ASSET Final Report

General Outcomes

A Spatial Strategy for the EuroDelta: Boosting the circular builT environment

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

ASSET

EURODELTA

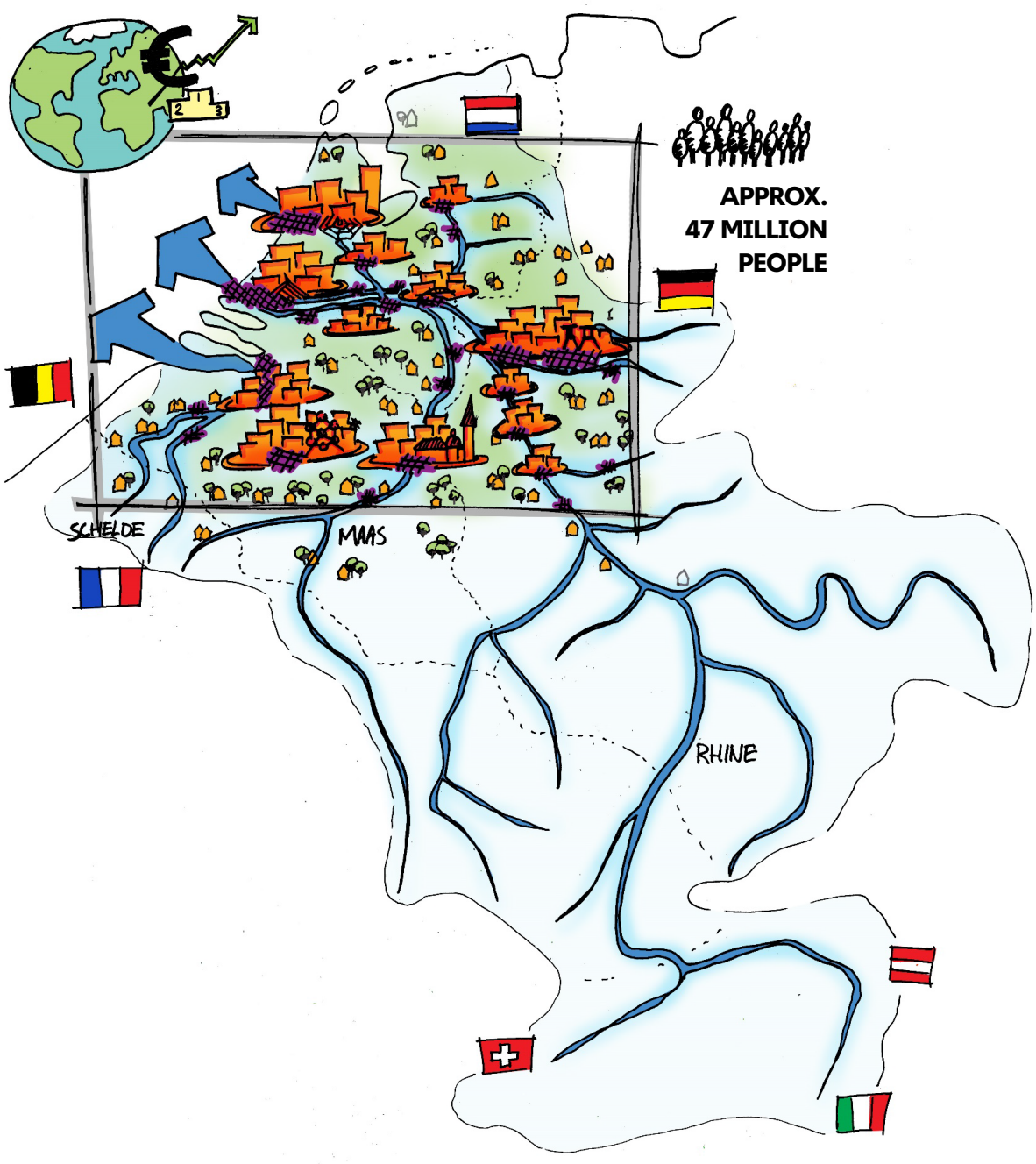


Illustration of the EuroDelta region
(Credit: BVR Advisors)

Project partners of ASSET

Chapter 1
ASSET

ASSET

ASSET stands for ***A Spatial Strategy for the EuroDelta: Boosting the circular builT environment***. It is a small-scale Interreg North-West Europe (NWE) project with a duration of 18 months. Small-scale means that it is a simplified, lower-budget collaboration initiative under the European Interreg programme with the aim to foster cross-border cooperation between regions in Europe.

The project's target is to determine the potential feasibility to create a spatial strategy for a circular built environment for the EuroDelta and to build a stronger partnership firstly between participating partners and secondly with associated partners. From the start, project partners agreed that the project functions as a preparation phase for further collaboration and follow-up projects.

The aims of the ASSET project are:

a) to better understand the concept of a circular economy and a circular built environment (CBE).

b) to explore the (spatial) implications and challenges of transitioning to a CBE.

c) to find innovative frontrunner ideas and trend and developments that accelerate a CE and CBE within the EuroDelta.

d) to understand spatial design principles that can be implemented on different spatial scales and find interconnectivities between different layers.

e) to understand the specific situation of the EuroDelta.

f) to develop a strategy for a circular built EuroDelta including inspirational visions, as well as policy recommendations.

g) to start a future collaboration.

The 11 project partners of ASSET include cities, regions, business associations and academic institutions from 3 countries – The Netherlands, Belgium and Germany under the lead of the City of Amsterdam. The partners involved in the project are experts in the field of spatial planning, sustainability, circular economy, economy and business development.

The project is supported by 30+ associated organisations covering academia, governments, civil society, and enterprises. External advisors have also been involved in the project namely BVR Advisors for Spatial Development and REGENALYZE.

During the project period, several activities were performed that resulted in 3 main outcomes:

Activities per phase:

Knowing
- ASSET Meet & Learn
- Policy Analysis of ASSET cities & regions
- Circular Design Atlas

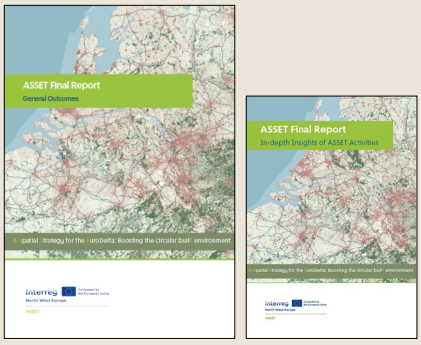
Exploring
- ASSET on Tour
- ASSET Local & Regional workshops
- ASSET Academia

Recommending
- ASSET Seminar
- Final Conference

Three main outcomes:

1. The **EuroDelta 2050+ publication**
(April 2026 delivery)

2. Signing of **Letter of Intent** of the EuroDelta Alliance



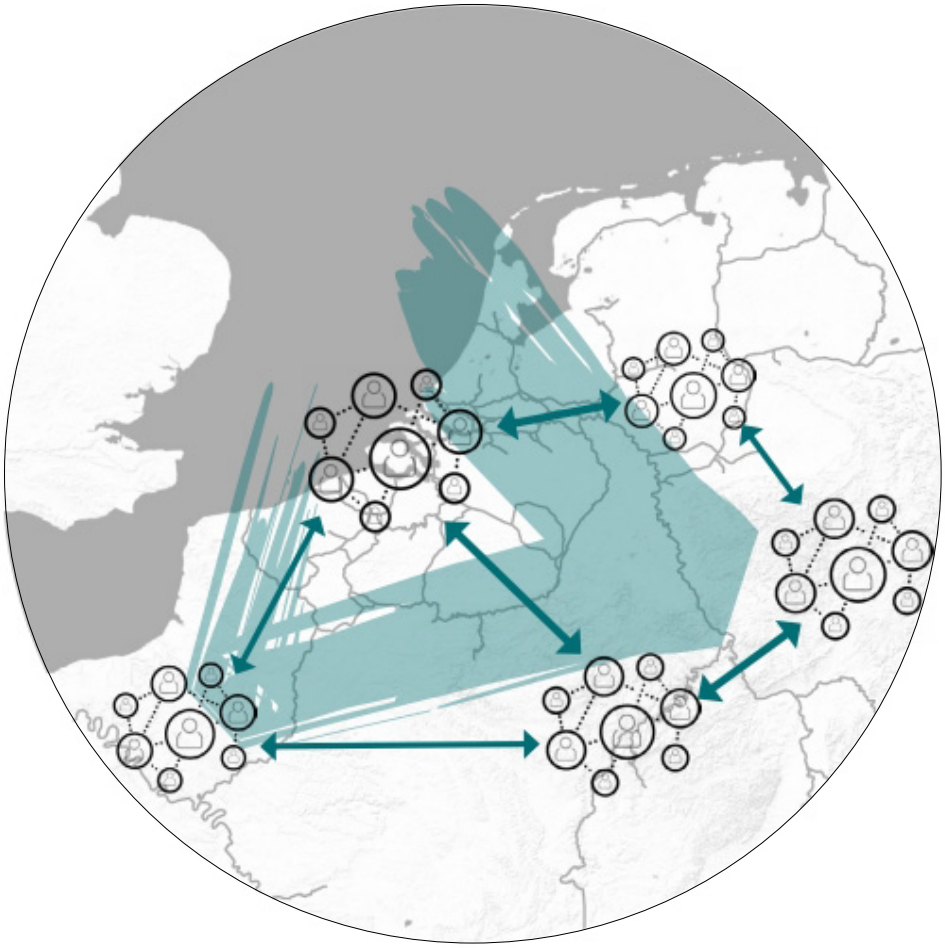
3. The **Final Report**
(2 parts: General Outcomes & In-depth Insights of ASSET Activities)

Background

The ASSET project was started by members of the existing network called SURE (Strategic Urban Region EuroDelta). This network, created in 2018, unites planning practitioners from public sector organisations and knowledge institutes in the Eurodelta area. Members of this network exchange knowledge and jointly develop projects in the field of economic development, sustainability and spatial planning. Since its inception in 2018, the SURE network operates as a sub-network of METREX, a larger network of over 50 European metropolitan areas. Back in 2018, the founders of the SURE network had the ambition to explore and strengthen the relevance of the EuroDelta, one of Europe's potential areas to become a megaregion. They were inspired by the successful example of the Nordic-Baltic Network, a subgroup of METREX that developed a bottom-up spatial-economic vision for the Nordic-Baltic region.

Since its establishment, the SURE network has undertaken many activities. Among other things, it developed a "Next Generation Podium" for student knowledge exchange (guided by Deltametropolis Association); set up a Scientific Board (with RWTH Aachen and TU Delft); developed the ESPON research project "STISE" on sustainable transport in the EuroDelta; organised countless webinars; and held discussions with OECD about megaregions and with other megaregions like the Danube Region.

The ASSET initiative stems from a desire to start a mission-driven interregional collaboration on a pressing challenge to realise a CBE and accelerate the CE shared by all stakeholders, which requires cooperation rooted in proximity.



Spatial scape of SURE Network (Strategic Urban Region EuroDelta)

Positioning the project results

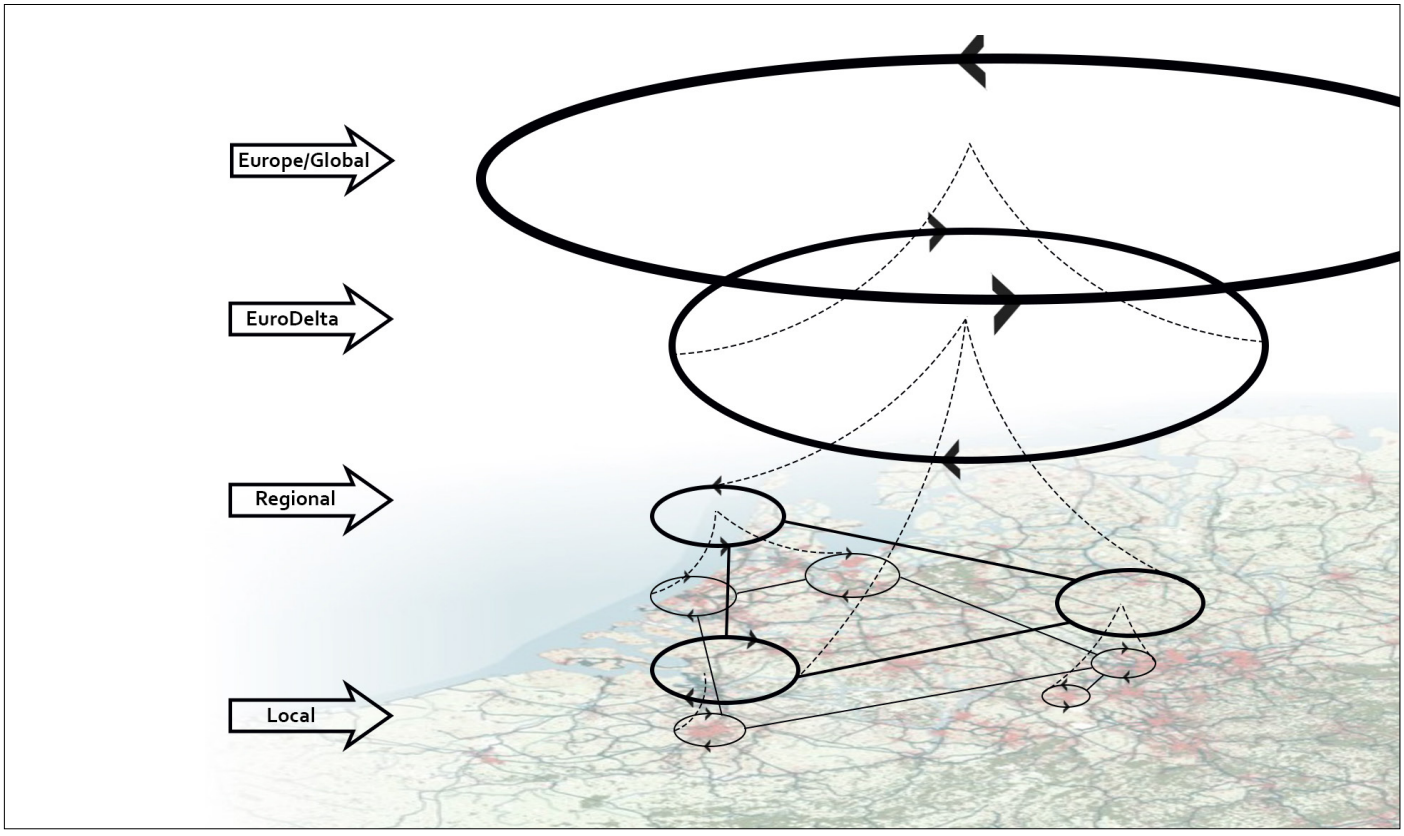
The proposed spatial strategy for a circular built environment, presented as the outcome of the project, offers a preliminary overview and not a definitive set of policies or recommendations from and for individual partners. Instead, it is designed to stimulate future discussions, activities, and collaborations. The results are intended to be inspirational and to set the agenda for a shared path forward.

Employing a research by design methodology, the project generates inspiring visions that connect different policy fields and reveal the potential of a shared strategy, vision, and set of actions. These visions are the result of observations, discussions, and workshops with a wide range of stakeholders involved in ASSET. They reflect a compilation of trends, developments, and frontrunner initiatives, painting a picture of a possible future for the EuroDelta if these initiatives are scaled up. The visions showcase new spatial concepts, reveal interrelationships between different sectors and scales to create circular built environments, and identify initial obstacles to cross-border barriers.

The project's recommendations are strongly related to these inspirational visions that focus on key challenges identified by participating cities and regions of ASSET.

To prioritise future actions and address local challenges, further dialogue should focus on understanding our shared ambitions and the unique situations of each partner. This deeper understanding will help provide context for local and regional policy decisions and define areas for collaboration to find innovative solutions.

The project results demonstrate the added value of building capacity through the collaboration of diverse stakeholders from different sectors and countries. They also highlight the importance of support from national and European policies.



Relevant scales for the ASSET project

Chapter 2
The EuroDelta

Spatial, economic, and environmental interdependence

The EuroDelta represents a unique spatial and economic area in the European context with high environmental and social challenges. It is the largest urbanised and industrialised region of Europe, forming a prosperous economic center that significantly contributes approximately 13% of European Union's GDP to the European economy (Source: Eurostat 2023).

The region – spanning parts of the Netherlands, Belgium, North Rhine-Westphalia, and France – has an open, internationally connected economy with strong sectors in logistics, innovation, services, and high-tech industry. The combination of industrial heritage and a growing knowledge economy helps the region take important steps toward more sustainable, circular, and digital practices. At the same time, global geopolitical developments and the push for decarbonisation pose challenges for the competitiveness of key sectors in the region. This affects the regional social cohesion, which is partly addressed by European Cohesion Funds (e.g., the Just Transition Funds) but requires new economic models for those areas within the EuroDelta that are economically highly dependent on carbon-intensive industries.

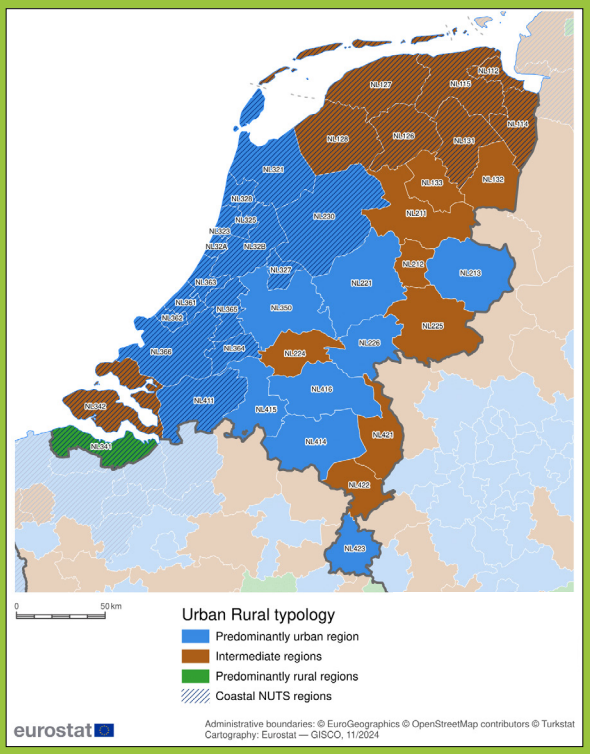
The prosperity of the region is deeply connected to its natural delta system, which provides fertile land, abundant resources, and a unique network of waterways. Located within the lower reaches of the Rhine, Meuse, and Scheldt river basins, the EuroDelta serves as a vital gateway for trade, connecting the region globally through an extensive network of ports, stations, airports, waterways, railroads, and roads serving big parts of European economy. It also serves as an important ecological gateway for many species migrating across Europe and home to a wide range of flora and fauna. These functions are increasingly degrading and endangering the biodiversity of Europe.

The prosperity of the region and the large number of ports and waterways, has attracted many people throughout history. This resulted in a polycentric region which is home to approximately 47 million inhabitants within approximately a 250 km diameter (Source: Eurostat 2024) . The EuroDelta is home to a dense network of both modern and historic cities – including major urban centers and agglomerations such as Cologne, Amsterdam, The Hague, Rotterdam, Vlaanderen, the Rhine-Ruhr region, Brussels and many more. The urbanisation degree in the EuroDelta is more than 90% (80-97% regional differences) while urbanisation is expected to grow resulting in a demand for more than 2 million new dwellings by 2030 in the entire EuroDelta Region.

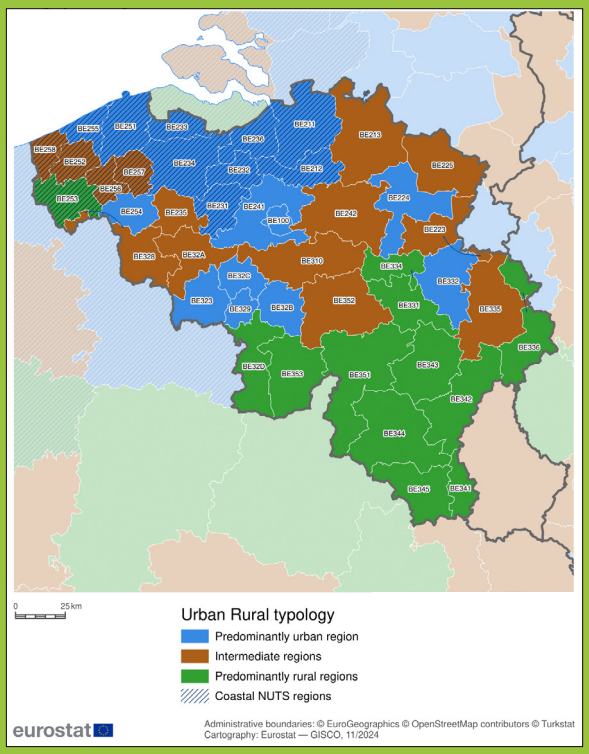
Left: Vergrotedok inner harbour near housing development of Tour & Taxis, Brussels (Photo: Dagmar Keim, City of Amsterdam)

Right: Sail Amsterdam (Photo: Anna Reinke, City of Amsterdam)

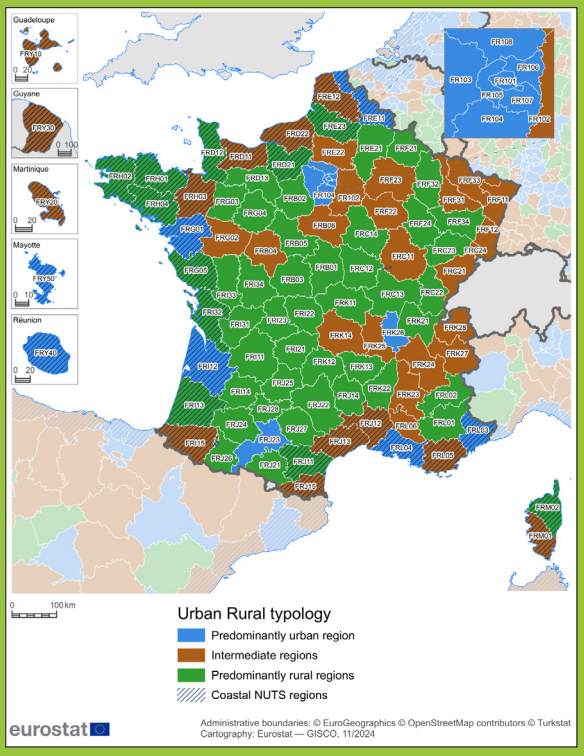
The Netherlands — NUTS level 3



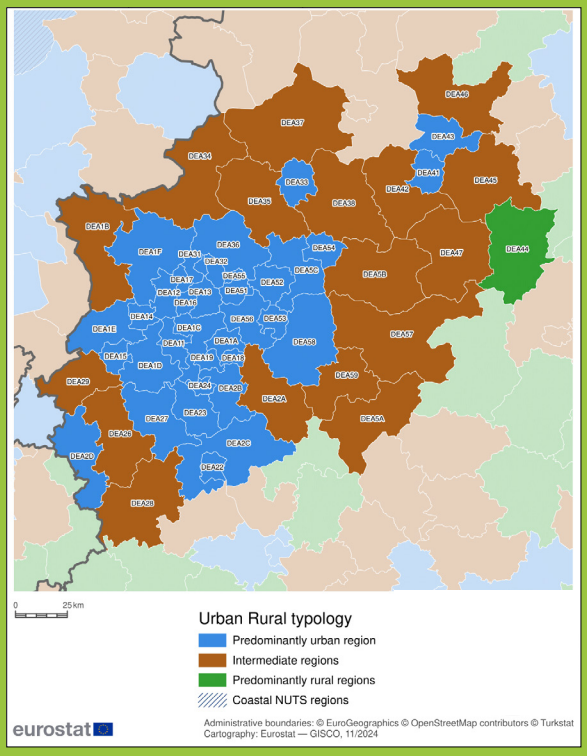
Belgium — NUTS level 3



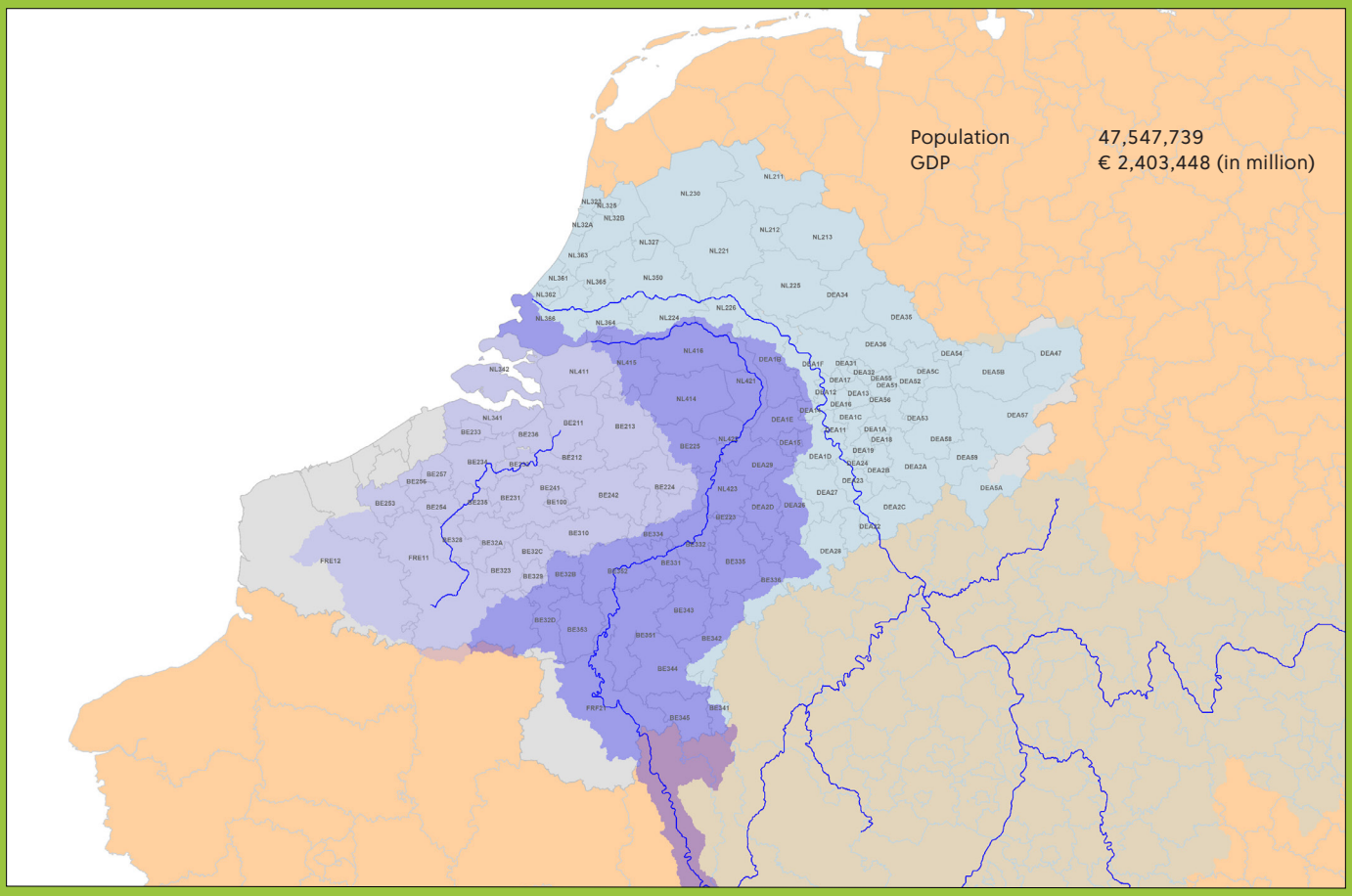
France — NUTS level 3



Germany (North Rhine-Westphalia — NUTS level 3



Degree of urbanisation shown in NUTs regions for The Netherlands, Belgium, Germany (Northern Westphalia) and France (Source: Eurostat)



River basin of the Rhine

River basin of the Meuse

River basin of the Scheldt

NUTS 3 region with high degree of urbanisation; part of calculation, but only a part of the Rhine-Meuse-Scheldt riverbasins

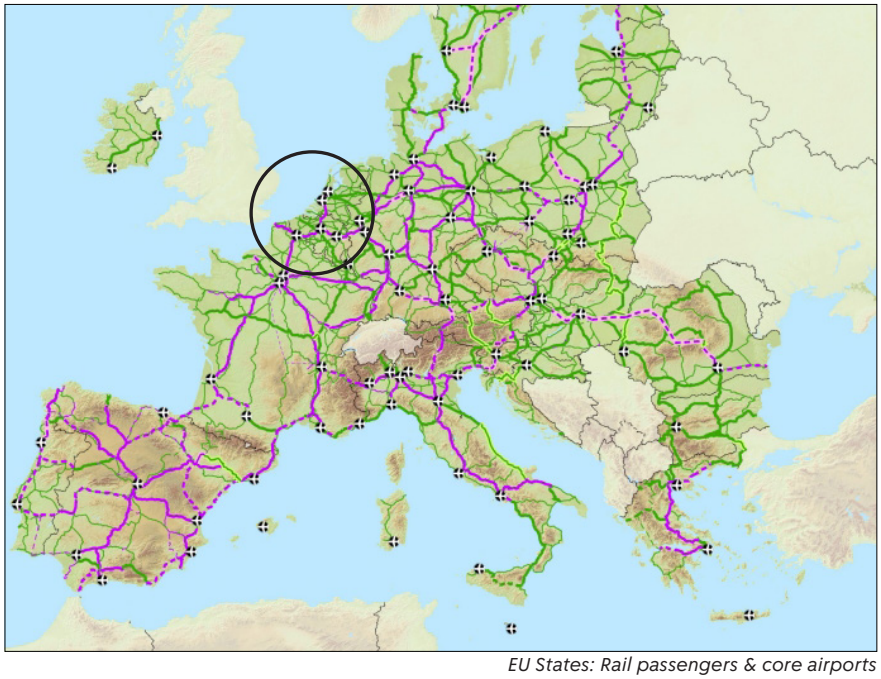
NUTS regions outside of Rhine-Meuse-Schedlt river basins and not part of the calculation

NUTS regions within Rhine river basin, but not part of the calculation

NUTS regions within Meuse river basin, but not part of the calculation

Approximate EuroDelta region: combining degree of urbanisation and the river basins of the Rhine-Meuse-Sheldt (Data sources: Copernicus, Eurostat (population - 2024; GDP - 2023), Water in the Netherlands)

To note: *the borders on this map are indicative. The map showing the borders of the EuroDelta is only used for statistical purposes to determine the GDP and amount of inhabitants. It is a rough outline of the urbanised regions as indicated by Eurostat NUTS level 3 region. The political, economic, social and ecological correlations differ from administrative and water management borders. The aim of the work on the EuroDelta is to work on new functional areas / new geographies that are difficult to map within the current system of data collection.*



EU States: Rail passengers & core airports

EU States: Inland waterways & core ports

EU States: Roads, core ports, rail-road terminals & airports

(Source: TENtec https://transport.ec.europa.eu/system/files/2021-12/COM_2021_812_annex1_4.pdf)

THE UPCOMING BUILDING CHALLENGE

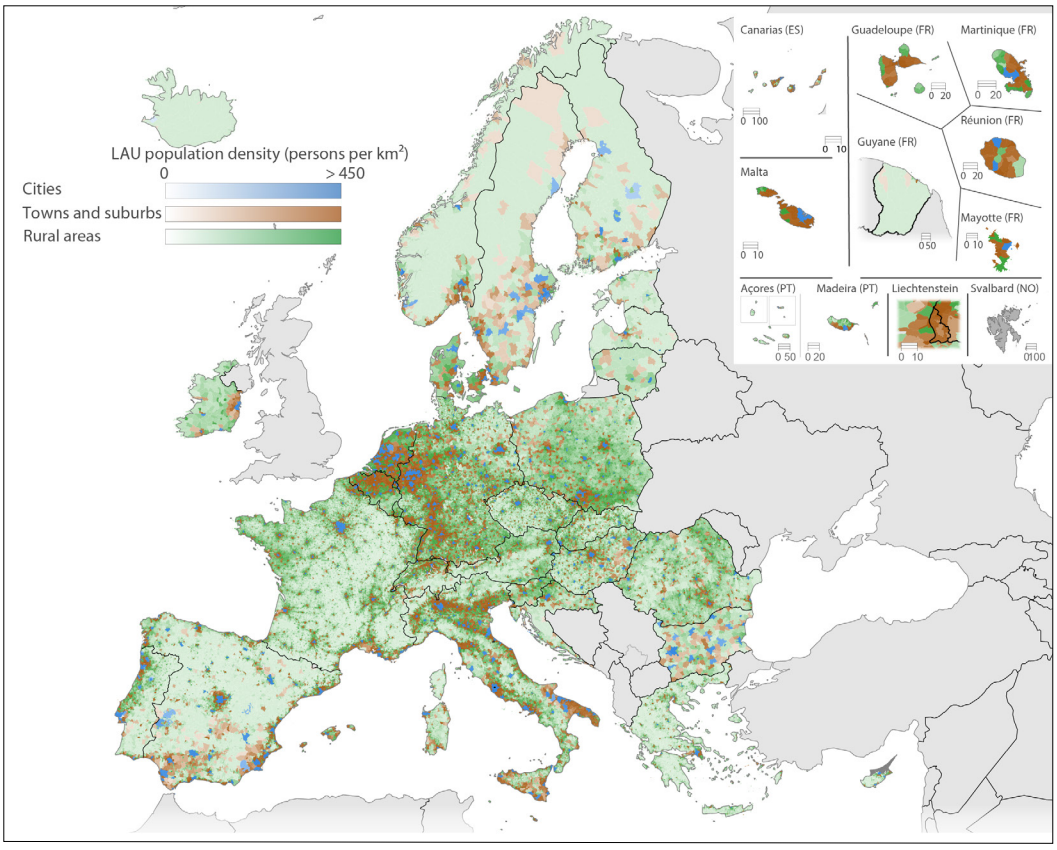
The Netherlands has clear policy goals and planning capacity, with a plausible pathway toward roughly 1 million homes by 2030 and approximately 2.6 million homes by 2050 (Source: *Rijksoverheid | Woningbouw: 90.000 tot 100.000 woningen per jaar t/m 2030, Nieuwsbericht*).

North Rhine Westfalia relies on a projected annual construction volume (46,000 per year), leading to around 1.4 million homes by 2050. (Source: *Forum Baulandmanagement NRW | Neue Wohnungsmarktprognose für NRW*).

Belgium does not publish an officially defined housing construction forecast toward 2050. Based on calculations of Embuild and EuroConstruct combining demographics, regional plans, permits, and economic trends, it is estimated that around 225.000 - 340.000 new dwellings need to be constructed up to 2030. Given the demographic trends and the need for new housing, Belgium may need to build between 1.5 and 2 million new homes by 2050 (Source: *statbel.fgov.be* | Challenges for affordable and sustainable housing in Belgium - EUROCONSTRUCT 75,000 more homes needed per year in Belgium).

While the EuroDelta may lack the visibility of a single megacity like Paris, London, or Istanbul, it is still one of the most prosperous and livable megaregions in the world. The polycentric setup of the EuroDelta, offers a more balanced and sustainable alternative to the problems often seen in big megacities, like bad air quality, overcrowding, by spreading people and activities across several cities with green areas nearby. This structure also adds resilience by spreading economic activities over different cities and supports economic and cultural diversity across the region.

At the same time, the increasing urbanisation is resulting in a growing tension between local needs – such as housing, mobility, space for local economic activities, biodiversity, water quality and quantity, and quality of life – and the demands of global economic activity like through-traffic, infrastructure expansion, and emissions.



Degree of Urbanisation, 2021
(Data source: Eurostat – based on Census Poulation Grid 2021 and Local Administrative Units 2021)

Ongoing urbanisation and industrialisation have major environmental consequences. They put increasing pressure on natural resources like land, water, and materials. The region is already one of Europe's largest emitters of CO_2 and nitrogen. Simultaneously, the Delta region is extremely vulnerable to climate change effects with risks like flooding, unstable waterways, and low water quality. As a result, it is necessary that within the EuroDelta, more than anywhere else in Europe, a fast transition to a new economic model is implemented – specifically a regenerative model that restores the natural system of the region.

Leadership within and of the EuroDelta

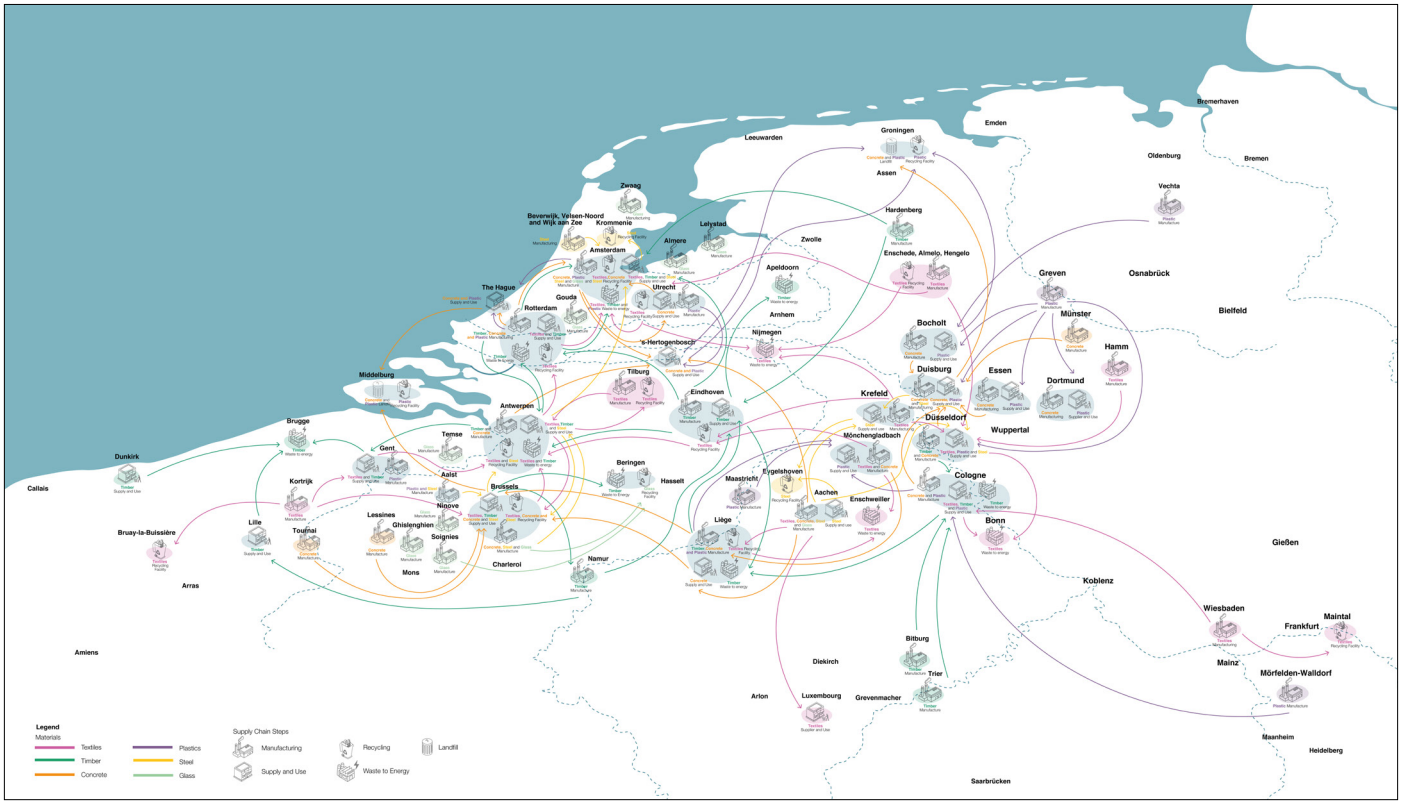
Achieving this transition requires an an all-hands-on-deck approach, in which government, academia, business, and civic society need to work together. This is even more urgent within the EuroDelta, given the strong interdepdence of the economic, social and national systems and the high level of urbanisation in cities within a close proximity.

The pressure on space is becoming a more urgent challenge than anywhere else. Leadership and a holistic integrated narrative are required to facilitate this collaboration. Though this leadership is missing. There is no governance body in place that coordinates a shared vision, formulates shared mission and strategies to align policies like, for example, the Nordic council. Current collaborations are primarily focusing on cross-border collaboration and thematic policies – supported by fragmented national and European policies and supportive instruments (e.g., cohesion funds like the Interreg North West Europe programme).
Therefore, collaboration within ASSET is based on the ambition of the European Commission to achieve a climate neutral, resilient, fair, and

NORDIC COUNCIL

A leading example of such collaboration is the Nordic Council of Ministers (About the Nordic Council of Ministers, 2023), which focuses on making the Nordic region the most sustainable and integrated in the world, with circularity as a key pillar.

https://www.norden.org/en/nordic-council

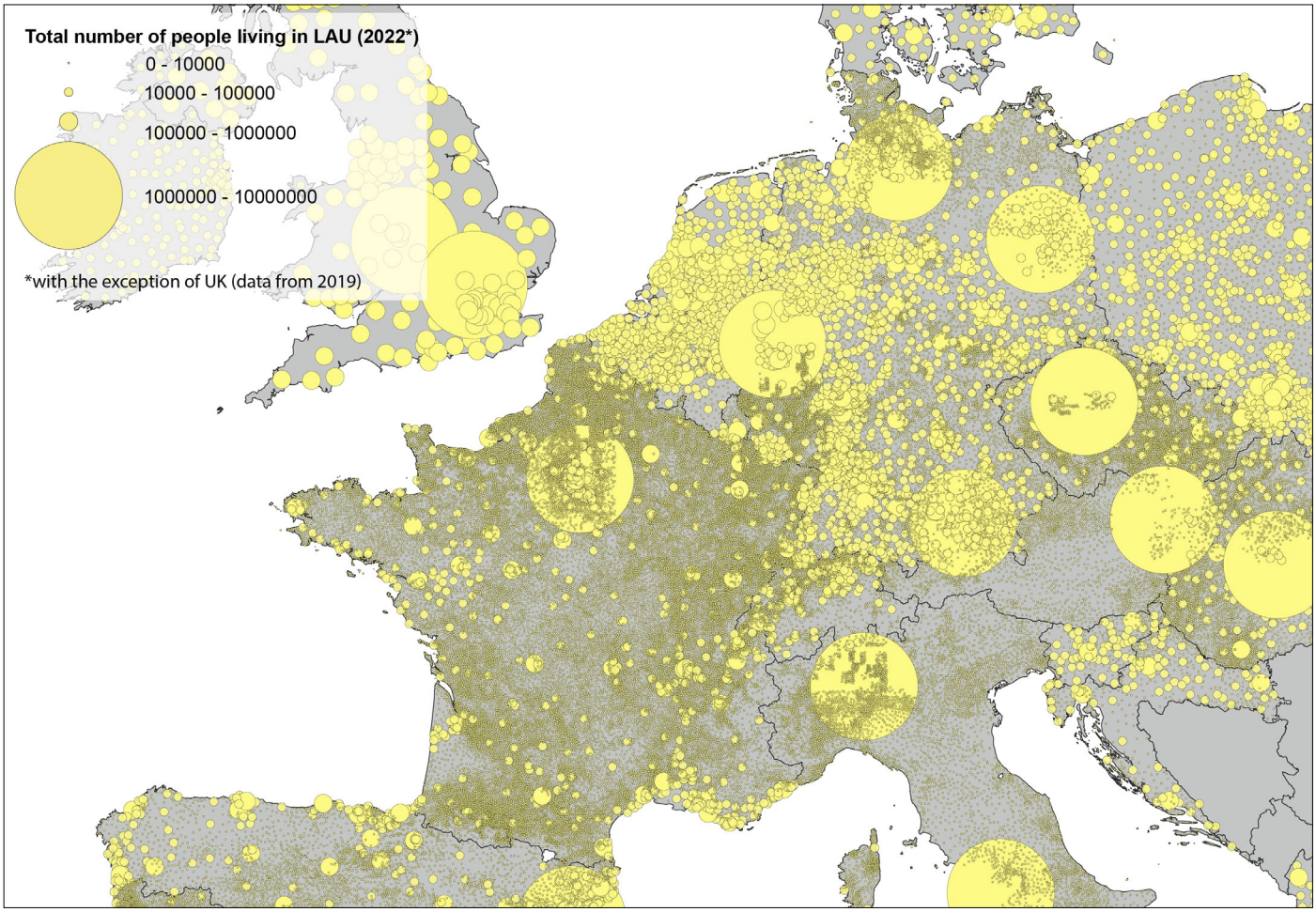


Eurodelta composite material flow map for strategic material profiles. (Source: RWTH Aachen Group project by Ilknur Garipoglu, Justin Pauls, Laura Caroline Barbosa e Silva, Lindy Huang)

competitive continent by 2050. This goal guided the project partners in their approach to develop a place based strategy for the EuroDelta. Although the project did not develop a holistic narrative for the EuroDelta, the understanding of the specific situation of the EuroDelta has been developed, providing a clearer understanding of the interdependency of the area and policy aspects that should be addressed toegether. In ASSET, inspiring perspectives were developed that invites stakeholders to join the collaboration and to create impact – by aligning their policy- and research agendas and actions, changing their business practices, and start working together. ASSET partners will continue to build on a narrative that stimulates further action.

However, more than 1,400 km of internal borders, national governments, and a variety of political, linguistic, cultural, administrative, and legal differences make cooperation challenging. The multitude of cities, towns, and regions within the EuroDelta may seem like a political and adminstrative challenge, but together, they form a rich pool of financial and human resources. Their diversity offers a unique capacity to come up with innovative solutions to complex challenges and to solve border issues so innovations can be more easily upscaled to the rest of Europe. Currently, many entreprises, startups, and scaleups focus on the EuroDelta scale as one market. Therefore, the EuroDelta could be the pilot area of CE / CBE of Europe.

In order to activate this potential, a new (informal) governance system is needed. To define the priorities of such collaboration, spatial strategies like the one developed within ASSET can provide support.



Mega regions in Europe
(Data sources: GISCO & Eurostat, 2022)

Chapter 3
The Challenge: Boosting a circular built environment

Circularity in Europe

The European Union has positioned circularity as a cornerstone of its sustainability agenda, recognising it as essential for achieving climate neutrality, resource efficiency, and economic resilience. The *EU Circular Economy Action Plan*, introduced in 2020 as part of the European Green Deal, outlines a comprehensive policy framework aimed at reducing waste, extending product lifecycles, and promoting sustainable production and consumption. Key focus areas include electronics, batteries, packaging, plastics, textiles, and construction. Through legislative initiatives like the *Ecodesign for Sustainable Products Regulation* and *Waste Framework Directive*, the EU seeks to encourage innovation, foster circular business models, and ensure that materials remain in the economy for as long as possible. Member states are urged to integrate circular principles into national strategies, with particular attention to job creation, digital solutions, and environmental impact reduction. Member states need to create space to implement the targets. At the same time, other sectoral policies are being developed that are also asking for space such as the regulations of *No Net Land Take* and the *Critical Raw Materials Act*. Combining the different demands at the local level is an increasing challenge that local and regional governments are facing.

Urgency of the construction sector

The circular transition of the construction sector is urgent due to its massive environmental footprint and resource intensity. The European Commission estimates that in the European Union, this sector accounts for around 50% of all extracted materials, over 35% of total waste generation, and 5-12% of greenhouse gas emissions stemming from material extraction, product manufacture, and building and renovation activities. Despite this, only about 40% of construction and demolition waste is reused or recycled, often at a low value. Furthermore, the EU's circular material use rate – the share of materials sourced from recycled inputs – is merely 11.7%, with non-metallic minerals (the bulk of construction materials) particularly lagging (Source: European Environment Agency). A shift to circular construction prioritising refuse, reuse, deconstruction, and renovation can dramatically cut embodied carbon, conserve resources, and reduce long-term environmental impacts, making the transition both vital and timely.

Role of Cities and regions

Cities and regions play a vital role in advancing the circular economy and the development of a circular built environment. They act as promoters, facilitators, and enablers by creating supportive economic and governance conditions. They develop spatial plans, tender projects, develop and maintain public buildings and public spaces, facilitate and stimulate circular development and behaviour within their cities and regions. Strong collaboration among local and regional governments offers the possibility to scale up initiatives, align policies, learn from each other and experiment together – leveraging the strength of local innovation centres, businesses, and civic society.

Challenges of CBE in current circular policies in the EuroDelta

In the beginning of ASSET, participating cities and regions provided information of existing policies regarding circular economy (CE), which were analysed by REGENALYZE. Five main challenges were initially idenfified that project partners face and can continue to collaborate on:

1. **Finding Space:** All partners face a growing demand for limited space. To free up new spaces for circularity, the ASSET partners are developing innovative concepts, such as multi-use spaces, smart logistics, hubs, and brownfield regeneration. However, there are many competing land claims, land acquisition, and negotiations with landowners that remain as limiting factors.

2. **Development of circular markets:** Markets for secondary materials and biobased products are in their early stages of development. To develop markets, the ASSET partners are deploying circular public procurement, promoting dialogue, networking to share circular knowledge and practices, or making specific agreements with the industry. It is not yet clear if these efforts of individual cities or regions are sufficient to render circular markets more competitive than the linear markers or if they are capable of ensuring an adequate supply of circular materials. Within the EuroDelta, the lack of cross-border standardised quality norms and certification of materials create barriers to the upscaling of initiatives. Existing tendering and procurement practices often prioritise the lowest price over lifecycle value and true pricing, which makes circular solutions a disadvantageous option. Limited digital infrastructure hinders the traceability and validation of reclaimed building elements. Finally, real estate valuation models typically overlook the long-term environmental and resilience benefits of circular buildings. Addressing these barriers requires coordinated governance outlined in clear policies, shared data platforms, and cross-sectoral collaboration.

3. **Financing CBE investments:** The investments required for a transition to a CBE are considerable. Financing innovation, infrastructure, and land acquisition are essential. Project partners have mentioned only having a small number of relevant financial / investment policies to utilise. In addition, partners seem to rely mainly on regional, national, and European subsidies. Subsidies may be insufficient to finance all circular investments due to their size and the intense competition during the tendering process.

4. **Data availability:** The availability of data has come up as a major obstacle. To respond to this, ASSET partners have introduced promising initiatives to monitor and exchange data, such as Amsterdam's *CE Monitor* and indicators for impact assessment and Brussels' monitoring tools. The Hague's material inventory even allows to anticipate reused material availability.

5. **Cultural shift:** Project partners have noted the need for cultural adjustments and for a greater acceptance of circularity by the industry. Both Amsterdam and Brussels are introducing circular public tender criteria, but there is a need to address a risk-averse culture in the industry by demonstrating the reliability of circular practices and materials. Furthermore, partners may need additional incentives for the industry to prioritise transforming the existing built environment.

Blind spot: the complexity of the challenge

During ASSET, the project partners discovered that CE / CBE policies do not often address the whole range of challenges required. The complexity of the transition reveals that if you start thinking in locations for CE / CBE and the flow of materials within the EuroDelta, the following blind spots are discovered:

Low impact logistics: Low impact logistics are crucial for the circular transition as they can minimise resource consumption and waste generation throughout the supply chain. Within the EuroDelta, there are different kinds of logistics, some serving European export and import, while others focus on local and regional logistics. In the EuroDelta, it is typical to have a high level of logistics on water and the important role played by inland harbours. However, the transport of goods by air, rail and road is also significantly high. Some of these logistics share infrastructure with passenger transport, resulting in an increased demand for space, traffic congestion, and safety risks. Within logistics, last-mile delivery within cities is crucial to ensure that the negative impact of logistics on the environment, and on the livability and health of local communities is minimised. Coordination is lacking between the role of sea and inland ports in relation to city logistics. Innovations in smart logistics planning and utilising digital platforms to coordinate supply and demand can help reorganise flows and reduce impacts of traffic.

Water: The high pressure on the environment has led to a severe disturbance of the natural system. Flooding, drought, and poor water quality make the region vulnerable to loss of lives and social disruption. The economic impact of environmental damage is enormous and affects all sectors. Efforts of the European Union to reduce the economic and ecological impact of poor quality has led, for example, to the *EU Water Framework Directive (2000/60/EC).* This directive aims to ensure all surface and groundwater bodies in Europe achieve good ecological and chemical status by 2027. It requires member states to implement comprehensive river basin management plans, focusing on pollution reduction, ecological restoration, and sustainable water use. According to the Netherlands Construction Association and the engineering firm Witteveen+Bos, poor water quality could make large construction and infrastructure projects unlicensable from 2027 onward. This could result in an estimated potential loss of €17.5 billion in annual revenue due to project delays or cancellations – in the Netherlands alone. A strong effort to regenerate the system is required and should be part of all decision making.

Work and housing: Circular economy is a promise for more jobs. Currently, circular initiatives are often located on existing industrial sites, which are most likely close to urban centres. The anticipated job creation is sometimes hindered by a lack of a skilled workforce and suitable housing especially in post-industrialised cities. Therefore, circular businesses invest in increasing automation (robotisation). This creates a mismatch between job availability and accessibility for potential workers. Circular economy has the potential to increase social equity and broad-based economic benefits within the EuroDelta, where a guided strategy on where to develop different industries is warranted. A smart specialisation strategy could help to develop the EuroDelta region as a whole.

Energy: Circular activities often require a vast amount of sustainable energy. The planning of circular activities has to ensure that high energy activities are located at sources with sufficient sustainable energy. Like traffic, the impact of energy use on the surrounding needs to be discussed and solutions that ensure that circular activities and, for example, urban activities create synergies instead of competition, need to be found. It is also important to ease pressure on energy networks and ensure space for future developments.

Ports & port cities: The location of ports and their surroundings is a critical factor in determining which kind of industry can be developed. Each port has a special relationship with its

city. Circular activities in ports or other industrial sites can lead to major tensions. While ports are beginning discussions about which activities to host in specific ports, cities are not yet involved in this discussion. This results in a limited perspective of future port activities and missed opportunities to create synergies.

Blind spot: the necessity to collaborate

The circular transition is reaching many thematic and economic sectors. Everything is interconnected, which makes the transformation challenging. The different sectoral policies and governance structures of governments are designed to maintain and support a linear system. A circular system requires much more interactions between the different actors of a chain in order to create circularity. Different sectors must collaborate and remain open to change in order to achieve a shared goal. This requires trust between departments and government layers, between governments and businesses in order to work together. To start this approach, the following challenges should be adressed first:

Lack of shared language: The initial policy analysis reveals that there is already a need for a shared language and conceptual framework for circularity and a circular built environment. Cultural and language differences make collaboration challenging, as well as governance structures and a lack of understanding between project partners. This lack of knowledge regarding each other's contexts and interests, strengths, weaknesses, and political realities make it difficult to find solutions.

Lack of transregional collaboration: There is no shared ambition for the EuroDelta, no strategy and action plan. The EU is offering some financial support for regional collaboration on a project basis. There are hardly any European and national financial incentives, nor are there any organised dialogue between relevant stakeholders to start a transregional dialogue between different parties like government bodies, universities and businesses. Transregional collaboration is not yet recognised as a key driver of change for the circular transition.

Lack of capacity: There seems to be a lack of capacity within city administrations regarding circularity, especially in smaller administrations. This results in a major mismatch of policies between different actors in the EuroDelta. Capacity building by working together between governments could accelerate the transition.

Why planning matters?

The transition to a circular economy requires physical space for both adapting existing business processes and for new circular business activities. These activities include repair, sharing, storage, recycling, and processing of used or raw materials, as well as the necessary transport infrastructure. Some activities, such as recycling hazardous materials, may require specialised industrial sites with specific environmental requirements and multimodal transport access. If these spaces are allocated to businesses with lower environmental impact, this can hinder the circular transition. Other activities, like repair cafés and logistics hubs, could be easily integrated into urban areas, but high (rental) prices are often an obstacle. Currently, this need for space often competes with the demand for housing, industry, energy transition, recreation, and nature. Insufficient space for circular businesses hinders ambitions to achieve a fully circular economy. The Netherlands Environmental Assessment Agency has determined that the circular transition may require up to a 40% increase in space for economic activities at existing business locations and industrial sites. The exact future is uncertain, but it is clear that, at least temporarily, additional space is needed for circular activities at existing work locations and industrial sites, and within the cities.

These demands add to the already substantial spatial claims of the energy transition, climate adaptation, and regeneration of biodiversity. However, this topic is largely unknown territory. Policymakers are only beginning to realise the far-reaching spatial implications of a truly circular built environment. Not only is the spatial demand rising, there are ongoing changes in society and businesses that result in systemic changes to our environment, affecting all aspects of the physical environment. This presents a challenge for all spatial planning levels and facets. Still, (urban)

planning and supporting policy frameworks often fail to integrate circular economy and societal considerations into spatial planning – even as awareness increases.

Planning is at the center of multiple – yet often competing – policies, rules, and regulations, including climate neutrality, greening, densification, housing development, competitiveness and production, and resilience. Using the power of formal and informal planning offers the chance to reveal tensions, define policy gaps and find innovative solutions to complex challenges. Addressing challenges from a spatial perspective makes complex and abstract concepts tangible and provides an opportunity to identify relevant stakeholders to solve the problem.

Therefore, aligned spatial strategies and policy levers on different planning levels are urgently needed to create a circular built environment. These strategies need to consider regional and local ecosystems, knowledge institutions, existing businesses, spatial qualities, and careful allocation of space at suitable and available work locations when implementing circular functions.

TRENDS AND DEVELOPMENTS THAT INFLUENCE THE CIRCULAR TRANSITION

During ASSET, several spatial trends and developments were observed that can guide spatial strategies for a circular built EuroDelta:

- **Industrialisation and strategic autonomy**
  Lack of stability of the geopolitical situation has stimulated industrial activities within Europe to support strategic autonomy. It is expected that a portion of these industries will be situated in Europe – including within the EuroDelta – with locations with good access to other continents.

- **Liveability and economic activities**
  Strategic autonomy requires an increase in industrialisation. However, since proximity of industry to urban centers has negative implications to public health and nature, it is increasingly important to balance the liveability of urban areas with the impacts of economic activities within the EuroDelta.

- **Urbanisation and resource pressure**
  The further expansion of urbanisation is putting pressure on resources and increasing traffic congestion, which exacerbates existing challenges. Large-scale urbanisation leads to inherent sustainability-related consequences.

- **Concentration of spatial claims around thriving cities**
  The increasing demand for space as a result of urban growth, sustainability measures, and local/regional and global economic activities is intensifying.

- **Delta logistics**
  The gateway function of the EuroDelta increasingly clashes with local urban interests. A low impact circular logistic system is requred to balance logistics, passenger transport, livability, sustainability and spatial developments.

- **Increase in water logistics**
  Increased use of waterways for transport and other purposes can degrade water quality, reduce biodiversity, and limit water-recreational opportunities. Low water levels require alternative logistical concepts to ensure supply security.

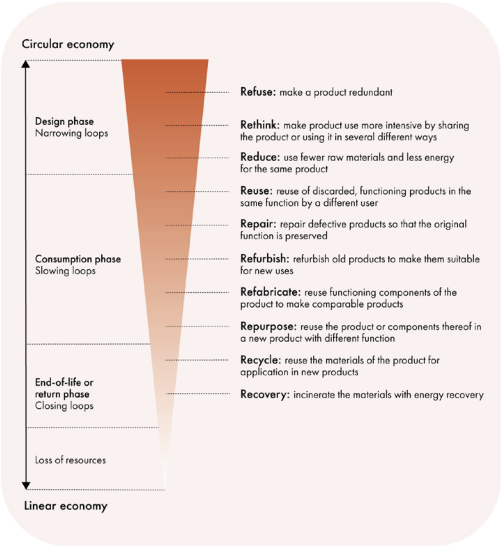
- **Lack of social, environmental and spatial cohesion**
  There is a lack of cohesion across the EuroDelta due to an imbalanced distribution of skilled labour, sustainable energy and housing availability betwen highly dynamic and less dynamic areas. These circumstances are essential in a fully circular built environment.

Chapter 4
Designing for a circular built environment

From linear to circular economy: R-strategies and economic ambitions

Designing for a CBE requires a shared language, shared ambitions, and a thorough understanding of design principles. In ASSET, project partners started to provide an overview of design principles as a starting point for future collaboration.

R-strategies, also known as the R-hierarchy or R-ladder, are a set of principles that guide the transition towards a circular economy, focusing on reducing waste and maximising resource utilisation. The initial focus of the framework on reduce, reuse, and recycle (1970) expanded in time to include recovery, refuse, and rethink, and later repair, refurbish, remanufacture, and repurpose, which are implemented in the *EU Green Deal*. More recently, recover, regenerate, and redesign have been added, with regeneration aiming at proactive environmental restoration. Applying the R-strategies in practice depends on a region's stage in transitioning to a circular economy and its ambitions.



From linear to circular economy
Source: Cabello Ocampo, Vogel, Westerkamp, García Valencia. 2024 (IP2 Amsterdam – lighthouse)

In ASSET, three types of economies are recognised:

- **The Reuse Economy** is the initial step away from linear consumption, emphasising extending the product life through reuse, refurbishment, and repair; this reduces waste but still relies on finite resources.

- **The Circular Economy** advances further by designing products and systems for longevity, recycling materials back into production cycle, minimising resource extraction. The aim is a closed-loop system that mimics nature. Waste is reduced, but ecosystems are not necessarily restored.

- **The Regenerative Economy**, is the most advanced stage, as it actively improves environmental and social systems by reducing harm and restoring biodiversity, replenishing natural resources, and fostering community resilience. It goes beyond sustainability by ensuring that economic activity contributes positively to planetary and social well-being.

Linking R-strategies to economic models enables a more nuanced and systemic approach than traditional R-ladders, which often rank circular actions in a linear hierarchy. Table 1 (on page 24) contains examples of R-strategies placed across the three types of economies.

For policymakers dealing with complex urban and regional systems, this shift is essential. It allows for integrated value chain thinking, where spatial planning is not treated in isolation but aligned with material, economic, and social flows. This perspective supports the identification of actionable interventions, such as spatial requirements for reuse hubs or incentives for shared infrastructure, that embeds circular principles into planning practice. Ultimately, this approach strengthens the role of urban and regional planning as a driver of circular economy.

Table 1: Examples of R-Strategies placed across three economic models

R-Strategy	Reuse Economy (RE) *Extending life & preventing waste*	Circular Economy (CE) *Closing loops & optimising resources*	Regenerative Economy (REG) *Restoring & enhancing systems*
REFUSE	Avoid unnecessary consumption (e.g.,, reducing single-use plastics).	Avoiding products with short lifespans and shifting toward sustainable, circular models.	Ensuring that economic activities respect planetary boundaries and do not deplete ecosystems.
RETHINK	Encouraging alternative consumption models (e.g., renting, second-hand, sharing).	Designing smarter business models (e.g., cradle-to-cradle, service-based models).	Reimagining economic and social systems to prioritise ecological harmony (e.g., biomimicry, permaculture).
REDUCE	Using less material in production and consumption (e.g.,, lightweight materials, efficiency improvements).	Reducing waste and energy use through systemic efficiency (e.g., zero-waste production).	Reducing resource depletion by actively regenerating ecosystems (e.g., minimising land and water use while restoring biodiversity).
REUSE	Extending product life by using items multiple times (e.g., refillable packaging, second-hand markets).	Industrial reuse systems (e.g., reclaiming industrial water, reusable shipping containers).	Industrial reuse systems (e.g., reclaiming industrial water, reusable shipping containers).
REPAIR	Fixing broken items to extend lifespan (e.g., repair cafes, modular design).	Industrialised repair systems that ensure product longevity (e.g., repairable electronics, leasing models).	Restoring damaged ecosystems by repairing environmental degradation (e.g., wetland restoration, coral reef rehabilitation).

Table 2: Examples of R-Strategies placed in the built environment across 3 economic models

R-Strategy	Reuse Economy (RE) *Extending life & preventing waste*	Circular Economy (CE) *Closing loops & optimising resources*	Regenerative Economy (REG) *Restoring & enhancing systems*
REFUSE	**Favouring compact urban form, preserving natural landscapes** instead of converting them into built environments.	**Restricting the use of virgin materials in construction; prioritising adaptive reuse** of existing structures.	**Implementing land-use policies** that prevent ecosystem destruction while promoting nature-based solutions.
RETHINK	**Encouraging mixed-use developments** to reduce transport needs and energy consumption.	**Designing cities for 15-minute urban living,** reducing car dependency and improving urban efficiency.	**Reimagining cities as self-sustaining ecosystems, integrating nature-based solutions** like urban food forests.
REDUCE	**Designing smaller, multi-functional spaces** to reduce resource use in buildings.	**Using prefabrication and digital tools** (e.g., BIM - Building Information Modelling) minimises material waste.	**Reducing land use impact by restoring green corridors and wetlands** while ensuring a minimal ecological footprint.
REUSE	**Reusing structural components** (e.g., doors, windows, bricks) in new building projects.	**Designing buildings for deconstruction and reassembly** using reclaimed materials.	**Promoting bio-integrated reuse**, such as regenerating old quarries into wetlands or using waste wood to create wildlife habitats.
REPAIR	**Repairing and maintaining historic buildings** instead of demolishing them.	**Establishing circular building maintenance programs** that extend the lifespan of infrastructure (e.g., predictive maintenance using IoT).	**Restoring degraded urban areas** (e.g., revitalising abandoned districts through community-driven initiatives).

Circular Economy (CE)

The circular economy (CE) is a regenerative economic system which necissitates a paradigm shift to replace the 'end of life' concept with reducing, alternatively reusing, recycling, and recovering materiasls throughout the supply chain, with the aim to promite vale maintenance and sinstanable development, creating environmental quality, economic development, and social equity, to the benefit of current and future generatiopns. It is enbabled by an alliance of stakeholders (industry, consumers, policy makers, academia) and their technological innovations and capabiities.

(Source: Julian Kirchherr, Nan-Hua Nadja Yang, Frederik Schulze-Spüntrup, Maarten J. Heerink, Kris Hartley, (2023). Conceptualizing the Circular Economy (Revisited): An Analysis of 221 Definitions,Resources, Conservation and Recycling, Volume 194, https://doi.org/10.1016/j.resconrec.2023.107001.)

A circular built environment

The built environment is yet to embrace circularity in mainstream spatial planning and regional policies. To establish a more ambitious approach, ASSET started with the following definition of the circular built environment, developed by the circular built environment HUB (CBE-HUB) of the Delft University of Technology:

Circular Built Environment (CBE)

The circular built environment (CE) is a system designed for narrowing, slowing, closing and sustituting with renewables in temporal levels by transitioning cultural, environmental, economic, and social values towards a sustainable way of living, thus enabling society to live within the planetary boundaries).

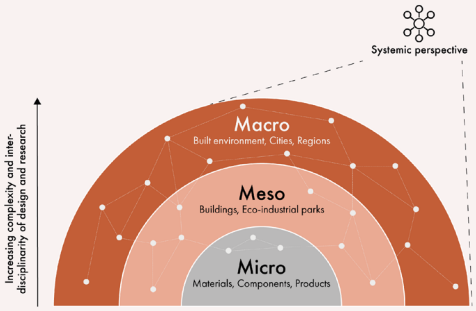
(Source: Wandl, A., Ioannou, O., Gruis, V., Peck, D., Jenkins, A., Geldermans, B., van den Berghe, K., Bucci-Ancapi, F., Tsui T., van Uden, M., Egger, T., Dabrowski, M., Medici, P. & Klein, T. (forthcoming). The Delft 'Scales to Aspect' Circular Built Environment Model: The result of two years of interdisciplinary discussions, Planning Practice and Research.)

Micro-meso and the macroscale

Circular economy principles can be applied at different scales: micro (individual products and consumers), meso (organisations, eco-industrial parks), and macro (cities, regions, nations). These scales represent a nested approach, where actions at each level contribute to a larger circular system.

- These scales are not isolated; they are interconnected and influence each other.
- For example, policies at the macro-level can incentivise circular practices at the meso- and micro-levels.
- Similarly, innovations at the micro-level can drive changes in business models and policy frameworks.

In essence, achieving a circular economy requires a holistic approach that addresses circularity across all scales, from individual products to global systems.



Circularity in the built environment: Micro, meso, macro scales diagram Source: Cabello Ocampo, Vogel, Westerkamp, García Valencia. 2024 (IP2 Amsterdam – lighthouse)

Close, narrow, and slowing of loops

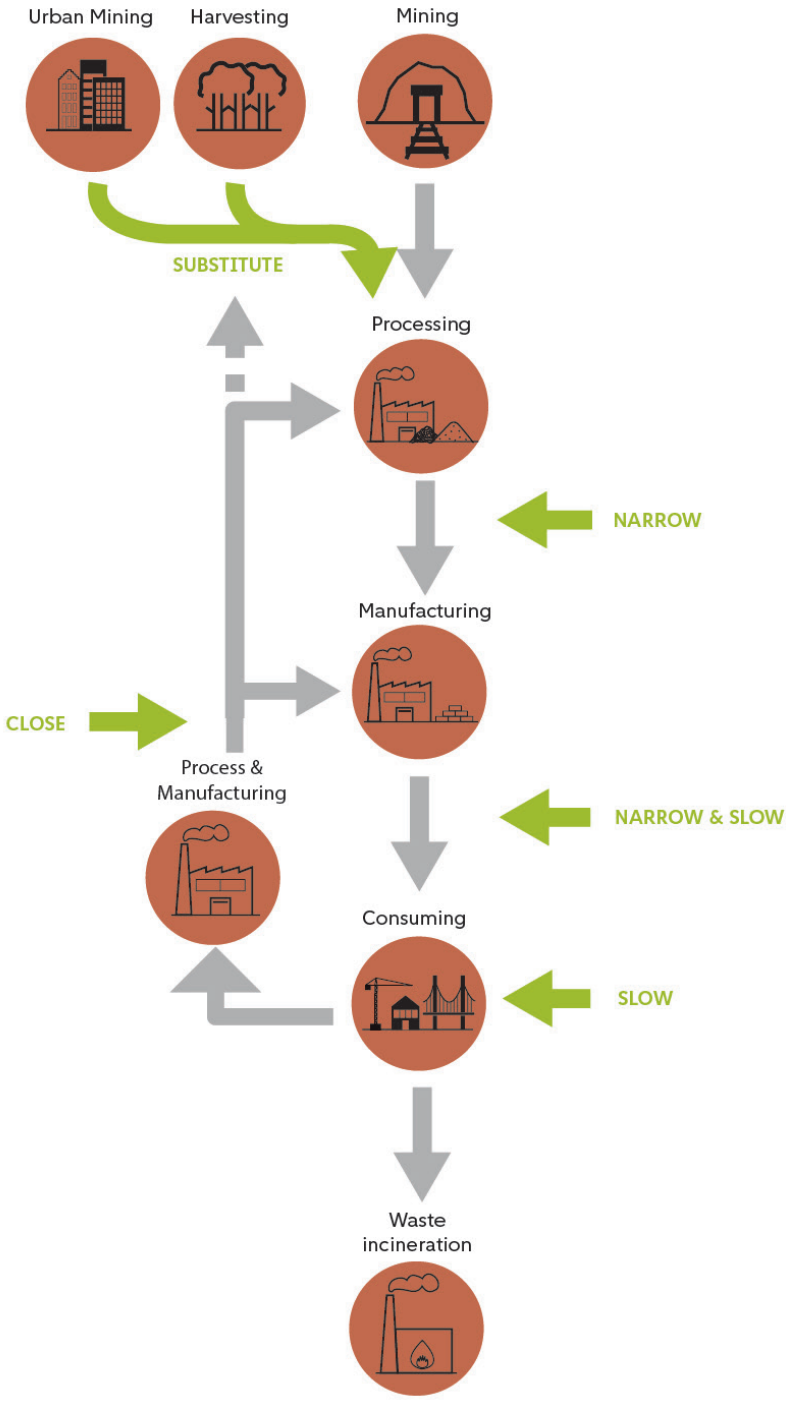
Design these principles to encourage a shift from a linear "take - make - dispose" model to a circular model where resources are used more efficiently and sustainably, minimising environmental impact and maximising the value derived from resources.

1. **Close:** This principle emphasises the importance of keeping materials and products circulating within the economy, rather than being discarded as waste. It involves designing products for durability, reuse, and recyclability, and establishing systems for efficient collection and processing of materials at the end of their initial use.

2. **Slow:** This principle focuses on extending the lifespan of products and components. It encourages designing for durability, promoting product longevity through maintenance and repair, and encouraging the sharing or leasing of products rather than solely focusing on ownership.

3. **Narrow:** This principle is about minimising resource consumption at all stages, from product design and production to use and disposal. It involves using fewer materials, reducing energy consumption, and optimising the efficiency of processes to minimise waste generation.

To note: A alternative mechanism to closing, narrowing and slowing of loops is to substitute; this involves using sustainable, renewable material substitutes in the place of of non-renewable materials (Source: United Nations. 2023 | Guidelines for Measuring Circular Economy).

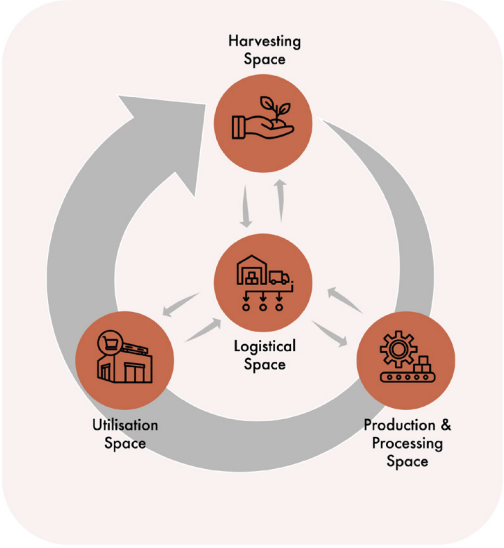


Material cycles diagram (Source: PBL – diagram redrawn & adjusted)

Linking spaces

The spatial transformation requires space for the necessary infrastructures and for places where circular activities are clustered (linking spaces). The living environment is gradually shaped in a circular manner, revealing typologies of circular spaces:

- **Harvesting space:** for extracting or harvesting primary (biobased) and secondary raw materials as input for chains.
- **Logistics space:** where material flows come together, are stored and distributed along circular networks.
- **Production and processing space:** where production, processing and valorisation of raw materials, semi-finished products and products takes place
- **Utilisation space:** the circular built environment: where products are used (consumption within chains). From consumption areas return flows of materials are generated.



Network of linking spaces diagram (Source: Cabello Ocampo, Vogel, Westerkamp, García Valencia, 2024 (IP2 Amsterdam – lighthouse))

These new spatial typologies become visible in so called 'linking spaces', such as fiber cultivation areas, material hubs or locations for processing secondary materials.

Linking spaces are essential to convert linear production chains into circular ones, which are crucial for a circular built environment. After all, there is no sustainable urban development without reusable concrete, sustainable steel, wood and fibers, modular building products, reusable materials or recycled plastics.

Examples of harvesting spaces: Agricultural plot where biobased materials are being grown by VORM & building materials being extracted from a demolition site in Amsterdam (Photos: Bart Bomas; Bas Horsting)

Example of logistics space: Building material storage at SHIPit in Brussels (Photo: Fabio Bayro Kaiser)

Example of production & processing space: TSR recycling facility in Duisburg (Photo: Fabio Bayro Kaiser)

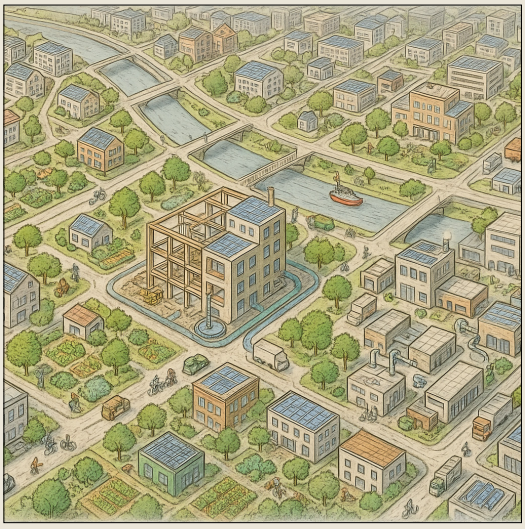
Example of utilisation space: Poppies – New modular & biobased housing project in Amsterdam (Photo: Marc Koelhler Associates)

Thinking not in measures but perspectives

Due to the systemic nature of a CBE, this makes transitioning to concrete measures difficult. As a result, entry points are needed such as focusing on the physical built environment, flows, supporting citizens' circular behaviour, and facilitating economic activities.. The decision regarding which entry point to choose, which (R-)strategy to apply and at which level depends on two aspects of the definition of the circular built environment: the temporal and societal aspects.

Spatial policymakers must evaluate how adopting circular principles align with existing urban planning priorities, such as addressing urgent housing needs. For example, how can the growing demand for housing be contextualised within a circular or regenerative agenda? Such considerations focus on broader questions: How much space is required? How can existing spaces be better utilised to reduce the need for new development? What kind of infrastructure is needed to facilitate the necessary economic activities?

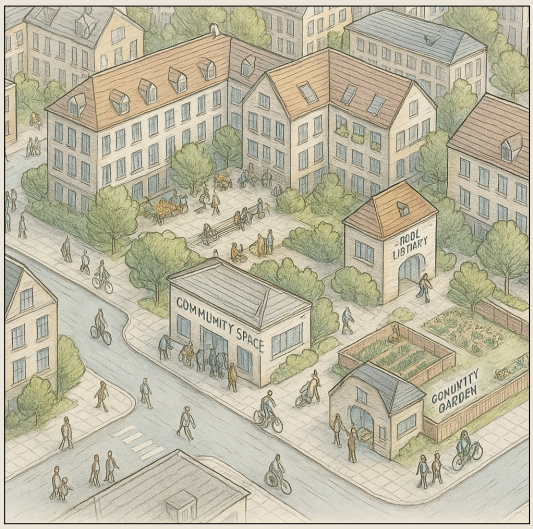
FOUR PERSPECTIVES TO APPROACH A CIRCULAR BUILT ENVIRONMENT



Developing a physical built environment

Key actions

- Use renewable and biobased materials
- Regenerate water and soil systems
- Design for material reduction
- Foster emotional attachment and longevity
- Enable disassembly and reuse
- Support upgrades and easy maintenance
- Ensure standardisation and compatibility across systems



Supporting citizens' circular behaviour

Key actions

- Provide shared infrastructure (e.g., tool libraries, repair cafés)
- Encourage regenerative practices (e.g., urban gardening, reuse stations)
- Foster trust and emotional connection in communities
- Design flexible, multifunctional spaces
- Enable easy maintenance and shared use
- Promote walking, cycling, and public transport

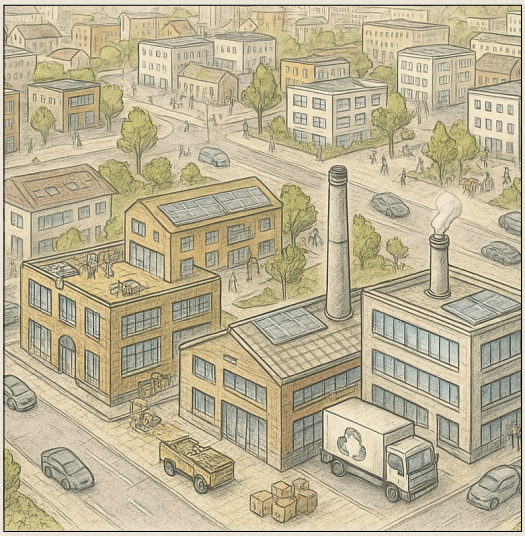
Beyond the material and operational dimensions, transitioning to a CBE also requires fundamental changes in the social sphere. This involves a value shift across the four dimensions of sustainable development – cultural, environmental, economic, and social. While the literature on circularity often prioritises techno-economic aspects (Corvellec et al., 2022), it tends to overlook the cultural and social transformations necessary to support this transition. These transformations are crucial because circularity, by its nature, challenges established systems and behaviours. To illustrate, Table 2 (on page 24 below Table 1) presents examples of the R-strategies placed in the built environment across 3 economic models.

When considering the principles illustrated in Table 2, it is evident that there is no circular city or region and that there will not be one in the foreseeable future. However, best practices of circular initiatives on different can be found within the EuroDelta region, which are published in the Circular Design Atlas of the TU Delft.

Facilitating circular flows of materials

Key actions

- Reduce consumption
- Transition to renewable energy
- Design for synergies between functions
- Cascade energy, water, and material flows
- Support regenerative infrastructure (e.g., water reuse, urban mining)



Facilitating economic activities

Key actions

- Reserve space for urban production and repair
- Promote circular manufacturing and reuse industries
- Design flexible, adaptable structures
- Integrate multimodal logistics and infrastructure
- Avoid displacement of productive functions from cities

Four perspectives to approach a circular built environment - key actions
Source: Wandl, 2025; images generated with openAI image generator

Chapter 5
Developing a spatial strategy in 6 steps

Roadmap to develop a strategy for a circular built environment

Based on shared definitions of CE / CBE and the ASSET activities, ASSET partners developed a roadmap for creating a strategy for a EuroDelta – including a spatial strategy in 6 steps.

1. **Set ambition:**
Use the European ambitions as a common policy framework to define a shared ambition and mission. Build on this with national, regional and local goals, taking into account the specific place-based context of cities and regions within the EuroDelta. Develop measurable targets for the transition from a reuse economy to a circular economy and finally to a regenerative economy.

ASSET: *As part of the project, a policy analysis of existing European, national and regional / local policies was conducted, dentifyng the main challenges.*

2. **Prioritise each value chains and the value chain and sector you want to work on:**
Each sector has its own specific ecosystem – comprising logistics, actors, and supporting infrastructure – which operates at different scales, with distinct development timelines, investment needs, and regional integration requirements.

ASSET: *Within ASSET, 3 type of value chains were explored:*

a) Biobased construction materials (timber, algae, fibers)

b) Secondary materials from urban mining (heavy building materials like concrete and installations)

c) Chemical and steel industries

3. **Set guiding principles:**
Develop guiding principles to inform choices for locations and the development of policy frameworks. Discuss the values underpinning these principles.

ASSET: *Within ASSET, the following guiding principles were used for location choices for the inspirational visions:*

Principle 1: Prioritise spaces for circular activities at locations with the right conditions.

Principle 2: Develop a low impact Delta logistics by prioritising water logistics over rail, and rail over road.

Principle 3: Close, narrow and slow loops on the lowest scale, considering spatial requirements, the impact of logistics, and opportunities for work on different spatial scales.

Principle 4: Increase social cohesion within the EuroDelta by boosting economic transition areas and fostering opportunities for economic symbiosis.

Principle 5: Maintain the gateway function of the EuroDelta while reducing the impact of traffic and spatial demands of economic activities, and facilitating sustainable and high-quality urban development.

4. **Develop a spatial strategy covering 3 aspects:**
The development of a spatial strategy was done by testing the methodological framework of the spatial strategy for a circular South Holland on different spatial scales. This resulted in the following conclusions:

a) The development of conditions for circularity (a circular main structure)
Create essential system conditions such as a robust soil and water system and a sustainable energy system. Ensure the availability of skilled labour and adequate housing. Develop suitable infrastructure that ensures efficient and sustainable transport.

ASSET: *ASSET identified the following key components for the EuroDelta as a starting point for future collaboration of stakeholders: development of clean water and soil, the development of a H2 network, the development of new infrastructures to reduce the impact of logistics around port cities, identify zones with different economic profiles, availability of skilled workforce and availability of suitable housing.*

b) The development of spatial links / hubs
Identify and create specific physical locations for consolidating resource and material flows, including harvesting / mining, storage, processing / manufacturing, connected by low impact logistics / distribution and logistics by air, water, rail and road transport.

ASSET: *Three maps were developed as part of ASSET that illustrate possible locations and supportive low-impact logistics:*
- *Go Biobased (e.g., wood, algae, fibre)*
- *Go Secondary (e.g., concrete, steel)*
- *Go Global and local (e.g., chemical industries, global logistics)*

c) The creation of circular arenas / area-based collaboration
Stimulate the creation of collaborative frameworks tailored to specific area types (e.g., urban areas, ports, peatlands) where governments, businesses, knowledge institutions, and citizens co-create circular opportunities.

ASSET: *Although the creation of arenas for area-based collaboration was not part ASSET, ports and urban areas were identified as key areas to start future collaboration.*

5. **Start collaboration with informal planning and governance structures:**
Begin with the stakeholders of ASSET, such as the EuroDelta Alliance and a community of practice, within the existing METREX network. Involve other networks that share the same mission and regional focus. Develop a shared action framework to guide collaboration, support knowledge exchange, co-develop projects, experiment with policy and instrument innovations, and facilitate upscaling through B2B (business-to-business) and B2G (business-to-government) meetings. Organise regular meetings and site visits to build trust, expand membership to include key stakeholders, and integrate new insights into a cohesive EuroDelta narrative. Share innovations with METREX, other members, and higher-level governments.

ASSET: *Motivated ASSET partners have signed a Letter of Intent that express the ambition to create a EuroDelta Alliance: an alliance with the mission to stress and strengthen the relevance and importance of the EuroDelta, and to serve as a platform or hub to share, disseminate, promote, scale up best practices and startups. In the longterm, the Alliance aims to align policies. Partners who want to join the Alliance are invited to sign the Letter of Intent.*

6. **Integrate circularity into spatial, mobility, economic, energy and environmental policy in local and regional policies:**
Support the development of aligned policies and actions by starting with knowledge exchange, by conducting joint research, and experimenting with relevant stakeholders across the EuroDelta.

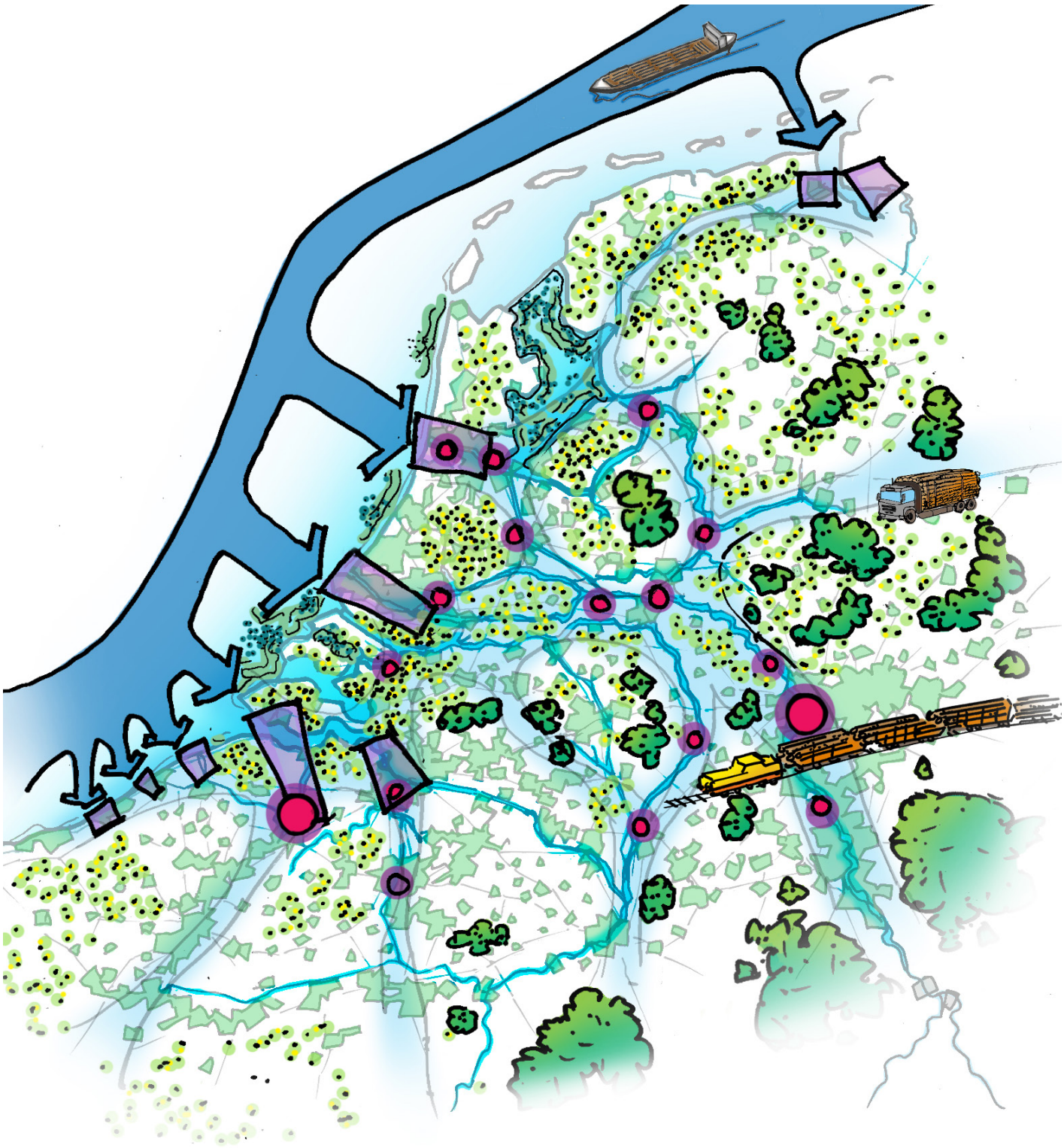
ASSET: *The implementation of the findings of the ASSET project is not the final outcome but serves as an agenda setting initiative. The insights and recommendations from the project will inform future policies, while the inspirational visions and research outcomes will guide future collaboration.*

Chapter 6
Inspirational visions

Based on the design principles of a circular built environment as described in Chapter 4, and using the methodology of research by design, the project produces inspirational visions that connects various policy fields. The two R-strategies (substitution by biobased materials and recycling) were tested on the scale of the EuroDelta to determine the spatial implications of upscaling these principles to the scale of the EuroDelta. The third map focuses on finding opportunities for synergies for the circular transition and reducing possible negative impacts. This has resulted in key insights and policy recommendations that can guide future actions.

These inspiration visions reveal the potential of a shared strategy and actions for future colloboration on the scale of the EuroDelta. The added value of the visions is that they integrate different aspects of a circular built environment in one integrate vision: space, logistics, broad prosperity, regeneration of nature, and market development. These visions are based on the different project activities which include upscaling frontrunner initiatives as presented in this report, the observed trends and developments, local and regional workshops, and many conversations with businesses, researchers, cities, NGOs, and many student contributions.

Map 1 | Go biobased



Strengthen urban – rural connectivities

Strive for a healthy living rural-urban environment

Support development of regional markets

Prioritise the use of timber and regional produced biobased materials

Create space for production and first processing of biobased materials near harvesting locations

Fiberland
(first processing on farms; the small black dots)

Agroforestry & Woodland

Algaeland

Stimulate smart specialisation for biobased materials

? Finding potential location(s) for EuroDelta Timber Valley(s) (not on the map)

Stimulate a sustainable Eurodelta logistics network

Stimulate transport of biobased materials via the multimodal EuroDelta logistics corridors
- Waterways
- Railroads
- Roads

Explore the role of (inland) ports for the distribution of biobased materials / components into cities.

Stimulate development of a network of multimodal hubs for wood and fiber logistics — building on existing major hubs such as Duisburg and Ghent — to connect import flows with internal network of regional hubs, enabling efficient first- and last-mile distribution.

Inspirational Map of the EuroDelta: Biobased Materials (Credit: BVR Advisors)

What & how

Biobased construction materials help create healthier rural-urban environments by linking agriculture, forestry, and local processing within circular building systems. This approach utilises local biomass, short supply chains, and nearby processing centers to promote circularity. It can boost regional economies and support climate goals by replacing traditional materials with sustainable alternatives.

Policy recommendations

- Prioritise biobased materials by engaging local and regional authorities, developers, homeowners, and other stakeholders. A supportive policy framework with clear and measurable targets should encourage economic sectors to adapt their business models and shift away from "business as usual" practices.

- Designate potential zones in agricultural zones as "Algae, Timber & Fibre land" to serve as spatial anchors. The initial processing of locally sourced materials should be facilitated within the EuroDelta, for example, by promoting the reuse of former barns for drying fibres.

- Foster innovative business models through policies and enable new forms of land use to support biobased construction.

- Recognise that biobased construction materials are sourced from both local and wider European or global sources. Since these materials arrive via various transport modes, research is needed to identify the most efficient ways to process and distribute these materials across the region.

- Prioritise the use of waterways for transport, sorfollowed by rail, and lastly road transport. Harbours can play a key role in the EuroDelta's water network, bringing materials into cities.

- Leverage existing multimodal hubs, such as Ghent and Duisburg, alongside seaports, to serve as key logistical and processing hubs for biobased materials.

- Conduct further research to explore the potential of developing one or more timber valleys within the EuroDelta to optimise space use and reduce logistical impacts.

Implications

These strategies reposition peri-urban and rural areas as key hubs in circular supply chains. They require flexible land use policies, adaptive regulations, investment in logistics infrastructure, and market stimulation. To realise this vision, environmental values must be directly integrated into spatial planning and economic development through cooperation among multiple stakeholders. Additionally, a supportive business ecosystem should be created to help frontrunner initiatives and startups to grow and scale up across the EuroDelta. Identifying and addressing key cross-border challenges will position the EuroDelta as a pilot area for Europe's circular transition.

Inspirational initatives for biobased materials

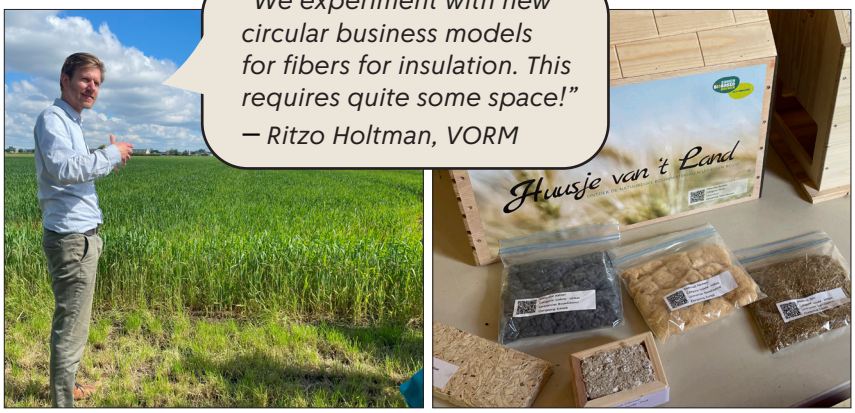
Healthy Building Movement

The Healthy Building Movement (HBM) helps schools, healthcare institutions, and municipalities create healthy, circular, and energy-efficient buildings by linking technology, experience, and policy through an EU-funded Dutch-German collaboration.
https://healthybuildingmovement.com/

(Source: Healthy Building Movement)

VORM Holding

VORM, a Dutch developer and builder, is accelerating the use of biobased building materials by investing in innovation, collaborating with knowledge partners and integrating these materials directly into its construction projects.
https://vorm.nl/



(Photos: Mariana Faver Linhares; Bart Bomas)

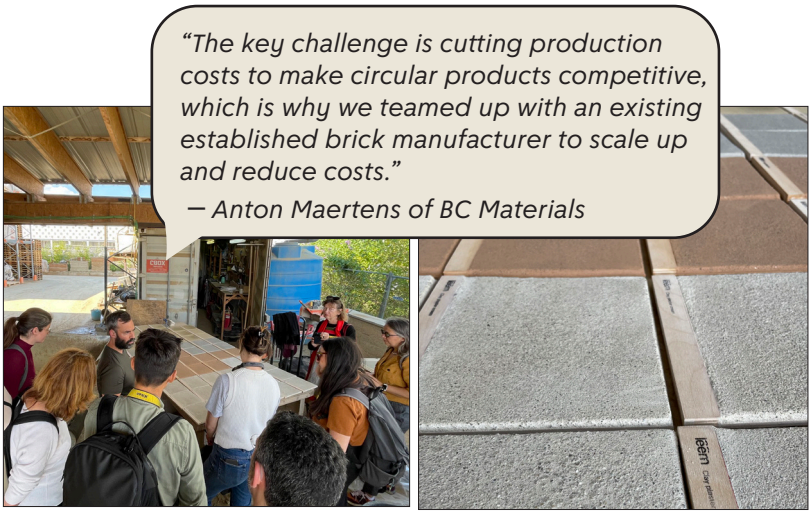
MRA Timber Convenant 2021 - 2025

The MRA Timber Covenant 2021 - 2025, signed by municipalities, provinces, housing associations, developers, architects and knowledge institutions, promotes timber and biobased construction in the Amsterdam Metropolitan Area with the aim of reducing CO_2 emissions, promoting circularity and facilitating concrete timber construction projects.
https://www.convenanthoutbouwmra.nl/

(Photo: Bob van der Zande)

BC Materials

BC Materials in Brussels focuses on urban mining by collecting and upcycling excavated earth from construction sites in Brussels as a building material. They produce earth-based plasters and paints from these materials, promoting a circular approach to construction.
https://bcmaterials.org/



(Photos: Bart Bomas)

Next steps for collaboration

Network / capacity building

- Identify key stakeholders to create a community of practice.
- Create a platform of knowledge exchange, shared projects, and discussions to build capacity.
- Foster relationships by organising regular meetings and excursions.
- Support the exchange by prioritising international work within the EuroDelta.
- Identify frontrunner initiatives and support upscaling through B2B and B2C meetings, involving business development departments of cities and regions.
- Integrate outcomes into the overarching vision for the EuroDelta.

Inspiration & knowledge sharing

- Share best practices in policies, research ,and frontrunner initiatives focusing on biobased construction materials. Emphasise aspects such as harvesting, processing, logistics, space management, market development, and creating the right conditions for circular initiatives.
- Define concrete fields of interests for the following phase of collaboration, such as focusing on different value chains.

Explore & expriment

- Identify key stakolders.
- Start projects and research that link an effective logistical network with the spatial concepts for timber and fibres.
- Develop a strategy for inland harbours and water-connected industrial sites in relation to seaports to support secondary material processing and logistics.
- Explore the possibility of prioritising frontrunner initatives of the EuroDelta in public procurement.
- Develop local and regional spatial strategies for timber and fibre productions based on the outcomes of the EuroDelta inspirational visions.
- Support innovations in resource management, logistics, and space management.

Align policies

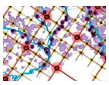
- Align policies, for example, by prioritising the use of biobased construction materials and setting clear and measurable targets, such as the Timber Covenant of the Metropolitan region of Amsterdam.
- Develop educational programmes for administration, constructors, architects, and others to equip them with the right skills.

Map 2 | Go secondary

Leverage cities as hotspots for a circular built environment

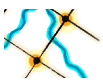
Facilitate circular loops on the lowest scale (scales of components, buildings, neighbourhoods, cities and regions) and prioritise the use of local secondary materials

Support development of regional markets



Facilitate the creation of city-to-city connections to ensure supply security and closing of loops of specialised secondary materials

Create space for a network of hubs for urban mining and reuse of materials



Develop a 20 km hub grid for local loops in urban areas for example for inflow and outflow of circular concrete and for collecting steel to recycle centers

Develop a 60 km hub grid for specialisations of e.g., circular processing and manufacturing of metals

Create circular logistics corridors

Develop a smart strategy to stimulate the use of inland ports as local and regional production, manufacturing and urban logistic spaces (for bulk and containers)

Revitalise and develop waterways as transport system for circular (re-) construction

Inspirational Map of the EuroDelta: Secondary Materials (Credit: BVR Advisors)

What & how

Circularity in construction requires transforming demolition waste into a valuable resource stream through the reuse and recycling of building materials such as concrete, wood, steel, and installations. As urban mines, cities expand their role as consumer space, resulting in more local traffic and greater spatial demands. This requires the reservation of adequate spaces within cities and their surroundings, rethinking logistics, and developing spatial hubs for processing and storage. The use of waterways and rails should be proritised where possible to bring materials into cities and regions. Inner ports and water-connected industrial areas offer opportunities for logistics and processing. These processes allow value to be recovered from the existing urban fabric, reducing emissions and resource use.

Policy recommendations

- Prioritise secondary materials and support this with a comprehensive policy framework that includes clear and measurable targets, as well as digital innovations.
- Explore potential locations for processing and storage hubs across the entire EuroDelta.
- Develop a hubs within a grid of 20 km for local material flows (e.g., concrete, steel) and a 60 km grid for regional specialised flows (e.g., metals). Combine materials flows with other value chains, such as biobased materials.
- Explore the potential to use inland ports as multimodal logistics hubs and spaces for processing.
- Explore the potential of seaports for local and regional economic activities without compromising their gateway function of the EuroDelta.
- Revitalise water transport for heavy materials to facilitate urban extraction and redistribution, reducing the impact on the livability of cities.
- Create relations with neighbouring cities to share spaces and logistics.
- Ensure supply security of secondary materials by collaborating with cities connected via sustainable modes of transport (e.g., waterways and rail).

Implications

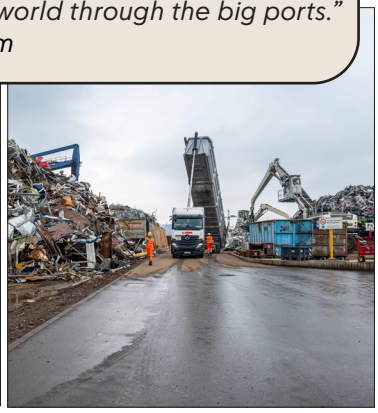
These measures involve changes in land use, investments in logistics, and regulatory adjustments. To achieve effective and consistent circular material chains, it is essential for stakeholders to work together across local, regional, and national boundaries. This collaboration should build on existing insights from policy coordination to infrastructure planning.

Inspirational initatives for secondary materials

TSR / HSK Metal Recycling

TSR Recycling GmbH in Duisburg is a leading metal recycling company, specialising in steel and non-ferrous scrap. Its TSR40 plant processes up to 450,000 tonnes annually, producing high-purity recycled materials for sustainable steel production. https://www.tsr.eu/

"The EuroDelta is the area that we work on. Here in Duisburg, we have the challenge that we are close to the borders and scrap steel and non-ferrous from the Rhine-Ruhr region and the Netherlands is exported to the rest of the world through the big ports." – Ibrahim Bayram



(Photos: DBI; Fabio Bayro Kaiser)

Urban Miner

Urban Miner is a circular construction hub operated by Dura Vermeer in the Rotterdam region, focused on closing raw material cycles in the construction and infrastructure sector. Here, used building materials and components are temporarily stored, processed and reused, with a focus on upcycling and CO_2 reduction through electric logistics and digital demolition methods.
https://www.duravermeer.nl/dura-vermeer-urban-miner

"To ensure that the materials are of a good quality, we only reuse materials from our own projects" – Ali Sedaghat Tarigheh

(Source: Urban Miner/ Dura Vermeer)

ShipIT

ShipIT was developed with the goal of establishing a logistics hub for the construction sector in Brussels. It started as the Brussels Construction Consolidation Centre (BCCC), an urban logistics hub in the Port of Brussels that aimed to enhance efficiency of supplying construction sites by consolidating building materials at construction hubs in the city. This hub focuses on inland shipping and multimodal transport, offering innovative solutions that extends beyond traditional transportation operations. Shipping of secondary materials is a still underdeveloped market.
https://shipit.be/

"We drive efficiency by taking as much material as possible off the road, and by industrialising supply chains. Thus significantly reducing the impact of road traffic within the city. – Mark Goossenaerts

(Photos: Fabio Bayro Kaiser; Bart Bomas)

Next steps for collaboration

Network / Capacity building

- Identify key stakeholders to create a community of practice.
- Create a platform of knowledge exchange, shared projects, and discussions to build capacity.
- Foster relationships by organising regular meetings and excursions.
- Support the exchange by prioritising international work within the EuroDelta.
- Identify frontrunner initiatives and support upscaling through B2B and B2C meetings, involving business development departments of cities and regions.
- Integrate outcomes into the overarching vision for the EuroDelta.

Inspiration & knowledge sharing

- Share best practices of policies, research, and frontrunner initiatives that support the use of secondary materials. Explore areas such as processing, (water) logistics, space management, market development, and creating the right conditions for circular activities.
- Define concrete fields of interest for the following phase, such as focusing on different value chains.

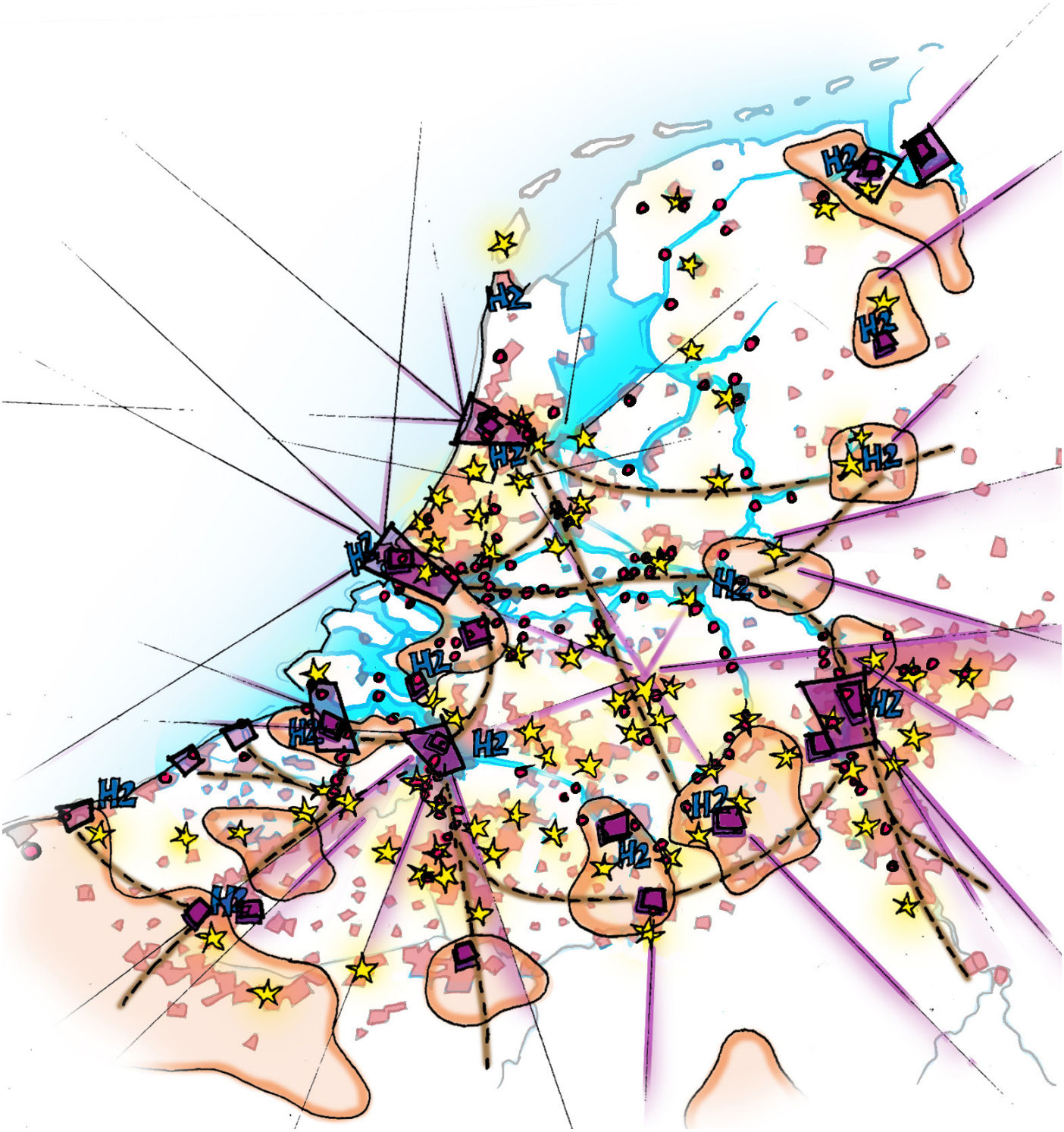
Explore & expriment

- Identify key stakeholders.
- Start new research projects to identify an effective network of hubs in combination with low impact logistics.
- Support the development of a demountable circular environment by, for example, equipping architects and constructors with the right skills, and supporting market development through public procurement pilots.
- Develop a strategy for inland harbours and water-connected industrial sites in relation to seaports to support secondary material processing and logistics.
- Identify critical partners for each city to ensure supply security and initial collaboration.
- Develop local and regional spatial strategies for secondary materials based on the outcomes of the EuroDelta inspirational vision.
- Develop an impact assessment tool of local and regional policies on the neighbouring regions within the EuroDelta.
- Support innovations in resource management, logistics, and space management.

Align policies

- Align policies, for example, by prioritising the use of biobased materials by setting clear, measurable targets, such as those implemented in France.
- Develop educational programmes for administration, constructors, architects, and others to equip them with the right skills.

Map 3 | Go for symbiosis



Potential economic developments that boosts the circular transition

- Development of hydrogen energy hub grid
- Sustainable transformation of (bio) chemical and steel industrial clusters
- Further development and strengthening of knowledge and innovation clusters
- Sustainable economic transformation of industrial areas (eligible for just transition funds) with high density of skilled labour
- Sustainable urban development of existing and new urban areas
- Sustainable redevelopment of big multimodal sea- and inland ports and flows of goods/materials
- Sustainable redevelopment of smaller inland ports as circular hubs

Corridors

- Waterways
- Freight and rail systems

Inspirational Map of the EuroDelta: Economic Symbiosis (Credit: BVR Adivsors)

What & how

An increase of circular activities will result in more spatial claims and more logistics, which will, at least temporarily, increase the existing tensions of interests within the EuroDelta. To reduce pressure on land, energy demand, and traffic impact, and to achieve a truly circular built environment, spatial synergies should be stimulated. This includes fostering industrial symbiosis and creative synergies between economic activities and local communities. It also requires re-evaluating the location of existing activities and situating new economic activities in locations that provide suitable environmental, social, and economic conditions. This approach aims to reduce the environmental impact while creating new job opportunities. New spatial, economic, energy, and logistical concepts are necessary to help define suitable places for symbiosis and synergies across economic sectors and scales.

The map identifies potential spatial zones and corridors where new developments and key characteristics are observed, which could function as driver of change to create new synergies:

1. The development of a hydrogen energy hub grid in close proximity to high-energy industries like chemical and steel industries.
2. A dense network of knowledge and innovation clusters all over the EuroDelta
3. The need for new economic models in fossil-dependent areas (eligible for Just Transition Funds) with a high density of skilled labor and, where applicable, space for development).
4. The re-orientation of seaports within the circular material flows.
5. Growing pressure on shared infrastructure at larger (sea)ports, resulting in congestion and negative impacts on people and planet.
6. Increasing attention to transport via water and rail.
7. The ambition to build circular, healthy and livable and well connected cities and regions.

The **Go for symbiosis** map identifies first ideas for synergetic spatial locations and corridors. These include were port-industry clusters as circular super-hubs, supported by hydrogen energy networks that are form part of a new spatial network of interlinked energy, materials and logistics systems across borders. These hubs and networks form the basis for the future industrial landscape of the EuroDelta while providing opportunities for a just transition.

Policy recommendations

- **Create symbiosis and synergies**
  Promote opportunities for symbiotic and smart, specialised circular economy and develop new technical and spatial solutions.

- **High-energy hotspots as catalysts for innovation (H2)**
  Promote specialised and symbiotic industrial clusters at sustainable high-energy hotspots (H2) for energy-intensive industries like steel and chemicals.

- **New circular hotspots in restructuring zones**
  Promote regionally specialised circular clusters in transitioning, fossil fuel-dependent and industrial regions. Focus on industries such as recycling companies and new manufacturing industries that require practically skilled labour.

- **Innovative collaborations**
  Stimulate innovation through collaboration between urban knowledge and service sectors, industry clusters and governments. Create space for experimentation.

- **Industrial symbiosis**
  Create symbiosis between different economic sectors and across various spatial scales, for example, by using slag as a substitute for cement in new concrete.

- **Create symbiosis on different spatial scales**
  Preserve strategic industrial sites essential for Europe's circular and economic resilience within the EuroDelta, while simultaneously building circular, healthy and livable cities and regions. Enable circular material flows and circular production/manufacturing across scales by sharing spaces, transport, and processing facilities. Create win-win scenarios for industry and local communities (e.g., energy reuse, cultural spaces).

- **Create circular symbiosis by unbundling of activities**
  Unbundle activities like freight and passenger rail or locally orientated circular processing from seaports in order to develop the full potential of activities and create shared spaces with better symbiotic possibilities.

- **Create right conditions for spatial synergies**
  Create affordable space for circular and healthy cities, regions, and global economic activities. Provide sufficient sustainable energy, promote clean water, air and soil, and boost skilled workforce development for a circular economy. Invest in digitalisation and policy instruments that allow flexible and adaptable space management, as well as new financing mechanisms.

Implications

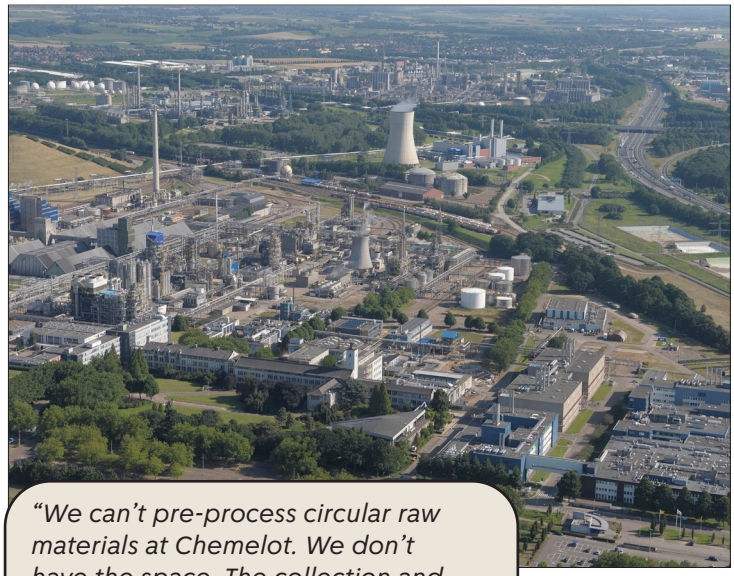
This vision requires cross-border coordination and high-level policy alignment. It calls for joint investment in infrastructure, flexible regulatory frameworks, and spatial strategies that prioritise long-term resilience over short-term optimisation, reflecting integrative approaches.

Inspirational frontrunners for symbiosis

Chemelot Circular

The chemical cluster Chemelot ambitions to become a circular hub in 2050 and to achieve climate neutrality.

To achieve this, the existing site of 600 hectares has to expand by 300 hectares to create space for circularity. The hydrogen production and using non fossil materials for plastic production requires the development of a new inner harbour, the plastic waste of 1.5 million households and that the locks are open 7 days a week. Chemelot Circular strengthens the region with circular chemistry that saves CO_2, stimulates innovation and creates new jobs in an area that is facing an economic transition.
https://www.chemelot.nl/chemelot/visie



(Source: https://upload.wikimedia.org/wikipedia/commons/c/c0/Chemelot_site.JPG)

"We can't pre-process circular raw materials at Chemelot. We don't have the space. The collection and processing will have to take place at other locations. Preferably, these are waterfront industrial estates, which can avoid transport by public road."
– Merijn Wetzels

Urban Mine Zaandam

A Dutch concrete company that turns concrete rubble into high-quality, new concrete with smart technology, developed together with the AMS Institute resulting in 80% CO_2 savings.
https://urbanmine.nl/

(Photo: Urban Mine Solutions)

"We reduce the impact of our industrial activities on the neighboring housing by containing our industrical activities in an halp open sturcture. That created new space within the envrionmental zone" – Sven Hiskemuller

Logistics Valley Flanders

A former brownfield in Belgium (originally a Ford site) that has undergone a massive transformation into a sustainable logistics terminal with space for logistics and industrial activities; a 430-meter-long quay wall on the Albert Canal; and a new inland port. The location is developed to reduce the traffic around the port and the city of Antwerp.
https://www.vlaamsewaterweg.be/nl/nieuws/logistics-valley-flanders-officieel-ingehuldigd-genk

"We expect that this terminal will take 1,800 trucks off the road every month"
– Koen Anciaux

(Source: Belga Photo Eric Lalmand)

Photos during local and regional workshops:
From top — Left to right: Province of South Holland and The Hague in Oct 2024 (Photo: BVR); Amsterdam in October 2024 (Photo: Bas Horsting); Brussels in November 2024 (Photo: Cécile Houpert; Krefeld in June 2024 (Photo: Simon Erath)

Next steps for collaboration

Network / Capacity building

- Identify key stakeholders to create a community of practice.
- Create a platform of knowledge exchange, shared projects, and discussions to build capacity.
- Foster relationships by organising regular meetings and excursions.
- Support the exchange by prioritising international work within the EuroDelta.
- Identify frontrunner initiatives and support upscaling through B2B and B2C meetings, involving business development departments of cities and regions.
- Integrate outcomes into the overarching vision for the EuroDelta.

Inspiration & knowledge sharing

- Share best practices of policies, research, and frontrunner initiatives that demonstrate symbiosis and synergies, serving different goals and target groups.

Explore and experiment

- Define concrete pilot projects and establish zones for experimentation.
- Initiative new research projects that identify symbiotic opportunities, with a focus on reducing spatial and logistic challenges.

Align policies

- Foster collaboration between governments to promote economic development at locations with the right conditions. Find new policy instruments that faciliate cross-border cooperation.

Chapter 7
Key Learnings & Recommendations

The ASSET project was executed in less than 1,5 years. Despite the short duration of the project, all stakeholders were enthusiastic about the learning experience it provided and will continue to collaborate. Below are some key takeaways shared by the participants.

Key learnings for **Governments and business associations** | *Brussels, Amsterdam, Province of South Holland, The Hague, Dusiburg Business & Innovation, Krefeld Business*

- **Opportunities at larger scales:** Governments recognise that circularity begins locally and regionally, but can only succeed when scaled up across regions. Achieving this requires policy harmonisation, improved data infrastructure, and the development of shared hubs and networks.

- **Spatial strategies as enablers:** Governments acknowledge that a circular built environment requires dedicated space. Developing spatial circular strategies in co-creation (e.g., testing South Holland's methodology in workshops) proved effective for joint fact-finding, shared agendas, and accelerated learning. The Delta, with waterways and ports, emerged as a crucial asset in these strategies.

- **Market development requires support:** The EuroDelta not only provides a systemic foundation for circular building but also concentrates demand at a scale capable of driving market development. Scaling up is essential to create meaningful impact – spatially, economically, and in terms of collaboration and knowledge. Growing supply and demand in tandem is key to advancing the market.

- **Scaling up for impact:** The EuroDelta faces a building challenge of more than 2 million homes by 2040. If cities and regions commit to biobased construction for at least a quarter of these new homes, they could generate material demand at a scale capable of transforming the market for biobased construction materials. Aligning policies on this scale could significantly boost the circular transition.

- **Multi-stakeholder arenas:** To address circularity at scale, governments need 'arenas' that bring together cities, regions, and industry for knowledge sharing, experimentation, and the exchange of best practices. These 'arenas' would support both local and regional transitions.

- **Collaboration and structure:** The project fosters more structured collaboration, enabling stakeholders to develop a common language and build trust.

Key learnings for **academia & civil society** | *RWTH Aachen, TU Delft, METREX, Association of Deltametropolis*

- **Education and research:** The project aligned seamlessly with academic initiatives, such as RWTH's European Master in Transforming City Regions, and provided valuable material for education and applied research. The close cooperation with governments and the engagement with businesses were regarded as significant added value for students.
- **New insights:** Collaboration with multiple cities and regions enabled academic partners (e.g., TU Delft) to critically re-examine models, concepts, and theories related to circular cities and regions.
- **Place-based experimentation:** Academia emphasised that place-based European policies and experimental zones, such as designating EuroDelta as a testing ground, are essential for advancing circularity and scaling up solutions proven effective across national borders.
- **Role in capacity building:** Universities highlighted that addressing gaps in circularity requires long-term commitment to collaborative learning and capacity building. This involves moving beyond isolated initiatives towards integrated approaches that engage all stakeholders.

Exhibition of TU Delft & RWTH Aachen student work as part of the ASSET project (Photo: Wassil Benamar)

During the ASSET project, the EuroDelta proves to be a relevant scale. Based on the outcomes of the project activities, key recommendations for different types of stakeholders are developed to first guide collaboration then actions.

Recommendations for **cities and regions within the EuroDelta**

1. **Integrate circularity into policy frameworks**
   Embed circular principles in logistics, energy, economic, and spatial policies, and develop a comprehensive framework that supports collaboration across sectors and borders. Implement circularity in spatial planning and building practices by engaging stakeholders, launching pilot projects, developing digital tools, and securing space for circular hubs.

2. **Promote collaboration, capacity building**
   Work closely with other cities and regions in and around the EuroDelta that are interconnected through infrastructure, economy, environment, and social networks. Co-create conditions for circularity and develop innovative solutions for local challenges. Build capacity through knowledge exchange, experimentation, tool development, and policy alignment.

3. **Strengthen spatial-economic connectivity for better decisions**
   Encourage policymakers to zoom in and out of their administrative borders to understand how their city or region connects within the EuroDelta and Europe. This broader perspective will enable better informed decisions.

Recommendations for **academia within the EuroDelta**

1. **Strengthen the scientific foundation and knowledge transfer**
   Invest in research on regional development and sustainability at the Eurodelta scale. Actively share findings with businesses, policymakers, and other stakeholders to support evidence-based decisions and accelerate circular transitions.

2. **Promote innovation and foster continuous learning**
   Encourage the development and scaling of innovative solutions in circular and biobased construction. Combine this with long-term investment in lifelong learning to equip professionals and organisations with the skills needed for systemic change.

3. **Facilitate dialogue and teaching**
   Create platforms for structured dialogue with stakeholders across sectors and governance levels. Incorporate insight gained from ASSET into professional education to help identify and address the risks of inaction, align ambitions, and strengthen cooperation across the Eurodelta.

Recommendations for **business associations**

1. **Embrace circular economy principles and support frontrunners**
   Encourage members to adopt sustainable practices and implement circular strategies (R-strategies). Actively support frontrunner initiatives and help them scale by facilitating B2B and B2C connections across the value chain.

2. **Invest in sustainable technologies and innovation**
   Promote investments in technologies that enhance environmental performance and resource efficiency. Support businesses in identifying, adopting, and sharing innovative solutions to accelerate the transition to circular business models.

3. **Engage in collective action and policy dialogue**
   Participate in the EuroDelta Alliance to exchange best practices, contribute to policy development, and strengthen collaboration between businesses, governments, and knowledge institutions.

Recommendations to **National governments**

1. **Engage in collective action and policy dialogue**
   Actively participate in the EuroDelta Alliance by engaging in dialogue and facilitating informal bottom-up cross-border and transregional collaboration.

2. **Recognise the EuroDelta as a relevant megaregion**
   Incorporate the EuroDelta scale into national policies and dialogue. Allow space for experimentation, and support projects and research initatives. Support collaboration within the EuroDelta and make transregional research and innovation possible through National funding sources.

3. **Adapt regulations and harmonise data**
   Reduce barriers and introduce measures such a special tax and waste rules for crossborder circularity. Ensure joint data collection and monitoring systems to enable informed transnational policymaking.

Recommendations to the **European Comission**

1. **Address EuroDelta's unique challenges within European policy**
   Recognise the EuroDelta's strategic role in reaching the European goals. Provide targeted funding and support for stakeholder dialogue in order to create systemic changes. This requires making it possible to influence the system by alligning policies and actions of different stakeholders geographically spread across one system. For example, the development of a circular market by alligning policies on the usage of biobased materials, logistics, and, spatial planning.

2. **Support the EuroDelta as pilot area of a circular built Environment**
   Adapt EU laws to address the EuroDelta's specific spatial needs. Allow regulatory exemptions and foster cross-border and interregional innovation.

3. **Improve data collection and knowledge on interconnections within the EuroDelta**
   Invest in data collection and analysis to better understand EuroDelta's interconnections. Promote research and encourage stakeholder data sharing.

Chapter 8
Start: The EuroDelta Alliance

An important first step has been taken to strengthen collaboration in the EuroDelta: *the signing of the Letter of Intent to establish the EuroDelta Alliance*. This letter was signed during the final ASSET conference in May 2025 in Brussels by 10 partners form governments, business associations, academia and NGOs.

The Letter of Intent reflects the commitment of the undersigned parties to create a collaborative EuroDelta Alliance. The Alliance aims to strengthen transregional and cross-border stakeholder cooperation within the EuroDelta. Its mission is to actively support the shift towards a EuroDelta that contributes to a prosperous, equitable and sustainable Europe while restoring the natural system of the Rhine-Meuse-Scheldt Delta ecosystem. With its dense network of cities, infrastructure, harbours, and industries, its rich cultural diversity across four nations, the innovative capacity of its businesses and citizens, and its fertile land, the region has all the ingredients to serve as a global model for sustainability, equity and prosperity in Europe and beyond.

The shared mission, narrative, challenges, strategy, policy recommendations, and inspirational visions developed during the ASSET project provide a foundation for these collective actions. A EuroDelta Alliance roadmap – based on the outcomes of ASSET – serves as an initial guiding tool in this process.

A — Articulate a shared mission

- A shift towards a competitive, livable, and resilience EuroDelta
- That contributes to a prosperous, equitable, and sustainable Europe
- That restores the natural system of the Rhine-Meuse-Scheldt Delta ecosystem
- By boosting a circular built environment

S — Shape an inspiring narrative

- Guide EuroDelta initiatives by linking sectors – green industry, agriculture, energy, and low impact logistics
- Address urban challenges like construction, livability, supply security, water management, and energy transition
- Ensure overall resilience and competitiveness of the EuroDelta

S — Set strategic & measureable targets

- Set aligned targets to reduce space use, material consumption, and logistics impact
- Increase biobased and secondary materials (construction steel, concrete)
- Create new jobs while fostering the spatial and (eco-) functional conditions for a circular transition

E — Establish (spatial) strategies

- Focus on 5 main challenges of cities & regions
- Build on ASSET's spatial strategy of a circular built EuroDelta
- Lead research and dialogue, guide actions, and unlock (trans)regional collaboration
- Prioritise innovative actions that reinforce city and regional policies, build capacity, and promote *from competition to collaboration* narrative

T — Take action

- Involve stakeholders across sectors and borders
- Develop a joint action plan for actions
- Use the platform to share findings within the EuroDelta
- Strengthen cross-border and transregional cooperation
- Advocate for EU support
- Build the network steadily – with long-term ambition

Roadmap presented during Final Conference of ASSET to guide the future pathway of the EuoDelta Alliance

Representatives of the founding partners of the EuroDelta Alliance (Photo: Wassil Benamar)

Letter of Intent

The Founding Partners of the EuroDelta Alliance

21 May 2025

This Letter of Intent reflects the commitment of the undersigned parties to establish a collaborative EuroDelta Alliance, which will be founded to strengthen transregional and cross border stakeholder cooperation within the EuroDelta. The mission of the Alliance is to actively support the shift towards a EuroDelta that contributes to a prosperous, equitable and sustainable Europe while restoring the natural system of the Rhine-Meuse-Scheldt Delta ecosystem. With its dense network of cities, infrastructure, harbors, and industries, its rich cultural diversity across four nations, the innovative capacity of its businesses and citizens, and its fertile land, the region has all the ingredients to serve as a global model for sustainability, equity and prosperity in Europe and the world.

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LOI | EuroDelta Alliance

Cover of the Letter of Intent (LOI) of the EuroDelta Alliance https://asset.nweurope.eu/letter-of-intent

Final Conference in Brussels (Photo: Wassil Benamar)

Chapter 9
Final Remarks

ASSET has enhanced structured collaboration, enabling the development of a common language among stakeholders and laying the groundwork for future partnerships. The initial ambition to create inspirational visions and establish a EuroDelta Alliance has been achieved. All partners have expressed satisfaction with the results, and there is a strong shared commitment among the core partners to continue collaborating.

Our key finding is the recognition that creating a circular built environment (CBE) is complex and requires strong connections between different sectors. Progress depends on collaboration between departments such as planning, economics, sustainability, and mobility to jointly develop integrated plans and actions. This approach can help achieve circular goals, boost the supply and demand for circular products, and create the conditions for a thriving circular built environment. Integrating the EuroDelta scale in planning and sectoral policies contributes to the boost of the circular transition.

A mission-driven approach, similar to the ASSET project, provides a successful model for our future collaboration. However, it is recognised that developing a strong, shared narrative is crucial to ensure alignment across scales and sustained commitment to the circularity goals. These goals should, in a later phase, also address other challenges within the EuroDelta.

We will continue our collaboration with knowledge sharing and experimenting. Aligning policies, as demonstrated by the successful testing of South Holland's spatial strategy in workshops, has also proven highly effective. Moving beyond isolated efforts toward a more integrated approach is a promising path for the future, uniting us within the EuroDelta to become a lighthouse region for a competitive and sustainable European economy. ASSET demonstrates the power of spatial design within complex sectoral questions revealing consequences of sectoral policies and showing interrelationships between scales – advocating for a future through research by design and sectors/themes. This methodology will be an important component for fiture collaboration in the EuroDelta.

We invite others – cities, regions, businesses, and knowledge partners – to join us in strengthening this shared vision and helping to shape the EuroDelta into a true model for Europe.

ASSET poster

Participants of the ASSET Final Conference in Brussels (Photo: Adrian Hill)

Colophon

Title: *ASSET Final Report | General Outcomes*
***A S**patial **S**trategy for the **E**uroDelta: Boosting the circular buil**T** environment*

Date: *June 2025*

Project Partners contributed to the general outcomes of ASSET:

City of Amsterdam | Department of Urban Planning and Sustainability
City of The Hague | Department of Urban Development, Urban Planning and Economy division
Perspective.brussels (Brussels Planning Agency)
Brussels Environment (Bruxelles Environnemment / Leefmilieu Brussel)
Province Zuid-Holland | Domain Economy and Energy
TU Delft | Faculty of Architecture and the Built Environment
RWTH Aachen | Chair of Urban Design and the Institute for Urban Design and European Urbanism
Krefeld Business
Duisburg Business and Innovation
METREX (The Network of European Metropolitan Regions and Areas)
Deltametropolis Association

Supported by external advisors:
BVR Advisors
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