Interreg North-West Europe
Co-funded by the European Union

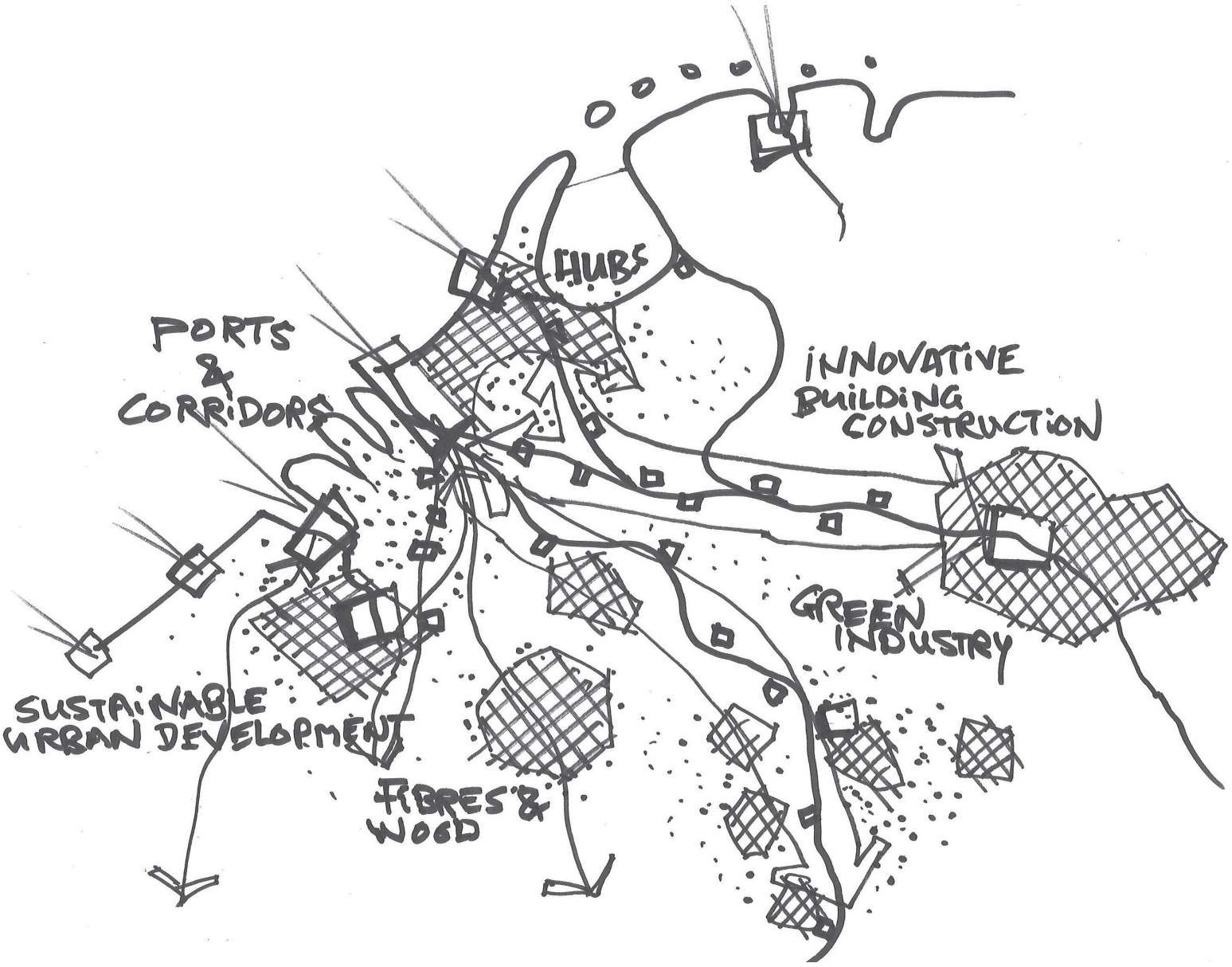
ASSET

BVR Adviseurs

ASSET WORKSHOPS

SYNTHESIS REPORT Activity 1.5

January 2025



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LESSONS LEARNED

We are very proud of all the ASSET workshops that have been organized, as every partner put much effort in the organisation. The general goals of the workshops were to establish a common understanding, build a network, exchange ideas and solutions and to take the first steps toward a circular strategy. The workshops focused on joint fact-finding, sketching and discussions. The key message of all the workshops was that to effectively scale up bio-based, reuse, and circular industrial ecosystems, it is essential to achieve critical mass.

What is the Eurodelta?
The Eurodelta is a natural system characterized by higher grounds, sands, clay, water systems, and sea entrances, with a layer of cities connected by rivers and waterways. The maps display the different urban regions within the Eurodelta, which form the arenas of the Eurodelta's Daily Urban Systems. TenT networks, including railroads, highways and waterways, are crucial parts of this system. The Eurodelta is by this way linked to key corridors like the North Sea-Baltic and Rhine-Alpine, creating a cluster of infrastructure that supports the optimization of this system and the integration of the circular built environment agenda with TenT.

Eurodelta Governance
Within the Eurodelta 2 million new homes need to be build by 2050 and another 20 million need to be renovated in order to reach the European target in terms of Climate Neutrality. If we want to build and renovate these houses with circular materials, the 'green industry' needs to scale up because the nowadays niche market is unable to produce enough against acceptable prices. Therefore governance is required. This governance could be organized bottom up.

For example certain sectors like steel, concrete and raw materials already have a network within the Eurodelta. A political focus on these collaborations might help the network to expand. Already other examples of existing cross-border collaborations with political dimensions are the Benelux and Nordrhein-Westfalen. Collaboration at the Eurodelta scale is necessary to scale up the circular market. Top down legislations and a clear agenda for the whole of the EU could encourage circular building practices. This approach allows for scaling up on a city and regional level, fostering collaboration to accelerate knowledge and best practices. To realize all of this within the existing living environment, a different construction practice is needed.
At a smaller scale it is important to involve citizens and other key actors. A multistakeholder perspective is in that case essential. A different scale asks for a different type of collaboration.

Hubs
Within the circular economy, setting up various types of hubs is essential. Insights from workshops and accompanying lectures have led to several conclusions regarding their implementation. For example the space that is needed for a smelly, hazardous or noisy industrial site ranges from 10,000 to 100,000 m^2. Circular business sites, like material centres and wood parks, should be located close to cities and have a surface area between 1,000 m^2 and 14,000 m^2. Harvesting spaces, like urban mining and arable land, are crucial for the circular built environment. Therefore they need stimulation, for example by enforcing that every year 2-4% of Dutch arable land is used for the growing of crops that can be used to make biobased materials. Not only the size of the hub is important, but also the proximity to its raw materials. A radius of 20 km is ideal for small industries, 60 km for specialized industries and 180 km for large industrial clusters.

Space
Space for circularity is needed, especially for the scaling up of circular initiatives (this requires also larger materials flows). Depending on the type of circular hub this space could be inside the city (more expensive, but closer to projects) or outside the city (less expensive, but further away from projects). However, circularity should have a place in the city, it should be showcased

proudly. The space should be designed for adaptability and modularity, allowing for modifications as needed. However, it is crucial that its core identity remains consistent over a specific period.

Circular Built Environment
A circular built environment adheres to the circular principles of the R-ladder and the four strategies (narrow, slow, close, and substitute). The environment we strive for is water-resilient with valuable soil quality and abundant green spaces, The mobility system is sustainable and facilitates healthy choices such as walking and cycling. Energy-wise, it is sustainable and resilient, using renewable sources and generating energy. The buildings are well insulated, modular, and designed to be disassembled, using bio-based materials, with recycled concrete and steel where necessary. The use of materials and mass in buildings and outdoor spaces is minimized. There is space for repair, reuse, and the sharing economy. Waste streams are separated at the source and reused as locally as possible, with proximity as a guiding principle. Material passports are properly managed. Construction and water management are carried out efficiently via hubs and low-emission transportation. This is facilitated by clustered spaces for biobased and re-use (manufacturing) industries, as well as recycling industries, with the right infrastructure, supply, and demand conditions. Both city and countryside serve as harvesting spaces. The market is large enough to support viable business cases. A circular built environment relies on sustainable logistics for biobased and modular products, as well as logistics for reuse.
Circular construction involves designing, utilizing, and repurposing buildings, materials, and infrastructure in a manner that conserves natural resources, minimizes environmental pollution, and preserves ecosystems. It involves building in an economically responsible way that contributes to the well-being of both humans and animals, now and in the future. Waterways or water transportation could be given piority at building projects, as many materials arrive via the harbours, and smarter construction in Amsterdam could require, on top of the existing harbor, new water related industrial areas along the water. Circular goals also have important spatial implications. Flexibility is needed to provide space for the circular economy as business ecosystems. Additionally, this requires supportive legislation and a change in the behaviour of both consumers and producers. Trust between buyers and suppliers in (industrial) symbioses will become increasingly important. Mass adoption is essential to reduce the cost of the desired circular built environment and to achieve the set ambitions.

Challenges
Challenges within the Eurodelta scale include significant differences between countries, such as tax systems—where in Germany, tax is for municipalities, while in the Netherlands it is for the national government. There is also a lack of maps and data which is required for the scaling up of information. Next to that, trucks still compete with short-distance systems, since trucks are cheap and flexible and the generally free space is scarce. While network cooperation is essential, it is challenging due to the many contractors involved.

Recommendations narrative
For the spatial strategy of the Eurodelta, we could build the narrative around the following elements:
- Delta system and networks of cities
- Strategic views on biobased and reuse needs
- Transitioning to a map with a spatial vision
- Implementing narrow, slow, close, and circular building principles
- Advancing on the R-ladder
- Scaling up efforts and industrializing solutions
- Digitalizing processes and planning instruments
- Harmonizing inventory of material flows
- Effective planning and assesment frameworks for the right location for the right material

INTRODUCTION

Introduction
ASSET is an Interreg North-West Europe (NWE) project that focuses on understanding the concept of a Circular Built Environment (CBE) by finding innovative spatial solutions through collaboration at various scales within the Eurodelta (the Rhine, Scheldt and Meuse delta including the Randstad, Belgium, the North of France and the Rhine-Ruhr area). An important part of the process of gaining new insights is for the ASSET project partners to organize a local workshop with relevant stakeholders (Activity 1.5). This document is the report of Activity 1.5 and shows how to organize an 'ASSET-workshop' which is a special way of developing insights and it describes the results of the workshops. The office of BVR advisors on spatial development (Rotterdam) serves as external advisor and developed the workshop methodology.

About ASSET
The change to a CBE can result in increased demand for space at one location and less at another; therefore, it requires strong involvement of the economic and social sector in planning and different design principles. However, the so-called 'spatial claims' – how much land and where it is located – is largely unknown territory. Policymakers are only beginning to realize the far-reaching spatial implications of a truly circular built environment. The objective of ASSET is to develop a strategy and action plan to understand the spatial implications of the circular transition of the built environment for the Eurodelta as well as to come up with innovative recommendations on different scales. By using the Province of South Holland's Spatial Circular strategy as the base of the research, the project partners focus on two main questions:

> HOW can stakeholders solve local and regional spatial challenges, by collaborating on the scale of the Eurodelta?
> WHAT is necessary to develop a spatial-economic strategy and action plan for the circular transition of the Eurodelta?

The ASSET partners collaborate to exchange knowledge and (best) practices. Site visits and policy analysis gives deeper insights. The research partners within the consortium will provide scientific support. Student workshops and university courses will be held to generate fresh perspectives. Local scale and regional scale Workshops will generate content and answers. The goal of these workshops is to derive spatial design principles and building blocks for the ASSET narrative, to develop an inspirational image of a circular Eurodelta in 2050 and to explore concrete actions to improve the local circular strategies within a macro-regional context. The building blocks derived from the different activities are brought together in a Seminar 2025 in which partners and associated partners jointly develop a strategy for a CBE on the level of the Eurodelta.

Four workshops
BVR published an Itinerary (a Workshop Guide) in June 2024 to help the ASSET partners organizing their local workshops and to ensure that the outcomes of the workshops complement each other / are applicable. In this final report you will find a short version of this guide with some tips and tricks. In the latter part you will find the results of four workshops held:

> A regional workshop South-Holland / The Hague
> A tour and local workshop Amsterdam
> A Local/Regional workshop Brussels
> A local German workshop in Krefeld

Innovative spatial solutions are needed to boost the circular economy in Europe. In this relatively new field of urban / landscape planning for circular spaces a design-driven approach seems necessary. This emphasizes the importance of the type of workshops ASSET promotes: workshops as active meetings, focused on joint fact finding, sketching and discussions towards a common understanding of CBE, building a network of experts and stakeholders, on the exchange of

ideas and solutions, articulating first steps for a CBE in the Eurodelta. Together we tested the hypothesis of a circular build environment and the value of collaboration on the large scale. It was fun to experience the different planning cultures between Belgium, Germany and the Netherlands. Thanks to all participants. Enjoy the results.

GOALS

During the ASSET project there have been 4 workshops, namely those of : South Holland / The Hague; Amsterdam; Brussels and Krefeld. The first two workshops took place in October 2024, the workshop of Brussels in November 2024. Krefeld workshop took place during the ASSET on Tour in June 2024. The goal of the workshops was to encourage active participation, to promote joint fact finding and free, out of the box thinking and testing of ideas. As each ASSET workshop is organized by the ASSET partners themselves, the workshops can differ in set-up, length and present actors. However the goals of each workshop was the same, namely:

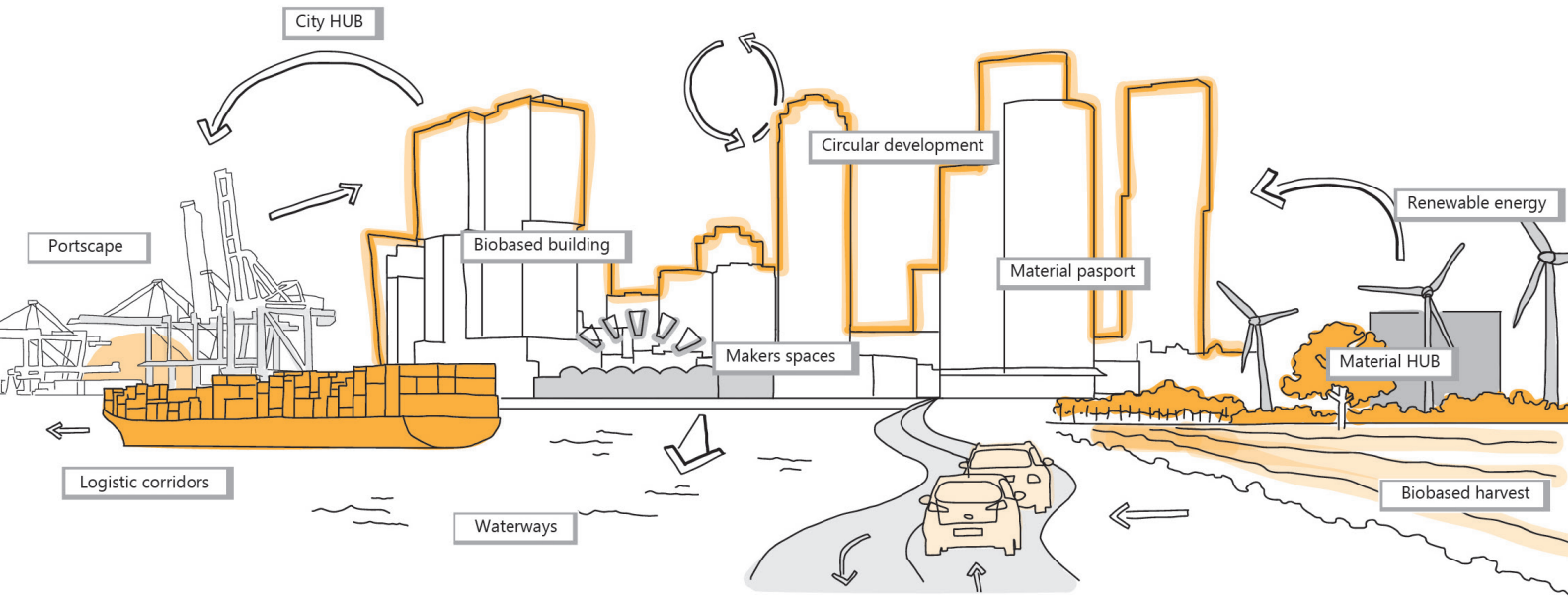
- **Common understanding**: First the workshops help to better understand challenges of the ASSET partners
- **Cooperation**: Building your local, regional and Eurodelta network
- **Coherence**: Make the first steps towards a common Eurodelta CBE strategy
- **to co-develop** a strategic perspectives on interregional cooperation in the Eurodelta for a CBE, focusing on spatial implications and requirements
- **to explore** in design workshops concrete ideas for spatial solutions and how interregional cooperation could take shape to tackle challenges in cities/regions
- **to raise awareness** of spatial requirements within the own cities and include circularity in the spatial strategies of the partners
- **to contribute** to the outcome of the project actions (research and project ideas), strategy and stakeholder analysis

Next to that every workshop used a base map of the (circular) main infrastructure, in order to explore spatial solutions. This base map included at least:

- Urban, rural, industrial and residential areas (landuse)
- Car, train and ship infrastructure (ports, airports, stations) (corridors)

Since the scope and the scale used within the workshop is chosen by each partner, more main structures could be added to the map (for example the energy systems or waste/raw materials systems).

After the workshop, the partners filled in a conclusion and a reflection format. These formats were provided for the partners so that the conclusions from the first workshops could be used and complemented by findings of the next workshop. This way the reflections could be easily compared and summarized for this synthesis report. The South-Holland and Amsterdam workshops were in Dutch and the Brussels and Krefeld workshops were in English. All partners wrote the reflections and conclusions of the workshops in English.



MENU: General preparations in a nutshell

In order to help the partners with organizing their local workshop a flowchart was made (see next page). This flowcharts guides you through the choices you have to make. The flowchart can influence the size of the workshop and what approximately is needed time-, equipment- and staffwise.

Preparations

Two weeks before the workshop

> Online briefing participants (optional)

Preparations

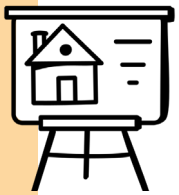
One week before the workshop

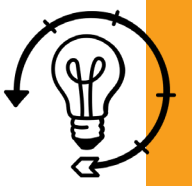
> Pre-workshop communications between different workshop organizers -> giving each other tips & tricks

Workshop day

Start workshop

> Welcome & planning what are we going to do?
> Introduction Circular CBE and South Holland principles
> Who is in the room? ->Everybody introducing themselve



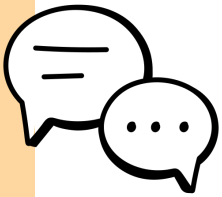


Workshop activities (different per workshop)

> Activity 1
> Break
> Activity 2
> Big break
> Activity 3
> etc.

End workshop

> Sharing the results of the different groups
> Conclusions on Eurodeltascale
> Conclusion format
> Feedback & closing (present at pre-workshop meeting)
> Reflection format



ASSET Workshop Flowchart

Start

1 Pick your format

- Small workshop
- Medium workshop
- Large workshop

2 Pick your theme (CBE)

(within spatial planning)

- Biobased and renewables in CBE
- Recycling, reusing in CBE

3 What's your focus? *(3 of 7)*

- People, stakeholders, roles, etc.
- Space for material flows
- R-strategies in spatial dimensions
- Adequate scales
- CBE & other aspects/themes
- Design approaches/principles
- Optimizing circularity

7 Outcome format

- Minutes
- Proposal
- Conclusions / lessons
- Answers

6 Organize

- Date, location
- People -> Invitation
- Materials/maps

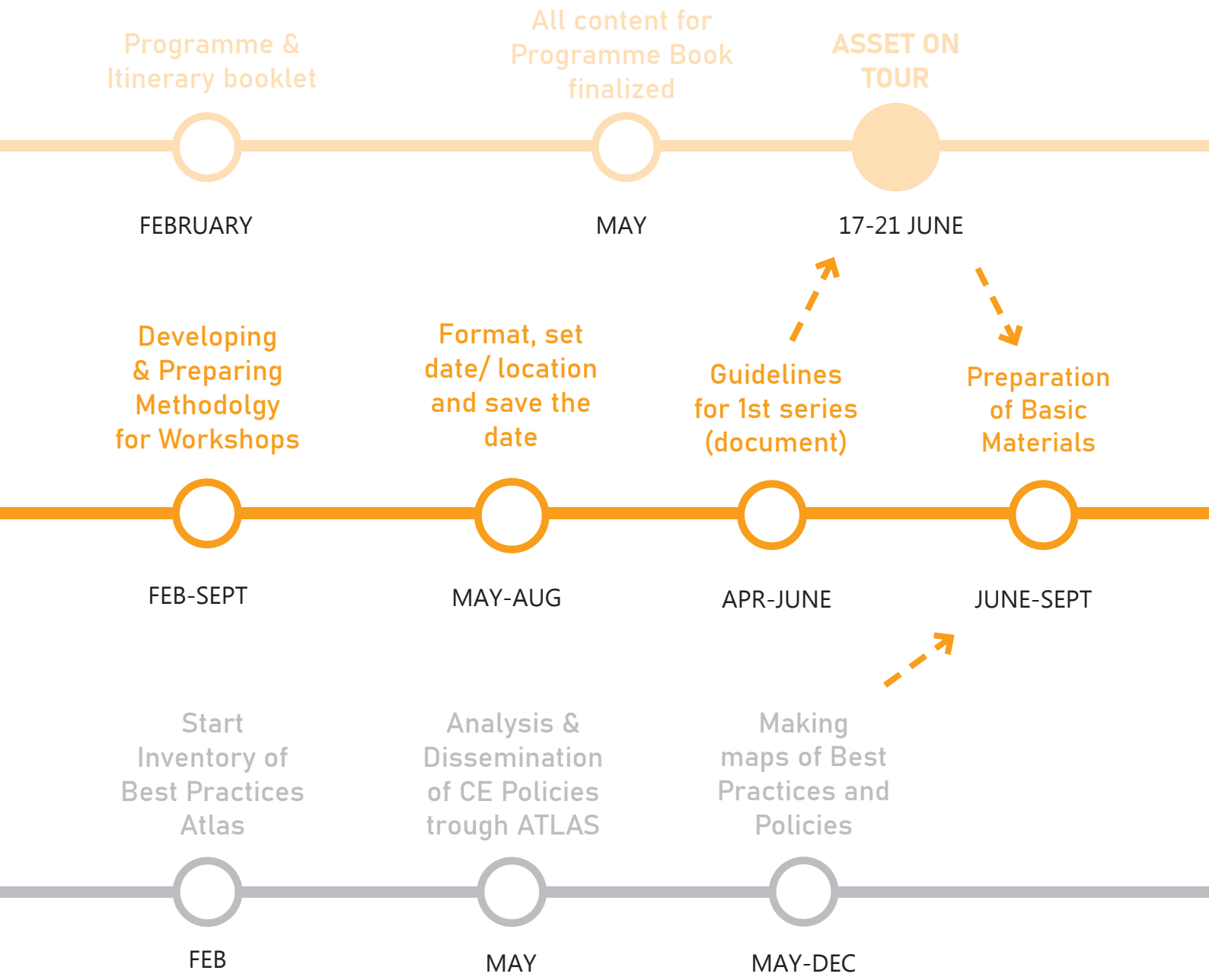
5 Who do you want to attend?

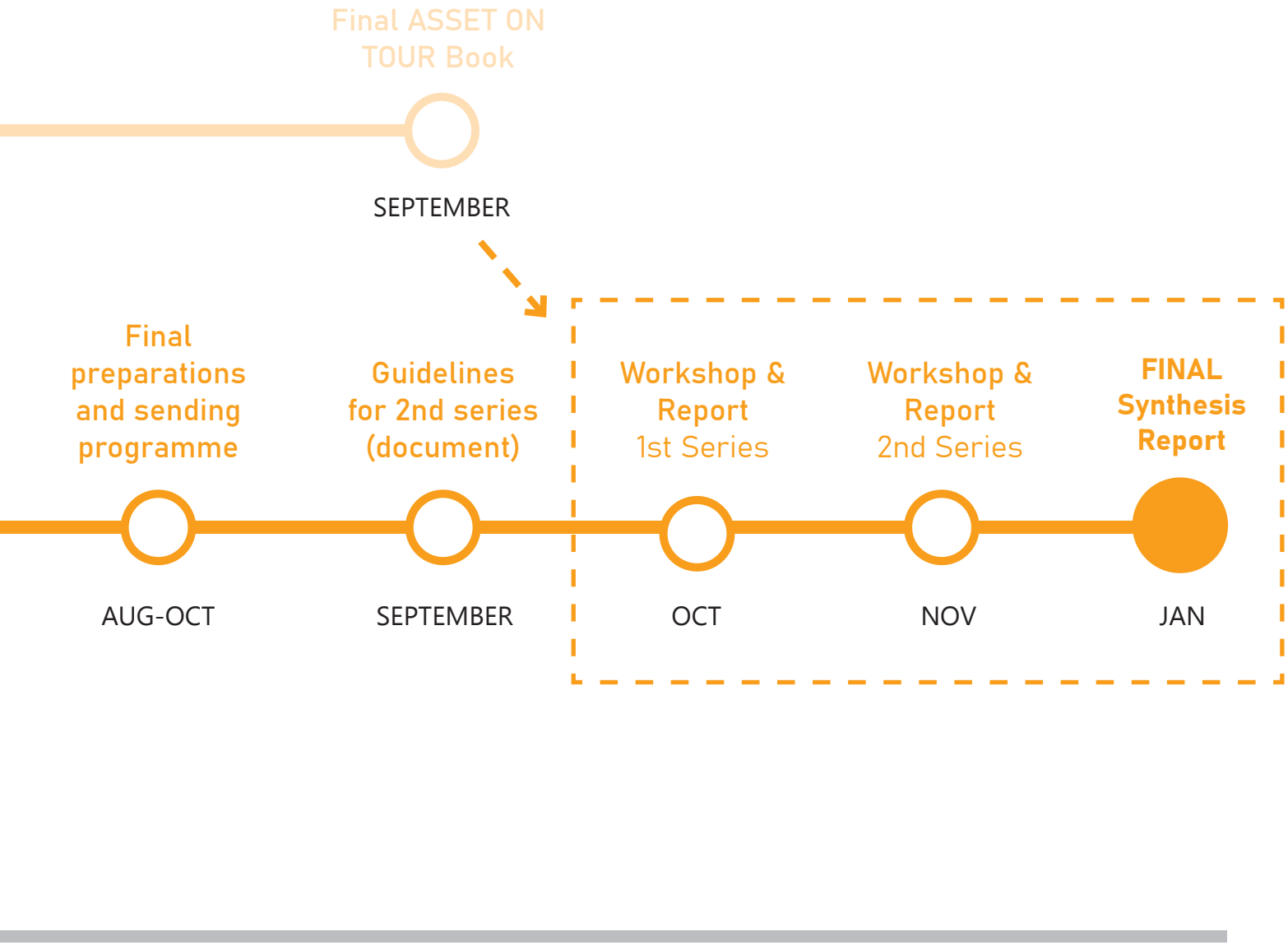
- Intern
- Extern

4 What scale as starting point?

- (Super) Regional
- Agglomeration
- Local Area

General ASSET Timeline




Final ASSET ON TOUR Book
SEPTEMBER
Final preparations and sending programme
Guidelines for 2nd series (document)
Workshop & Report 1st Series
Workshop & Report 2nd Series
FINAL Synthesis Report
AUG-OCT
SEPTEMBER
OCT
NOV
JAN

TIPS AND TRICKS

After the format is decided and the research questions clearly formulated there are some practical issues that also need to be addressed:

- Goals and participants - internal/external stakeholders
- Content questions/base presentation
- Facilitating - Workshopleader
- Possible timetables
- Data, maps and materials
- Location
- Invitation

Goals and participants
- Choose different disciplines
- internal (partners) and external (stakeholders from government, business, societal organizations)
- Workshop means working, so we need people who can think and create freely, always as k at least an urban designer/ architect/landscape architect

Content questions/ Base presentation
- A presentation format available on the drive. This presentation is incomplete, as in that the workshop specific information needs to be added. The general introduction on ASSET interreg is present.

Workshopleader
- The workshopleader should be present at the preparation meeting
- The workshopleader gives the introduction, keeps track of the time and leads the conclusion/discussion/reflection
- The workshoplearder is responsible for the outcomes

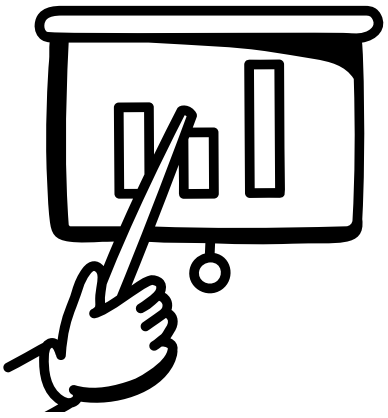
Possible timetables
- Make a timetable, include enough breaks!
- See workshop format

Data, maps and materials
- Basemaps will be prepared as proposed in the Base maps section on previous page.
- When the basemaps need to be more detailed the partners could add their own layers onto the basemap or make a (smaller scale) new basemap or thematic maps
- Provide adequate working materials
    - Paper and pens/pencils
    - Triangles
    - Relevant documents
    - Fill-in posters for subgroups and for wrap-up overall conclusions

Location
- It is important to make sure adequate tables are present at the location (subgroups)
- When giving a presentation, check if there is a beamer
- The location should be well accessible for those who are going to be present at the workshop
- Arange some drinks and snacks

Invitation
- Pick a date as soon as possible
- Decide if you want to invite people from intern or extern, make a list
- Decide the size of the workshop, how long is it going to take?
- Sent the invitation, programme and homework questions beforehand

THE WORKSHOPS



Province of South-Holland

ASSET WORKSHOP
South-holland & The Hague

Who:

25 Professionals in the field of construction and circularity from the Province of South Holland

When:

1st of October 2024

Towards a circular built environment in the Eurodelta

Workshop Results from the Local/Regional Workshop of the ASSET Project / SOUTH-HOLLAND & THE HAGUE

1 October 2024, Province of South Holland and Municipality of The Hague

The ''regional/local workshop Zuid-Holland'' is part of the ASSET project and took place on October the first 2024. The Interreg ASSET project explores spatial strategies for the Eurodelta to achieve a circular built environment in North-West Europe. The topic of this workshop was the circular built environment and the construction sector in South Holland.

25 professionals in the field of construction and circularity from the Province of South Holland were present, municipalities, knowledge institutions, civil society organisations and ASSET partner organisations. The aim: 'think through the value chain of construction. How will it become more circular? What does this mean on the scale of the province and on the scale of the Eurodelta?' The group was divided into two smaller groups, each with its own circular focus for the construction sector: biobased strategies and re-use/recycle strategies. The shared lessons and key points are presented in this brief, but a full report of what was discussed during the sessions is also available.

Key message workshop

Towards a circular built environment in the Eurodelta

Create mass in supply and demand together as Eurodelta partners:

> Joint housing task of 2 million homes and renovate 20 million

> Industrialise chains for bio-based building materials and reuse materials

The enticing perspective: global market leader in innovative and circular construction

Work together for this, make use of the strengths of the different areas in the Eurodelta, create the right preconditions, supported by the EU

Both subgroups made a pitch with key findings:

Pitch subgroup biobased: Eurodelta as global market leader for biobased construction

Eurodelta: think big and create mass. The Eurodelta has everything it needs to become a global market leader in biobased production, knowledge and management. The circular built environment should therefore move from a research project to an investment agenda. After all, an industrial scale is necessary. Each part of the Eurodelta has its own opportunities in this. Imagine that we build 300,000 houses a year here. For this to become reality, the circular material chain needs to be build. Imagine, then, we need 300 manufacturing and assembly plants of 1 to 3 ha at the right locations in the Eurodelta (20-50 of which are e.g. in South Holland). Work together and this space claim of 300-600 hectares becomes relatively feasible when you look at the Eurodelta scale. This does require a spatial strategy at the Eurodelta scale. Develop that strategy as a market-public sector proposition for the EU clean industry deal in Europe.

What should we do as Eurodelta? Offer enticing prospects!

- Eurodelta global market leader for bio-based construction
- Realisation power through scale
- Joint change force
- Collective innovative strength
- Industrial strength
- Network strength
+ Develop bio-based industry strategy
+ Develop Eurodelta forest and fibre strategy

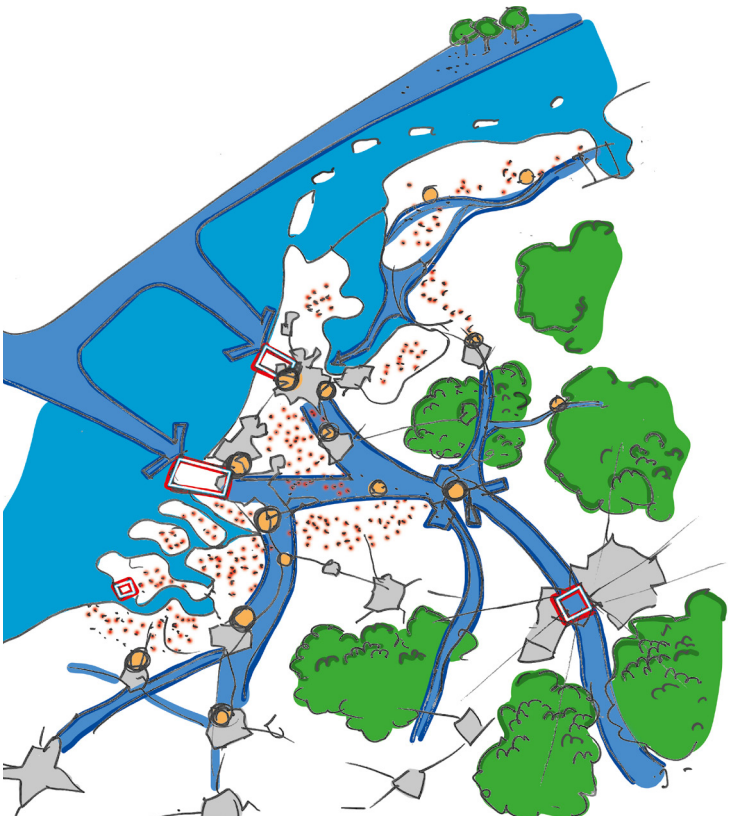
Pitch subgroup re-use: Eurodelta as an industrial ecosystem for re-use

Exploit the existing structure of (inland) ports and waterways as the historical origins of collaboration in the Eurodelta. Link the waterways to the other infranet networks of road, rail and energy. At the nodes at ports and business parks where the linear economy began, there are now opportunities to develop a green, circular industry. Eurodelta is becoming a vital part of the circular Rhine-Alpine corridor. For example in a grid of 480 km by 480 km with nodes at distances of 180 km (Eurodelta heavy circular industry system such as chemical/pyrolysis or steel), 60 km (regional circular transhipment and specialised industry) and 20 km or less (local circular (return) hubs and manufacturing industry). Within this Eurodelta, add up all the new-build and restructuring tasks of post-war construction. This is ‘mass’ of supply and demand for the reuse chain. This green industrial policy also includes rules to ‘keep materials with us’.

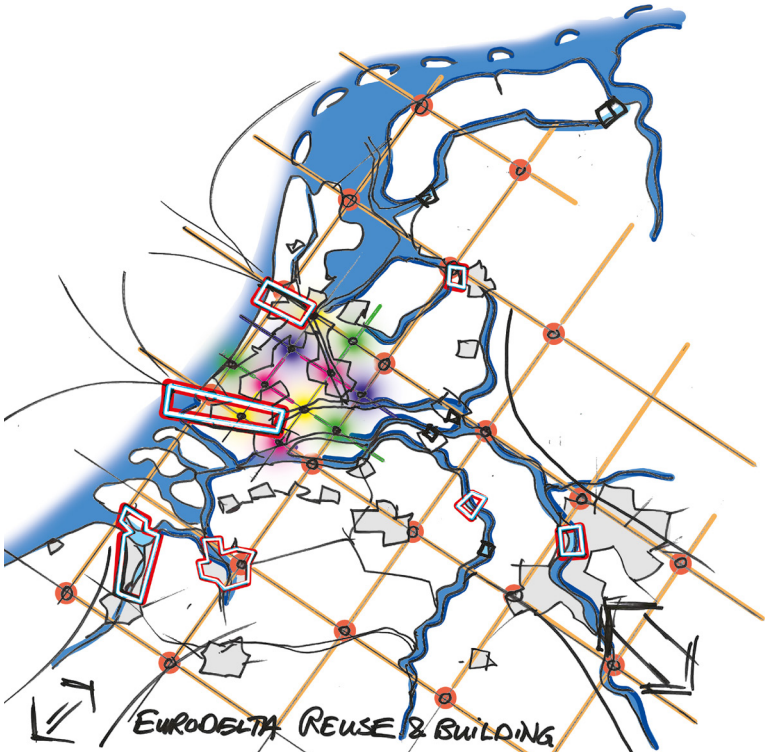
What should we do as Eurodelta? Create spatial preconditions

- Building code -> ensure European standard/certification and standards
- Organise mandates, e.g. Paris Agreement
- Affordable and fast: the reuse and biobased sector must industrialize
- Make it concrete, show the other side. Use the market. Tenders are not asking for this yet.Become professional, show the other side. Use the market. Tenders should provoke innovation and guts.
- Organising: the timber industry association is growing
- Governance Eurodelta: organise the reuse and biobased mandate (administrative/political) for partners, regions and cities

Market leader biobased construction



Industrial ecosystem for re-use

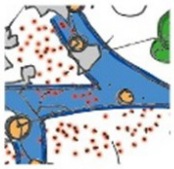


Legend

Plan space for industrialization biobased cultivation, increases harvest of fiber and wood

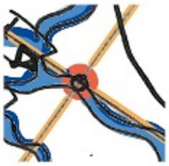
Give room for 1st reprocessing at the farmer's premises

Organize the Eurodelta logistics

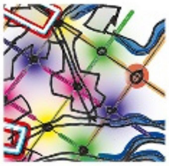


Realize circular economy logistics when developing an area

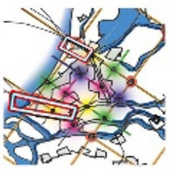
Develop waterways/ transport corridors with circular construction industry along



Make space for circular hubs



20 km grid for locale loops



60 km grid specializations

180 km grid big industry

How does the chain from raw material through manufacturing and construction to demolition become more circular?

The first question is how to achieve a more circular construction chain. This requires change in all parts of the chain. Circular 'chain readiness' requires three action lines: a much stronger action line Biobased building and Reuse in the building chain. Both biobased and reuse require the realisation of the corresponding spatial (links). For these chains to become of age, a third action line Transition Management is needed in which knowledge exchange, education, design research, testing/experimenting, and scaling up are central. What we are learning is that a few things are crucial in this transition today: sufficient space, new forms of regulation and financing, and powerful connected digital systems to manage material passports and logistics. The triangle of space, time and ownership is always at stake. As a government, take into account expected residual flows in time, think about what you would like to do with them in the future and engage with land and property owners so that you can always reserve enough space and find buyers.

There are several obstacles and dilemmas and further research questions to get the intended changes done.

- Setting up the playing field. This involves issues such as: the tension between wanting to organise locally/regionally for a smaller footprint and the necessary international scale needed to achieve mass and a stable chain and economy;
- The international distribution of costs and benefits of circular industries between regions;
- The still lack of innovative regulation (including at EU level) for circular material chains (When is something waste? How do we keep the transition safe and clean?);
- pricing in a European and global market for materials in circular chains compared to linear chains.
- There are also more local and regional issues at play. For instance, there is tension between the required proximity of production and application sites on the one hand and the scarcity of expensive (urban) land in that type of nearby locations on the other. Another issue is how to simultaneously phase out linear economy and build circular economy. This seems to require additional (scarce) space. Another question is how materials can be kept in regions as much as possible and on what scale this is realistic. The underlying question here is: how does a place-based circular economy thrive in relation to the global economy?

What does circular construction mean at the scale of the province of South Holland?

Housing task

South Holland is committed to building around 250,000 new homes by 2030 and faces a renovation of the current built environment. To do this circularly, the credo is: from one housing project to the next. Housing as a task implies a broader view. It is not only about new construction, but also about smart (re)use of the built environment or limiting material use (refuse and reduce).

This housing challenge presents opportunities for bio-based construction and the reuse of building materials. The production and processing of biobased materials is becoming increasingly industrial and can therefore hopefully compete with traditional materials in the future. Stricter (CO2) regulations and policy make secondary materials more interesting and competitive compared to primary materials. Already today, early co-design of bio-based applications such as insulation and panel materials made of fibres or wood will create feasible business cases. Another trend is that of industrial prefabricated construction. This makes it possible to scale up applications of recycled materials. Prefab construction requires more physical space for logistics, process and manufacturing industry, among others, while time and space can be saved on the - often inner-city - building site.

The task in the building chain: Put the housing task centre stage. And start energetically in the chain to scale up the processing of residual flows from demolition sites and apply bio-based materials as much as possible in new construction and renovation projects.

Circular hubs

Circular hubs are needed as the spatial links where residual flows leaving the city and building materials entering the city can be transhipped and further transported. These hubs also have an important role in processing used building materials (reuse/ refurbish). Promising places for this are industrial estate locations such as in South Holland in the Port of Rotterdam, Spaanse Polder, Drechtsteden, Oude Rijnzone. Link nearby new construction and demolition areas with such multimodal business parks and with the biobased growing areas further in the region. Exploit South Holland's well-developed logistics machine for transport, including by water.

The ideal place for a hub is hard to find. Therefore, look at what is feasible in the short term. Hubs now seem particularly promising as small-scale locations (about 1 ha) in urban outskirts and as temporary hubs in construction projects. Ensure speed of transit of materials, as storage and land is (too) expensive. Match supply and demand. The renovation/conversion of existing post-war building stock is a prominent harvesting and application area. Returning flows from these areas can already be anticipated/calculated.

What is South Holland already doing in the Eurodelta? Proof of concept

South Holland has a large housing challenge, has top ports and industries, includes a logistics machine and is one of the flywheels for scaling up: clout, innovation power and collaborative strength come together. The strength and solving power of circular building in South Holland is threefold:

- Circular construction (bio-based and reuse) is faster, cleaner and delivers numbers of homes
- There is great potential for a regional ecosystem of sustainable, regional construction industry. It requires scaling up and industrialising the biobased and urban mining market on the demand side of the market as well as the supply side
- The basis is already there in the region's own DNA: South Holland is a strong knowledge economy, urban and diverse, coupled with a smart manufacturing industry, a doing culture and a well-functioning logistics system.

Role of government

The government has a major role to play in the transition to circular building chains: setting preconditions, organising rules of play and permits, being a knowledge broker and formulating a joint proposition of market, government and knowledge parties, being a launching customer and pre-financing the non-profitable top where necessary.

- Space for additional business parks is scarce. Therefore, put transformation of existing space centre stage. Apply circular materials here, make room for scaling up process and manufacturing industry, logistics and eye space.
- Dare to think big and set an attractive perspective around which chain parties can organise themselves
- Use the time factor: make decisions now for the future, use temporary space, sometimes something can be done if it is temporary.
- Involve property and land owners in the search for space.
- Focus on a few flows, combine functions and exploit linking opportunities: the South Holland speciality is building in the delta.

What does circular construction mean at the scale of the Eurodelta?

This scale is needed for a perspective that makes impact, spatially, economically and in terms of cooperation/knowledge. Scaling up supply and demand moves the market.

- The new-build challenge in the Eurodelta is 2 million homes. Set the ambition with Eurodelta parties to build 1 million of them biobased and you have an enormous volume to build a healthy and mature market and chain around.
- Together with ASSET in the Eurodelta, establish a green industry proposition for a North West European market of circular and biobased building chains that contributes to Europe's strategic autonomy.
- Circularity contributes to EU goals on health, CO2 reduction (Paris), raw materials strategy and industrial policy (e.g. critical raw materials act).
- Work together in the Eurodelta from the bottom up on a new international (circular) building culture. This requires an alignment of legislation, building practices and cross-border exchange of similarities, differences and common lessons.
- Standard setting (CO2 budget) and regulation are necessary to encourage good circular building practices.
- Aim for industry clusters that specialise (chemicals, pyrolysis, raw materials), preserve and make room for a few hotspots for high value materials and circular, or green steel industry. Circular concrete and fibre applications can be organised more locally.
- Develop a European fibre, wood and forest agenda, and exercise direction on agricultural transition so that these biobased opportunities are exploited.

Impression of the workshop

POTENTIE REGIO ZUID HOLLAND - RONDE 2

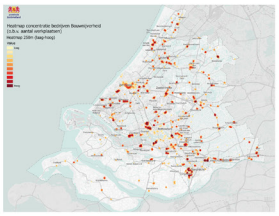
SCHAKELS MEE UIT RONDE 1

INZET IN ZUID-HOLLAND

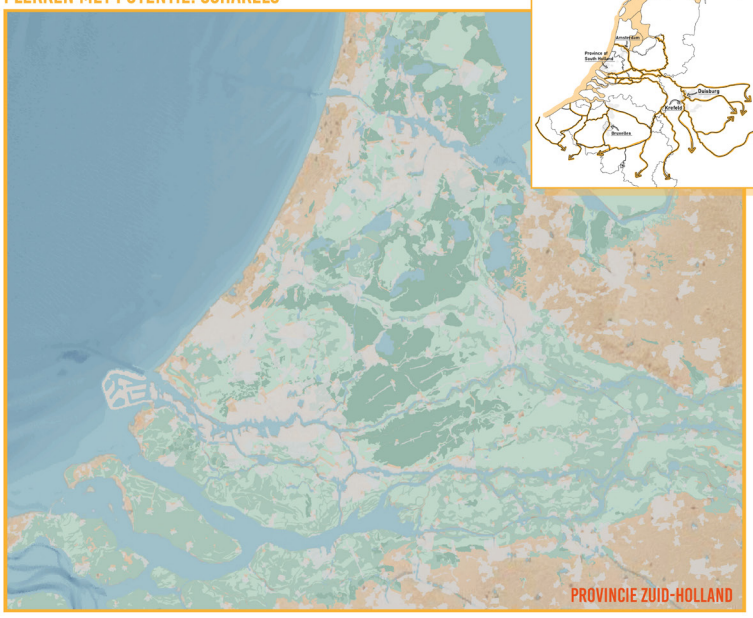
VRAGEN VANUIT DE EURODELTA WEL NODIG NIET IN ZUID-HOLLAND

RANDVOORWAARDEN

BOUWCLUSTERS

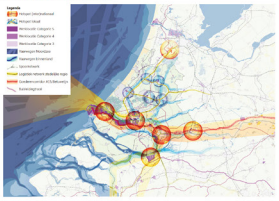


PLEKKEN MET POTENTIE: SCHAKELS

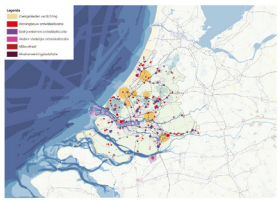


ENERGIE

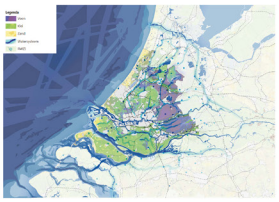
INFRASTRUCTUUR



RESTSTROMENSYSTEEM



WATER EN BODEM



KRACHT & IDENTITEIT VAN DEZE REGIO

KERNBOODSCHAP

POTENTIE EURODELTA - RONDE 3

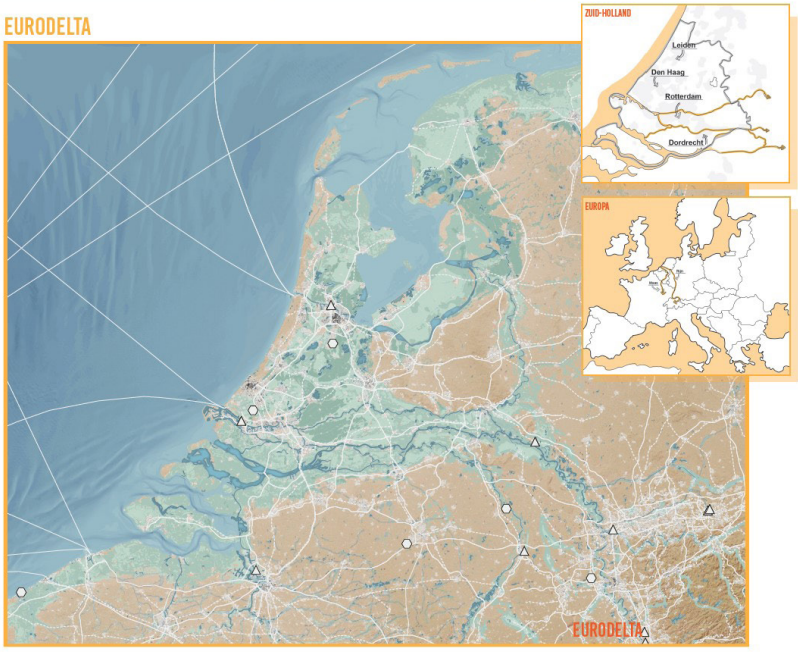
MEENEMEN UIT RONDE 2

WAT DOET ZUID-HOLLAND IN DE EURODELTA

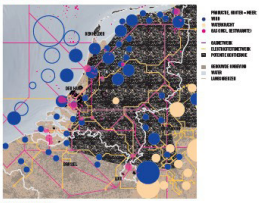
WAT MOETEN WE DOEN ALS EURODELTA?

RUIMTELIJKE RANDVOORWAARDEN

EURODELTA



ENERGIE



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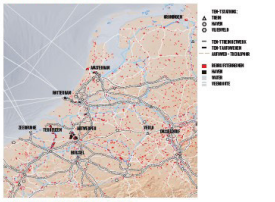
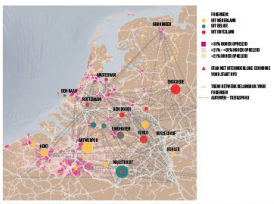
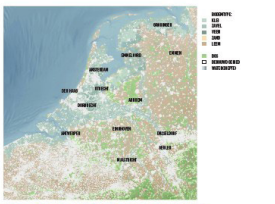


KENNIS



WATER, BODEM, BOS



KRACHT & IDENTITEIT: CIRCULAIR VERHAAL VAN DE EURODELTA

KERNBOODSCHAP


Havenstad
NSDM shipyard
IJburg

ASSET WORKSHOP

Amsterdam

Who:

30 professionals in the fields of urban planning, infrastructure, projects, area development, construction, and circularity from the City of Amsterdam, Rijkswaterstaat, and ASSET partner organizations

When:

8th and 17th of October 2024

Towards a circular built environment in the Eurodelta

Workshop Results from the Local/Regional Workshop of the ASSET Project / AMSTERDAM

December 11, 2024, Municipality of Amsterdam

On October 8 and 17, 2024, two parts of the "Regional/Local Workshop Amsterdam" took place as part of the ASSET project. A week before that, Amsterdam organized a webinar to introduce the project and adopted methodology to the participants. The ASSET project is an Interreg initiative exploring spatial strategies to achieve a circular built environment in the Eurodelta. The topic of this workshop was the circular built environment and the construction sector in Amsterdam and its surroundings.

Around 30 professionals in the fields of urban planning, infrastructure, projects, area development, construction, and circularity from the City of Amsterdam, Rijkswaterstaat, and ASSET partner organizations were present. The goal was: "Reevaluate the value chain of construction, particularly for wood and concrete. How can this become more circular? What does this mean on the scale of Amsterdam's projects, the metropolitan region, and the Eurodelta?" The first part of the workshop on October 8, 2024, included a field trip to several companies with circular or (construction) logistics functions. On the afternoon of October 17, 2024, participants worked in three groups based on large area developments in the City of Amsterdam: Strandeiland (IJburg), Hamerkwartier/ NSDM shipyard, and Haven-Stad. The key lessons and takeaways are summarized in this brief overview.

Key message workshop

The circular goals of Amsterdam have spatial implications for the built environment. The city becomes part of the production proces and needs therefore circular mobility and new spatial concepts. To effectively steer these developments, it is recommended to link waterfront area developments with multimodal, particularly water-based locations for manufacturing industries and (reverse) logistics. Close collaboration is needed within the municipality, involving various departments and expertise, and accelerating (international) cooperation between companies, governments, and knowledge institutions in the construction sector. Circular design principles are still quite unknown and further development of education is also recommended. Map out space requirements and develop a 'bottom-up' strategy together with these stakeholders. Develop a decision-making strategy for the spatial integration of the circular economy, with clear priorities to protect and develop the space in and around the city. There will not be enough space within the city to accommodate all spatial claims and mobility. Use the construction challenges in the Amsterdam Metropolitan Region as a kickstarter for a bio-based and circular construction industry within the region and as an example for the entire Eurodelta. Collaborate on the scale of the Eurodelta to ensure supply security and to develop together strategies to create a smart specialization within the Eurodelta reducing the pressure on land within Amsterdam.

Facilitate circular construction and smart construction logistics in area developments.

The large construction tasks near existing residential areas, along with ambitions to use more secondary materials, involve significant challenges for the city, particularly in construction logistics. It is essential to integrate construction logistics into project designs to: a) ensure livability and safety in residential neighborhoods, b) monitor air quality, and c) better utilize opportunities for water-based logistics (e.g. decarbonization). Each area requires its own circular strategy, where basic principles such as "water over roads" or "wood over concrete" serve as guiding principles. Multimodality is crucial.

- Example Strandeiland: Use a planned quay to establish a water-based construction hub, reducing the expected logistics of around ½ million transportation movements. Implement flexible housing on Makerskade as a circular pilot project. During the construction phase of the area development, visualize and monitor material flows in mass and volume.
- Example Haven-Stad: Conduct a thorough value inventory of Haven-Stad concerning circular construction, both in terms of available materials and valuable production and storage locations. Take advantage of the large scale and long development period of this project to continuously include logistical and production space in the planning.
- Example Hamerkwartier/NSDM: Develop water-based hubs for incoming construction flows and outgoing return flows. Use quays and public spaces in a manner similar to the former shipbuilding industry, where construction flows are still visible in the area.

Develop the Amsterdam Metropolitan Region as a Circular Ecosystem: Market, Logistics, and Processing

The spatial demand for scaling up the circular economy can only be addressed through innovative solutions and collaboration with all relevant stakeholders.

- Choose an appropriate scale for a hub strategy (where, what type, and how large).
- Open a regular city conversation about The New Normal (a unified language for circular construction) with builders, developers, urban planners, architects, and investors. Establish agreements and collaboration partnerships.
- Biobased construction materials requires a special (international) system for harvesting and processing.
- Next to the harbor, more locations along the Amsterdam-Rhine Canal and the Bay Area should be explored for (temporary) hubs on waterfronts. This is interesting to keep the harbor open for manufacturing and logistics for bulk materials that needs to be shipped inland and need much energy (H2hub). Bulk material that comes form the inland should not pass the Eye, which is already dealing with lots of interests.

Develop the Eurodelta Both from the Bottom Up and Top Down

Keep material and product cycles as close to the city as possible. For each material flow, consider an adequate 'ecosystem' of (joint) hubs to consolidate material flows and stabilize the supply to processing industries. Data is required at every scale to achieve this. Strengthen collaboration within the city, interregional, national and transnational.

- We need a better understanding of circular building. Visualize the spatial structure of the system for a circular built environment and circular construction sector and make it discussable through maps and data, so it becomes a basis for knowledge development, cooperation, and national, provincial, and local strategies.

Workshop Results

ASSET is based on continuous learning, building on the knowledge we have previously gained, such as during ASSET on Tour in June 2024 and the South Holland workshop on October 1, 2024. In this process, we aim to bridge different scales: local, regional, and Eurodelta. The goal is to answer the central question: "How does the Eurodelta scale and collaboration at that level help achieve local spatial solutions for a circular built environment?"

The circular objectives of the City of Amsterdam are clear and are outlined in the Circular Economy Agenda, which is founded on the "city donut": using 50% less primary, abiotic raw materials by 2030. Circularity is essential to achieve the ultimate goal of a 95% CO2 reduction by 2050.

Workshop Day 1

On October 8, workshop participants took a field trip to BMN Van Keulen (a specialist in dry construction), the startup Urban Mine (circular concrete), and HKS Metals (metal recycling). During the visit, we explored the circular business models of companies working with secondary building materials that are sourced from the city within a radius of approximately 20 km (concrete) and 50 km (steel), and then further processed in base industries and manufacturing industries connected through logistics.
During the excursion, we saw examples of storage, distribution, and recycling: how materials are harvested and how materials and raw materials are returned to the cycle. A major eye-opener was the value of going on a field trip together and thoroughly considering the implications of the circular economy (this should be done more frequently with colleagues and policymakers!). Only through experiencing and conversation with entrepreneurs you will become aware of the scale, volume of flows, business models and the spatial requirements to have feasible business cases. Supply security seems to be a major issue for them.

Such discussions lay the foundation for innovative space-saving solutions, such as industrial activities that have reduced their environmental category 4 to environmental category 3.1 through smart measures (noise and dust reduction). This makes it easier for a factory to be integrated into or near a residential area (e.g., Urban Mine).

Processing Industry

> Cement and Concrete, Bricks and Ceramic Materials, Gypsum and Gypsum Products, Steel and Metal Products, Wood and Wood Products, Glass, Insulation Materials, Plastics and Synthetic Materials, Bluestone, Sustainable and Circular Building Materials.
> In 2022, these industries accounted for 12% of the Netherlands GDP = 120 billion euros (a large portion of this from construction).

Construction Logistics

> Transportation of building materials to construction sites (10% to 20% of total construction costs) = 5-10 billion euros per year (in the Netherlands).
> Current transport over water and rail: Raw materials, Finished building materials, Biobased materials (imports), Recycled materials, and in the future, possibly more prefab materials, etc.

Construction/Renovation/Sustainability/Deconstruction

> Building material consumption in the Netherlands: Estimated annual usage of 60 million tons, with 1 million new homes to be built by 2030, alongside sustainability efforts, transformations, and infrastructure projects.

A key finding from this brief field trip is that the built environment is increasingly seen as a harvesting area and is becoming part of economic business models. As a result, more space is needed for processing, storage, and logistics.

The need for circularity is urgent. Currently, there is already a shortage of sand, even in the Netherlands. Our per capita consumption of CO2-intensive concrete is 5 kg of concrete per day (equivalent to 2 liters). For comparison: 1 kg of food, 2 liters of drink. As long as there is no sustainable substitute for cement, innovations in secondary and biobased materials are necessary to reduce CO2 emissions and ensure a sufficient supply of building materials.

The raw materials market, construction logistics, manufacturing (production) industry, renovation, and circular demolition are all essential components for a circular built environment. These are already markets in the Netherlands worth billions of euros. However, these functions are less profitable compared to other industries, such as fossil fuel-based businesses or the construction of large yachts, and they are quickly being pushed out of the city.

To scale up the circular economy, it is important for governments to support circular entrepreneurs through legislation and regulation. For example, during demolition, the separation of demolition materials and offering residual streams (concrete, steel, wood) to the circular market could be mandated. Regulations are needed to prevent steel from being exported to the highest bidder on other continents. Additionally, protecting space for logistics companies along waterways, supporting circular business models through land policies, etc., are all crucial steps.

Workshop Day 2

The workshop on October 17, 2024, focused on three large area developments, each addressed by its own subgroup. Together with the municipal project leaders and policy experts, we worked through three rounds:

- **Round 1: Awareness of Circular Construction**
  Participants were asked to map the current "Harvesting Space," "Logistic Space," "Production & Processing Space," and "User Space".
- **Round 2: Circular Area Development**
  This round looked ahead to a circular built environment in 2030 and 2050. How will area development become circular, and what spatial needs will arise? Participants were asked to allocate circular space within their area, considering spatial coherence and opportunities between areas and on a larger scale (MRA and Eurodelta).
- **Round 3: Scaling Up**
  This round focused on giving advice on how to involve stakeholders and identify opportunities for higher-scale levels, up to the Eurodelta.

Round 1: Awareness
In this workshop round, the subgroups discussed the spatial aspects of the circular economy and where it is already visible in the city. The following suggestions were made:

- **Map projects and locations for harvesting** (urban mining, biobased crops) at every scale level and connect them. One area may provide circular concrete (harbors), while another may produce wood or fibers (North).
- **Think more strategically about locations for material storage and processing**, even within your own area development projects. "We are facing a similar blind spot as we did in the energy transition, where space was also needed – we must take action and not wait too long." Example: the BLVC framework for minimizing construction disturbance needs to be tightened: as few movements as possible, logical locations for construction hubs, adequate electric charging points, etc.

- **Biobased materials** are part of the solution for more sustainable construction, but other options like reuse, repurpose, and recycling are also necessary. Examples of visible circular construction include the Bajeskwartier (a test site for circular material use in public spaces) and the Warren (with a façade made from reused dock pilings). Less visible examples include circular concrete (from Urban Mine) used in The Newton building on the Zuidas and the 360 Degrees project, made with Stonecycling: recycled façade bricks. Biobased building (using renewable raw materials) plays a crucial role in circular construction. Amsterdam's goal is to have 20% of new homes built with timber. Wood is four to five times lighter than concrete. Less mass to transport means lower emissions. Also, less material is needed for the foundation. The load-bearing structure of a biobased building can be reduced to one-eighth of the mass compared to a concrete building. But where do you source the wood and/or fibers from? Primarily from Europe: Germany, Austria, Scandinavia, Switzerland, but also from South America. The sawmills are located there. Conclusion: many biobased raw materials come from the hinterland, primarily the East. Ideally, these materials should be transported into the city from the East. Transporting them through the sluices of IJmuiden is inconvenient. A more logical supply route would be via Markermeer and the Amsterdam Rijnkanaal, or by road (trucks) from the East. This might require an additional port on the eastern side of Amsterdam. Ideally, this could be combined with a railway line and located near a major highway. This would help ease the pressure on the city. At such a multimodal location, you could organize a transfer point for materials from larger to smaller ships, etc. The quicker storage is arranged, the less space is needed. A future eastern supply route for construction materials to Amsterdam (MRA) should therefor be explored in detail.

- **Logistics**. In the circular economy, the R-ladder is used (from refuse and rethink to recycle and recover). The logistics sector also uses an R-ladder, the 7 x R: Right place, time, product, quantity, vehicle, etc. By connecting the circular 9 x R with the 7 x R, more circular practices can be applied. Each circular R has its own logistical R. The benefit of water transport lies in reduced emissions and fewer transport movements in an already very busy city. The largest ship replaces around 533 trucks, and the smallest ship replaces about 14 trucks.

Impression of the workshop

Hub strategy

Round 2: Circular Area Development

2.1 Strandeiland

Strandeiland is a new urban district built on reclaimed land in the IJburgbaai. It spans about 150 hectares of new land and will accommodate around 8,000 homes (approximately 20,000 residents), as well as amenities, businesses, and a shopping area. The development will feature 6 hectares of green space, 750 meters of beach, public spaces, and 21 parking hubs. If built traditionally, nearly half a million (450,000) tons of materials will be needed by 2030—approximately 18,000 truckloads of 25 tons each, potentially even more due to inefficiencies in loading. By using biobased materials, the total building mass to be transported can be halved. Existing Plans and Innovative Ideas to Reduce Material Transport are listed below.

Opportunities:

Construction Logistics, Existing Plans:

- **Short-Term**: A municipal construction hub could be set up at the southeast side of the island. The municipality is also exploring whether natural stone from the public space development can be reused.

Circular Area Development, Ideas:

- **Short to Medium-Term**: Use Strandeiland as a flagship project for a circular built environment. The development of Strandeiland is part of the Bay area development (Almere) and should be worked out as an integral plan. Make Strandeiland a pilot project to monitor material flows over a 20-year period, tracking how the hubs operate. This project is already in the setup phase and serves as a great case study for the Top Sector Logistics.
- **Short-Term**: Explore the possibility of a temporary construction hub/materials hub at the unloading dock of the Buiteneiland ground depot or at the edge of Strandeiland. The existing small harbor, where the new bridge from IJburg is docked, could also be used. A temporary concrete plant might also be a viable option. By offering affordable, temporary storage space for circular construction processes, the municipality can bring developers together and facilitate circular building.
- **Short to Medium-Term**: The Makerskade sub-area (near public transport) is designated for small-scale manufacturing industry. In the meantime, temporary flexible housing for students and young people will be established. With the first residents of the temporary housing, create a craftsmanship center for repairing and processing damaged elements or leftover materials from the island's development.

Maintenance:

- **Medium to Long-Term**: The green development and maintenance in the area will also require bulk materials like black soil. This could be transported by ship, opting for sustainable and circular products.

Laws and Regulations:

- **Short to Medium-Term**: It is challenging for the municipality to actively influence material choices and building techniques in private projects. However, the municipality could use land lease grants (erfpachtuitgifte) as a tool to guide more circularity and promote collaboration between parties during construction.
- **Short to Medium-Term**: Tightening sustainability requirements for area development. CO2 emissions and environmental impact must be factored into the choice of products. This will increase the demand for, and the price of, circular products.

2.2 Haven-Stad

Haven-Stad is a long-term project. Over the next 35 years, 40,000 to 70,000 homes can be added to the city, and there is space for 45,000 to 58,000 jobs. To achieve this transformation, there will be significant investment in urban utilities and infrastructure.

The mixed, high-density area will have a balance of approximately 70% residential functions and 30% non-residential functions. Due to the long timeline, the existing open and built space will be used strategically to support circular ambitions. The current industries will move to areas such as Westpoort, making space for the new economy described as a work-live city with urban-serving businesses, manufacturing companies, etc. This will create opportunities to develop and grow new supply chains within the circular economy. For example, stimulating current construction companies, wholesalers, etc., in the area to work more locally and circularly. The slogan "waste is a resource" will be further developed, and more. The ambitions outlined in the Integrated Framework for Haven-Stad, and more, will thus be realized.

Within the transformation process, the City of Amsterdam plays a facilitating role. This means that the number of tenders will be minimal, and new forms of steering are being explored. While there is a stacking of city-wide ambitions, concrete steering mechanisms are still limited. How do you steer Haven-Stad toward circularity?

A quick calculation reveals that with traditional construction methods, approximately 7 million tons of material will be needed for Haven-Stad by 2050. This would involve 280,000 truckloads passing through the city. Using circular and biobased construction methods, the material volume could be reduced to an estimated 3.5 million tons, or about 141,000 truckloads. By using boats more extensively, this number could potentially be even lower. In any case, circular construction offers significant potential for reducing transportation movements (CO2) and the pressure on the urban system.

Opportunities:

- **Long term**: Due to the large scale and timeline of Haven-Stad, it is possible to leave space open for projects/functions that may emerge later.
- **Short to long term**: Consider the entire area as a current harvesting space. Gradually, it will transform into a space for the harvested materials. Haven-Stad is a large area in the city where more than 40,000 homes will be built. Circular ambitions must be incorporated here! It is important to make a realistic estimate of the scale at which harvesting can occur and the distance between the harvest and the use area.
- **Short to long term**: Customization is increasingly needed to integrate work within the urban fabric. Focus on small businesses and functions that can mix well with residential areas (categories 1 and 2). Many construction and manufacturing companies are already present in Haven-Stad and may provide a fertile ground to build on or further organize!
- **Short term**: Use spaces that are initially used as construction sites or hubs during the building phase, and later turn them into sharing hubs, places for resource exchange. The space reservations at the quays for loading and unloading can play an important role in this, as seen in the Integrated Framework map. The accessibility of Haven-Stad, via water, rail, and road, provides good conditions for establishing businesses.
- **Short to long term**: Be selective about the types of businesses, for example, by setting circular requirements, which can help stimulate supply chain responsibility. What resources could be used for this? Are there mechanisms to ensure that companies with a positive impact are prioritized?
- **Long term**: Circular construction is not the same as circular living. Organize for this during development by ensuring enough space is allocated for it. A different industry is needed (the circular issue is not primarily about more or less space, but about a different types of space). Haven-Stad aims for a culture of conscious living, where making, repairing, etc., is an integral part of daily life. Are there examples of sufficient scale and size to learn from?

2.3 Hamerkwartier en NSDM-werf, Buiksloterham

Hamerkwartier

Hamerkwartier is a centrally located neighbourhood near Amsterdam's city center (currently zoned for industrial use), situated by the IJ River opposite Java Island. A development plan has been created where existing industrial buildings will be demolished to make way for the construction of 6,000 homes. The goal is to integrate productive industries within the development, with residential towers and a public ground floor for societal amenities. A quick calculation reveals that approximately 360,000 m² of gross floor area (GFA) will be developed by 2030, equivalent to about 520,000 tons of material, requiring a minimum of 20,000 truck movements — about 4,000 trucks annually. Shipping could significantly reduce these transportation movements.

Opportunities for Circularity:

- **Short-Term**: A key question is whether there is space for a material hub to temporarily store and efficiently select materials for reuse or disposal. This concept is not yet included in the current plans, but it could reduce the environmental impact of transporting and sourcing materials.
- **Short-Term**: One idea is to create a manufacturing or hub space at the GVB office on Zeeburgereiland, potentially utilizing the roof area. While this may be more expensive, it could be a worthwhile consideration. A significant materials hub, similar to those found in the western port area, could help manage construction material flows.
- **Medium-Term**: If the project involves timber construction, a temporary timber workshop could be set up in one of the existing halls. Manufacturing could take place within the development area itself, becoming an integral part of the local business strategy.
- **Long-Term**: A crucial question is whether, once Hamerkwartier is fully developed, the area could become a permanent hub for circular production and manufacturing. To answer this, it is necessary to break down "manufacturing" into different categories to assess the potential for a local, sustainable, and circular production facility.
- **Long-Term**: Engaging future residents is essential. A key consideration should be developing a circular concept for local work opportunities and for the public space. This could include integrating local circular businesses and ensuring residents are involved in sustainable practices from the outset.
- **Long-Term**: The planned green infrastructure must be integrated with the circular economy. The area's biodiversity and climate resilience could be enhanced through CO2-binding soil (e.g., composting). The green structure should also be linked to pedestrian and cyclist pathways, adhering to the principle of walking-biking-public transport-traffic managemnet -private car (which prevents car traffic and aligns with the circular economy's "R-strategy"). Furthermore, it could connect with food provision and food waste reduction, promoting a more self-sustaining community.

NDSM-dock

The NDSM-dock is a former shipbuilding yard located along the IJ River. Since 2000, plans have been made for its transformation, with a revised urban plan approved between 2006 and 2013. The historic NDSM site, a national heritage monument, still retains much of its industrial character, with iconic features like the shipbuilding halls remaining. The plan includes the restoration of a ramp as a park and a strip for timber construction projects. It is estimated that by 2030, around 175,000 tons of construction material will be used, translating to approximately 25,000 truck movements.

Opportunities for Circularity:

- Short-Term: Construction materials for both Hamerkwartier and NDSM-werf could be transported by water, but this option is not yet utilized. The municipality could set up a circular hub and allow developers to use it, provided they commit to circular construction practices. Such a hub could be situated in the northern part of the area, along the business strip by the Cornelus Douweskanaal-Oost.
- Medium-Term: If land space is limited, a floating hub or a dock could be constructed on the water. Alternatively, one of the existing warehouses could be repurposed for circular building processes. Historically, these areas were connected, and a new hall could be built between the Lasloods and Scheepsbouwloods, maintaining the industrial character of the area.
- Long-Term: Since the area is already in the advanced stages of development (almost fully transformed), it will be more challenging to incorporate circularity into the built environment. However, there is still potential to focus on circular principles in the public spaces. Implementing circular practices in landscaping, waste management, and resource exchange within the public realm could help drive sustainability.

Buiksloterham

Buiksloterham lies between the Hamerkwartier and NDSM-werf areas and is recognized as a circular urban neighborhood. It already features a circular manifesto, a materials hub, circular public spaces, and several timber construction projects. This area serves as a model for circular development. However, it is notable that many of the lessons and best practices from Buiksloterham have not been widely adopted in other area developments.

Opportunities:

- Circular Demonstration: Buiksloterham's status as a leading example of circular urban planning presents an opportunity to demonstrate the full potential of circular principles, including innovative construction practices, resource reuse, and local supply chains.
- Materials Hub: The materials hub in Buiksloterham could be expanded and integrated more with other areas like Hamerkwartier and NDSM-werf, enabling a city-wide network for resource sharing and circular construction materials.
- Public Space Integration: The integration of circular principles into the public space, such as using reclaimed materials, green infrastructure, and sustainable waste management systems, should be a key priority. This could influence neighboring districts and encourage broader adoption of circular practices across Amsterdam.

Despite its success, it is crucial that the lessons from Buiksloterham are not confined to this area alone but are instead used as a blueprint for circular development in other districts like Hamerkwartier and NDSM-werf.

Round 3 Recommendations

City

A Spatial Strategy for Circularity is Needed

The "Omgevingsvisie" (Spatial Vision) of Amsterdam is the integrated spatial vision for the city until 2050 and is updated every two years. The "Verstedelijkingsconcept 2.0" (Urbanization Concept 2.0) is the spatial vision for the Metropolitan Region of Amsterdam (MRA), based on the spatial visions of all participating partners of the MRA. Develop a "Spatial Strategy for Circular Development" for hubs, harvesting/mining, and processing in the short term within the Metropolitan Region of Amsterdam (MRA) – as part of the provincial and national spatial strategy. Look at the scale of the metropolitan region to identify areas suitable for larger hubs for the import of construction materials and the export of waste streams from demolition sites. As a government, this should be clustered and organized for space efficiency and to ensure a constant flow of waste materials for industry.

Connect the area developments around the IJ with a continuous blue line: they are already connected through water. Water already links business districts and large construction projects: use this as an opportunity. Focus on the development of a circular building and harvesting strategy in and around Amsterdam through water, rail, and road. Utilize the stacked Amsterdam Logistic Cityhub (ALC by CTP) for urban logistics located along the water.

Think not only spatially but also temporary. By intensifying space usage and allowing different functions at different times (e.g., recreation and logistics), circular economy concepts focused on higher levels of the R-ladder can lead to innovative spatial concepts that reduce space demand and minimize disruption. Also, consider new supply and disposal routes and reducing current congestion on the IJ from large cargo ships bringing materials from the East to the western harbor for local/regional use. Explore the opportunity for an additional harbor or the repurposing of several small harbors on the eastern side of the city (outside the lock or near the Amsterdam Rijn Canal).

Begin by regionally assessing which raw materials are available. Make an inventory of the expected waste streams, demolition projects, and fiber cultivation areas to identify materials that can be reclaimed or harvested from the areas around Amsterdam (a regional or bioregional approach). Select existing local industries and those with potential for the future within the MRA for processing, and provide the necessary conditions and spatial structures as the government to scale up the circular economy.

Develop a New Approach

The changes brought about by the rise of the Circular Economy often have (unintended) consequences. Changes in regulations, such as making circular building mandatory and accounting for residuals, may have implications for land prices in the coming years. Therefore, there is a need for more conversations within the city – including with 'new stakeholders'. The municipality of Amsterdam should also open up discussions at the urban level about 'The New Normal'. Start by exchanging knowledge and organizing excursions. Do this simultaneously at the national level and within the Eurodelta. Make insights visible. Work collaboratively with advisors and architects to develop a new urban building culture. Through a sustainability agreement (sustainable building), you could steer the collaboration with developers more effectively.

Within the municipality, it is crucial to learn how to develop in a circular way, understand material flows, and grasp spatial demand. The question to answer is: "How can I work towards this with my own project?" Collaborate with economists and financial institutions to better value the scarce and valuable spaces in and around the city, particularly those that hold stocks of valuable materials. This could lead to new ideas, such as using raw materials as an investment product.

Find your own specialization as an urban region

Focus on making the Amsterdam region a leader in knowledge-intensive circular (biobased) manufacturing industries by developing a circular business ecosystem that is meaningful for the Eurodelta. This requires a spatial and logistical strategy at the national/Eurodelta scale, as harvesting areas are spread across the entire Eurodelta. Link this strategy with the building tasks, agricultural challenges, and the transformation tasks of the fossil industry.

Eurodelta

Develop a Network

Quickly organize a sustainable network for knowledge exchange on circular built environments.

Joint Data & Mapping

The complexity of the Eurodelta requires more data, especially around material flows and harbor risks. Map the spatial distribution of raw materials, incoming and outgoing flows for the entire Eurodelta region, including physical flows and locations.

The Role of Governments

It is important to create a timeline or roadmap towards a circular built environment, with key milestones for 2030 and 2050. What is needed, when, and with whom? Between now and 2030, three million new homes will be built in the Netherlands, Belgium, and North Rhine-Westphalia combined. The renovation challenge is even larger. A significant amount of material will be involved. It's essential to learn from each other and look at other projects in Europe, specifically within the Eurodelta. Many contractors operate already at this scale and can help scale knowledge and best practices.

Streamlining legislation will support this, ensuring that private construction projects track material passports, separate construction waste, and offer it to processors. Governments can drive lighthouse projects by digitalizing material passports for public spaces and public real estate.

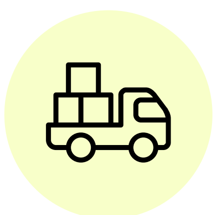
Circular industries in the Eurodelta, such as chemistry and steel, are interconnected at local and regional levels. Thinking on the Eurodelta scale can also provide insights into the smart allocation of some "spatial links" that have supra-local importance. In fact, it may be necessary over the next 10 years to develop shared "state factories for circular construction" on this scale, rather than leaving it solely to the market. Leaders like the Metropolitan Region of Amsterdam and the Brussels-Capital Region can serve as kick-starters for a biobased/circular construction industry throughout the Eurodelta, a movement that starts in cities based on shared urgency and mutual cooperation with a shared economic interest.

At the national level, the "Nota Ruimte" (Spatial Planning Document) is currently being developed. The construction challenge in the Netherlands is primarily a materials challenge. We will continue to grow, and new materials are scarce and expensive. The urgent housing crisis makes this a key topic of conversation in the coming year: building differently is necessary.

Calculaties: Hamerkwartier

2 Toekomstige situatie									25 ton		400 ton	
2a Nog toe te voegen tot 2030					Traditioneel		Circulair 2030		Trucks		Boten	
Programma		**Aantal**	**BVO**	**Materiaal (kg)**	**Materiaal (ton)**	*Biobased (2%)*	**Materiaal (ton)**	*Biobased (30%*	*Traditioneel*	*Circulair 2030*	*Traditioneel*	*Circulair 2030*
	Laag (1-4 verd.)	435	36.300	36.300.000	36.300	726	18.150	5.445	1.452	726	91	45
	Midden (5-8 verd.)	1740	14.500	20.300.000	20.300	406	10.150	3.045	812	406	51	25
Wonen	Hoog (>8 verd.)	2175	181.500	290.400.000	290.400	5.808	145.200	43.560	11.616	5.808	726	363
	Kantoren	NTB	27000	29.700.000	29.700	594	14.850	4.455	1.188	594	74	37
Werken	Bedrijvigheid	NTB	55000	71.500.000	71.500	1.430	35.750	10.725	2.860	1.430	179	89
Winkels		NTB	21.000	31.500.000	31.500	630	15.750	4.725	1.260	630	79	39
Voorzieningen		NTB	26.000	39.000.000	39.000	780	19.500	5.850	1.560	780	98	49
Overig		-	-	-	-	-	-	-	-	-	-	-
			361.300	**518.700.000**	**518.700**	**10.374**	**259.350**	**77.805**	**20.748**	**10.374**	**1.297**	**648**

2b Nog toe te voegen tussen 2030 -2050					Traditioneel		Circulair 2050		Trucks		Boten	
Programma		**Aantal**	**BVO**	**Materiaal (kg)**	**Materiaal (ton)**	*Biobased (2%)*	**Materiaal (ton)**	*Biobased (50%*	*Traditioneel*	*Circulair 2030*	*Traditioneel*	*Circulair 2030*
	Laag (1-4 verd.)	135	12000	12.000.000	12.000	240	4.000	2.000	480	160	30	10
	Midden (5-8 verd.)	535	48000	67.200.000	67.200	1.344	22.400	11.200	2.688	896	168	56
Wonen	Hoog (>8 verd.)	670	60000	96.000.000	96.000	1.920	32.000	16.000	3.840	1.280	240	80
	Kantoren	NTB	9500	10.450.000	10.450	209	3.483	1.742	418	139	26	9
Werken	Bedrijvigheid	NTB	35000	45.500.000	45.500	910	15.167	7.583	1.820	607	114	38
Winkels		NTB	8000	12.000.000	12.000	240	4.000	2.000	480	160	30	10
Voorzieningen		NTB	6750	10.125.000	10.125	203	3.375	1.688	405	135	25	8
Onbestemd	Reserve	-	-	-	-	-	-	-	-	-	-	-
			179.250	**253.275.000**	**253.275**	**5.066**	**126.638**	**63.319**	**10.131**	**3.377**	**633**	**211**



- traditioneel - 20.784
- circulair - 10.374

- traditioneel - 1.297
- circulair - 648

- De schatting van het gemiddelde appartementengebouw BVO -
- Schatting van het gemiddelde kantoorgebouw BVO -

- Materialen die het gebied binnenkomen:
- Materialen die het gebied verlaten:

- Hoeveelheid hout die binnenkomt
- Hoeveelheid hout die wordt geëxporteerd:

- Hoeveelheid beton geïmporteerd:
- Hoeveelheid beton geëxporteerd:

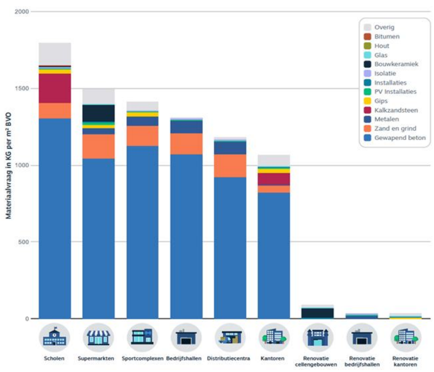
- De hoeveelheid ruimte die nodig is voor opslag:

Vragen:

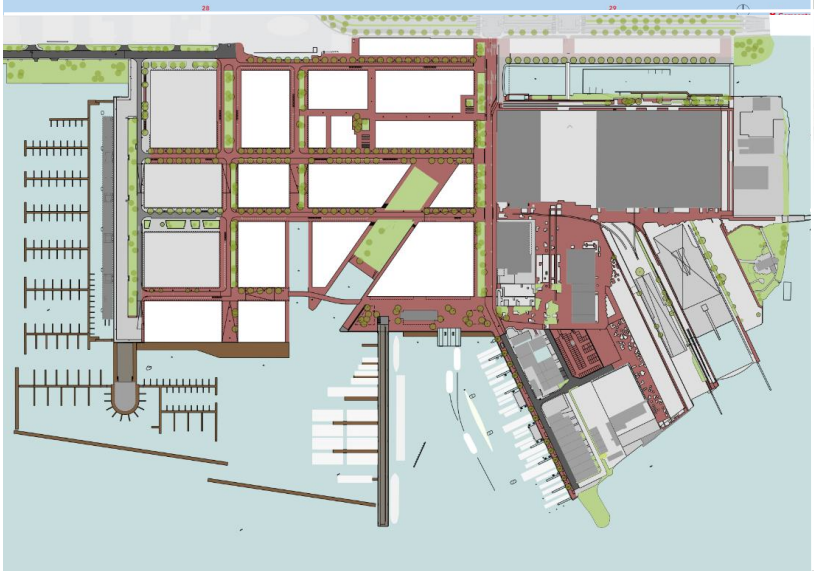
- Wat zou de logische route zijn voor deze materialen om in en uit te gaan?
- Gebaseerd op het volume, de frequentie en de gedetecteerde route
- Kun je de beste locatie voor de Materiaalhub bepalen?
- Wat zou de gewenste locatie en functie van de hub zijn
- Hoeveel volume zal deze hub innemen en wat zal de opslagcapaciteit zijn?

	Materiaal (kg/m² BVO)
Laag (1-4 verd.)	1.000
Midden (5-8 verd.)	1.400
Hoog (>8 verd.)	1.600
Kantoren	1.100
Bedrijvigheid	1.300
Winkels	1.500
Voorzieningen	1.500
Overig	1.500

Materiaalintensiteit per archetype (kg/m² BVO)



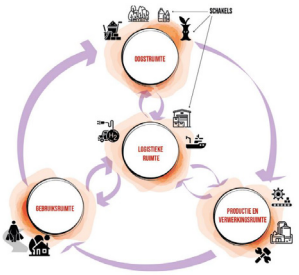
>> Draw it!



Hamerkwartier & NDSM
RONDE 1 - huidige situatie:

Opdracht

- Hoe werkt Hamerkwartier en NDSM nu? Teken de 4 types circulaire ruimtes op kaart:
  - Oogstruimte
  - Logistieke Ruimte
  - Productie & Verwerkingsruimte
  - Gebruikersruimte
- In dit gebied zullen tot 2030 de volgende hoeveelheden materialen worden gebruikt:
  - 518.700 t (hamerkwartier)
  - 110.524 t (NDSM)
- Waar komt je bouwmateriaal naar verwachting vandaan? Komt het over de weg, spoor of over het water? Teken de routes op kaart.
- Hoe veel vrachtauto's / schepen denk je nodig te hebben om de benodigde hoeveelheid materiaal aan te voeren?



Oogstruimte (circulaire brongebieden)

Voor het winnen of oogsten van primaire (biobased) grondstoffen en secundaire materialen als input voor ketens. Denk aan wieren of vezelgewassen, sloopmateriaal of zeldzame metalen.

Logistieke ruimte (circulaire knooppunten)

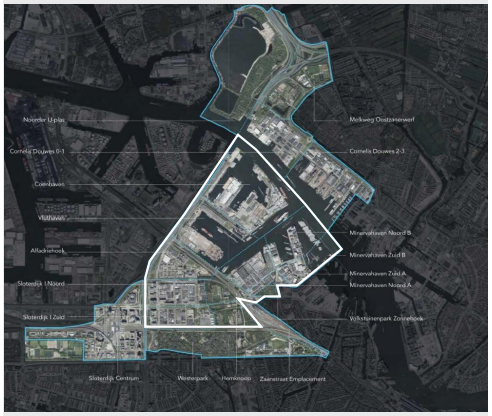
Zoals een bouwhub, waar logistieke stromen van primaire en secundaire grondstoffen worden samengebracht, opgeslagen, uitgewisseld en verder gedistribueerd langs ketens

Productie- en verwerkingsruimte (circulaire vervaardigingsgebieden)

Waar productie, verwerking en verwaarding van grondstoffen, materialen, halffabricaten en producten plaatsvinden. Denk aan spoelen, drogen, verhakselen, persen, printen, sorteren en assembleren

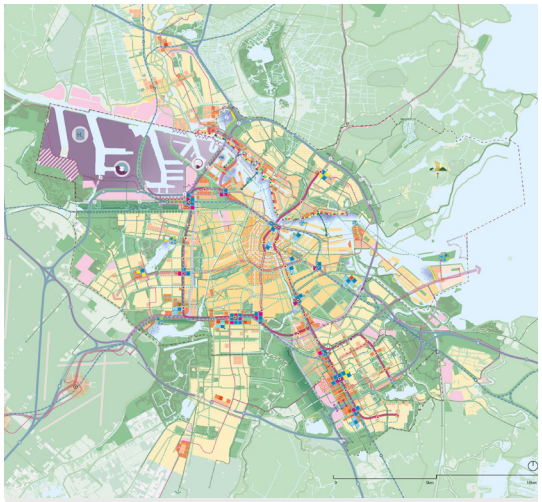
Gebruiksruimte (circulaire consumptiegebieden)

Zijn de plekken waar consumptie van ketens plaatsvindt, bijvoorbeeld de circulaire woonwijk. Uit consumptiegebieden komen retourstromen van secundaire grondstoffen en materialen voort.



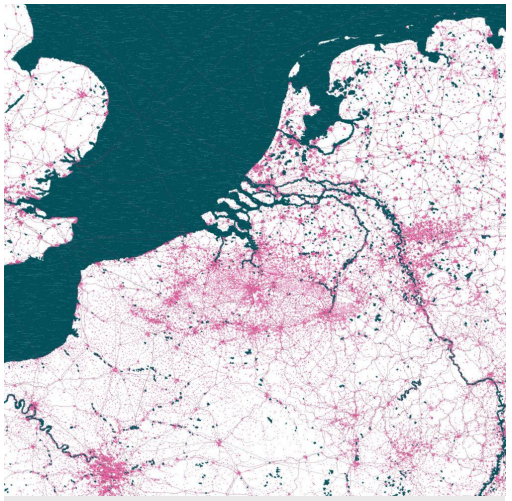
Aanbevelingen voor Haven-stad

Formuleer 3 concrete acties die de komende 2 jaar in de planontwikkeling en uitvoering van Strandeiland moeten worden ingebracht om een circulaire gebouwde omgeving te kunnen realiseren.



Aanbevelingen voor de Omgevingsvisie

Formuleer 3 concrete acties voor de Omgevingsvisie zodat de ambities voor een circulair gebouwde omgeving voor 2030 (50% reductie primaire grondstoffen) en 2050 (volledig circulair) gerealiseerd kunnen worden.



Aanbevelingen voor de Eurodelta

Formuleer 3 concrete acties die de komende twee jaar moeten gebeuren op de schaal van de Eurodelta om de circulaire gebouwde omgeving in Amsterdam sneller te kunnen realiseren.


Schaarbeek-Vorming

ASSET WORKSHOP

Brussels

Who:

Target groups: Civic servants (programma circulaire, logistiek, economy, designer), City/MRA/Province
External guests: Oram, Harbor, Van Keulen, Fiction Factory, TSE ntb.

When:

21th of November 2024

Towards a circular built environment in the Eurodelta

Workshop Results from the Local/Regional Workshop of the ASSET Project / BRUSSELS

21th of November 2024, Perspective Brussels and Bruxelles environnement

On November the 21th 2024 the ASSET workshop that was organised by the region of Brussels capital took place. This workshop was the last of the four workshops organized by the ASSET partners. The main topic of this workshop was how to develop a CBE and what a circular economy could mean for Schaarbeek-Vorming, a location that is currently redeveloped in Brussels.
During the session around 15 professionals with different backgrounds were present, namely academics, people from the municipality or the Flemish government, circular start-up or company owners/employees and some of the ASSET partners. The main research questions were:

- What are the needs of the various players and sectors involved in the circular economy? Where can these needs be met and what local resources are needed? What synergies are possible between sectors?
- What places and spaces should be allocated to the circular economy? How can the necessary transition be anchored in the urban, metropolitan, regional and supra-regional space?

The workshop was divided into two parts. The morning session's objective was to provide participants with informative and inspirational content regarding material, logistical, and data flow management in the built environment, with an emphasis on enhancing the sector circularity. Nicolas Brusselaers (VUB) emphased the importance of an efficient data management model that enable to trace and monitor construction and and demolition waste material flows. Steven Claes from VITO showcased how the DRASTIC project's pilot initiatives demonstrate innovative solutions to reduce whole-life carbon and enhance circularity in the construction value chain. William Dockx of Shipit discussed the ReLOAD project, emphasizing the role of advanced reverse logistics in improving on-site sorting and optimizing construction and demolition waste (CDW) management. Subsequent presentations by BC Materials, Rotor DC, and Wood Park introduced participants to various types of multifunctional material hubs, envisioned as local nodes in a future circular network within the Euro Delta region. Finally, Giulia Scialpi addressed the local challenges and opportunities related to the valorisation of food and other biowaste for construction applications
The afternoon was used to brainstorm and come up with ideas and conclusions regarding the research questions. There were three tables and two rounds of group discussion. Each table had its own topic on which they focussed: spatial configuration, logistics and distribution and ecosystems of companies.

Key message workshop

Circular functions come in many shapes and forms and one area with certain characteristics can be suitable for many different of these circular functions. That being said, use the already present characteristics of the location to its fullest (water, road and train connectivity). Use the brownfield locations, not as housing development site, but as (circular) industrial parks.

Synergy
Create a space in/around cities where start-ups can grow and organize synergies between these different companies (can also be financial – research). But it is as important to also find synergies with the companies that are already present at an industrial parks, look at what each company has to offer. Does a company has a big roof? Then maybe they can collect the rainwater that is useful for another company.

Visibility
Circularity should be more visible in order for people to understand and appreciate the industrial function, therefore showing it to the public is important. This could be done through a museum, tours around the industrial park, school trips and so on.

Governance
Strong governance is needed to create (by selecting certain companies) and maintain (by steering the companies) the identity of an industrial park. When a company decides to leave it is important to have someone who manages which company comes in next. Long term leases are important, because they prevent companies from having to move constantly which improves the internal cooperation in an industrial park. Strong regional, national or even European legislation is needed as well. For example a decisive zero emission zone would stimulate the reduction of emissions emitted by trucks.

Eurodelta
The Eurodelta scale could help to match a shortage in local supply and demand of materials. When a client in Brussels wants five hundred wooden beams, it is possible that these beams are not present in or near Brussels. However, within the Eurodelta they probably are. The matching of demand/supply on Eurodelta scale should go hand in hand with a sustainable transport system and a well known and widespread used data system.

Short introduction on the location

The case study location that was used during the workshop was Schaarbeek-Vorming. This place is located in the northern part of Brussels. It is a site with a rich industrial history, but over time it has become underutilised. It was historically a major railway hub, due to decline in its utility a large part of the marshalling yard is no longer needed and therefore will be redeveloped (60 HA). It has a big potential for the circular economy, because of its good accessibility by water and train and because of the already present industrial functions next to it. But the circular economy department is not the only one to have a claim on the area. Because of it's isolated location there is also a lot of biodiversity and it has potential for the production of energy.

Table 1- Spatial configurations

The site has some very special characteristics, it is namely enclosed by the water and the railway. It could be an opportunity to cast a strong identity on the site. This could be done either by looking at activities that already take place and strengthening these activities by creating an ecosystem so that companies can benefit from each other or by creating a whole new identity, for example making it 'the waste place of Brussels' where all the waste of the city of Brussels is recovered and transformed. Making urban metabolism the central theme of the area. The geography then can be used as a gradient, where the treatment of the material can function as a zoning structure, with the on the north site the entrance for the materials and on the south side a waste incineration factory. Either way, good management of the site is crucial, because they can play a role in the placement of a specific type of company and in the maintaining of the identity of the area. Often companies move and then the identity is lost.

Table 2 – Logistics and distribution

This area is a perfect connected spot within the city and its region, that in itself is a huge value. But since around 37% of the construction waste is shippable and container transport is still very important in the building sector, the fact that the area is located next to a waterway is also of great value. Companies who currently don't use the harbour could be given land on the newly developed site. Another way of using the accessibility of the area would be to make a massive distribution centre for construction material or food. Trains or boats could bring in the goods, after which they are distributed within the city. A whole other way of looking at the area would be that it is a place for small circular making industry, a place that is well connected so that employees and tourist can easily get there. The circular industries could help people to find job and they could show people what the circular economy entails. Some general remarks: Circularity should never be a goal on it's own but should be seen a mean to reduce the CO2 footprint and you can't circulate endlessness, at some point you will need new materials.

Table 3 – Ecosystem of companies

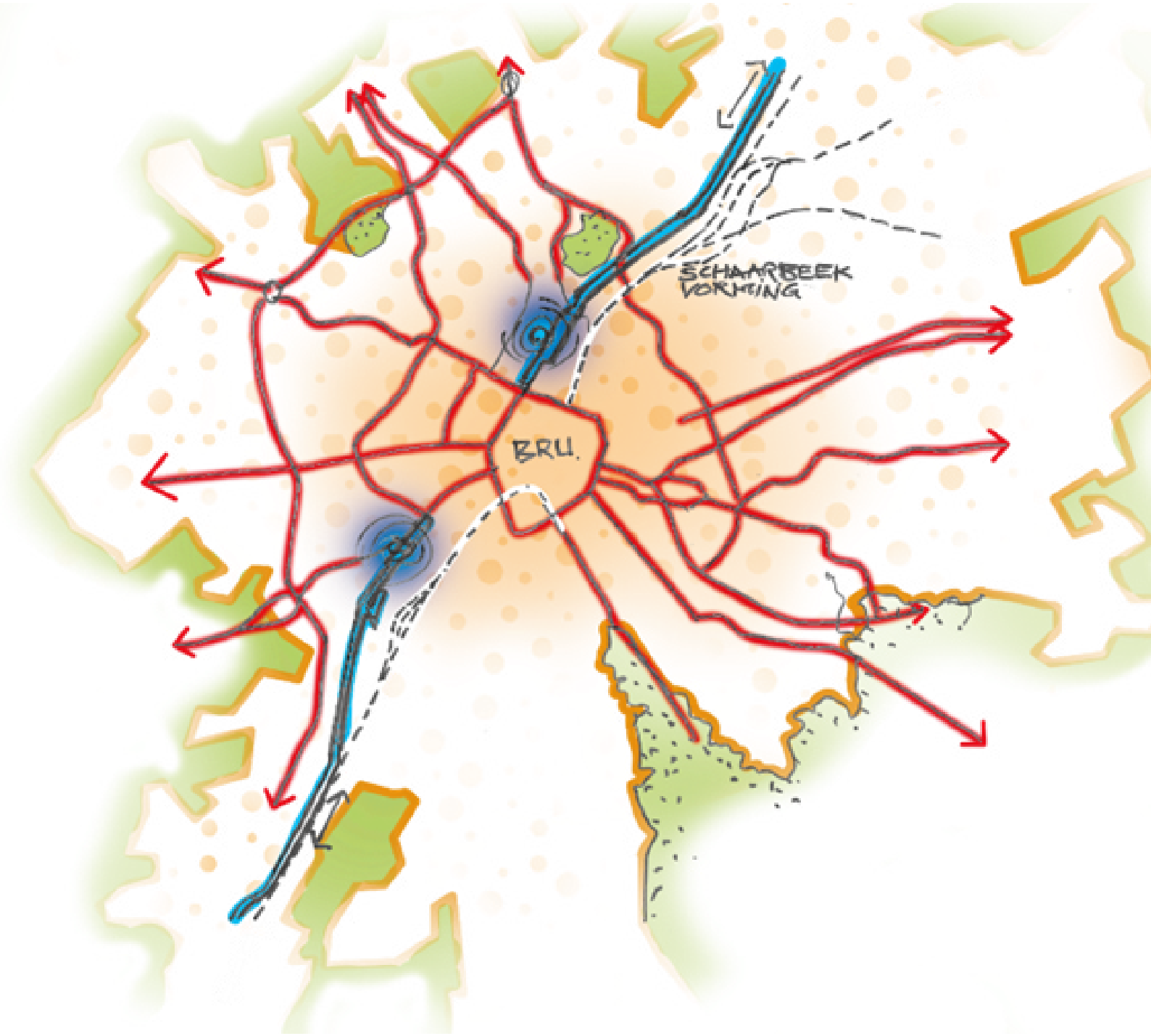
Currently, European countries are shipping away lots of materials, because it is not profitable to reuse them. However, these materials are valuable since Europe many of these materials are scarce and we depend on other countries for mining them. This area therefore could function as a ''gold mine'', a place where all the materials that aren't profitable are stored. The products can be reassemble (the expansive and time-consuming part) and all the materials sold separate. Other ideas for activities that possibly could take place in the area were recycling of concrete and the developing of biobased building material. Concrete recycling creates lots of noise and smells, since the area is very isolated this could be a potential. A biobased material developing centre could be part of the industrial symbiose, using waste material from agriculture to create construction materials. Schaarbeek-Vorming would also be the perfect place for start-ups to grow. Big companies could have a crossover with the start-up companies and make them financial viable. Also start-ups can work together by sharing their machines and knowledge.

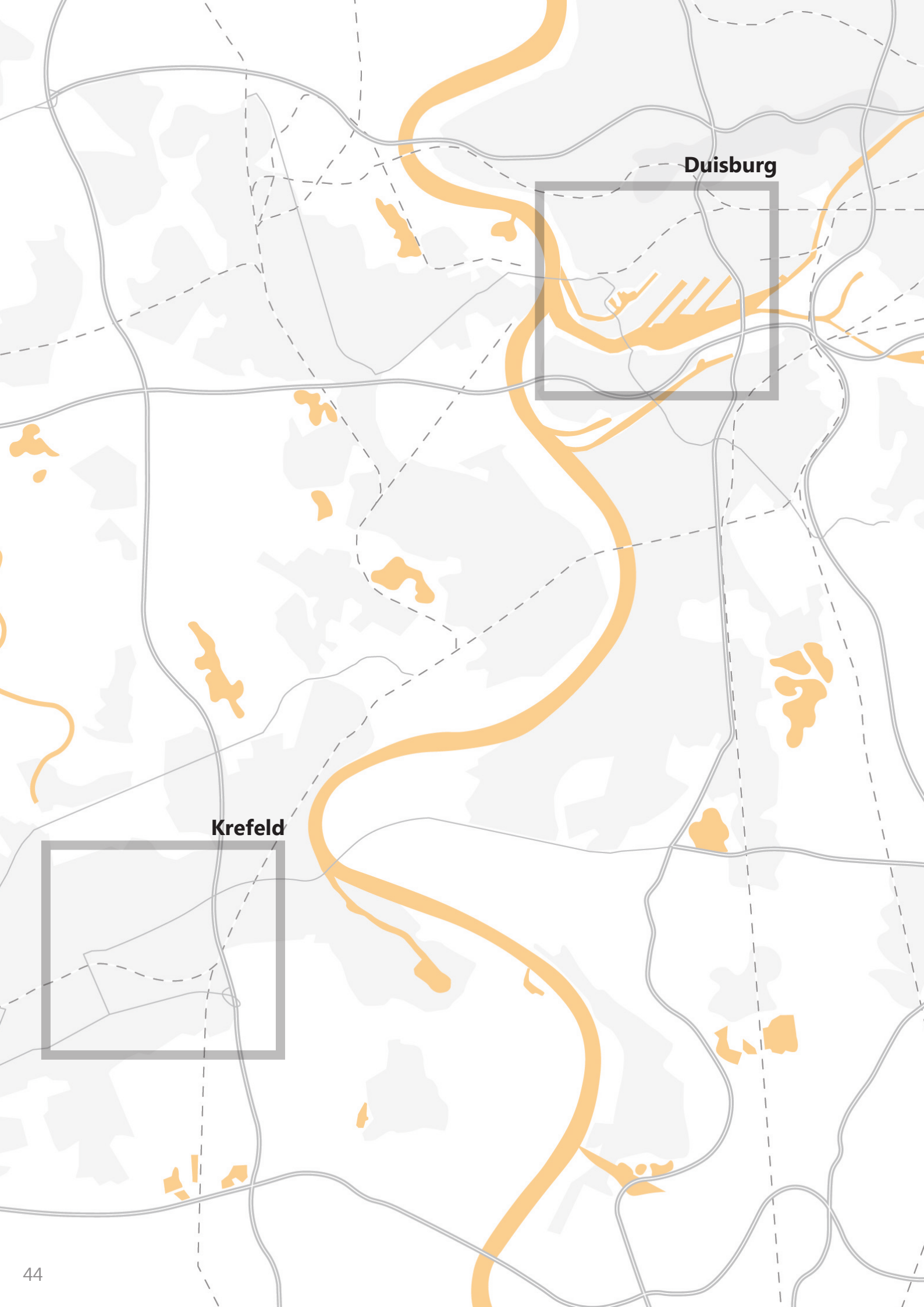
Lessons Learned

- Here is a 'planning gap' towards present and a future circular built city
- The upscaling of successful initiatives like BCCC, ShipIt and Woodpark is necessary.
- Potential: from 1% to 25%, high quality reuse in the building logistics reduces time spent on the construction site.
- Data systems are crucial for making the logistic sector more efficient/circular (ShipIt, METASETS)
- The solution should be feasible and affordable. It could help to involve one important stakeholder (BC materials)
- Smart systems are now being tested (Reload) for the return of waste streams from construction sites. Promising when sorting and separation is already done on the construction site. How to do this with smaller contractors of renovation is still a question.
- For biobased applications, scaling up and linking with major players is necessary
- Cluster small initiatives into strong clusters in a stable place long-term
- We need to move towards a smart database like Opalis but then also with what the supply is by provider/quality. The government can already do a lot with hubs for material flows from public space (see PREUSE, Interreg project). Size of hubs varies from 1000-3000m2 to 5500-15000m2.

Impression of the workshop

Drawing situation Brussel




Duisburg
Krefeld

ASSET WORKSHOP

Krefeld

Who:

Several parties from administration, academia, enterprises, and stakeholders that are part of the Healthy Building community

When:

the 20th of June 2024

Towards a circular built environment in the Eurodelta

Workshop Results from the Local/Regional Workshop of the ASSET Project / KREFELD

20th of June 2024, Krefeld Business

The German team invited several parties from administration, academia, enterprises, and stakeholders that are part of the Healthy Building community to be a part of an exchange with the ASSET team (as part of the Krefeld portion of the excursion). Three roundtables were organized where each focused on a specific circularity theme (Circular Building, Circular Planning, and Circular Strategy) and participants shared their individual experiences and knowledge based on the roundtable theme they were assigned.

Key message workshop

Starting with a focus on energy, the sustainable building initiatives of the city has shifted to an additional focus on health and currently also cradle-to-cradle. Initiatives and projects are driven by a strong cooperative and network approach. Cross-border cooperation mainly with Dutch partners plays a strong role like in The Healthy Building Movement or the Initiative Euregional Sustainabiliy Center (ESC) for example, which focuses on sustainable manufaturing and sustainable buildings. Moreover, approaches tend to focus on a comprehensive shift towards sustainability by integating the economy (mainly SMEs) which may innovate towards sustainable products, services and business models, thus providing the potentials for green growth. With its industrial base in manufacturing, the city of Krefeld may further scale up a green economy and position itself as an excellent location for sustainable material production. With a high accessibility by ship, rail and road, and an international airport (Düsseldorf) nearby, logisitic conditions are also excellent. By being situated directly between the Netherlands and at the edge of the Rhine-Ruhr area, this makes Krefeld an excellent connection between both countries in terms of resource flows but also knowledge transfer.

Roundtable: Circular Building

Main points of Circular Building roundtable session:

- Interesting term in German – Enkelfähig: to make futureproof for your grandchildren
- Not many circular projects in the built environment in the Rhine-Ruhr region come to mind at the start of the conversation - EUREF campus in Düsseldorf is mentioned.
- There is a lot of intent but not a clear direction.
- Appears that timber from HAUT building in Amsterdam is coming from Münster and that the region is providing building materials for the Eurodelta region.
- Discussion is mostly about materials; timber is part of the solution but still many other materials like concrete and steel are still needed.
- Focus should also be on greening the traditional industries. Wiki: "Thyssenkrupp is Germany's largest steelmaker, and the company's Duisburg steel production site alone accounts currently for 2% of Germany's CO2 emissions." They are investing in greening steel production and recently presented a CO2 neutral oven.
- Focus has shifted towards the approach of circular building.
  - First: to not demolish (Was steht müssen wir behalten) and focus on renovation and reuse.
  - Second: building in a way that makes it easy to dismantle and adapt to future changes.
  - Biobased as part of the solution but reuse very important
  - Money still a big obstacle; it is still cheaper to buy new from abroad than to recycle or reuse within the region.
- Someone at the table is working on another Interreg project, CIRCULAR, and mentioned some example projects like advanced material separation plant by Eberhardt in Switzerland.
  - Seems that there is more happening upstream of the Eurodelta

Concluding remarks of Circular Building rountable session:

- A lot is happening but not very well coordinated or with a clear focus. It is also apparent that many Interreg projects are going on that do not know of each other's existence. It would help in that sense to have a common language and better collaboration.

Roundtable: Circular Planning

Main points of Circular Planning roundtable session:

- Question that came up: do we need a new approach for circularity in planning? (e.g. circular material/hubs)
- Answer: We probably need a completely different approach for circular construction/building.
- We have to plan the spaces and we have to plan conditions for the re-flows.
- Understanding and diagnosis are crucial, the vision and the talks
  - Therefore a participative and co-learning, co-design approach is needed.

- The big questions are:
  - Who is responsible for standardization, a coordinated planning and the eventual harsh choices. Regional governments?
  - What about circularity in business parks (material and energy flows between companies)?

- Companies act in 'ecosystems'
  - The bigger firms can develop smart logistic solutions, smaller firms follow and will find their niches.
  - In business parks you might need circular facilitators, e.g. ShipIt.
  - Moreover open access of digital logistical systems / secondary materials are very necessary.

- Brownfield development vs. greenfield development
  - Greenfield is expensive
  - The struggle for space in cities are making it almost impossible to develop new material hubs (environmental permits)
  - Brownfield developments offer cheaper spaces in proximity with the building/demolition projects.
  - Be keen on old port areas or multimodal location close by the city. Startups might well find a place there. If fostered by government they could scale up there together with other businesses.

- Do we need cooperation between other municipalities in terms of material flows/knowledge exchange?
  - Yes, the questions are similar in the Eurodelta.

- Barriers:
  - There is a lack of (cheap) spaces for storage and processing and the city is pushing it outside, but proximity is crucial.
  - Distance of heavy cargo is expensive; proximity is a condition
  - Also the environmental permits, the willingness to cooperate between companies and governments.
  - A lack of standards/accreditation for re-materials.
  - There is not one responsible actor who can (top down) plan the ecosystem – it is top-down, bottom-up and sideways.

- Chances/opportunities:
  - Sharing knowledge and practices, showing a vision on different levels of scale and actions.
  - The money-argument works as a starter: smart CE logistics, reuse of materials, cooperation spares money.

- Reflection/learning moment:
  - What were the spatial implications of the R-strategies? Were the R-design principles used?
  - What does slowing, closing, narrowing and substituting means within the Eurodelta?
  - Slowing, closing, narrowing and substituting demands interconnected spaces with specific qualities.
  - Coping with return flows is a new emerging economy; it needs planning on local, regional, national and even international scale.

Concluding remarks fo Circular Planning roundtable session:

- Scale matters!
  - Upscaling means lower costs.
  - Eurodelta is a scale-level that already works for companies (like TSR in Duisburg). The Eurodelta is approximately a 200 km by 200 km dense urban-rural delta area within a 600-700 km radius catch area. It is positioned between North Sea basin and the Alpine region on the crucial western-EU nexus of Rhine-Alpine corridor with rail, car, waterways and ports & corridors.
  - Within this Eurodelta, we see different cultural and natural regions, and on that substrate a logistical circular system with hubs/materialparks is evolving with interconnected cells about 25-50 km radius (feedstock areas around the linking spaces).
  - These linking spaces (e.g. Hubs, industries, harvesting and mining zones) need proximity to building projects and user spaces and are always a combination of storage and processing.

Impression of the workshop

Roundtable: Circular Strategy

Main points of Circular Strategy roundtable session:

- How can stakeholders solve spatial challenges, by collaborating on the scale of the Eurodelta?
- How to develop a multi-stakeholder approach for a circular Eurodelta?
- There could be opportunities for stronger cooperation between cities, companies, and engineers, because engineers could help companies as well as cities into realizing circular buildings.
- What are the main future spatial challenges/scenarios towards a circular Eurodelta?
- Future spatial challenges and scenarios are the scarcity of space. In the future, companies may need the space for circular activities and cities should provide them with the required space. However, cities will also need to deal with the existing space for non-circular activities. The existing space could be changed into ideal space for a circular built environment.
- What does cross-border collaboration and arenas mean for a circular Eurodelta?
- Cities and regions can focus on specific area(s) for analysing data on biggest material flows, developing new umbrella framework, regulations, and (design) guidelines and supporting circular building in the focus area(s).
- What is necessary to develop a spatial-economic strategy and action plan for the circular transition of the Eurodelta?
- What comprehensive spatial planning concepts (like networks and linking spaces) are needed on what scale and what actions are needed for losing/slowing/narrowing/substituting towards a circular Eurodelta?
- Combination of activities by companies and cities are crucial for a circular economy. Therefore, we could organize meetings with companies to come together in specific area(s) and to make circles for closing/slowing/narrowing/substituting loops.
- Does your city has an own strategy/is working on it/plans a strategy?
  - The city of Krefeld is preparing a new strategy on environmental healthy buildings.
- Issues covered: sustainable building and maybe consuming of goods in the city.
- Chances/opportunities: implementation of a best practice in the city, so that the city can show possibilities and also can experience challenges for sustainable building.
- Hurdles: view of politicians that the market shouldn't be too much pressured.
- Which actors are involved?
  - The municipality and semi-public parties are mostly involved in the strategy for the city of Krefeld. The idea could also be to involve engineers into the task for the municipality.

- What do we think about circular strategy? How do we come to the change towards circular system?
- Introduction round about information on the existing strategy of the Province of South-Holland and the idea behind the ASSET

- Project - to the roundtable participants who are not familiar wit this strategy and ASSET
  - In 1.5 year time, the province of South-Holland executed a circular spatial strategy for South-Holland. South-Holland has a lack of space fto accomodate all spatial demands of economic activities, such as circular building and construction.
  - Duisburg and Krefeld also do not have a lot of free space; there is a ratio of space and workforce to be met when developing new space.
  - Logistics uses are also debated.
  - Krefeld is now busy with preparing a strategy on environmental healthy buildings; they have received the special condition of politicians, that the focus shall lie on activities of municipalities (and semi-public players) and the activities will not put too much pressure on the market.

- The participants of the roundtable talked about public space and the creation of jobs in the circular economy
  - They would like to change 'the big boat' towards realizing environmental healthy buildings, as the X-curve shows
  - They would also like to change the existing space into ideal space; there will not be new space.
  - Supporting one area in North-Rhine Westphalia could be a model that the group thought about e.g. during the re-development of Opel in Bochum where a big logistic enterprises wanted space. Here, guidelines for investors should be defined.

- Cities have a lot more power than one thinks. Existing spaces, like brown fields should be developed. Here, design principles and guidelines are needed.
- According to Amsterdam, cities will be asked 2-3 times per year to provide companies' space within 1.5 years. Otherwise, they will move to another location.
- Circular initiatives should be supported, but how can money be earned from and for these urban developments.
- How much workforce is needed for circular building and construction, and specifically environmental healthy building at the end? The ratio for work force is 60 per hectare for Krefeld
- Companies should be provided with possibilities to get space for circular activities. How can companies combine activities to make loops circular?

- The logic of circularity is complex and circularity & sustainability have many dimensions.
  - It is about the substances, energy, logistics, agricultural use of landscape and biobased materials.
  - It would be interesting for circular economy to come together and to make a bigger circle (to close loops).

- Focus on one subject is very hard; complexity needs to be unraveled.
- The plan of Krefeld is to realize more sustainable building and maybe also focus on consuming of goods; however...
  - There are a lot of restrictions and there are factors such as people and time.
  - It is difficult to make a sustainable project and to have the right people on the right spot.
  - Public procurement is useful for promoting sustainable building. It requires also to put circular buildings in regulation.

- Germany is a very regulated country. What kind of city would you want to become? How can we involve new people from marginalized groups?
- First step for a strategy could be first to invest in data on material flows to know what goes in the city and what goes out the city
  - What is the biggest material flow?
  - Cities need data, otherwise monitoring of a strategy is not possible.
  - Also network and knowledge building is required for cities.

- Krefeld would like to start first with realizing one sustainable public building to be the first with a best practice.
- Cities have a lot of tasks at the same time; restrictions and laws will need to change.
- An association of engineers can help the companies, who have own goal with focus on money.
- We need to talk for combination of cities, companies, engineers. Cities are much more in the topic.

Concluding remarks fo Cricular Strategy roundtable session:

- It is a ‘chicken-egg’ situation: on the one hand, a conservative construction sector; on the other hand, cities need to start as ‘leaders of change’ but the task is complex.
- What do cities require first: a strategy of a best practice? The best choice could be to get internal regulations and to learn from the sustainable building to see the results.

- Some concepts are now coming to life.
  - Krefeld has a few
  - The City hall of Venlo is an example that everyone knows.
  - Krefeld would also like to build a new administration building: a cradle to cradle certified building.

- Spend not too much time and make it concrete.
- There is no resistance in Krefeld.
- A strategy could land in a bottom drawer – this is why Krefeld is now hesitating to make a big strategy.
- The city could also have a combination of both, because each city needs ambitions, guidelines and benchmarks.
- Cities would like to learn from the implementation phase(s) of projects and showcase the possibilities for sustainable buildings
- Investors would like cities to take the leadership.
- Cities could make a best practice to showcase the good example and to make clear what are their expectations and goals for sustainable buildings.
- Investors want to know the quality of a neighborhood; if they don’t know then it is not sustainable for them to invest in the building.
- A framework must be in place for one single project and discuss it with the politicians, so that politicians are also willing to invest public money in the project.

Impression of the workshop

COLOPHON

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