and that things are moving forward. Key questions to consider include:
 - What type of governance model is suitable for this specific context?

- Are models of public-private partnership appropriate and/or desirable?

Relevant governance structure examples in port cities

The city of Aalborg (DK) has entered into a partnership agreement holding 49 % control of a partnership with a developer, a construction company and an institutional investor. The partnership is responsible for the development of a major, new neighbourhood, Stigsborg Harbourfront. The city has contributed land to the partnership, including bearing the considerable costs of decontamination in the area, where chemical enterprises were previously located. Public funding from the city has covered the decontamination and encouraged private investors.

In Cork (IE), the newly established Land Development Agency (LDA) has an immediate focus on managing the state's own lands to develop new homes, and regenerate under-utilised sites. In the longer-term it will support the assembly of strategic land banks from a mix of public and private lands, making these available for housing development in a phased manner that aims to bring long-term stability to the Irish housing market.

In Brest (FR), important public sector involvement in the initial acquisition projects, decontamination and promotion of land parcels in the commercial port of Brest have successfully attracted private sector interest, thanks to the action of the Metropolitan City of Brest by a semi-public mixed economy company. Their pivotal role was in carrying the risks of their operations, thus alleviating the burden of risk on the city and the private sector. Indeed, the private sector was not a driver of change but rather reacting to the supply of development opportunities created by the mixed company.

In Catania (IT), the adopted governance model is a 'permanent session' where a steering group is formed and works until the draft of the final solution. The involved stakeholders are public authorities with specific competences (e.g. port authority, municipality, heritage protection board, etc.) that worked on a suitable solution for the new railway project in front of the port area.

Within our sample cities, the Hafen-Stadt Basel (CH) project started from a local and multinational challenge based on the three borders along the River Rhine. The cities of Weil am Rhein (DE), Huningue (FR) and Basel (CH) form a single territorial area that benefits from the growth of industry on the Rhine. 3Land was launched as a planning agreement for developing a tri-national inter-city regeneration.

In Cherbourg (FR), there has been a strategy of continuity since 2006 between the ZAC intervention, the Port Master Plan and future development strategies. This is possible thanks to joint planning and development activities that are the most important achievement in the Cherbourg experience, activated by a mixed company called SHEMA (Société Havraise d'Économie Mixte pour l'Aménagement). The new governance structure is able to attract more funds and realise urban facilities thanks to a strong public leadership.

Gdynia (PL) is an example of a more liberal approach by the public authority: the Port of Gdynia is owned by Port Gdynia Holding SA and is independent of the municipality. The municipality of Gdynia released a Local Spatial Development Plan in 2010 for part of the Śródmieście district in Gdynia, the central waterfront area. A private landowner developer, Vastint Holding BV Poland, produced two development plans called Gdynia Waterfront I and Gdynia Waterfront II for a full free-trade port. The municipality works as guarantor and controller of the outcomes.

RECOMMENDATION 3.2 | Incorporate public participation processes in the planning and implementation as a broader engagement activity

Engagement of citizen groups should be harnessed to ensure that projects are fit for purpose and have the necessary support to ensure effective implementation. The public authority should guarantee the common interest through a well-prepared planning process. The public authority should not only select and implement appropriate options and solutions, but also ensure transparency and citizen engagement and active involvement in the planning process. The active involvement of citizens along the entire planning process is important. Participation is a transversal activity, so it refers to both the planning side (see recommendation 2) and the delivery side (see the current recommendation, in particular 3.1).

The following actions are proposed:

- **Define the extent, scope and form of citizen engagement at an early stage.** Citizen engagement is a critical aspect of the regeneration processes: communicating during the entire regeneration process (including the pre-planning stage), ensuring transparency of the processes, promoting social cohesion within regenerated areas, and gathering public support and ownership. The key guiding questions are:
 - Who should be involved and how?
 - What models and tools of citizen involvement should be applied?
 - Who in the team is involved in ensuring citizen involvement?
- **Think beyond consultation process: engage for real!**
 - Could temporary uses and cultural events help to create ownership?
- **Prepare a communication strategy, suitable for citizen engagement.** The key questions are:
 - What are the communication goals?
 - Are you sending the right message to the right person (or audience)?
 - Are you communicating at the right time and in the right way?
 - Are you evaluating the impact of the communication strategy?

Examples of incorporating participation processes in planning and implementation

In Aalborg (DK), a phased approach to regeneration and the use of various communication lines throughout the port regeneration process, including temporary pilot projects to open up port areas for the public, have contributed to a successful regeneration process.

In Brest (FR), citizen participation was initially not well integrated in the regeneration process but this improved over time as awareness of the importance of public support and participation grew over the years. For the latest regeneration project, Les Capucins, public engagement took place at the planning stage and in the early stages of works in the form of public debates and information sessions or online surveys to inform citizens and learn about their expectations, and direct citizen participation to facilitate ownership of the new public space.

In Cork (IE), the Public Participation Network (PPN), made up of independent groups and non-governmental organisations (NGOs), has grown significantly in recent years and sits in the majority of City Council Strategic Policy Committees. This is an important channel of communication between policy-makers and urban citizens.

Reykjavik (IS) provides an example of how processes of consultation were integrated into the project planning from the outset, and where the public was engaged at the earliest stages to generate ideas. Even when the public is involved and supports an idea, success is not guaranteed. In Turku (FI), a test project to co-locate urban and port activities is underway but while broadly supported, it is proving challenging to convince citizens to relocate to the area.

RECOMMENDATION 3.3 | Develop suitable funding/financing models for the regeneration projects

Successful waterfront and port city regeneration require the availability of public and/or private sector funding. Funding, among other things, depends on the location and attractiveness of the planned project, and is temporally contingent and dependent on economic and development cycles and the broader institutional and financial context. The exact funding arrangements may vary from project to project along the same waterfront. Funding may be sought from a range of public sources (local, regional, national, EU) and private direct investment or other financing initiatives (e.g. tax increment financing, land value capture, equity financing, etc.) and then combined to the best effect.

Joint developments, property or land value taxes, tax increment financing, betterment levies, and negotiated development agreements are some examples of value capture mechanisms to generate funding. The choice of a specific mechanism entails risks and opportunities that are contingent on the social, economic, legislative and fiscal framework.

Land value capture is relevant in cases of projects with a high profitability, particularly where this is due to public investments, for example in the area's infrastructure or in decontamination of the site. In cases when the project is not considered commercially viable, private investors

may be attracted by mechanisms that improve the project viability, for example by allowing higher building rates or by improving the infrastructure in the area.

The funding arrangements may need to be adapted to the specific project, depending on land ownership and financial viability, but also on potential investors' interests. A high financial viability may attract private investors, but on the other hand, funding will often require some influence on the project, and if the public authorities want to avoid investor influence on a project, they may prefer to invest more public money.

The following suggested actions are proposed:

- **Identify land ownership and potential investors' interest.** A first step is to take into consideration that the investment challenges depend very much on the ownership of the land. If the land is owned by stakeholders other than the local authorities, the availability of the land needs to be assessed. The key questions are:
 - Who is the owner of the land?
 - Is the land for sale or in other ways available for the local authorities? Or are there other models available through partnerships with public and private investment, etc.?
- **Select funding solutions.** For a balanced regeneration, funding is required from the private and/or the public sector. It is possible to search for different solutions as local authority budgets, other public sources (such as the sale of publicly owned land, local or national), private commercial investments, private non-commercial funding, e.g. charitable funding, international funding e.g. European Union (EU), European Bank for Reconstruction and Development (EBRD), etc.. In particular, public money could be invested at the outset to 'pump-prime' development and act as a catalyst for regeneration to lever in private sector funding. Publicly funded regeneration and flagship developments could be important in terms of generating profit for re-investment but also boosting investor confidence. To do this, the key questions are:
 - What public and private sources of funding are available?
 - Is 100 % private funding considered an acceptable solution? What is considered an appropriate public-private investment ratio?
 - Is the project considered financially viable? If yes, is it possible and relevant to make use of land value capture? If not viable, what is the support needed in terms of investments or otherwise to make it viable?

Relevant funding / financing examples in port cities

In Aalborg (DK), different sources of funding have been used for the various regeneration projects: using different combinations of national and local contributions or with other private

ones, public investment in youth housing, and recreational and public spaces generating private investment at the central harbourfront.

In Brest (FR), funding for the regeneration process has been managed with agility thanks to a governance set-up involving satellite organisations (organisations in the mixed economy) with dedicated finances and being able to take financial risks where private investors were less inclined, thus mitigating these risks for Brest Métropole's budget.

In Cork (IE), key infrastructure is based on public funding controlled by central government through the Irish Strategic Infrastructure Fund (ISIF), borrowing from the European Investment Bank (EIB), with other elements of the project potentially funded through the new Urban Regeneration and Development Fund.

In Malmö (SE), public sector funding supported the development of a successful housing expo, which was then used to lever private funding for the second phase of the regeneration project. EU funding, particularly from the 1990s, has encouraged urban regeneration across Europe but this needs to be carefully managed. For example, when Belfast (UK) applied for EU funding, their application was investigated due to a perceived lack of competition between construction companies for the Titanic Quarter project. In Norrköping (SE), funding is both public and private with a small part of the regeneration enabled through the European Interreg and the Baltic Urban Lab programmes. Public and private sectors collaborate in many cities and this kind of partnership is the emerging norm in European port city regeneration. In Swansea (UK), the City Council is both developer and funder, in partnership with a private sector development team. Funding sources are project-specific, such as the transport capital infrastructure grants system, private developers and investors, as well as existing council and national government funding schemes.

7 Need for future policy-relevant research

The undertaking and outputs of ENSURE suggest that there is a need to support further research on port city regeneration in small and medium-sized European cities. **The data required to engage deeply with the outcomes and the impact of port city regeneration within the broader urban and regional context is not available at the European level**, and in many cases at the metropolitan or city-regional level. Data that does exist is primarily at a level that requires disaggregation in order to evaluate and monitor project successes and outcomes. A second limitation is the **lack of an appropriate and agreed methodology for assessing the long-term consequences of these substantial investments**. During the course of this research, there was much debate about defining outcomes and impacts of regeneration. The project makes suggestions, but it would be helpful if the development of a standardised approach to assessing and understanding such variables were considered by ESPON or another relevant agency.

Despite these data and methodological limitations, the report offers a unique synthesis of the general experiences of small and medium-sized port cities across the European territory. By its nature, it is a relatively simplistic snapshot in time and does not suggest that trends, outcomes, impacts, challenges and opportunities identified are the only ones facing cities. The contingent nature of experiences needs to be stressed but some common opportunities and challenges are evident. The manner in which a sub-set of cities deals with these challenges in practice could be the subject of a more substantial research project .

Focusing in depth on a larger number of cities that have successfully completed regeneration could be relevant to developing an evidence base on the effectiveness of different approaches to regeneration planning and implementation.

This would begin by examining particular geographical areas of Europe (e.g. Euro-Mediterranean, Baltic, North Sea, Scandinavia, central Europe, etc.), or using the main EU macro-regional strategy articulation (Baltic, Danube, Adriatic and Ionian, Alpine) or other similar criteria preferably connected to EU policies (e.g. the Trans-Europe Network – Transport policy), or to other European Structural and Investment Funds (ESIF) programmes.

Studies of this nature would build on ENSURE's findings and test the applicability of the recommendations in a wider and macro-regional context.

Based on our analyses, it is also clear that our understanding of particular dimensions of port city regeneration is relatively limited to the main topic of the projects and that stakeholders themselves require further research to support policy development implementation. Understanding the port city relationship and dynamics in Europe generally, but particularly in urban centres beyond the major metropolises, is a major challenge and there remains many unanswered or partially answered questions.

Key topics worthy of further investigation are based on looking into more specific measures to overcome challenges in regeneration. The proposed key topics aim to unpack the port city challenges to better understand them, as follow:

- a) **Spatial dynamic of port cities regeneration.** In port cities, regeneration avoids urban sprawl, but it could be a problem in terms of congestion in urban centres, or an opportunity to develop sustainable urban transport systems; it attracts new amenities and urban activities, but could gentrify the waterfront; it develops new functionalities but could preserve more traditional industrial activities,. An analysis of the broader demographic, social, environmental and spatial dynamics associated with port city regeneration projects needs to be undertaken to inform further solutions, in order to understand the relevant cause-effect relationship and drive urbanisation and land-use change towards more sustainable cities.
- b) **Environmental opportunities of port cities transformation.** How can regeneration projects jointly drive urban transformation whilst ensuring environmental preservation? A port city regeneration process can close the life cycle of urban areas and contribute to urban development while avoiding urban sprawl, hence contributing to the goals of the European Green Deal for low carbon and resource efficient economies. A port city regeneration process can contribute to connectivity in ecological networks and promote green spaces in the urban environment following the principles enacted in the EU Green Infrastructure Strategy. Finally, port city regeneration reduces industrial pollution in city centres and provides an opportunity for site remediation and decontamination. Environmental outcomes and impacts in regenerating port cities should be analysed to inspire stakeholders and provide more sustainable solutions.
- c) **The contribution of urban regeneration to mitigating flooding in seaport and/or riverport cities.** Documenting and assessing how different cities are tackling the issue across more environmentally sensitive European regions (e.g. Atlantic Ocean, North Sea, Mediterranean, etc.), could provide learning for others and inform a good practice framework for local authorities. This would encourage better and more proactive management of the land-water interface.
- d) **The cultural heritage vulnerability and landscape quality challenge in port cities.** The landscape quality needs to be assessed to ensure that the benefits of the transformation are fully reaped. A good practice framework should be drafted to help local authorities in urban planning and architectural design to meet the challenge of landscape quality, as defined in the European Landscape Convention. This reseach could help local authorities responsible for port/waterfront planning, both at the port and at the city level, by providing a set of recommendations for both the transformation and the protection of port city cultural heritage under the pressure of development plans. These would help local autorithes to see the landscape preservation not only as a challenge but also as an opportunity.

- e) **Land value in port city regeneration as a driver for local economy.** Further research on the use of land value capture solutions across Europe shall be promoted and supported. Evidence from this research could examine which are the necessary features of land value capture solutions applied by local authorities and would propose new suggestions and solutions to any identified issues.
- f) **Brownfield regeneration and depollution in port cities.** ENSURE's findings have highlighted environmental challenges in the regeneration process, as the environmental remediation of industrial sites can be too costly for the local authorities and the owners. It is necessary to expand research activities on the technical and economic characteristics of depollution operations, how the conversion process takes place from pollution control to delivery of the layout or construction, and how can this result into profitable projects both in financial and economic terms.
- g) **The role of port authorities in urban regeneration and development.** ENSURE's findings have underlined the main governance challenges of port city regeneration. In trying to assess suitable public-sector governance arrangements to deliver successful port city regeneration, research activities could verify in what way, in a context of change, port authorities can be engaged in broader matters of urban development. The ambition of port authorities to expand their role and influence in local contexts, beyond port business activities, often without an agreement with the local authority, emerged in ENSURE's findings. This research stream could produce targeted analyses starting from a selection of port city case studies in which the challenge has been addressed in terms of combined governance, management models and physical transformations. In relation to this, risk management and governance related to the role of ports as crucial gateways in crisis situations like flood, migration and pandemic could be addressed.
- h) **Engaging citizens in successful regeneration processes.** Across different governance contexts in port cities, the role of citizens needs to be assessed and given increased attention, so as to achieve a better quality of transformation. ENSURE's research findings reveal general attention by the local authority to citizens' participation. However, the transition from participation to engagement needs to be extended to citizens, NGOs and organised groups. In fact, the direct involvement and interest in port city transformations could be a relevant part of port city governance. By assessing bottom-up approaches, participation initiatives started and managed by the community (e.g.: without a managing authorities) or cooperative approaches, researchers could advance good practice in this field.

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List of Annexes

All annexes can be found in separate files provided with this report.

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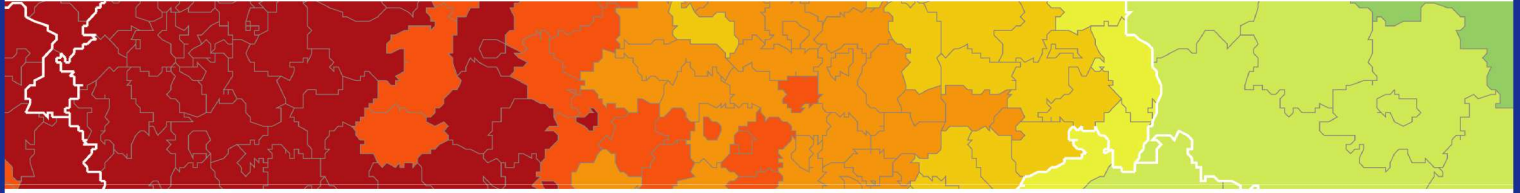
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ESPON 2020 – More information

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