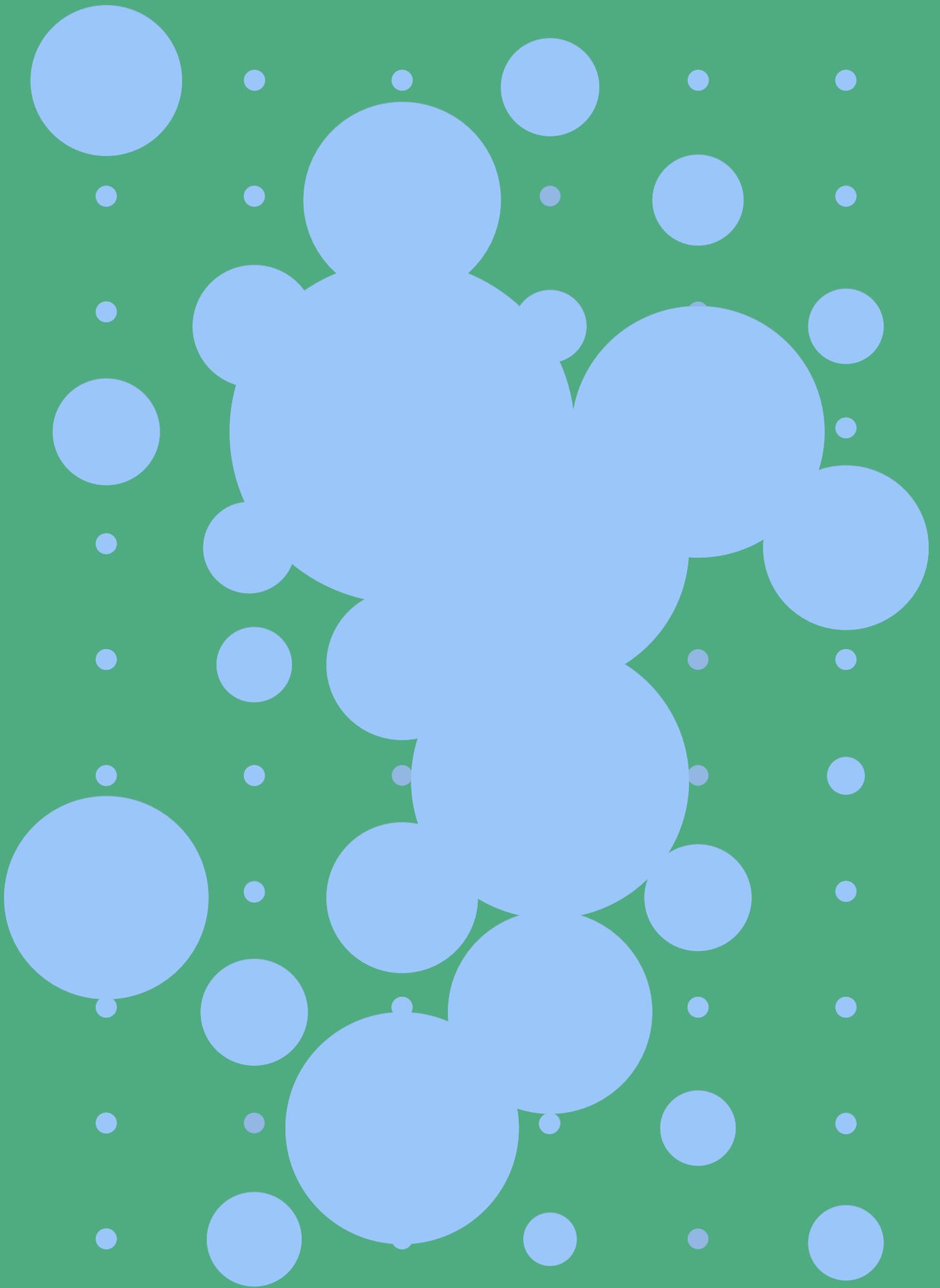


Circular (City) Ports Lessons Learned

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Delta Atelier 'Circular Ports' Program

The Delta Atelier positions itself as an autonomous P2P knowledge and action platform among more than 50 actors who work in innovative ways to make the urban landscapes of our joint Delta, composed by: Netherlands, Flanders, Brussels and, by extension, the regions of North Rhine-Westphalia and Nord-Pas-de-Calais. The platform bundles scattered knowledge and practical experience about the spatial impact of different transitions (mobility, energy, water, biodiversity, circular economy, agriculture, care) and organizes interaction between peers - both designers and policy makers and organizations as experts - so that they learn from each other and jointly formulate and realize new breakthroughs. The Delta Atelier sets out a program of debates, workshops, project initiations, design research, a physical workplace, exhibitions, virtual exchange (documentaries, podcast) and a community-driven online exchange platform.

The Exploratory trajectory on Circular City Ports position itself within the Delta Atelier 'Circular Ports' program. The hypothesis that ports will play a crucial role in the transition towards more circularity, is bundled within the Delta Atelier within an agenda of collective work programs, building new types of transformation projects from new coalitions.

Within the “Circular ports” program, the planning authorities are working together on a Circular Main Frame (scale XL) on the Delta as a whole; a regional test is being set up around the North Sea Port based on cooperation between the provinces of East - and West Flanders and Zeeland (scale L); exploring the bridge between the port cities and the ports, the “city ports” (such as Antwerp Eilandje II or Rotterdam Makers District) as catalysts of a new manufacturing and circular economy, together with OVAM / Circular Flanders, 1010au and AWB (scale M); the IABR and the municipality of Rotterdam together with the port authority are strategizing around the Rotterdam Makers District within Test Site M4H, towards the realization of a pilot for a circular building economy integrated with logistics functions in the Merwe Vierhavens, experimenting on the scale of the building typology (Scale S).

These different trajectories, each with their own coalitions, have met every six months since their first meeting within the context of the Delta Atelier, to coordinate their independent tests. The support that the Delta Atelier offers them in this regard is in building a constructive narrative for the future of the Delta: if we start to link things together, we can actually start designing the desired living environment.





Climate change and the urgent need to move towards a different economic model, founded upon diverse understandings of Circular Economy, is at the root of many new collaboration platforms and policy initiatives. As ports are an key links in the global supply chain and also a subject of transition, they can be a leverage to further circularity in their own space, but also beyond their borders. The port

sight became a central topic during the 2018 IABR, in the publication “Lage Landen” and in the Delta Atelier working conference during the summer of 2018. During this last event, circular ports were approached through four scales, ranging from the smallest scale of the company, to the city port, the regional port system, and ending with the Delta area, as a whole. Different parties saw the value of



Image: Circular City Ports: Testsite M4H+ by 1010au on the expo 'You Are Here', Brussels © Tim Van de Velde

is a place where there is access to all kind of flows, They are gateways for both incoming and outgoing flows. They house a mix of logistical and industrial activities, which are the big players who need to shift towards a more circular system of functioning. Next to that, the ports find themselves in a momentum of change: when looked at the geopolitical context, the past globalization impetus seems losing force: localities find themselves in a quest to decrease exposure to global volatility and want to anticipate collapse by boosting their self-sufficiency. The climate change challenges are globally raising questions on how our production, functioning and developing need to have a radical shift, being aware on how sustainability policy, energy transition, transition to a post-carbon economy, digitization and automation will take place in our realities. It all affects the organization and functioning of ports. It is hence clear that circularity could definitely find its roots in these ports in transition.

It is then logic that ports are considered ideal places to advance the circular transition, in their role as logistical and industrial hubs but not less as location for industries that are active in the collection, treatment and shipment of waste and stimulate the emergence of innovation circles. This in-

working on these scales and started up different researches and projects moved by the need to better grasp the issue at stake. The exploration on Circular City Ports was part of this first round of projects, as well as the focus of this synthesis document.

That City Ports have a strategic importance to further circularity is beyond question. Their location has a close proximity to both the port and the city. Cities are the biggest consumers and waste producers, and keep on attracting an unprecedented number of people, transforming businesses and the built environment in the process, mines in all kind of ways. Ports are pins in global supply chains as source of economic activities , as a gateway and a crossing point. City Ports combine the access to resources with the demand for them, at a scale that is not the one of Industrial Ports, indirectly allowing for certain degree of experimentation. The City Ports were the economical core inside the city itself until the industrial revolution, the fact that City Ports were 'left-behind' by the continuous scaling-up of maritime activities after WWII, made them in-between spaces to test out new development models (from waterfront developments to transitory urbanisms) and helped to position them in the right place to initiate now a urban circular transition.

The hypothesis of circular city ports was the starting point of an exploratory trajectory, commissioned by the Public Waste Agency of Flanders (OVAM) and Circular Flanders (Vlaanderen Circulair). The team of Architecture Workroom Brussels (AWB) and 1010 architecture and urbanism (1010au) took up this challenge. Different circular initiatives and visions were gathered through a benchmarking of 11 city ports: Le Havre, Dunkerque, Ostend, North Sea Port/Ghent, Brussels, Antwerp, Dordrecht, Rotterdam, Amsterdam, Duisburg and Hamburg. In some cases, defining a space which could be called 'City Port' was not always straightforward and thus the benchmarking also incorporates initiatives in the Cities and Industrial Ports. In other cases, the City Port itself was already a clear project, like 'Innovative City Port' (Innovatieve Stadshaven) in Antwerp or the Makers District in Rotterdam. During the benchmarking, there was also a search to distinguish the different aspects of circularity, since it is clear that there is no one singular way to be circular. Finding the right language to name things and activities was therefore also an important aspect of this exploratory trajectory.



Image: A. Stevens & Co Recycling, Vergotiedock in Brussels
© A. Stevens & Co Recycling

Next to the benchmarking, interviews were done to gain a better insight into some initiatives and to harvest projects and ideas which were not publicly known. Through a public debate and two working sessions the gathered knowledge of this benchmarking and interviews were presented and formed the basis for thematic working tables. The different invited stakeholders and interested parties could talk freely about their issues and chances in working towards circularity inside City Ports, Ports and Cities. Each session enriched the ongoing benchmarking and other research.

Coming at the end of the exploration, different conclusions could be made, combining the different challenges and chances that came forward during the working sessions and the research. These conclusions want to stress the different actions that need to be taken, not only at the scale of



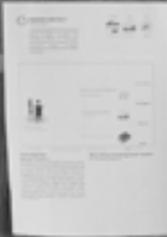
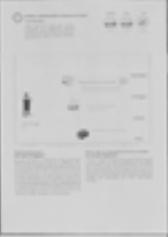
the city port itself, but also beyond its borders and on different scales. These actions need to be put on the agenda of all the different parties involved in the transition towards circularity in City Ports, Industrial Ports, Cities, Regions and the Delta as a whole.



Image: Overview of the circular initiatives in fiches during the working session on 2nd of April 2019 © Miles Fischer

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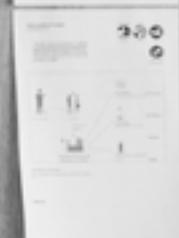


DORDRECHT

AMSTERDAM

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HAMBURG



Looking at the City Port as a starting point for circularity is vital.

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- The City Port is a crucial scale to enhance circularity

The position and scale of the City Port “in-between” the city and the port play an important role. The connection to both the resources and knowledge of the city and the near presence of the industrial port with its many processes and logistical functions are important leverages to boost circularity.

- The City Port is more a mindset, rather than a spatial site.

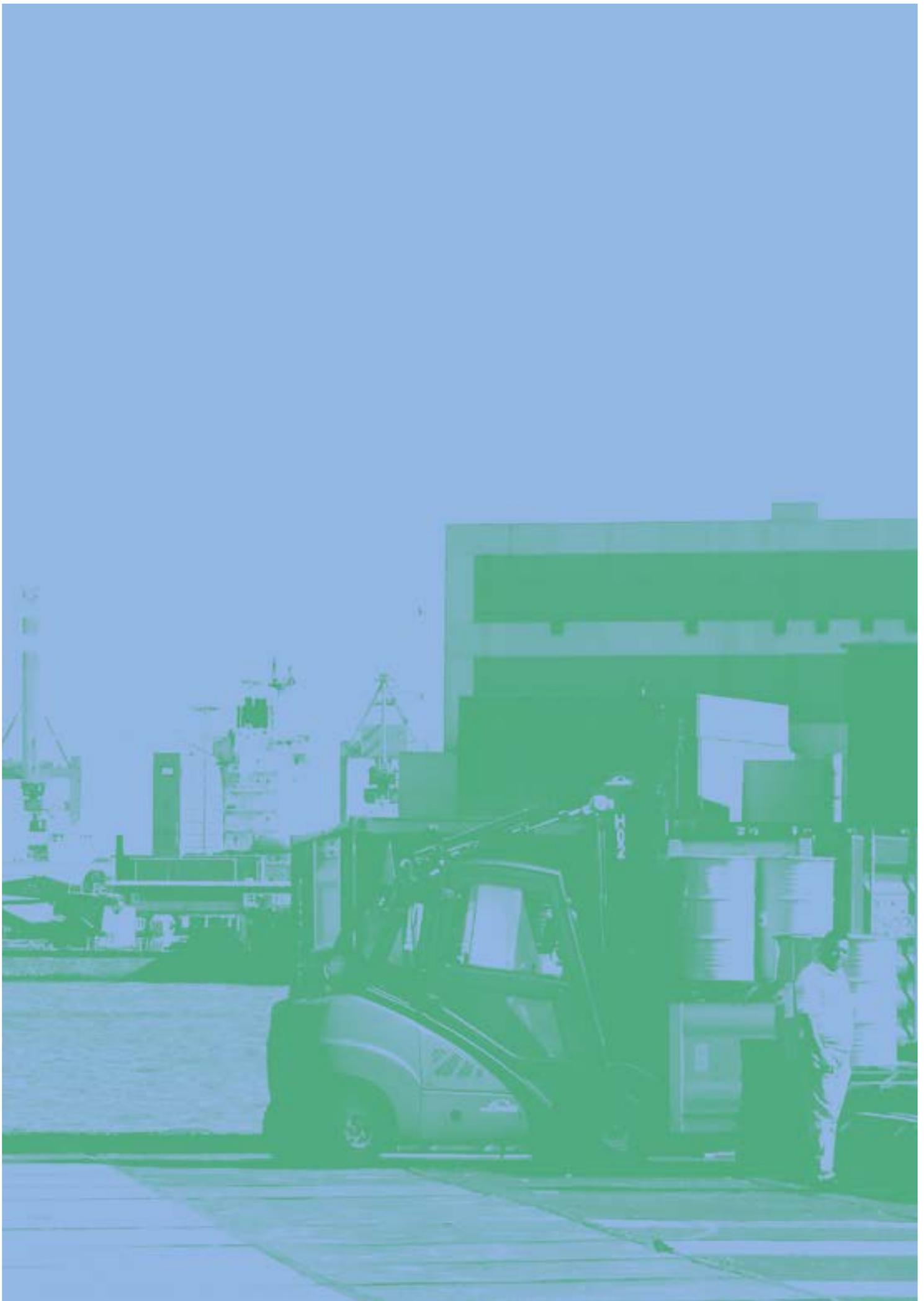
The circular City Port should be seen as a *modus operandi* for testing, reflecting and revisioning. Practices are challenged to develop new typologies, tools, collaborations, covenants... Only by doing and exchanging, we can move towards more circularity.

- The City Port is connected to other scales and should work in a network.

The role and the functioning of the city port is always connected to bigger and smaller scales, it cannot be considered as a stand-alone scale. The city-port needs to be part of a wider strategy, that can define circular territorial development. Clear is the necessity of a scale interrelation in order to constitute a larger system of collaborations.

- For circularity to get started, you need site specific experimental projects and a supporting policy framework

Experimental projects and a supporting policy framework are crucial to enhance circularity. Such projects tend to look for “in-between” places like City Ports, where there is room, and which is positioned close to the networks serving the city. Most of the times, they do require subsidies to erect infrastructure adapted to their operations. And they need specific policies that will consolidate their operations into a different value framework. These combinations of elements come together in certain spaces. These places should be the first seeds inside city ports and the network around the city ports to implement and start-up circularity.



On site at Eilandje 2.0 in Antwerp for the project of 'Innovatieve Stadshaven' © 1010au

The following eight arguments to further circularity want to set the agenda for future research and projects.

- 01 We need a more comprehensive understanding of the many practices and innovations linked to circularity.**
- 02 Port authorities need to rethink their role and business model in light of circularity.**
- 03 To build up a system of circularity, you need to set up different ecosystems of actors**
- 04 The current obstacle of data sharing needs to be overcome to start up a circular strategy using the existing chains.**
- 05 A significant shift in the regulatory framework is crucial in order to facilitate circularity.**
- 06 The programming of infrastructure is essential to support the further development of circularity in city ports.**
- 07 A circular port relies on the existence of differentiated environments to work and thrive.**
- 08 The transition towards more circularity cannot be tackled alone, but coalitions need to be promoted in order to strategize upon this change.**

The following arguments derive from the exploratory research we conducted. This research consisted of a benchmarking analysis, a series of interviews and workshops with relevant stakeholders. The issues and possibilities that came to the foreground could be connected to each other into eight main arguments analyzed, with each some specific items that should be on the agenda.

01 We need a more comprehensive understanding of the many practices and innovations linked to circularity.

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- There are not yet clear definitions of all aspects related to circularity.

There is not one way to be circular. Circularity and circular economy are often perceived solely as the recycling of materials. However, it goes farther than that. Circularity is already happening inside the ports. On each scale many projects and initiatives take place, using and developing different strategies and innovative ways to start-up a more circular process. In order to start up a productive dialogue between the different stakeholders to further circularity, a better understanding of the diverse circularity approaches and of their dominant framings is needed. Circularity can result in very different futures, and we should acknowledge this heterogeneity and the value frameworks sustaining them.

- Circularity asks for innovation, and triggers the development of new skills and jobs.

Our capacity to further circularity will depend on innovations in the provision of more-effective products, processes, services, technologies, or business models. New skills will be developed, and new jobs will be required to adopt them. At the City Port level, understanding this change might help to accelerate the adoption (or modification) of circular processes, and their practical implementation.

- The win-win of circularity is not yet clear to companies.

Currently the benefits of circularity inside businesses are not yet counted inside the business models and plans. To convince the companies to invest in circular innovations and in collaborations, they need to be made aware of the advantages that come with these investments. There should be a clear view on the return of this investment and on the gain on other levels: reduction of energy costs, less production or material costs, creation of new jobs... Implementing circularity inside business models should be seen as a must-do for each company, and not something that has been unwillingly imposed by higher authorities. The beneficial side of circularity should be investigated and shared in order to achieve this shift.

- Circularity needs to be business driven, and not only be a political question.

The primary focus of circular economy is on the systemic redesign of our modern industrial system. This requires a real paradigm shift that cannot be achieved in isolation.

- Everybody is inventing the 'circular wheel' while the questions and challenges linked to circularity are common to many companies, ports and cities.

Knowledge of all the aspects related to circularity is not openly shared. The lack of a platform from where this knowledge could be shared is preventing the system from fully transforming it. Many ports, cities, regions, villages and companies deal with the same issues and possibilities, and some of them know already how to handle them. On the other hand, there isn't a single way to be circular, and this way surely surpasses the mere material recycling to move into a redefined industrial system, operating within planetary boundaries and vigilant of everyone's welfare. The challenge is to share these innovations while staying true to the wide range of circular framings.

Circularity leaves behind a trail of things and performances. All recycling starts in a container and relies on a sequence of meticulous actions. These are at present deemed superfluous. Instead, they could result in a unique set of crafts. Because circularity aims at designing out wastes and closing loops, it needs to be fit with industrial practices that depend on concrete staff and places. The following jobs are part of a research study, focusing around three flows, relevant for M4H: construction, textile and agri-food. Some examples of jobs are presented here. The gate-keeper supervises the traffic and the flows of organic waste, and oversees coalitions and transactions among actors. The clairvoyant keeps overview of the total organic value chain and looks into the future for new opportunities and resources.

In the case of textiles, sorting includes the recognition and accurate placement of material, but sometimes also the removal of accessories such as buttons or zippers. The remover can take up this role. The deconstruction orchestrator organizes the deconstruction of built structures; cares for the sorting, storage and transport of salvaged materials and components.



The clairvoyant



The gate-keeper



The deconstruction orchestrator



The remover

02 Port authorities need to rethink their role and business model in light of circularity.

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- Port authorities need to move beyond their role of landlord.

While port authorities are assigned a landlord role that secure their license to operate, they often provide services that are of strategic character and strongly linked to the financial performance (e.g., return on investment) of the port as such.

Today, the port authority is forced to be more than a landlord, moving away from the old port covenants based on revenues from concessions and tax on throughput and invest in port community systems and in hinterland nodes and links. The port authority needs to become more proactive, adopting a role as facilitator and community-builder. While coordination of the port area on a larger scale, involving corridors, is needed too. This changed role is crucial in order to promote port efficiencies through innovations and new governance forms beneficial to the integration of ports and cities..

- Enhancing circularity in ports requires new business models.

The business model describes the way organizations create, deliver and capture value. When developing the business model ports need to consider both the operations and the environment in which a company exists or will operate. Nowadays, the inflow of cash of ports come from the taxes on cargo flows and the concessions that they give to the companies. With the circular economy transition, port authorities realize they will need new kind of sources. Cargo flows will still be there, but probably in a different volume and handling style than today is the case. While concessions are often focused on the long-term, freedom and space to experiment with start-ups and other pilot circular projects is equally needed. Next to these changed cash inflows, the port authorities are also look for new sources of income, mostly by diversifying their activities and roles, ranging from operator to landlord, conservator, regulator, trade facilitator, cluster leader, regional development agency and entrepreneur.

- The vision of the Port should focus on the long-term, but with a clear build-up of where to start.

Since port authorities are facilitators, they have the power to steer companies in a certain way. With the making of a vision for the Port as a whole, which focuses on the long-term development and evolution, companies know where to invest in light of sustainability and circularity. It is important to note that with the constitution of a vision, there is the need to bridge the gap between the vision itself and the daily operations of the ports and cities. The vision should give the tools to the local actors to translate it into feasible projects and steps forward.

- There is a need for a dialogue between the Port and Public and Private Actors to know and act on new and existing circular initiatives.

Currently, port authorities and the community of port companies are two separate entities, who in many cases do not communicate. This makes it hard to act upon the different initiatives that already take place or want to start up. Port authorities and other actors involved with the Port should find a neutral space or platform where they can freely share their activities, potentialities and issues and which can serve as a common ground where they can collaborate. The port authority could also function more as a facilitator to initiate this dialogue.

'A survey commissioned by the European Sea Ports Organization (ESPO) and including 43 recent terminal awarding cases across Europe showed that environmental issues do not play an important role in terminal awarding processes across European ports.' - Sustainability-Notteboom and Lam-Green concession (2018). Indeed, the main factors for awarding concessions here are throughput and price bid.

'A survey commissioned by the European Sea Ports Organization (ESPO) showed that smaller plot sizes mean a smaller time period or duration of the concession.' - Sustainability-Notteboom and Lam-Green concession (2018).

Criteria considered in the final awarding stage of the terminal

The criterion with a rank value '1' is the criterion with highest importance when awarding a terminal. The lower the rank, the lower the importance

- Rank 1
- Rank 2
- Rank 3
- Rank 4 or 5
- Rank 6, 7 or 8
- Criterion is not considered

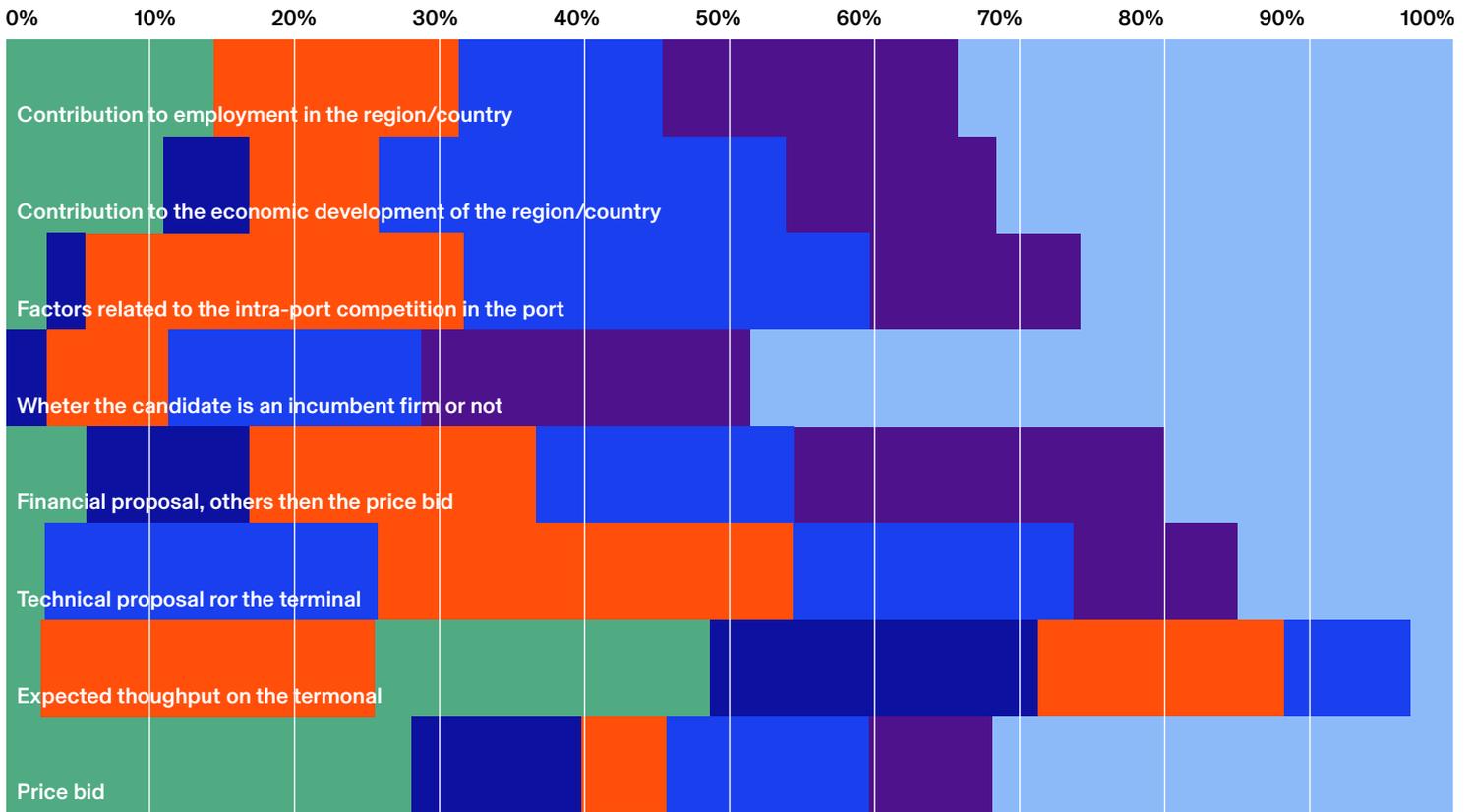
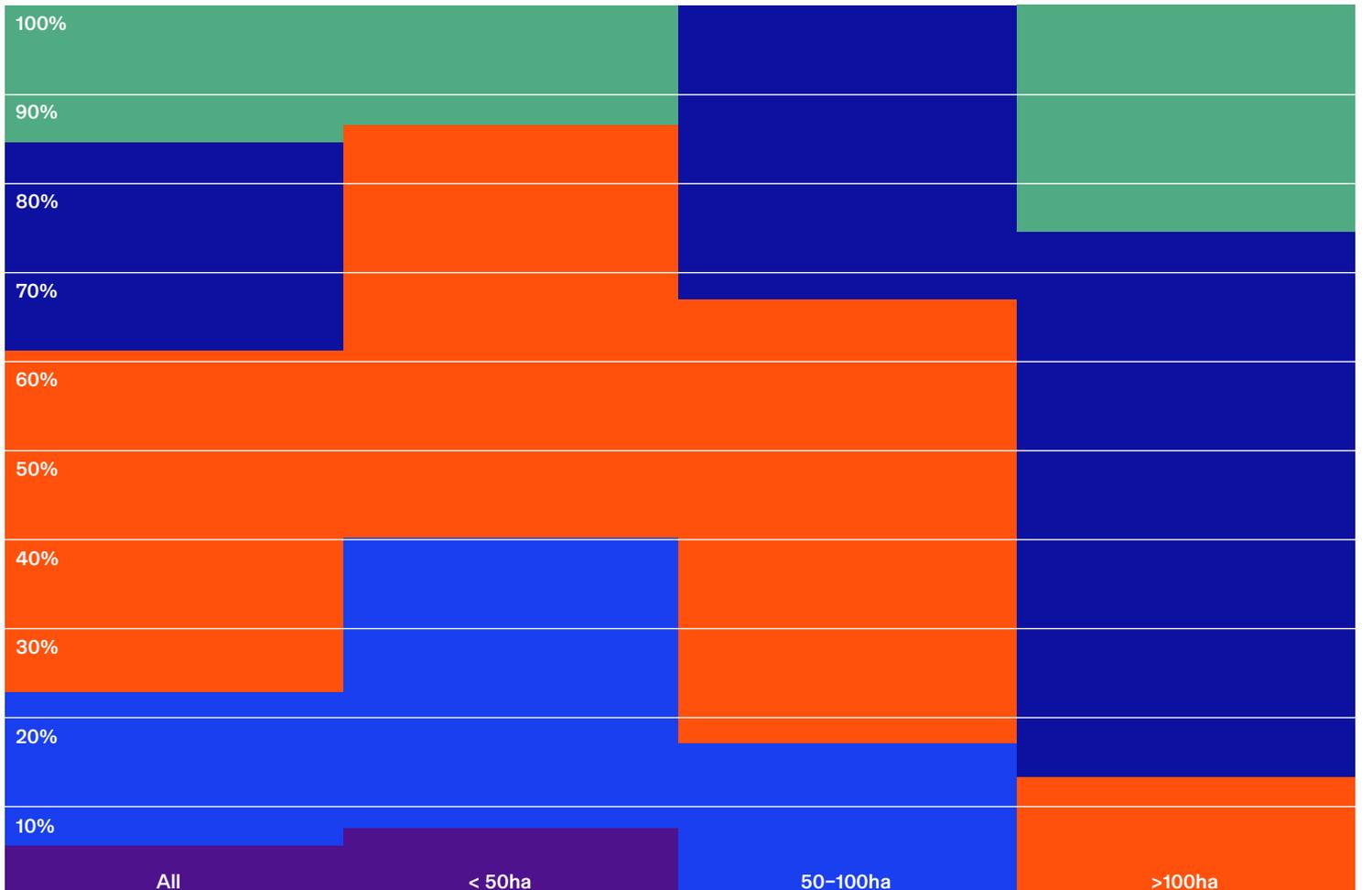


Fig. 1 Survey results on the duration of terminal award

- +40
- 31-40
- 21-30
- 11-20
- -10



Share in total number of projects

Size of the terminal concession (in hectare)

03 To build up a system of circularity, you need to set up different ecosystems of actors.

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- In each (City) Port there should be space for both new circular actors and for old actors who will reinvent themselves.

Going towards circularity will ask involved actors to change in two ways: first, circularity asks for different technologies, jobs, skills and ideas and thus new actors who are willing to start-up new initiatives, experimenting towards more and better circularity. Secondly, there are also many existing actors, who see themselves in need for or who are pushed towards the circular transition. To reinvent these 'old' industries, needs as well new kind of processes, activities, technologies, jobs and skills, but looking mostly internally to fit these inside the existing dynamics. Both ways of changing ask for different kinds of support, experimentation space, vision, infrastructure... It is possible to estimate that the balance between these actors would be 30% of new actors initiating new practices and 70% of existing actors in need to reinvent themselves.

- Existing ecosystems should be mapped, gathering the local knowledge on its functioning.

There are already certain ecosystems which are circular, functioning in an efficient way. It is important that these systems are mapped and comprehended in order to be able to act on them. Having a profound knowledge of what is already happening locally, of which are the dynamics taking place, is important in order to see the missing links to become more circular and to learn from already existing practices that are already enhancing circularity in different and innovative ways.

- Every port should invest in test-sites, where experiments can take place, and which attracts certain (missing) actors.

Certain spaces for experimentation need to be foreseen in ports. These spaces for testing should handle a differentiated system of concessions and regulations in order to attract the missing actors or to support the existing ones. Concessions are often too strict and envision a long-term commitment of a company. Regulations are often not flexible enough to facilitate experiments. In order to invest in test-sites, concessions and regulations need to be based on an alternative framework which makes the base to boost experiment.

- The clustering of certain actors should be only in regard of enhancing circularity.

The spaces which are still free inside port and city areas should be filled in according to a circular logic. The clustering of actors on these spaces has to be in regard of what activities are already there – and which will stay – and what activities the port authority wants to attract, based on their vision. Different scenarios could occur. First, there can be a vacant area, which gives a lot of space for different testing sites and where new companies could position themselves. Secondly, it can be a key production company, where related experimentation sites are clustered around this main activity. This clustering of activities and actors should focus on the benefits that each of them can achieve: exchange of materials and side products, specific shared regulations and concessions, collaborations and knowledge exchange.

- It is necessary to look beyond the port-centric supply chains, understanding the different links and dependencies between actors

The challenge is that many supply chains are not port-centric, so the ability of port authorities to act as research partners will be hindered if terminal managers, shipping lines and traders are unwilling to share their data. Transition to circularity depends on this broader knowledge on actor's interrelation and interdependency.

03 40 recommendations to accelerate the transition to circular economy

by SERV

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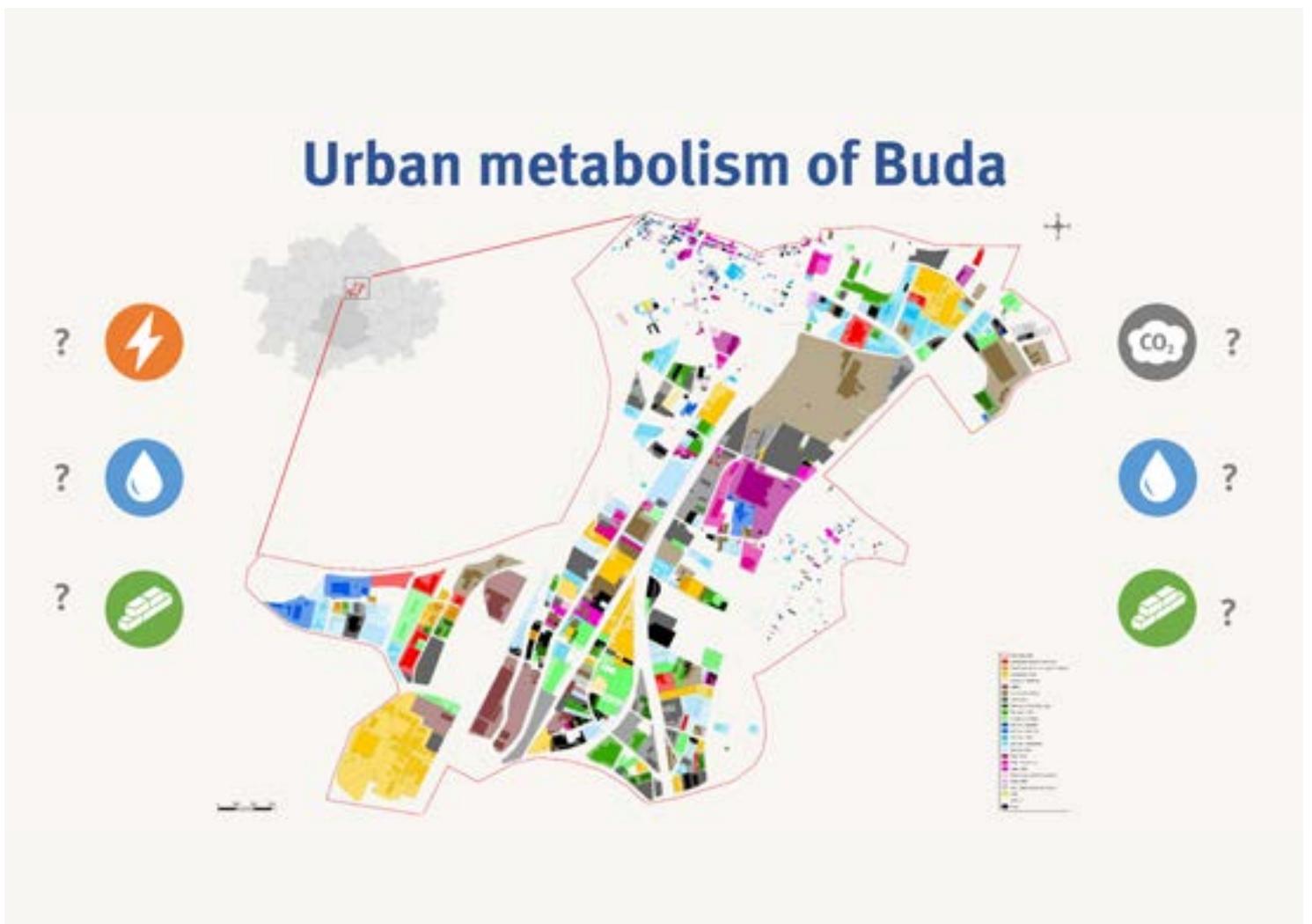
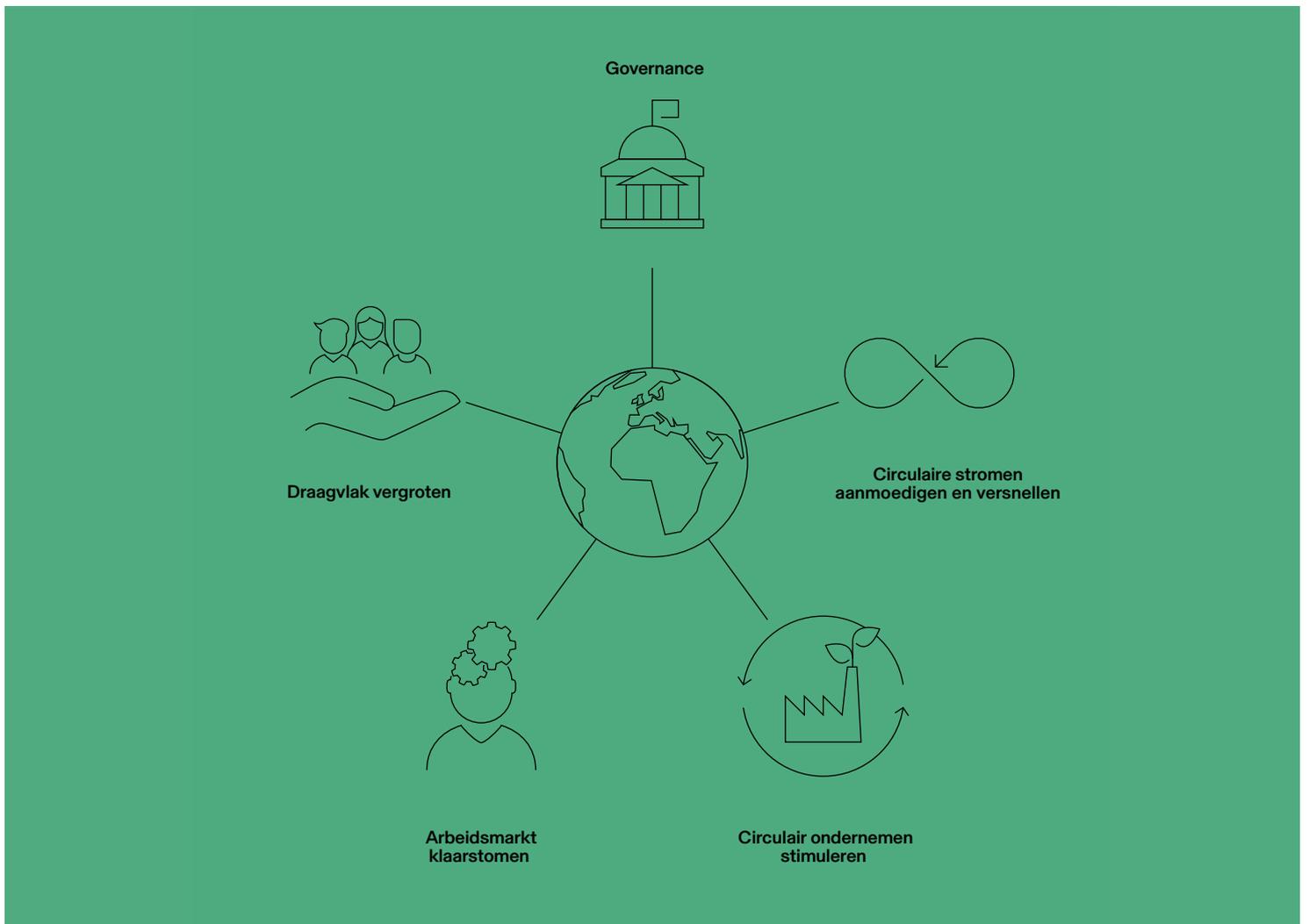
The Social and Economic Council of Flanders (SERV) brings Flemish employers and employees together for consultation and advice on a wide range of topics. In order to accelerate the transition to circular economy, the Flemish social partners have drawn up a policy agenda in the SERV with 40 concrete recommendations. These are grouped according to four themes:

Encourage and accelerate circular flows,
Stimulate circular enterprises,
Prepare the labor market,
Increase support.

03 Urban metabolism as a tool to activate circular economy in the BUDA area

By ULB, Ecole Polytechnique de Bruxelles, BATir, OVAM

Buda, a part of the Port of Brussels, extends over 2 regions and 3 municipalities, each with their own planning framework and ambitions. Due to this political fragmentation, less attention was given to this area and was considered too long as a backside of the city. However, there are great opportunities in the existing activities and the area to create an attractive, economically resilient and circular place. Under T.OP Noordrand, actors are sitting around the table, working towards optimization through concrete projects and discussion tables. A mapping of these existing actors and their activities has been done as a base to investigate the territorial circular area development, as visible on the next page.



04 The current obstacle of data sharing needs to be overcome to start up a circular strategy using the existing chains.

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- There is an urgent call for the sharing of specific data, that could allow us to move towards new ways of valorizing underused flows and to build up new circular coalitions.

The more knowledge is available about certain material flows, collaboration and processes, the easier will be to be integrated in certain chains in order to make it more circular. It is important to note that the sharing of data should inform on different aspects of the flows. The data has to mention the quantitative aspect of the flow and the physical pathway it follows: how many materials flows from which location to which location and in which are the means used to move it? Next to this, initiatives who handle these flows should also mention the skills and technical innovation that are required to manage the flow and the certain knowledge that comes with it. Thus, data sharing should be both quantitative and qualitative.

- The sharing of data calls for a mental shift at the company level to surpass the competition between them.

Company competition is not enhancing collaboration and the sharing of data between different actors located in the same port area. Therefore, it is crucial to trigger a mental shift, in order to build up a better collaboration. Surpassing the company's competition by providing a neutral platform or in-between figure is only one part of the solution.

- Next to the data of economical process, the data of the cities' flows is also important, with the public authorities who have the power to initiate this process.

While circularity is often perceived as dealing with the material flows of industries, the flows of the city are not yet fully valued. They are, however, a source of specific materials of which the circular economy can profit. Collecting the information on these flows and finding ways to incorporate it in existing or new circular ecosystems, could play a crucial role in enhancing circularity. The city port could be the strategic place where these ecosystems, which are often already localized in the industrial zone, can integrate with these new flows and where they can be managed, used and recycled.

- There should be an understanding of the right scale, crossing different borders, in which the sharing of data is bringing benefit to all the parties involved.

Borders in all kind are often limiting the sharing of data and the movement of materials flows and consequently, the collaboration between different parties. Waste which crosses the border is already a difficult topic to incorporate in the policies. A more flexible stance towards cross border collaborations is needed. Different regions should be able to work together, both on the political level, and at the companies level, enhancing the exchange of flows and data.

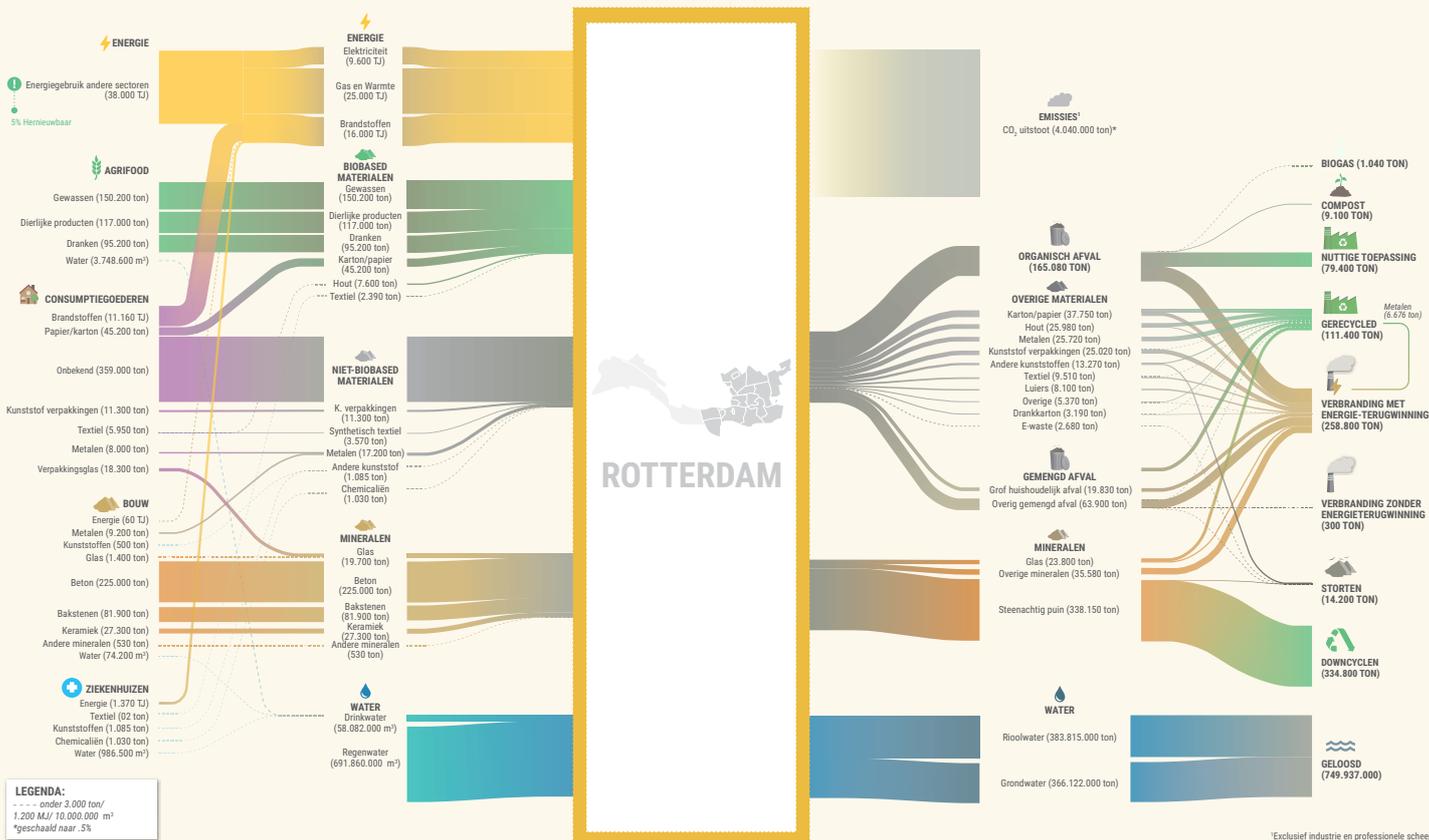
- Efficient and valuable data sharing calls for the constitution of a new kind of 'in-between' figure, who is both matchmaker as a neutral person of trust.

A matchmaker could have two pivotal roles: the first role is to be a neutral body, which can surpass the competition issue between companies, by being a trustful 'in-between' person. The second role is to make the known data valuable and efficient: the matchmaker should look for the best circular collaborations, bringing these initiatives at the table, aiming to make the connection available.

Quantified studies on the metabolism of urban areas give valuable insights. This study of Metabolic and Circle Economy is one of them: four flows or sectors have been chosen for its environmental impact and potential for job creation (construction, agri-food, healthcare and consumption goods). Beside the quantitative research, a collaborative session was done with companies and stakeholders from each sector. Here, possible projects were discussed for their feasibility and benefit-cost calculation were made. However, the challenge remains; how to give access to data, that allows actors to move towards more circularity?

This flow diagram shows the interdependence of companies and the extent of their local roots. This approach has a twofold advantage: to identify the potential of territorial development, and to anticipate the impacts of changes on economic markets. Thus, it supports political and economic decisions by representing simulations of impacts on local industrial ecosystems. And it also makes possible to visualize at a glance the opportunities to be seized in a territory and to see Dunkirk as a favorable breeding ground. This prospective tool encourages the development of new subsidiaries such as industrial ecology.

OVERZICHT VAN STOFSTROMEN DOOR ROTTERDAM 2015



05 A significant shift in the regulatory framework is crucial in order to facilitate circularity.

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- To enhance circularity, a certain degree of flexibility regarding planning tools is required.

Transition toward a more circular functioning of the industrial systems of the (city) Ports requires spatial flexibility, in order to give the freedom to companies at the local level to experiment and find their own way to build up a new circular system. Therefore, the right planning tools should be in use, giving differentiated permission in relation with actors in transition and new actors. There is the need to develop tools that are allowing innovation and diversification to take place, that are letting experimentation happen at the local level, initiating processes of transition, integrating new functions, new actors and new collaborations.

- The definition of concessions has to change into a tailor-made *modus operandi*.

The standardized concession models taking place in many Ports, is limiting the evolution toward a more circular system. In this phase of transition, and within the future vision of a more circular functioning of ports, concessions are key in order to strategize upon circular economy. The diversification of concessions could represent a strategic tool, enhancing a comprehensive spatial strategy. Some of the port authority already stated a “monitoring” phase in order to understand the specific needs that specific actors and productions have. The concession system has to be open to the growing need of companies to experiment and to change, taking into account also the close proximity to the city, which represent a key aspect in the building up of the functioning strategy of each port.

- Since legislation on circularity is often founded on a higher level than the region, an institution on supra-regional level should be formed in order to connect the different scales and to cross all kinds of borders.

Port and city authorities and companies have to deal often with legislation which is formed on a higher level and on which they don't have any grip. From this prospective, it is possible to highlight a gap between the legislative framework at the higher level about circularity, and the actions and decision-making process at the local level. The supra-regional institutions could represent the in-between figure that is coordinating the exchange between the local and the broader level, compiling knowledge available on companies and economic actors, fostering synergies on specific location or regarding flows, having the role of a neutral match maker.

- A shared vision needs to be build up between the different parties, in which their own voices are integrated in the common values and objectives.

Opening a dialogue between parties could be a crucial first step to start collaborations, that's in this exact moment is lacking especially at the local level. Building up exchanges can represent a way in which different voice can be listened, constituting a shared vision and objectives. This could be an attempt to start to build a common ground in which priorities of different parties of different level come together, integrating them in order to build a common strategy for a more circular system in order to lead also the decision-making process.

05 Providing a framework and space for entrepreneurs to test, develop and launch new technologies

Prodock in Amsterdam

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Prodock is the innovation hub of the Amsterdam port where entrepreneurs, both growing and established, can develop and roll out their products and processes. Prodock offers 4000m² industrial workshop, office and outdoor space where, in a 'plug & play' way, can be rented. The port of Amsterdam is rather isolated from the city and industrial in scale and activities... Offering space and facilities for testing attracts new kinds of entrepreneurs that can foster new synergies and symbiosis between port and city.

05 Environmental legislation space

Port of Amsterdam

A study has been conducted on business sites, along the West-as of the Amsterdam region, suitable and necessary for a circular economy. Herein, the port is of strategic importance: land is scarce and the economies (of the port) are shifting. Material flows, crossing the region (also coming from international networks), can be processed inside the area of the port, where certain infrastructure is already there. Now, because of new dynamics inside the port area (ex. Prodock), a differentiation of various kind of zones, related to the right environmental space, is on the agenda. But how does it relate to the ongoing urbanization (of the port)?



Legenda Milieucategoriën

- Milieucategorie 2
- Milieucategorie 3
- Milieucategorie 4-
- Milieucategorie 4+
- Milieucategorie 5
- Milieucategorie 6
- Onbekend



Vb.

Milieucategorie 4:
bierbrouwerij,
betonfabriek, gipsfabriek.

Milieucategorie 5:
cementfabriek,
vervaardiging
industriegas, ruwijzer en
staalfabriek.

Milieucategorie 6:
olieraffinaderij,
koolelektrodenfabriek,
ruwijzer- en staalfabriek.

0 2,5 5 7,5 10km

06 The programming of infrastructure is essential to support the further development of circularity in city ports.

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- The transition towards circular ports asks for a different kind of logistic modality, which calls for specific infrastructure.

The notion that logistics will disappear, when the economy evolves from global to circular, is not true. A different kind of logistics will happen, which is more focussed on reducing transport needs, travelled distances and intermediaries, enhancing the usage of local flows, last-mile logistics and return logistics. It is about closing different kind of loops starting from the local level, and strategizing upon different scale. These dynamics requires new ways of looking at logistic modality, intermodal transportation, transforming the infrastructure integrating them to an economical context in transition.

- Experimenting with a combined pallet of services should provide specific facilities related to certain needs.

Physical infrastructure on its own are not enough to support circular system at the local level. Therefore, it is crucial to strategize upon the interrelation between infrastructure and a series of service, necessary to accompany existing actors in transition together with the attraction of new innovative actors. It is important to strategize toward a more comprehensive set of service, that can represent a way to give growth opportunity; flexible permits in order to experiment at the local level; tools to implement the network of actors busy on the same kind of production or finding complementarity among them. The port authority in this scenario is playing the role of an enabler for circular economy, trying to give a set of differentiated services and facilities to build up a circular system

- Investments in the reuse of old infrastructure should be encouraged to shift to a more sustainable and multimodal way.

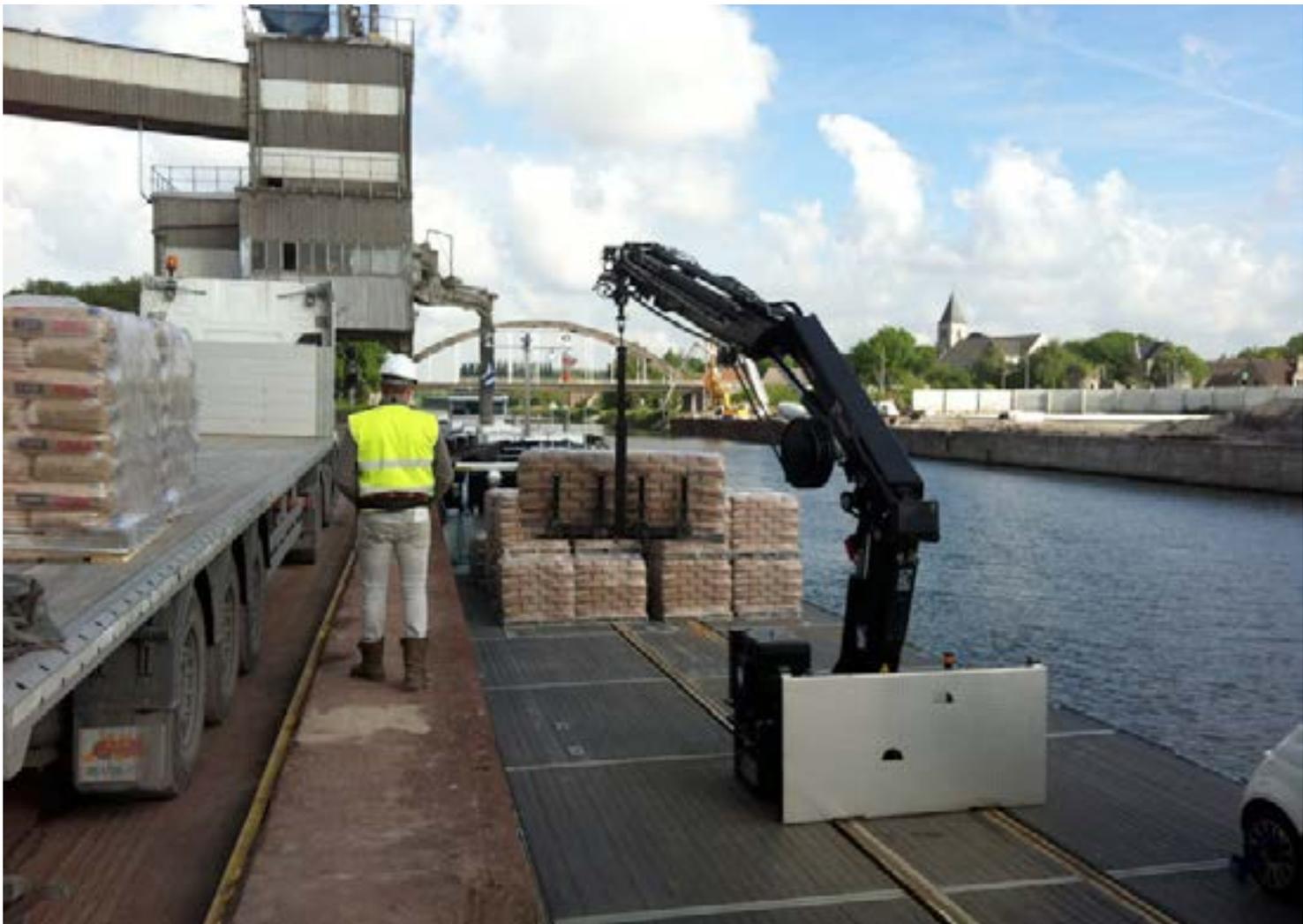
The existing infrastructure mostly based on fossil fuel driven economy, are representing an opportunity to start a shift toward a more circular system in ports. the asset of a series of infrastructure already present in certain areas, create the opportunity to attract and sustain new innovative actors, starting a clustering logic, in order to activate local circular dynamics. Building a series of shared infrastructure based on what is already there, can somehow, enhance dynamics of collaboration and interrelation between different economic parties.

- Programming the infrastructure calls for a vision on the hardware and software: the infrastructure itself and the skills needed to handle it.

In order to envision the infrastructure that could be possibly enhance the circular economy at the (City) Port level, is necessary to widen up the concept of what the infrastructure are and should serve. Therefore, they are a combination of policies, social contract, tenders and the physical service. In order to support circularity, it is necessary to constitute hard infrastructure and soft infrastructure, and, at the same time, crucial is the programming of this infrastructure in order to build a series of facilities supporting the transition to circularity, linking all the parts involved, from the company to the policy level.

The Port Feeder Barge can be considered a green logistic innovation, in fact this boat typology will make the internal container logistics of the Port of Hamburg more efficient and at the same time significantly more climate-friendly. This means of transportation is an alternative through water, for the movements of the containers between the companies and the port, that usually are carried out by trucks. In this sense, this boat can act as a floating terminal, for the bigger cargo ships that are not able to enter in the port, and in the same time, it can work as vessels for the inland water ways, in order to substitute all transportation by trucks.

This shipping company has designed and built these boats, suitable for palletized cargoes. Traditional inland vessels are not suitable for big bags and pallets. Thanks to the crane on the boat, there is no need for large infrastructure on the quay or the cargo can be driven directly on deck with a forklift (due to its design as a catamaran, it doesn't tip). In this respect the ship can handle a cargo of 300 tons or 200 pallets. With its relatively limited draught is also very suitable for small waterways.



07 A circular port relies on the existence of differentiated environments to work and thrive.

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- Envisioning a new circular landscape, characterized by differentiated context of environmental spaces, urbanity, exchanges and experimentation.

Global value chains transform within circularity. They gather resources, transform them in parts and products, distribute finished goods to markets, and finally make these resources available again through various recycling and reuse strategies. The major consequence of this evolution is that supply chain management and manufacturing become closely embedded, and that access to a wide pool of suppliers and customers is the new source of competitive advantage (against cheap input costs). This increased importance of accessibility forces ports to better integrate in their hinterlands, accounting for the diversity of environments that exist in them.

- Heading from a patchwork to a network approach

Even the most efficient port will fail to attract business if other links in the supply chain to which it belongs are not themselves performing well. Additionally, efficiency without scale no longer seems to provide an entry card to direct global trade for smaller ports. Port corridors seem to partially offset the scale effect, allowing efficient smaller ports to co-exist alongside large global gateways and eventually be integrated within their hinterland. Ports not only develop new products and services along those corridors, but the tendency is also to extend the geographic space within which these activities take place: from the local level (the port area) to the regional level (inland networks) and eventually to the global level, keeping and maximizing value within global, regional, national or supply chains. This brings port authorities to invest in inland terminals and rail connections, setting up intermodal services, and developing information platforms that facilitate inland transport.

- The diversity of environments along port corridors works as an asset to further circularity

Characteristic port environments populate those corridors, positioning them differently in the face of circular transition. Certain circular activities require an industrial context because of the hazards or nuisances involved, as well as the scale of operations, while other circular activities profit rather from public transport accessibility and a certain degree of environmental laxity, or yet others could be mixed

with functions like offices and could afford the higher rents therein implied. Inside the port area itself, different physical and functional configurations are still possible.

- The need to integrate port and urban planning

Port-city coordination mechanisms should be created to further the integration between cities and ports in light of circularity. Both city and port are dynamic complex systems, endowed with a physical structure that combines infrastructures, facilities, installations into spatial, social and programmatic assemblages. On one hand, a more flexible land-management combined with a specialized environmental legislation in port areas appears to keep up with the need of scalability and growth. However, only when this approach is combined with a concession policy following up on a spatial strategy profits are truly reaped for both city and port. Urban planning, on the other hand, can guide investments towards the construction of transport infrastructure, fostering the use of waterways and increasing intermodality, It can also zone areas for economic development, provide the right facilities and therefore strengthen industrial agglomeration, stimulate the creation of clusters, and attract both investments and networks of collaboration.

- The circular transition will not be constrained to the port itself but will follow corridors and straddle (political) borders.

The transition towards circularity in some supply chains goes hand-in-hand with a geographical scale shift, away from global and towards regional supply chains. Important differences exist too between supply chains that handle the same type of commodities: some fruit supply chains have a clear international orientation, while others may be regionally oriented, and the share of recycled textiles differs not only between products but also within each product market. As recycling rates and resource efficiency increase, collection and processing costs of waste are reduced. All of this leads to a huge growth in the number of companies focused on creating value through advancing the circularity of supply chains, companies that locate on diverse locations along port corridors in function of their physical and organizational demands. It seems relevant to envision a wider strategy at the corridor scale, aligning the diverse regulation frameworks and facilitating exchange among the stakeholders beyond the port.

07 Spatial framework as underlayer for urban development, towards an innovative makers economy

M4H, Rotterdam

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Inside this 180ha large area port-related activities that have marked the area so strongly (fruitport) are gradually moving to other locations further on in the industrial port. In the wake of this transition, smaller, more innovative makers have settled here because of cheap rental costs, low noise or odor nuisance requirements, good accessibility, ... In this plan, different zones for companies are drawn, where a mix of living-working is reserved for only certain areas, leaving room for larger companies to stay or settle.

07 Kanaalkant Area Manager

Albert Canal, Antwerp

In order to become more circular, a good understanding of what is there is crucial to establish new synergies and symbiosis. Trust, sharing information, and talking the same language (business-case check-ups) can help in detecting willing actors, defining next steps and managing projects towards more symbiosis between housing and production and more water-bound activities. The area manager is positioned between policy and the operational side of the companies. On the border between government and companies, he encourages the right organizations to start projects.



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- A neutral ground should be constituted in which dialogue and discussion could take place in order to learn from each other, to envision a common strategy and to tackle common problems together.

The pathway that goes toward circularity is not an easy one, and it consists in a series of changes and transitions that are complex. Relevant is, on one hand, the fact that many parties in transition are facing the same issue, on the other, the fact that this lesson learned could be shared and constituting an important body of knowledge. In this sense, the constitution of a neutral ground to envision common strategy could help to build up a task force that works together toward common objective.

- Collaboration needs to happen at different scales at with different parties.

In this process of changes, many different parties need to play a role. The transition toward circularity can take place only if there is a movement from different directions, having as common ground the same goal. This means that collaboration it is important at the local level, as first step, but need to be furthered at different levels.

- A common, open agenda should be built up to steer towards a unified vision to strategize upon, between port and city, port and hinterland, and port to port.

Crucial is to set-up an open agenda in order to listen at the different voices and having a shared vision and strategies toward collaboration and circular economy. Fundamental is to build a vision that is bridging the port and the city, trying to tackle common issue; moreover, linking hinterland and the port in order to enhance collaboration activate complementary strategies; envisioning a common open agenda between different ports, trying to overcome competitions, and look at how together circular economy can be explored and activated.

The former port area has been transacted to the City of Antwerp, that will develop and restructure the area. Part of 't' Eilandje', the second phase will not allow housing development, but focuses on new urban and port related economies. In this context a charter was proposed, as the framework of this new collaborations between companies, authorities and 3rd parties like OVAM, federations, knowledge institutes, economical networks... The charter (as idea) will form a guideline for the development of the city port area and constitutes the common vision between these parties.

08 West practice: making the link between people in the neighborhood and job demands in the city port

M4H and Bospolder-Tussendijk, Rotterdam

West Practice is a network of cooperating local organizations that offer programs for talent development and education for 21st century skills, with the goal to strengthen the socio-economic resilience of its inhabitants. Beside educating, mapping and bringing actors together (both from port and the neighborhood) they set up a neighborhood investment fund, positioning themselves on the cross-point between government and companies.

INTENTIEOVEREENKOMST → PROJECTVEHIKEL



STAD
HAVEN
VLAAMSE WATERWEG



PROGRAMMAREGIE

- KOPELORGANISATIES**
 - VLAAD
 - POM
 - OVAM
- OPLEIDINGSINSTELLINGEN**
 - LA
 - ZEEVAARTSCHOOL
 - HOGESCHOOL ANTWERPEN
- KWALITEITSCONTROLE**
 - GO4CIRCLE (vzw)
 - MOBIEL 21 (crow)
- EIGENAARS + CONCESSIEHOUDERS**
 - VAN WELLEN
 - HYDREX



GEBIEDSREGIE

DAGELIJKS BEHEER

ACTIES



PILOOTPROJECTEN

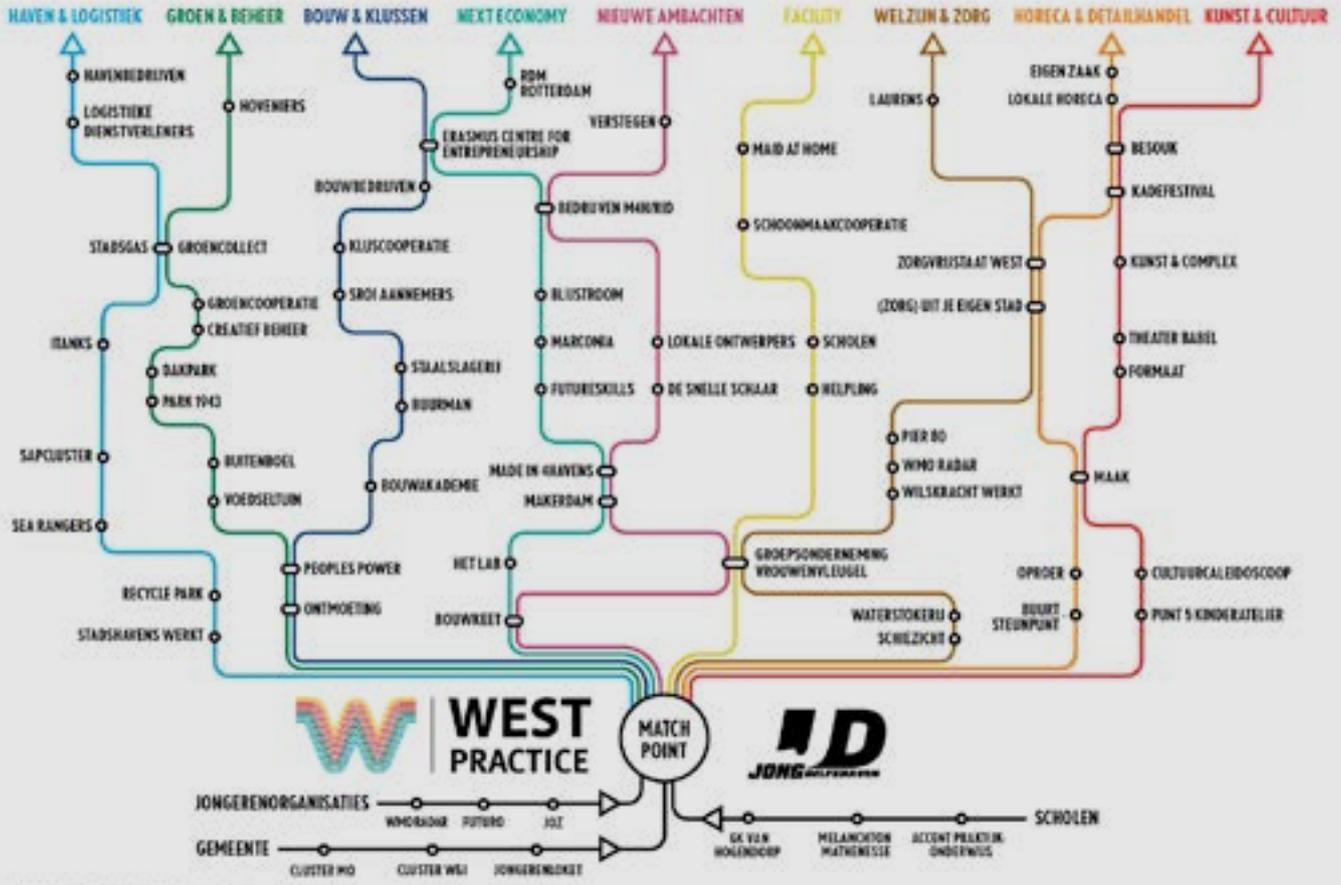


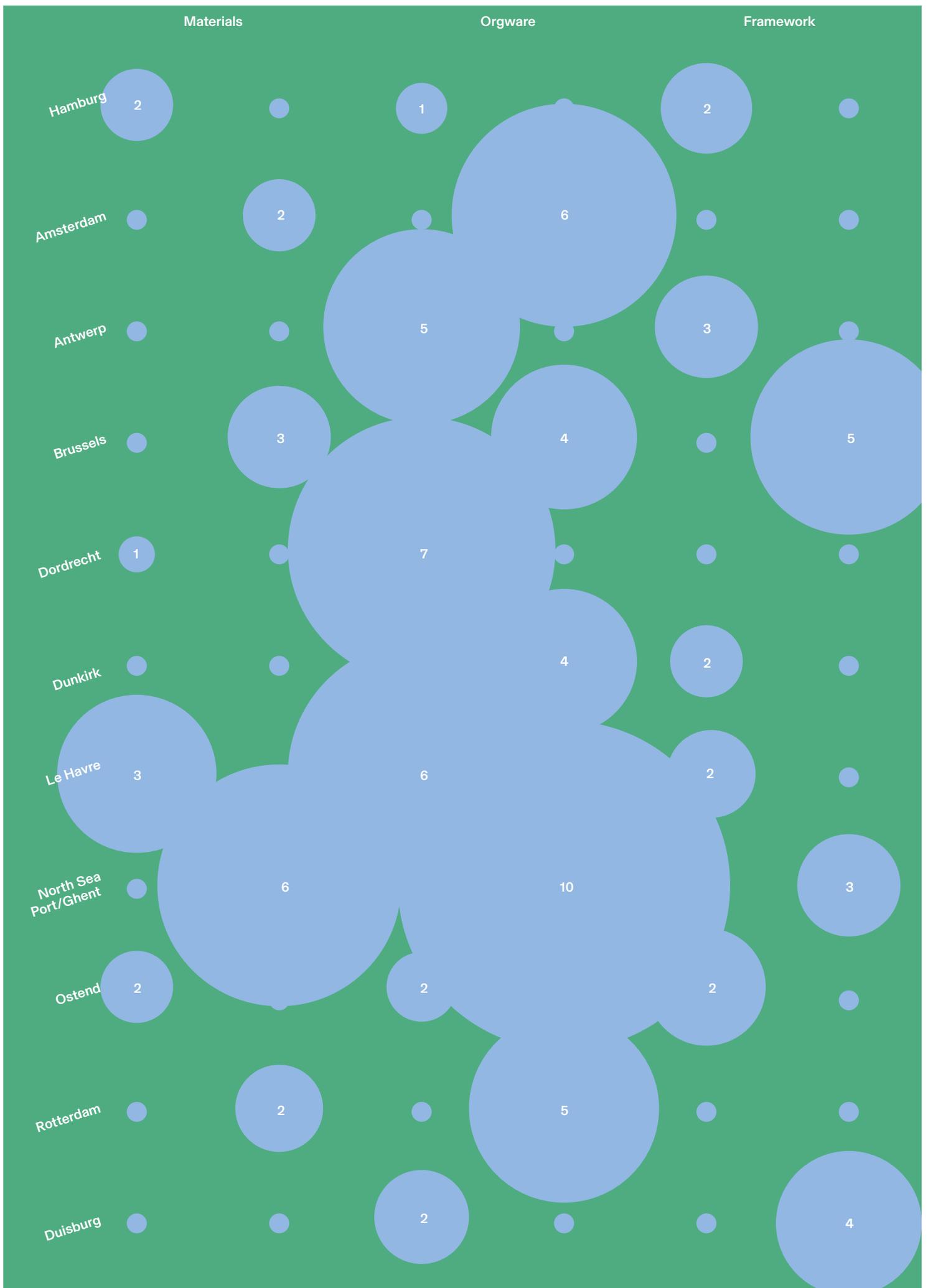
STUDIES



OOSTERWIEL

NIEUWE ROUTES NAAR WERK IN ROTTERDAM-WEST





Scheme synthesizing the benchmarking work on the 11 ports, putting them in relation with the analyzed practices and their activities
 © AWB and 1010au

Looking at the city port as a starting point for circularity is vital.

While wrapping this explorative trajectory, the next steps of working on circular ports were envisioned. With making the synthesis and workbook of the 'Circular City Ports trajectory', the collected material and knowledge is compiled and shared with all interested parties. They both serve as documents where the lessons learned are presented and where the different stakeholders can envision what they mean to each other. In short, the synthesis and workbook want both to build up capacity and start a community with the different stakeholders, and hopefully a next round of projects can be started with this new knowledge. In that way, we come one step closer to the real organization and implementation of circular ports.

In conclusion, it is possible to state that there is not one single way of being circular, and transition to circularity has a strong impact to city ports. It is clear that every port is facing different challenges, opportunities and various ambitions, meaning that they are confronted with diverse circularity choices or pathways to embrace. The transition toward circularity affects the way industrial and logistical systems work within each port, this means that it is not possible to have a singular strategy toward

circular economy, but it depends on the identity, the ambitions and the available means that each port has.

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Therefore, the specific circular pathway undertaken by each port, constitute various ways to start circular actions at local level, envisioning the ports as a series of different milieus building up a specific functioning, having at the same time a strong interrelation one to another.



Image: Heros Sluiskil BV, © AWB



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Circular Flanders/OVAM

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