Gemeente
Amsterdam

Amsterdam Circular 2020-2025 Strategy



Amsterdam Circular 2020-2025 Strategy

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Foreword

Amsterdam wants to be a thriving and equitable city. In this city we want to ensure a good life for everyone within the Earth's natural boundaries. We want to be a city in which prosperity and wellbeing for everyone come first. Therefore, we want to be a completely circular city by 2050. This is good for the economy, for the environment and for the people of Amsterdam.

Our way of producing and consuming has a tremendous impact on the supplies of scarce raw materials, on our climate and on our living environment. For example, one-third of our food is wasted and consumer goods are the biggest environmental burden for which we as a city are responsible. As things stand now, we are exhausting the Earth and inequality is increasing. We currently live in an economy in which we incinerate discarded products containing valuable raw materials as 'waste'. This is a great shame, considering the current scarcity of raw materials in the world. It is not good for our moral awareness either. Nobody wants to live in a throwaway society, in which we consume and produce indiscriminately.

To become a thriving and inclusive city, we need to make our economy circular. Through high-quality processing of raw and other materials, we can close our cycles and prevent them from becoming waste. And through smarter production and consumption, we can conserve the raw materials we so badly need for our prosperity and the energy transition to which we are also strongly committed.

In addition, a circular economy contributes significantly to the reduction of global CO_2 emissions. Climate change knows no national boundaries, so everyone – including the people of Amsterdam – benefits from preventing global warming.

Finally, a circular economy provides more employment. Jobs will disappear, but in the field of repair and processing of raw materials there will be a net increase in jobs for people from all walks of life.

As a city, we have been busy reducing our footprint for some time now. Two of the ways we do this are switching off the gas and reducing CO_2 emissions. We also ensure that raw and other materials are not lost, but can be used and reused. The circular economy is therefore an important spearhead of Amsterdam's College of Mayor and Alderpersons.

With this strategy, the City of Amsterdam is setting the course towards a circular city by 2050. We aim to halve the use of new raw materials by 2030. These are ambitious targets, which we can only achieve if everyone plays their part.

As the municipal authority, we are taking the lead and want to set a good example for Amsterdam's residents as well as our businesses. In this strategy we describe how we as a municipal authority – often in cooperation with other parties from the city – are working towards a circular city. When it comes to modifications in the public space or maintenance of roads, bridges or municipal buildings, for example, the City must take its responsibility. This also applies to our own purchasing of, for example, food, electronics and office furniture. Through circular procurement, we give local and regional suppliers an extra incentive to become circular as well.

Because we will not be able to achieve our goals without the help of businesses in and around our city. Businesses must produce and provide services in a more responsible manner. And we all need to be more responsible in our consumption habits. Only then can we become the responsible capital we as Amsterdam want to be, for everyone inside and outside our city limits.

We want to inspire and encourage everyone to work together, to share our knowledge and experience in order to be innovative and successful together. And we realise that we can accelerate the transition to a sustainable and social society if we have the courage to learn from each other and find solutions together.

By opting for a new economy, we will turn Amsterdam into one of the world's most circular cities: innovative, prosperous, inclusive and attractive. I wish everyone much energy, creativity and success in implementing this strategy in 2020 and beyond.

Marieke van Doorninck
Deputy Mayor for Spatial Development and Responsibility



Marieke van Doorninck,
Deputy Mayor for Spatial Development and Responsibility

Reader's guide

You have before you the *Amsterdam Circular 2020-2025 Strategy,* the first of four complementary documents. In *the Amsterdam Circular 2020-2025 Strategy* we outline why and how we want to make Amsterdam circular.

In the second part, the *Innovation and Implementation Programme 2020-2021*, we discuss in detail how and with which projects we will shape the circular economy. Some of the projects are described in the *Waste & Raw Materials Implementation Programme 2020-2025*, drawn up in conjunction with the strategy for a circular economy, which will go through the administrative decision-making process in parallel in the spring of 2020.

In the *Monitor* we describe how we are going to measure the extent of Amsterdam's circularity.
In the fourth document, you will find *The Amsterdam City Doughnut*, the advisory report drawn up by economist Kate Raworth, which will help to make Amsterdam circular.

This *Amsterdam Circular 2020-2025 Strategy* has five chapters. In the introduction we discuss the need for a circular economy, what the circular economy entails, and why it is a solution to our problems.

In Chapter 2, **Circular Amsterdam**, we outline what the circular economy will look like in Amsterdam. Which economic chains are important to us, and how does this affect the people of Amsterdam and its businesses? What should we leave out and what opportunities are there?

In Chapter 3, **Ambitions and Courses of Action**, we describe how we arrived at the strategy and plan of action and what the City is going to do to create the circular economy. Because a circular economy involves many sectors, a **cross-value chain approach** is also included, in which we describe how we will deal with, for example, hotels and restaurants, schools and the port of Amsterdam. We then specifically discuss the courses of action we want to carry out for three selected value chains: **Food & Organic Waste Streams, Consumer Goods and the Built Environment.**

In Chapter 4, Monitor, we describe how we will measure our progress towards the circular economy in the coming years, taking into account social aspects as well as the use of materials and economic indicators.

Finally, in Chapter 5 we list the references used.



Visual overview of the relationship between the strategy, the implementation programme, the monitor and the city doughnut.

1. Introduction

1. Introduction

This is how we will stay within the planetary boundaries

Amsterdam has a strong economy that has brought and continues to bring us a lot of prosperity. However, there is a major drawback: we use raw materials as if there were an unlimited supply. That puts a great deal of pressure on the environment. To meet Europe's demand for raw materials alone, we need 2.9 Earths [21] – while of course we only have one. So, we use more than the Earth can provide. This is at the expense of future generations and people in other countries. Moreover, the trends do not bode well. Every year, we see more extraction of raw materials, higher energy consumption and increasing greenhouse gas emissions. These trends are in line with the growth of the global economy and population. Clearly, we are exhausting the Earth in this way. In addition, consumption here influences prosperity elsewhere, for example, through working conditions during the extraction of raw materials and the manufacture of products.

It doesn't have to be like this. There is another way. It is possible to live prosperously within the limits imposed by our planet. In a circular economy – also known as a circular or doughnut economy – we make better use of what is already there. By making smart choices in Amsterdam, we can create prosperity and take good care of the Earth at the same time. This is how we are working towards a future that is both social and sustainable.

An end to waste

In a circular economy, we prevent waste by preserving the value of products, components and raw materials in closed cycles for as long as possible, which leads to us being left with less waste. This way we can reduce the burden on the environment and save costs without sacrificing quality. We are going to share more with each other, reuse more and repair more, which will also lead to less degeneration in the city – a tidy city is a safe city.

We stimulate cooperation in the production chains so that we get the most out of the raw materials. For example, designers are already thinking about how a product can be easily dismantled for repair or reuse. By using what we have more sparingly, we lose fewer valuable and scarce raw materials. Take, for example, phosphates needed for fertiliser or rare metals used in electronics and in the batteries that are so badly needed in the energy transition. We will achieve this with renewable energy solar and wind energy as much as possible. These renewable sources will drive production processes.

An integrated approach enables us to solve bottlenecks and work on the transition to a circular economy. This strategy and the action plan make this possible.

More with less

As more and more environmental, climate and economic experts are pointing out, the circular economy is necessary. The Earth is warming up, nature reserves are under pressure and biodiversity is declining rapidly. Meanwhile, inequality is increasing and young generations are worried about the financial and ecological challenges that will face them.

This awareness is beginning to spread to a larger audience, which is good news, because the transition provides a unique opportunity for social justice. The circular economy is the beginning of an essential change to the system, which will enable us to achieve broad prosperity, for all residents of Amsterdam as well as for people far beyond.

All things considered, this is the great challenge for the 21st century: to give ourselves and others a fair chance at a good life, while separating economic growth from the pressure on the environment. The transition to a circular economy is an inevitable way to take up that challenge. Amsterdam is going to take that step, as one of the first cities in the world. This plan is a concrete start to the transition.

On the way to climate neutrality

At the Paris climate conference in 2015, government leaders agreed to limit global warming to 2 degrees Celsius, preferably 1.5 degrees. The City of Amsterdam has adopted this objective. By 2030 we want to reduce CO_2 emissions by 55% compared to 1990. This figure should be 95% by 2050. Leading up to this, we want to be natural-gas-free by 2040.

In the introduction, we wrote that a circular economy can provide tremendous climate benefits. The Amsterdam coalition agreement [13] has therefore given the circular economy a prominent role. This strategy has therefore been carefully coordinated with the *Amsterdam Climate Neutral 2050 Roadmap* [22], which sets out how we can achieve a climate-neutral city between now and 2050.

The circular economy plays an important role in this, thanks to the tremendous savings on raw and other materials. There is a story behind every product we use. It is the story of raw materials taken from the Earth and of materials that are produced and traded – indium for our phones, nickel for our electric cars and silicon for our solar panels. This whole process takes energy and therefore contributes significantly to climate change: it is responsible for 60 to 70% of global greenhouse gas emissions, such as CO_2. In a circular economy, we can prevent up to two-thirds of greenhouse gas emissions [10]. In addition, the extraction of raw materials and the production of products do not always take place under good working conditions. Consumption here therefore influences prosperity elsewhere.

Preserving value

In a circular economy, the value of raw materials is preserved as much as possible throughout a product's lifecycle, from design to disposal. A ladder of circularity has been designed for this purpose (see page 12), which shows which processing options are preferable to others.

The three options at the top (refuse, rethink, reduce) relate to the changing use and design of the product and also to the business models around it. Examples avoiding plastic cups at a coffee machine, renting and sharing cars and producing the same products with fewer raw materials.

The next four options (reuse, repair, refurbish, remanufacture) relate to the use phase of the product. These are aimed at prolonging the lifecycle as much as possible. Second-hand stores and repair centres play a role here.

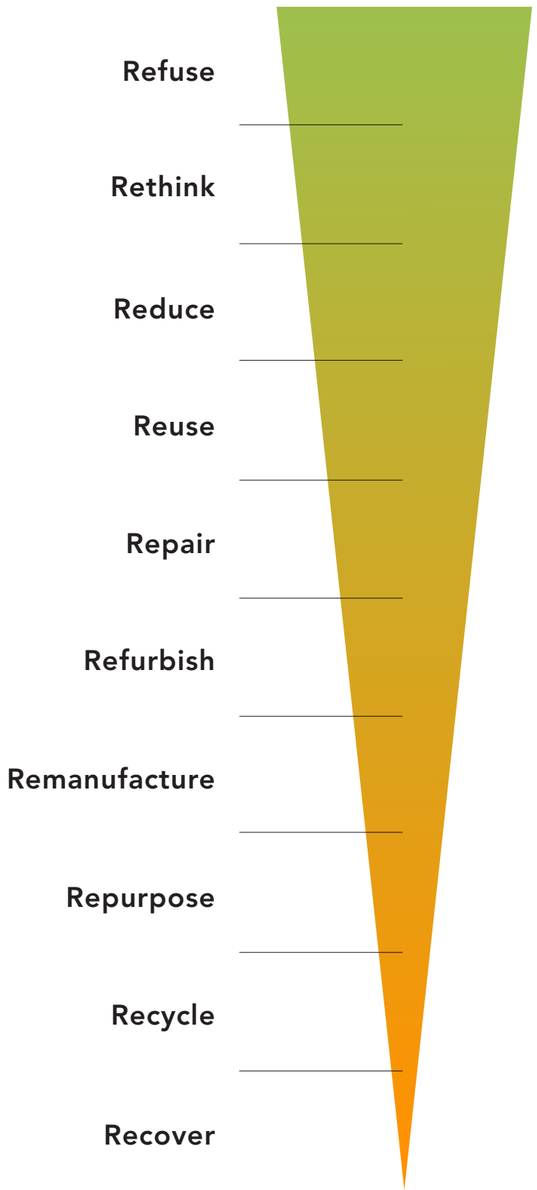
The bottom three options (repurpose, recycle, recover) cover the end of the product's life: components can be repurposed, materials recycled and, as a last option, incinerated with energy recovery.

Opportunities for frontrunners

Focusing on the circular economy delivers more than a healthier and fairer world. There are great economic opportunities for frontrunners, for two reasons:

- The demand for clean technology is increasing. See, for example, the rise of electric cars and meat substitutes. We also see a growing need for new business models that fit a circular economy. Among other things, we are now seeing them in the emergence of digital platforms on which goods and services are offered.
- More and more pension and investment funds are 'greening' their portfolios. This is a logical choice, because businesses that are less dependent on scarce, expensive raw materials have a competitive advantage and more opportunities to thrive. Those who are among the pioneers in offering good, clean options can count on investors.

Circular processing ladder



Refuse	Make a product redundant by abandoning its function or by providing the same function in a different way.
Rethink	Make product use more intensive by using (sharing) the product with more people or by giving the product more functions.
Reduce	Increase the efficiency of the machines in the production process or use fewer raw materials for the same product.
Reuse	Reuse of discarded, functioning product in the same function by a different user.
Repair	Repair defective products so that the original function can be preserved.
Refurbish	Refurbish old products to bring them up to date.
Remanufacture	Reuse functioning components of the product to make comparable products.
Repurpose	Reuse the product or components thereof in a new product with a different function.
Recycle	Reuse the materials of the product for application in new products.
Recover	Incinerate the materials with energy recovery.

Global support

Fortunately, we are not alone in our pursuit of a circular economy. Government authorities at all levels, including the Dutch government and the European Union, have stated their commitment to this. Among other things, this means that together we are making different choices when it comes to investment and policy, so that the world becomes cleaner and society becomes fairer.

At the central government level, these ambitions have been elaborated in the National Raw Materials Agreement and five transition agendas, for construction, food and consumer goods [1]. In the Netherlands, transition paths to a circular economy have been formulated for each of these value chains.

Outside the Netherlands, there is also serious and increasing attention for the circular economy. In 2015, 2018 and 2019, the European Commission presented the circular economy packages, a set of policy changes, studies and financial support for the development of a circular economy.

After the new European Commission took office, it launched the Green Deal in December 2019. This is a comprehensive plan that embraces the circular economy and states that the transition must be social and equitable – comparable to Amsterdam's doughnut model.

The world in a doughnut

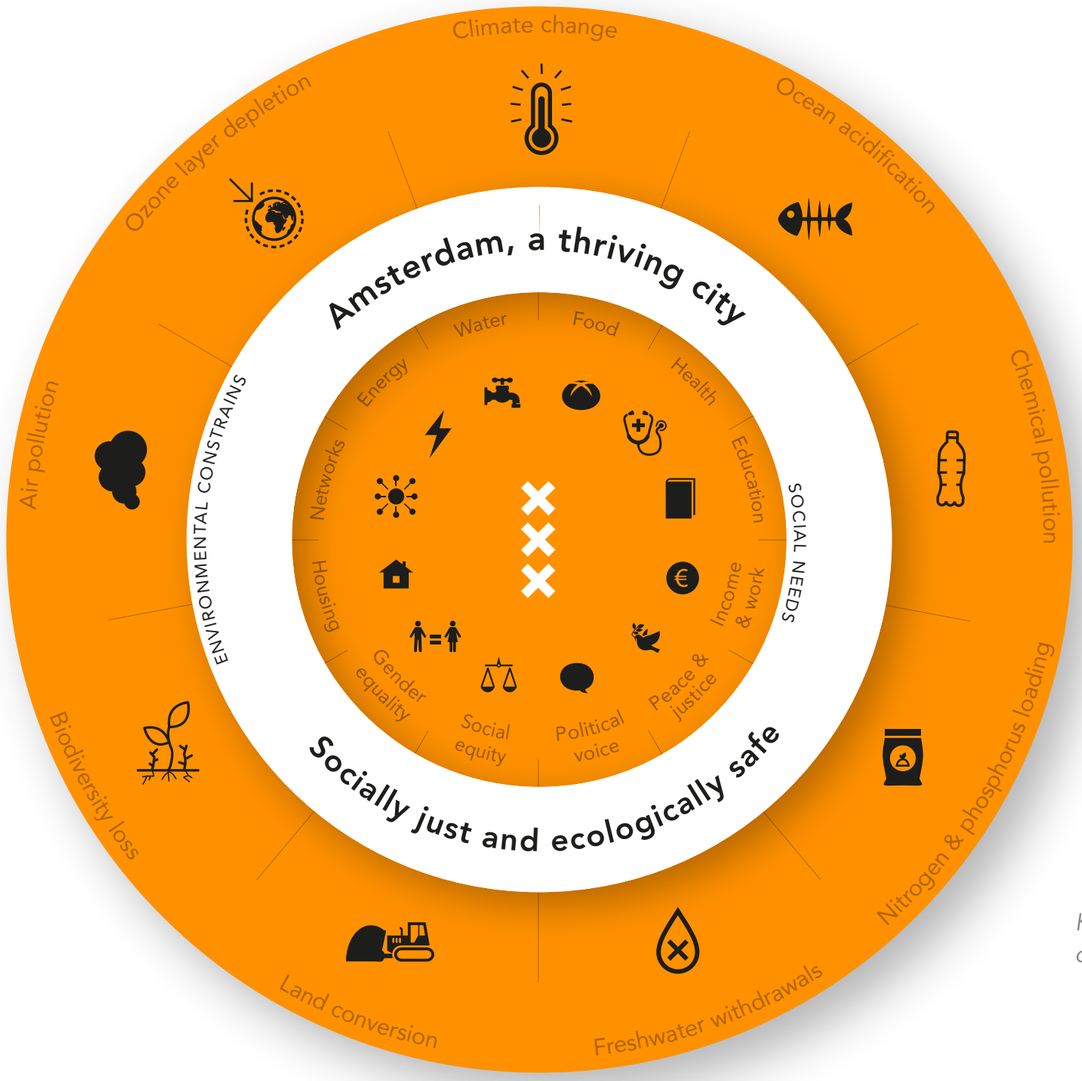
The circular economy is sometimes presented as a doughnut. This is a model that we also use in Amsterdam. This model was developed by Kate Raworth, a British economist working for the University of Oxford and the University of Cambridge. In her influential book *Doughnut Economics* she shows that the current economy does not contribute to broad prosperity. In the circular model she combines economic, social and ecological principles.

This model (see next page) shows that there is a lower limit to prosperity in order to be able to offer a socially equitable existence to inhabitants of a city or country. People need income to live, so economic activity is essential. If we do not satisfy this, problems such as hunger, scarcity and inequality will occur. These boundaries form the inside of the doughnut.

However, there is also an upper limit to prosperity: the boundaries of our planet. After all, we cannot emit unlimited CO_2 or deplete oceans. Crossing these planetary boundaries leads to problems such as climate change, loss of biodiversity, ocean acidification and freshwater shortages. These boundaries form the outside of the doughnut.

Dynamic between green and social

Cast in the form of a doughnut, it becomes clear that the circular economy is about healthy dynamics between social and ecological issues. This representation of the circular economy shows how closely everything is interconnected. Because of the interaction, good coordination and cooperation are needed. By constantly innovating, testing and making sensible choices, we will incorporate more and more aspects of Amsterdam's economy and society in the 'doughnut'. In this way, the doughnut offers a perspective on how a society can thrive in a safe, equitable and sustainable way.



Kate Raworth's doughnut model.



Survey among Amsterdam residents via the OIS panel:

More than half of the Amsterdam residents surveyed bought something second hand in the last year.

2. Circular Amsterdam

In this chapter we explain how Amsterdam is taking up the challenge of becoming circular. We start with a vision for the city and the role of the doughnut economy. We describe the fact that tough choices have to be made, but that these can ultimately be very effective. Finally, we explain what a circular economy means in practice and the timeframe we want to follow.

Vision: broad prosperity

Amsterdam desires broad prosperity. By this we mean that material wealth is not the only measure for a good life. It also involves things like wellbeing, sufficient leisure time, good health, a pleasant living environment and space for personal growth.

We want to be a modern, thriving and inclusive city for everyone, taking into account the boundaries that the planet imposes on us. Amsterdam is aware of the impact of its consumption and production, both within and far beyond its own city limits. That is why Amsterdam challenges all of the city's residents, businesses and visitors to be aware of their impact and invites them to have a positive impact on people and nature – here and now, later and far away.

From project to achievement

The City of Amsterdam is working on a circular and climate-neutral city with the seven city districts, local initiatives, market parties, knowledge institutions and residents. This has led to a range of 'projects', including physical developments in the city, research programmes, consortiums, policy interventions, assessment instruments and innovations.

These projects contribute to achieving the ambitions in the value chains on which the City has the most impact. These are projects that can remove barriers that stand in the way of the transition to a circular economy. And they are projects that can be scaled up, with clarity regarding which partners are needed for this. Of course, these projects are also based on the experiences the City has gained in recent years as part of its 'learning by doing' approach. We will therefore work intensively with knowledge institutions, businesses and the government to research, innovate and implement.
The output of these projects will be evaluated qualitatively and, where possible, quantitatively. Where data projects are concerned, the results will be integrated into the monitor. The results of the evaluation will be used to further enhance the strategy and new programmes.

In this way we will take concrete steps, and sometimes concrete leaps, towards a circular urban economy.

Our approach

In this strategy, we use the doughnut as a basis to have economic and social developments take place within socially equitable boundaries (the inner boundary of the doughnut) and planetary boundaries (the outer boundary of the doughnut). Our ambitions and courses of action to make Amsterdam circular – which are described in detail in Chapter 3 – tie in with this.

A circular economy is not only achieved with nice words and plans. We also need concrete objectives. This is our objective in figures: the City of Amsterdam wants to reduce its use of primary raw materials (that have never been used or recycled before) by 2030 and be 100% circular by 2050 [13].

Focus on three value chains

The National Raw Materials Agreement distinguishes five value chains: Food & Organic Waste Streams, Consumer Goods, Built Environment, Manufacturing Industry and Plastics. We have chosen to focus on the first three value chains to shape the circular economy. We have selected these value chains because of their economic significance to the city, their impact on ecology and climate and the opportunities for Amsterdam to exert influence.

1. Food & Organic Waste Streams
We will fight food waste – not only in households, but also in hotels and restaurants. Organic waste streams can also often be reused. For example, fat used for deep frying can be collected and converted into biodiesel for city buses or used as a substitute for plastic in refineries to make high-quality products. We aim to increase the consumption of regionally produced and plant-based food. It also concerns pruning waste, for example, most of which is returned to nature, where it becomes a home for insects or compost for the soil, which together provide a rich biodiversity in the city. This value chain – which is closely linked to the (yet to be launched) Amsterdam Food Strategy – was chosen because our food supply has a major ecological impact.
In order to properly process the waste stream and preserve the valuable, increasingly scarce fertilisers, we need to keep control at the urban level and work together with the region. This way we can stimulate Amsterdam's economy, close the nutrient cycles and lower our greenhouse gas emissions.

2. Consumer Goods
This value chain mainly concerns electronics, textiles and furniture. These goods can often be repaired by professionals. We are committed to preserving value by reducing our use and, above all, by processing waste streams more intelligently.

We have chosen consumer goods because they contribute to the depletion of rare raw materials, because their production causes pollution and often occurs under poor working conditions and because they have a huge impact on climate change. There is much to be gained in this value chain: at the front by sharing and trading, and at the back through good collection and reuse.

3. Built Environment
Not only can we construct buildings circularly, for example, by using new and scrap wood and by taking changing functions into account, we can also use sustainable materials in public spaces – from roads and bridges to playgrounds. Moreover, we can design the city in a climate-adaptive manner, so that residents breathe cleaner air and are less affected by rising temperatures and increasing rainfall. In addition, we are seizing the opportunity that lies in the renovation task of being gas-free by 2040.

This value chain was chosen because the City itself decides on the organisation of public space and on what will be built where. In addition, the City is a major user of buildings itself. At the same time, there is a lot of potential for better handling of raw materials and building materials, which is why there is a lot to be gained here.

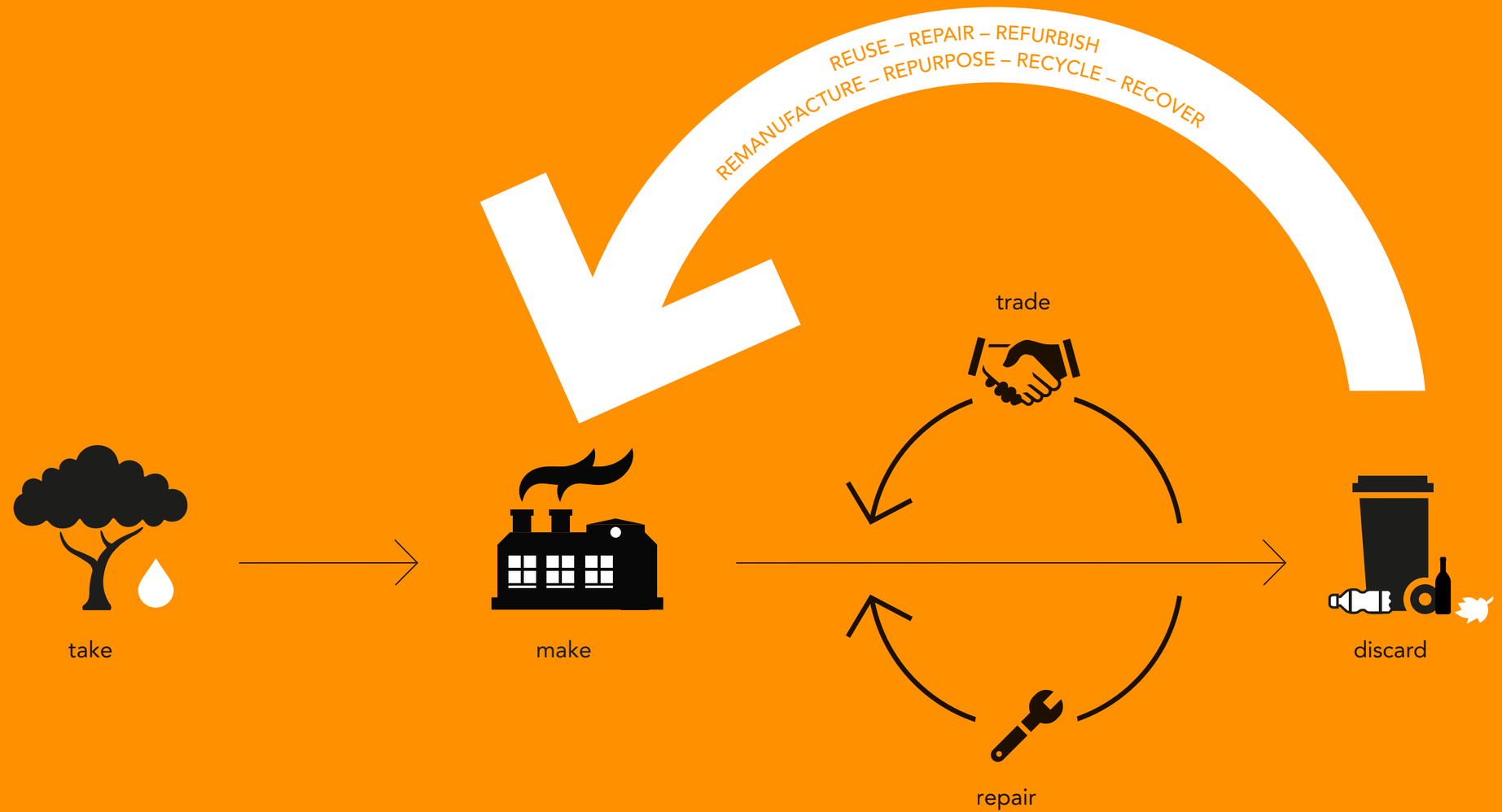
Today, tomorrow and beyond

The transition to a circular economy is new, challenging and far-reaching. So there is no step-by-step plan that can simply be rolled out up to 2050, if we want to be 100% circular. The City of Amsterdam's motto is: learning by doing.

We are now starting to take steps that we know will contribute to our ambitions and deliver results before the end of 2021. This means that by the end of 2021, we will have a better idea of what does and does not work because we apply solutions in practice. We do this both in our own organisation and in the city. In addition, we are starting preparations for what will be needed tomorrow (before 2025) to achieve our goals. This includes developing policy, designing criteria and setting up projects. In this way, we will be able to achieve the balance for a circular economy between 2030 and 2050.

We follow two approaches: top-down and bottom-up. In this strategy we describe top-down what we want to achieve and how we intend to do so. In the *Innovation and Implementation Programme 2020-2021* (see the reader's guide at the beginning of this document) we describe bottom-up which projects and initiatives we are already starting in order to accelerate the process.

At the same time, we acknowledge that much is still unknown about how the transition will proceed. By following both approaches, we will maintain the right balance between being as specific as possible and leaving room to embrace new developments in the coming years. At the end of the College of Mayor and Alderperson's term, we will evaluate the results and adjust our policy where necessary.


REUSE – REPAIR – REFURBISH
REMANUFACTURE – REPURPOSE – RECYCLE – RECOVER
trade
take
make
repair
discard

Challenges ...

We are on the eve of a number of far-reaching social transitions, such as the transition to a circular economy and a CO_2-neutral energy supply. The road towards this is fraught with uncertainty. We know where we want to and must go, but we still have to discover part of the route. This means that we have to experiment and accept that there are risks involved.

The transition to a circular economy will not always be easy. We have to break old habits and we have to change the way we think and act. This may cause friction. We are asking the people of Amsterdam to take a different approach to food, to change their thinking about possessions and to make different choices, in their lives and in their work.

The benefits of these changes will not always noticeable immediately, sometimes only after a few decades, or they will take place on the other side of the world, where raw materials are extracted. Moreover, major social transitions take a long time. The industrial revolution – a transition comparable in scale in terms of impact – lasted 100 years.

... and opportunities ...

We are convinced that Amsterdam is up to the challenge – determined, heroic and charitable as we are. Amsterdam is a progressive and liberal city that is not afraid to experiment or to invest in the future. As prominently written on the former Commercial Intelligence Bureau (*Bureau voor Handelsinlichtingen*) on Oudebrugsteeg: "*De cost gaet voor de baet uyt*" (cost comes before benefit). This is what has made us who we are today as a city.

In the tradition of Amsterdam, we will use participation, innovation, creativity and entrepreneurship to make the transition to a circular economy a success. The Amsterdam region has an excellent starting point for creating a circular economy. The region already has numerous entrepreneurial and innovative businesses, start-ups, organisations, knowledge institutions and residents who are already working hard on the circular economy.

With an increasing demand for clean technology and new, circular processes, we will eventually be able to serve a large sales market, also to export our knowledge in this area. It is the frontrunners, who have the courage to make choices and innovate, who will benefit from the advantages.

... for a better and more beautiful Amsterdam

And there is something beautiful to look forward to. By developing a circular economy, we will ensure:

- **A fairer society:** by purchasing services instead of owning products, sound and valuable products are accessible to everyone, now and in the future.

- **A resilient society:** by being less dependent on, for example, imported raw materials such as phosphate for our food and rare metals for our electronics, we become more self-reliant and therefore better protected from influences that can negatively affect the import of raw materials and materials.

- **A healthier world:** reducing emissions of toxic substances during production, use and disposal reduces damage to nature and health.

- **A more efficient economy:** reclaiming raw materials and products locally as much as possible leads to new activity with less waste. This creates new jobs in various sectors, such as the repair and processing industry.

Survey among Amsterdam residents via the OIS panel:

Seven out of ten Amsterdam residents had a product repaired in 2019.

The strength of the City

To achieve our vision, we are doing everything we can to make Amsterdam circular and climate-neutral – from regulations to commissioning, and from awareness to spatial planning. Momentum is also growing in the Metropolitan Region Amsterdam (MRA). The 'declaration of intent on procurement and commissioning' was launched recently, and a lot of hard work is being done on the *Circular Economy Development Plan for the Metropolitan Region Amsterdam.*

The City inspires, motivates and directs. But there is a limit to the City's responsibility. This is logical, because otherwise Dutch and European policy would become a patchwork of local wishes and requirements. It would become impossible for manufacturers to make another product that could be sold everywhere. Where we have no mandate as a local authority, we seek cooperation with other authorities in order to achieve our ambitions. The City of Amsterdam also uses its influence to promote circular entrepreneurship in its municipal holdings.

Influence on the playing field

By regulating matters at the national and European levels, we create a level playing field for everyone. Important factors in this playing field are taxes on labour, raw materials and investments, levies on CO_2 emissions and other pollution, and the degree of product responsibility.

A level playing field also has its disadvantages. For example, it can inhibit the ambitions of frontrunners, because the rules lag behind the state of the art or because they are unnecessarily complicated. The City therefore wants to influence these issues, so that our economy becomes cleaner, fairer and more circular sooner.

Lobbying agenda

We are preparing a lobbying agenda in which we discuss a number of topics that are important for the circular economy. In addition, within the *Innovation and Implementation Programme 2020-2021*, we are investigating topics such as true pricing (a fair price that includes environmental and social impact), quality assurance, municipal coordinating role in the collection of industrial waste and the role of tax instruments. If applicable, these themes will be added to the final lobbying agenda, which includes the following topics.

• **A shift from taxation on labour to taxation on raw materials and energy.** Repair take time. Economists will say that it is a form of labour that involves many man-hours. By shifting taxation from labour to raw materials and energy, repair becomes cheaper, while the purchase of a new product becomes more expensive. The cost of environmental damage caused by the extraction of raw materials elsewhere becomes part of the purchase price of a new product.

• **Regularly tightened legislation and objectives in the field of reuse, construction and area development.** Developments are often faster than legislation makes visible. In order to stimulate frontrunners and provide clarity to the market, the existing criteria for circular construction, for example, must be tightened regularly.

• **Extended producer responsibility for an increasing number of product groups and/or life stages.** Producer responsibility – e.g. by means of deposits – is already successful in the beverage sector and in electronics stores. This could be extended to furniture and clothing, for example.

• **Room for municipalities to experiment in deviating from (obstructive) national legislation.** This will make it possible to prove the value of new principles, for example, when it comes to the distinction between industrial waste and household waste. It would be better to change this distinction to municipal versus industrial waste.

Appreciation and inspiration

It is important to use our communications to appreciate and reinforce frontrunners' initiatives and share them as inspiration. For example, an online platform like www.nieuwamsterdamsklimaat.nl (NAK) uses examples of circular initiatives and clear perspectives for action to encourage all Amsterdam residents to set to work themselves and the platform Vanamsterdamsebodem.nl provides an overview of the food initiatives and events in the city. NAK is currently being developed further into a sustainable brand that also engages with the people of Amsterdam offline, for example, through events and sustainable hubs in the city.

Powerful initiatives are also emerging from the bottom up, such as Ma.ak020, a 'social agreement' by and for Amsterdam residents that strives to create a circular city with about twenty 'doughnut-deal initiatives'. And then there is the Repair Café, which celebrated its tenth anniversary at the end of 2019. With twenty locations throughout the city, more and more residents are able to have household appliances repaired close to home, so that valuable raw materials can be preserved.

Broad participation

The Amsterdam residents and the businesses that have yet to start their circular transition are just as important as the frontrunners. Through appealing messages, campaigns and online and offline communication resources, the City wants to make them aware of the social and green impact they can make within the circular economy.

At participation meetings, we continue to engage with the residents concerned and ensure that we remain in a dialogue with as broad and diverse a group of residents as possible. We received a lot of input from them in 2019. These meetings helped form the basis for the creation of *The Amsterdam City Doughnut* by Kate Raworth. In 2020, we will hold a new series of participation meetings to let residents know what is being done with their input.

In addition, we will organise meetings in collaboration with the Amsterdam Climate Neutral Roadmap. These will clarify the link between the circular economy and the energy transition. At the same time, this collaboration prevents us from inundating residents with participation meetings.

Room for businesses

For businesses, there are many opportunities in the area of circular entrepreneurship. This applies to reducing their ecological footprint and also economically. Think of the competitive advantage they can gain through circular innovation, or by entering into new collaborations and exchanging materials or knowledge with each other.

Through our communications we also encourage businesses to collaborate in chains (vertical approach) and sectors (horizontal approach). We offer them support where possible. A good example of sector collaboration is the 'Circular Hotels Frontrunner Group' (*Koplopergroep Circulaire Hotels*), a network of 22 leading hotels that work with the City and their suppliers to find measures to reduce food waste and unnecessary material consumption. For example, they choose to use organic or recycled cotton for their linen, to replace the breakfast buffet with à la carte menus (to avoid overflowing plates) and they use soaps made from collected coffee grounds or orange peels in their bathrooms.

Within the communication strategy, the focus is on medium-sized and large businesses. The greatest impact is expected in this target group due to the large proportion of industrial waste and also because of the opportunities afforded by circular entrepreneurship and the attention already being paid to this theme within the business community. Innovation and economic opportunities are the main themes.

Setting an example

In our communications strategy we also focus on what we, as a municipality, can do ourselves within the circular economy. The City will take major steps towards the circular economy, particularly within the public space and its own property and also with its procurement and waste policies. We realise that we serve an example and can inspire market parties as well as Amsterdam's residents and visitors. It is therefore important that the City strives for circularity in its own activities, for example, with regard to the procurement of circular products.

An effective communications strategy is needed to align the actions of our own employees with circular principles. Various programmes have already been launched to this end by the Green Office, the City body that oversees the sustainability of its own municipal organisation. This will be developed further in the coming year.

In dialogue

The City uses successful platforms and networks as much as possible, such as Amsterdam Smart City, New Amsterdam Climate (*Nieuw Amsterdams Klimaat*) and Circular City (*Cirkelstad*). The focus is on providing knowledge and practical tools, connecting stakeholders and showcasing best practices from the market. In this way we enhance the dialogue with and between the various target groups. Where possible, we will expand these further.

This approach reinforces support for the transition to a circular economy in our city. By connecting with other initiatives, parties, institutions and residents, supporting them and collaborating with them, we can accelerate and scale up to a circular Amsterdam by 2050.

3. Ambitions and Courses of Action

3.1 Methodology

How is Amsterdam going to achieve the circular economy? In this chapter we describe the ambitions and courses of action that make Amsterdam a circular city. In the sector-focused approach, we discuss how cross-value chain themes are tackled, and in the section that follows which tools we use for this purpose.

We will start with the methodology: how have we discussed this strategy?
Last spring, under the guidance of Kate Raworth (creator of the 'doughnut economy' model, see Chapter 2), we tested the city's current policy and objectives against the principles of the doughnut economy with hundreds of parties concerned.
We established seventeen development directions (desired developments such as circular construction, repairing more and reducing food waste) with suggestions for actions to be taken for each of these directions (such as making adaptable buildings, setting up repair centres or stimulating awareness). These developments were elaborated for each of the three selected value chains (Food & Organic Waste Streams, Consumer Goods and Built Environment) in the report *Building Blocks for the New Amsterdam Circular 2020-2025 Strategy*. This report was discussed in the city council last summer, after which the College agreed to the elaboration of this report into a strategy. The approach chosen builds on the direction the City has taken in recent years to achieve the circular economy.

We started working out the strategy in September 2019. We translated the development directions in the report *Building Blocks for the New Amsterdam Circular 2020-2025 Strategy* into ambitions and courses of action: where do we want to be in five years' time and what can we do now? To this end, we consulted with numerous experts from the City and investigated source material. Where necessary, we have merged development directions from the building blocks report for clarification purposes. The courses of action, including how they relate to the original development directions and ambitions, are shown in the overview on the following page.

Because the circular economy covers so many policy areas and affects the entire municipal organisation, we then presented the results to all City parties concerned during a workshop at the end of October. This produced details, refinements and new suggestions, which we also incorporated into the strategy. This was then presented to external parties for validation and feedback in January, so that we can also be assured of support outside the municipal organisation.
The ambitions and courses of action in this strategy are thus the result of the contributions of hundreds of parties concerned both within and without the City – from debt counsellors to engineers and from ecologists to urban planners.
Many of the presented measures are described in the *Waste & Raw Materials Implementation Programme 2020-2025*, drawn up in conjunction with the *Amsterdam Circular 2020-2025 Strategy,* which will go through the administrative decision-making process in parallel in the spring of 2020.
The measures included in both the *Innovation and Implementation Programme 2020-2021* and the *Waste & Raw Materials Implementation Programme 2020-2025* have been incorporated in the strategy in order to make visible the elements of that programme that contribute to achieving the ambitions of the *Amsterdam Circular 2020-2025 Strategy.*

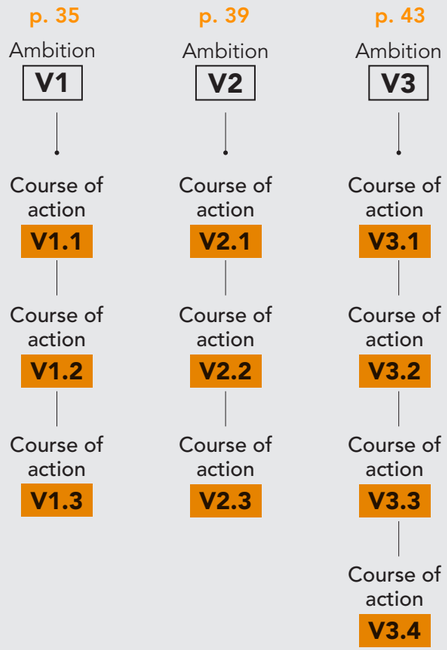
The full *Waste & Raw Materials Implementation Programme 2020-2025* also includes an account of the way in which the City intends to carry out its statutory duty as collector of household waste and further discusses how the waste chain can contribute to a clean city. That plan also sets out binding policy choices for Amsterdam residents, as well as frameworks for implementation by the city districts. Therefore, the *Waste & Raw Materials Implementation Programme 2020-2025* will be submitted to the residents and districts of Amsterdam for advice and participation.

Value chain	Development direction from 2019 building blocks report	Ambition in 2020-2025 Strategy
Food & organic waste streams	- Create circular food production in (and for) urban areas. - Encourage healthy, sustainable and plant-based food consumption by all inhabitants. - Minimise food waste by retail, hotels & restaurants, and households. - Scale up the separate collection of organic waste from households and businesses for high-quality processing. - Scale up high-quality processing of biomass and food waste streams. - Accelerate the closure of local nutrient cycles from biomass and (waste) water streams.	- Food & organic waste streams 1 - Food & organic waste streams 1 - Food & organic waste streams 2 - Food & organic waste streams 3 - Food & organic waste streams 3 - Food & organic waste streams 3
Consumer goods	- Reduce consumption and avoid overconsumption. - Stimulate high-quality recycling of complex consumer goods. - Aim for shared and long-term use of products. - Increase the number of local craft centres for repair and restoration of products. - Use and design standardised and modular products that are suitable for reuse, repair, and recycling.	- Consumer goods 1 and 2 - Consumer goods 3 - Consumer goods 2 - Consumer goods 2 - Consumer goods 1 and 2
Built environment	- Stimulate circular area development with an urban design, an integrated approach and climate-proof construction, with special attention paid to closing cycles. - Use circular criteria in land allocation and tendering of all construction and infrastructural projects and in the public space. - Develop buildings with adaptable functions and systems. - Scaling up circular disassembly and separate collection for the purpose of high-quality applications. - Use renewable and secondary building materials. - Stimulate circular renovation in private and social housing.	- Built environment - Built environment 2 - Built environment 2 and 3 - Built environment 2 and 3 - Built environment 2 and 3 - Built environment 3

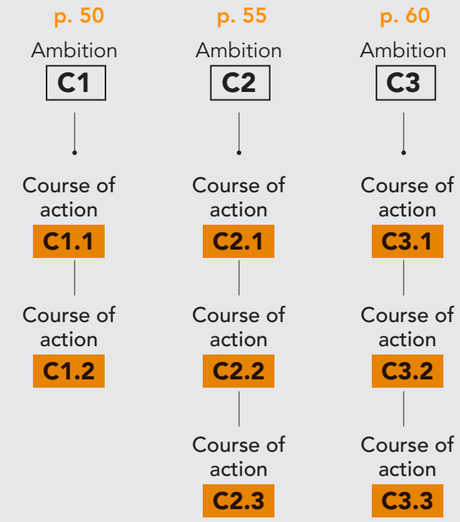
Structure and numbering

Overview of value chains with accompanying ambitions and courses of action.
Numbering has been added in order to make the different elements easier to find.

Food & organic waste streams



Consumer goods



Built environment



3.2 Cross-value chain approach

A part of business and industry carries out activities that relate to multiple value chains. The City focuses on this in the sector-oriented 'Social Institutions and Business' approach and in the 'Port and Industry' approach. A number of these organisations are already working on the circular transition. The City wants to support them in any scaling up. The City wants to encourage organisations that are less concerned with the circular economy to increasingly focus on this as well.

1. Sectors

With the sector-oriented approach, the City cooperates with promising target groups, i.e. sympathetic, similar organisations from the same sector on which sustainability can have a major impact. These organisations are often hubs in multiple value chains. For example, a hotel can make an impact by making the building more sustainable and can also influence the consumption of goods and food by its guests.
By having such organisations work together in their sectors, we increase their impact and speed up the circular transition.



Social institutions

A distinction has been made within the sector-oriented 'Social Institutions and Business' approach. The first pillar focuses on sectors that primarily have a social benefit, such as museums, schools, universities and hospitals. These sectors are of great importance to the circular transition: on the one hand because of their direct impact on the use of primary raw materials, and on the other because they play a role in many Amsterdam residents' daily lives. By focusing on these sectors, residents become more involved in the circular economy.



SME and large businesses

De tweede pijler richt zich op de zakelijke
The second pillar focuses on the corporate market. The corporate market is made up of non-industrial companies and mainly concerns small and medium-sized enterprises (SMEs) and large businesses. Examples are businesses in the hotel and restaurant sector, retail businesses and the services sector. The corporate market is the driving force behind Amsterdam's economy. Although the size, nature and character of these businesses vary, they share a commercial purpose, which provides employment and business activity. This group of businesses forms a large part of our current and future economy and is crucial for a successful transition.

2. Port and industry

The port of Amsterdam plays an important role in the current and future economy of Amsterdam, the Metropolitan Region Amsterdam (MRA), the Netherlands, and Europe. The port can also contribute to achieving various ambitions to make the city more sustainable. For the energy transition, for example, this role is described in the *Amsterdam Climate Neutral 2050 Roadmap*. For the circular transition, the port can turn into a circular ecosystem. Here, businesses can use one another's waste streams, as well as those from elsewhere. In addition, circular innovations can flourish on an industrial scale in the port. Using this ecosystem makes it possible to apply a chain-oriented approach on an industrial scale, since it focuses both on the production side (from chemical element to material) and on the processing side (high-grade reuse of new and other materials and waste streams). The Port of Amsterdam Authority (HbA) is in the best position to realise this ecosystem in the years to come and has stated this in its strategy. As a shareholder, the City will explicitly seek cooperation in this area.



SAIL

SAIL is the largest freely accessible event in the Netherlands. Every five years, hundreds of ships come to Amsterdam from all corners of the world. In 2025, the event must be 100% circular. To achieve this, the 2020 edition will be a testing ground for innovative, circular applications that reduce CO_2 emissions and the consumption of energy, water and raw materials. The knowledge gained will also benefit other events, in Amsterdam and also in other cities.



Events

Cross-value chain approach

3.3 Policy instruments

The City of Amsterdam has various policy instruments at its disposal to guide the transition to a circular economy. They are shown in the tables on the next page. We distinguish between regulatory instruments, economic instruments and soft instruments. The courses of action, which will ultimately help us achieve the ambitions, describe which instruments are used in which way.

As we explained in the Introduction, this strategy focuses mainly on three value chains: Food & Organic Waste Streams, Consumer Goods and the Built Environment. We will briefly illustrate a few policy instruments for each chain. The policy instruments are explained in more detail in the description of the ambitions and courses of action.

Spatial planning can play a role in the **Food & Organic Waste Streams** chain, for example by creating physical places for collection, reuse and closing nutrient cycles. According to the 'Green Vision' (Groenvisie), underutilised green space can be used more often for urban agriculture. In order to achieve behavioural change, Amsterdam also focuses on awareness-raising campaigns and uses its influence on social institutions. In addition, we stimulate innovation and work closely with businesses to reduce waste and improve the processing of organic waste streams. This topic overlaps with the food strategy that has yet to be launched, in particular with regard to food production and consumption. There is therefore close coordination and cooperation between the strategy to create a circular city and the food strategy, so that they reinforce each other.

For the **Consumer Goods** chain, the City can serve as an example as a buyer. In addition, it can expand facilities for sharing, reuse and repair and make them more accessible. The City can work with large retailers and make agreements on producer responsibility (the principle that a manufacturer remains responsible for proper processing of a product after the use phase, as happens with plastic packaging) and collaborate with knowledge institutions to improve the design and processability of raw materials.

For the **Built Environment** chain, the City can propose further-reaching policy than for other chains thanks to its relatively big role in spatial planning. The City can use its influence on the design of areas, its role as a commissioning authority for the public space and in the realisation of its own accommodation and the granting of permits for construction and demolition. For the existing city and its renovation, we seek to cooperate with corporations and developers. The City is also exploring the adaptation and expansion of financial instruments. For example, land prices, fees or levies can be adjusted.

The policy instruments chosen ensure that the City gets the most out of its mandate as a local authority. Because circular chains go beyond municipal boundaries, we enter into cooperation with the region and the national government so that together we can have a 100% circular city in a 100% circular country by 2050.

The various policy instruments are shown in a diagram on the following page.

Policy instruments

Regulatory & Legislative Instruments	**Regulations**	**Strategy & objectives** **Spatial planning** **Environmental assessment & permits** **Monitoring & enforcement**	Economic Instruments	Fiscal frameworks	Positive financial incentives Negative financial incentives	Soft instruments	Knowledge, advice & information	Research activities Educational programmes Information campaign Capacity building
	Legislation	**Prohibitory provisions** **Performance standards** **Technical standards** **Labels** **Other legislation**		Direct financial support	Subsidies Circular procurement & infrastructure Debt financing		Collaboration platforms & infrastructure	Data and information exchange platforms Matchmaking platforms Participation platforms Living labs
				Economic frameworks	Tradable permits Strong producer responsibility Public-private partnership		Governance	Institutional design Public-private partnerships Voluntary agreements Lobbying



Food & organic waste streams

3.4 Food & organic waste streams

In the Food & Organic Waste Streams chain we focus on short food chains, healthy and sustainable food consumption and high-quality processing of organic waste streams. This chapter of the *Amsterdam Circular 2020-2025 Strategy* is strongly linked to the Food Strategy, which has yet to be launched. This involved close coordination. The focus of this chapter is mainly on reducing material streams, preserving value and minimising the negative ecological impact of our food supply, while the Food Strategy offers a more holistic approach that goes into more detail.

In short food chains, spatial planning can play a role in urban agriculture and we work together with the food chain to better align production with local consumption. This way, chains can be shortened, food is brought closer to people and the local nutrient cycle can be closed better. This way, urban agriculture can help to define the green contours of the city and does not conflict with the densification of the city in these areas.

Healthy and sustainable food consumption is ultimately a choice of the people of Amsterdam. In order to achieve behavioural change, we are going to make it easier for people to offer their kitchen and garden waste separately and we are using awareness campaigns (AIDAS: awareness, interest, desire, action, satisfaction). We also use the influence the City can exert on social institutions and associations to make people thinking about preventing food waste and separating kitchen and garden waste outside the home. We will work together with residents, the food chain and the city's many restaurants and hotels to halve food waste in Amsterdam and find the best destination for food that is still usable. To do so, we will stimulate the necessary technical, social and organisational innovations.

Finally, to ensure the high-quality processing of organic waste streams, we want to set up a good infrastructure, raise awareness among residents and set up a cluster with processing companies to go beyond composting or fermentation. These materials can then find good applications in urban agriculture or public green spaces.

Ambition

Short food chains provide a robust sustainable food system



(V1) Short food chains provide a robust sustainable food system

Amsterdam strives to increase the consumption of regional products. Therefore, we will work with businesses in the food chain to start better adapting regional food production to regional needs before 2025, for example by promoting circular agriculture. Urban agriculture also has a place in the city; with a focus mainly on the social function: awareness, participation and connection.

Context and policy

The ambition is to initiate a system change in which Amsterdam (together with the Metropolitan Region Amsterdam) strives towards a robust regional food system, in line with Amsterdam's Food Strategy. There is limited agricultural land in Amsterdam's territory. Around Amsterdam, from the peat meadows to the old and new polders, there are large-scale production areas for arable farming, horticulture and livestock farming. Agricultural land, both local and regional, should be used for wet crops or other, more nature-inclusive (circular) agriculture with a more diverse supply that better meets local needs and closes the nutrient cycle locally.

Urban agriculture[2] is part of the green city; urban agriculture contributes to closing nutrient cycles and restoring the relationship between Amsterdam's residents and their food [2]. The latter leads to more appreciation, less waste and a healthier diet. Urban agriculture does not necessarily have to use valuable building land. Vertical agriculture can be used, for example, as well as the option of growing food on roofs or squares. However, regionally and sustainably produced food is still often more expensive, partly because the costs of deforestation and resource depletion are not included in the price on the global market.

Allocation of roles

The City is responsible for spatial planning and is also a major party as a commissioning authority. In addition, it must work with parties in the food chain to improve supply and production methods. Collaboration within the MRA through networks such as Voedsel Verbindt ('Food Connects') is essential in this respect. Knowledge institutions can conduct research into and experiment with food streams, food production and behavioural change. Businesses, in turn, can buy and sell from local initiatives and change their range of products.

Position in the doughnut

Climate change: **Nature-inclusive land use, urban agriculture and circular agriculture benefit the climate by using less chemical fertiliser and avoiding the import of feed products and fertilisers. Less fertiliser requires less energy, is better for soil life and prevents exhaustion elsewhere. Sustainable logistics, for example in cooperation with the City Distribution Project Office (Programmabureau Stadsdistributie), can reduce CO2 emissions thanks to short chains. The City will discuss this with parties in the food chain.**

Nitrogen and phosphorus saturation: **Closing local nutrient cycles requires the City to play an active role, for example by connecting parties so that knowledge is developed and shared, and to match regional supply and demand. A transition to circular agriculture can make a positive contribution to this.**

2 Urban agriculture is the generally accepted and used term for growing, harvesting and selling food in or in the immediate vicinity of a city in combination with activities for other social values such as care, education, participation and nature management..

(V1) Short food chains provide a robust sustainable food system



Education: **Urban agriculture can teach Amsterdam's residents about food production and inspire them to grow their own food. This can contribute to improved awareness of food consumption, greater higher appreciation for food and thus reduced food waste. Collaboration with knowledge institutions and secondary and higher education institutions is an important step, for example for research into product development, dietary change, behavioural change and the development of innovations in food.**

Courses of action

(V1.1) Food production will have a place in the city.

Instruments: spatial planning, collaboration platforms and infrastructure

Urban agriculture in the city focuses on the social function: awareness, education, participation, connection. The City actively supports the participation of Amsterdam residents, knowledge institutes and businesses in the sustainable regional production of food.

(V1.2) The City purchases regionally produced food.

Instrument: direct financial support

The City stimulates the use of regionally produced products and food.

(V1.3) Sustainable chain parties will collaborate more in order to increase the consumption of regional food.

Instruments: collaboration platforms and infrastructure

The City and chain parties (producers, distributors, processors, sellers and food preparers) will jointly draw up a plan of action to promote the consumption of regionally produced food. Monitoring and information provision are an integral part of this, as are finding or developing markets (e.g. in schools, hospitals and other social institutions) and business models to fund the potential additional cost of regionally sustainable food.

Circular Experimental Garden in West

Tuinen van West ('Gardens in West') is an experimental garden. It is an educational laboratory for experiments in the field of food production, biomass, soil, fertilisation and biodiversity. Waste streams, such as prunings and compost, are collected locally so that they can be used again and again. *Tuinen van West* is a place where anyone can go to contribute, to learn and to enjoy

Food & organic waste streams

Ambition
(V1) Short food chains provide a robust sustainable food system



Tuinen van West.

Ambition

Healthy and sustainable food for the people of Amsterdam

(V2) Healthy and sustainable food for the people of Amsterdam

Amsterdam will initiate the transition from consumption of animal proteins to consumption of vegetable proteins before 2023. In addition, food waste by consumers and businesses will have been reduced by 50% by 2030. This will lead to a substantial reduction in the ecological footprint of our food supply by 2030.

Context and policy

Our food supply puts great pressure on the environment [3,4] and leads to all nine planetary boundaries of the doughnut economy being exceeded [5]. This pressure is increasing, because the world population is growing and needs to be fed [6]. The solution is to change our eating habits and the way we produce proteins. The objective of the *Biomass and Food Transition Agenda* is to consume a maximum of 40% animal and 60% plant-based proteins by 2050 (compared to 60% and 40%, respectively, today). In addition, we need to deal with what we have more sparingly: [7,8] In the Netherlands, an average of 41 kg of edible food per person is thrown away each year [9]. To combat food waste, we want to follow the Sustainable Development Goals (SDGs), which aim to halve food loss per capita as part of a sustainable consumption and production pattern for food. In order to achieve the ambition of a healthy and sustainable diet, the Amsterdam Food Strategy (*Amsterdamse Voedselstrategie*) (under development) and the successful Amsterdam Approach to Healthy Weight (*Amsterdamse Aanpak Gezond Gewicht*) are crucial.

Allocation of roles

Behavioural change is a shared responsibility. Ultimately, Amsterdam's residents and businesses have to make more sustainable choices. The City can help by raising awareness and through campaigns, by research into behavioural change and by focusing on a healthy food environment. Company canteens, social institutions such as hospitals and nursing homes, and associations, schools and events have a role to play in making their own offerings more sustainable and can use their reach to help raise awareness.

Position in the doughnut

Education: **Education plays an important role in the ambition to change our food pattern. On the one hand, the importance of balanced, sustainable nutrition must be included in teaching materials. On the other hand, it is important to develop and share innovation in production techniques, business models and organisational forms for circular food production.**

Health: **Projects that stimulate sustainable food consumption can improve the health of Amsterdam's residents. In addition, initiatives that reduce food waste can also have a social component. Examples are food banks and no-waste dinners that bring residents together.**

Land conversion: **Tackling food waste and promoting a plant-based diet contribute to more efficient use of agricultural land and thus to the reduction of greenhouse gases, soil degradation, biodiversity loss and nutrient surpluses (and shortages).**

(V2) Healthy and sustainable food for the people of Amsterdam



Climate change: **Less food wastage and a reduction in the consumption of animal products lead to less direct emissions of greenhouse gases and nitrogen. Indirect emissions also decrease, because less transport is needed. Soil subsidence due to livestock farming also decreases.**

Courses of action

(V2.1) The people of Amsterdam change their eating habits.

Instruments: knowledge, advice and awareness

The City and chain partners are working together to encourage Amsterdam's residents to eat healthier and more sustainably through awareness-raising campaigns and the Amsterdam Approach to Healthy Weight (*Amsterdamse Aanpak Gezond Gewicht*). We are also looking at whether we can change the policy for advertisements in public spaces so that there more attention is paid to healthy, sustainable food and less attention to unhealthy food with a large ecological impact.

(V2.2) The City is committed to reducing food waste

Instruments: regulation, economic frameworks, knowledge, advice and awareness

We combat food waste with policies aimed at specific sectors and at specific groups of Amsterdam residents. We can, for example, use awareness-raising and economic instruments to discourage food waste and ensure that surpluses find their way to those residents who need them most.

(V2.3) Initiatives against food waste and for more efficient production of food will be supported.

Instruments: fiscal frameworks, direct financial support, knowledge, advice and awareness, collaboration platforms and infrastructure

The City supports initiatives from all corners of society that fight against food waste and for a more sustainable, healthier diet – e.g. by offering solutions in logistics, data, value retention, accessibility or engagement and community involvement, but also in the field of food technology that can provide tasty sustainable alternatives. To help these initiatives find their way to support, we regularly ask the target groups to submit project proposals.

Zuidoost Food Forest

The Zuidoost Food Forest (*Voedselbos Zuidoost*) is an initiative of the residents of the K-district. The 53 hectares of forest were created and are managed by the residents. In addition, the initiative stimulates social cohesion between generations and different population groups, while the forest increases biodiversity and makes the neighbourhood more climate proof.

Food & organic waste streams

Ambition
(V2) Healthy and sustainable food for the people of Amsterdam



Zuidoost Food Forest in K-district.

Ambition

High-quality processing of organic waste streams



(V3) High-quality processing of organic waste streams

The municipality will launch an offensive before 2023 to improve the collection and processing of organic waste streams from Amsterdam's residents, visitors, businesses and institutions. EU policy states that kitchen and garden waste must be collected and processed separately by the end of 2023. With this offensive, we aim to have separate collection of kitchen and garden waste for 73% of Amsterdam's households by 2030. In this way, we will achieve a shift towards higher-quality processing of organic waste streams, retain more value and close the nutrient cycle.

Context and policy

Organic waste streams in Amsterdam are divided into food waste and wastewater on the one hand and waste from gardens and public spaces on the other.
To process the first group into high quality products, an effective collection system is required that ensures that waste streams are not cross-contaminated [10]. This is why the system of separate waste collection must be improved for both households and businesses, and this has also been set down in Amsterdam's coalition agreement. To this end, successful pilots for organic waste are being expanded. Effective separation at the source does not only generate more usable organic waste, but also improves the quality of other waste streams, such as household residual waste. New technologies and policies and an engaged community can contribute to achieving this goal [11]. Once separated, waste streams can be reused in a wide range of useful products: as they are, as fibres for building materials or even as chemical building blocks for plastics and coatings [12]. Waste streams from gardens and green public spaces – the second group of waste products — should remain as much as possible on the site where they are produced, so ensuring closed loops to the benefit of local ecological values. Finding the best fit for each situation requires made-to-measure solutions. To this end, a tiered approach must be developed and implemented, as is also set down in the Biomass and Food transition agenda.

Allocation of roles

The efficient collection of residual streams starts with the parties that generate them: the citizens, institutions and businesses of Amsterdam. It is up to the City to develop a suitable infrastructure for separate waste collection. Knowledge institutions will study how to foster the participation of the people of Amsterdam and the city's business community and how the waste streams can best be upcycled, i.e. reused as valuable new products. Once we have succeeded in generating uncontaminated streams of high-grade waste, innovative companies will be able to convert these streams into useful products as described in the coalition agreement. As the manager of the city's public green spaces, the City must set the right example by ensuring that residual streams from our green spaces are reused locally as much as possible.

(V3) High-quality processing of organic waste streams

Position in the doughnut

Networks: **This ambition demands intensive cooperation between the City, private parties and the people of Amsterdam to develop new logistic networks for circular waste.**

Nitrogen and phosphorus saturation:
By involving the people of Amsterdam and the city's businesses and institutions in the collection and upcycling of food waste, we can raise awareness of the relationship between food purchasing, consumption and processing, and hence encourage them to reduce food waste.
An improved system for the collection and processing of organic waste will allow us to recover and reuse nutrients, thus reducing the need for artificial fertilisers.



Courses of action

(V3.1) Working together to ensure the best approach for each city district.

Instruments: regulations, spatial planning, direct financial support, knowledge, advice and awareness-raising, collaborative platforms and infrastructure

The City is developing a made-to-measure approach for each district together with the people of Amsterdam and businesses and institutions in the city to find optimal ways to collect and process organic waste streams. To this end, we are developing a ranking system of preferable processing routes for organic waste streams in Amsterdam.

(V3.2) The City sets the right example.

Instrument: direct financial support

The City will purchase waste management capacity for its own operations, whereby the most usable waste fractions will be extracted from the residual waste streams. Where possible, the existing practice of reusing garden and other organic waste streams at the source will become the responsibility of subcontractors and the people of Amsterdam themselves.

(V3.3) The people of Amsterdam are made aware of the importance of separating waste for uncontaminated waste streams.

Instruments: knowledge, advice and awareness-raising

Awareness of the importance of separating usable organic waste streams from municipal waste is essential to encourage behavioural change and so enable these streams to be upcycled. This awareness and behavioural change will be stimulated through campaigns focussing on schools, associations, neighbourhood initiatives, shopping mall managers and business associations.

V3.4) Amsterdam creates room and generates opportunities for reusing waste streams.

Instruments: spatial planning, direct financial support, economic frameworks, collaborative platforms and infrastructure

Deploying its spatial planning tools and innovation policy, the City will designate locations for the collection and reuse of waste to stimulate closed nutrient cycles. Industrial and experimental initiatives that contribute to improving waste processing are actively brought together and supported in cooperation with the Port Authority of Amsterdam and other businesses involved in the bioprocessing industry. Our spatial planning experts are examining whether we can combine these initiatives with the development of sustainable public spaces and the city's climate ambitions.

Kitchen and garden waste in Amsterdam

A large proportion of the city's household waste consists of vegetable, fruit, food and garden waste (organic waste). This waste is currently mostly incinerated, but it could also be upcycled into high-grade products. Amsterdam's first priority in the reduction of organic waste is prevention.
This waste must be collected separately wherever possible, taking into account the needs of each neighbourhood, based on a socially responsible plan and in cooperation with the residents.
Local initiatives such as worm hotels, leaf baskets, local composting and bread baking will be facilitated as much as possible.



Food & Organic Waste

Ambition
(V3) Organic waste streams are upcycled into high-grade products

Survey among Amsterdam residents (OIS panel):

Amsterdam residents say that one of the first steps towards ensuring a better environment should involve making it easier to separate waste.



Consumer goods

3.5 Consumer goods



To make the Consumer Goods value chain more sustainable, we are focusing on developing a circular procurement policy and on creating an efficient infrastructure for sharing, repairing, reusing and reprocessing end-of-life products, where the first step in the life of the product is a good design.

The waste energy authority (AEB Amsterdam) currently fulfils a number of statutory tasks in the field of waste collection and the organisation of waste processing. In mid-2020, the City will take over the management and operation of the six municipal recycling depots from AEB. By the end of 2022 at the latest, the City will also reassume the tasks of organising the processing of waste and raw materials flows collected by or on behalf of the City. These changes are connected to the City's decision to sell its shares in AEB Holding NV. AEB's activities focus on processing residual waste, treating sludge and producing energy from waste incineration.

The City can set an example in its procurement policy by reducing its consumption and opting for reused or reusable products, or developing recycling streams, for example for electronics or office furniture.

The second ambition focuses on using what we have more sparingly and getting as much as possible out of the products we use. Achieving this requires an effective and accessible infrastructure, and the people of Amsterdam must be made more aware of the value of the products they use and the opportunities for sharing, reusing and repairing them.

Finally, the third ambition focuses on the end-of-life phase of a product. To this end, the City can cooperate with major retailers and make producer responsibility agreements with them, and collaborate with knowledge institutions to develop improved designs and more easily reusable products.

Consumptie-
goederen

Ambition

The City sets the right example by reducing its consumption



(C1) The City sets the right example by reducing its consumption

By 2030, the City will implement 100% circular procurement and will also reduce its overall consumption by 20%. This starts with consumables and the furnishing of the City's own premises and, where possible, the city's public real estate.

Context and policy

In recent decades, products have rapidly become more complex and production methods more efficient. Products have become cheaper, but it is also more complicated to dismantle and repair them. Often, the failure of a single component – for example the battery or screen of a phone, or the wear and tear of the upholstery of a sofa – means that the entire product is written off and thrown away. To counteract this wasteful behaviour, the City can use its purchasing power to stimulate circular production, for example by purchasing only used, refurbished or easily refurbishable furniture and electronics. The coalition agreement [13] states that CO2emissions must be taken into account in all investment decisions (including of furnishings and consumables). Including economic, environmental and social costs of products in the 'real cost price' is a good way to achieve this. In addition, the City can pay more attention to such matters as working conditions in the electronics industry, or the use of responsible timber in furniture.

The Amsterdam Metropolitan Area describes procurement as a game changer for the circular economy and has set a target of 50% circular procurement by 2025. The national transition agenda for consumer goods [14] states that 'by 2030, non-critical short-cycle products will have been reduced by 100%'.

Allocation of roles

This ambition mainly focuses on the City as the purchasing party, but the best way to develop better products and more efficient recycling logistics to close the loop is to cooperate with innovative companies, while economic benefits of scale can only be achieved by cooperating with other public authorities, for example within the MRA.

(C1) The City sets the right example by reducing its consumption

Position in the doughnut

Climate change: **Reducing overconsumption reduces the demand for products and hence also emissions of greenhouse gases. This ambition can as such contribute to reducing Amsterdam's environmental footprint.**

Air pollution: **By purchasing reusable and refurbished products, the City creates less waste and so there will also be less to incinerate or dump in landfills. This in turn reduces the pollution of the air and the soil.**

Work and income: **The City encourages the development of circular products and services and so creates opportunities for companies to supply these products. This also stimulates the demand for labour and skills for the circular economy.**



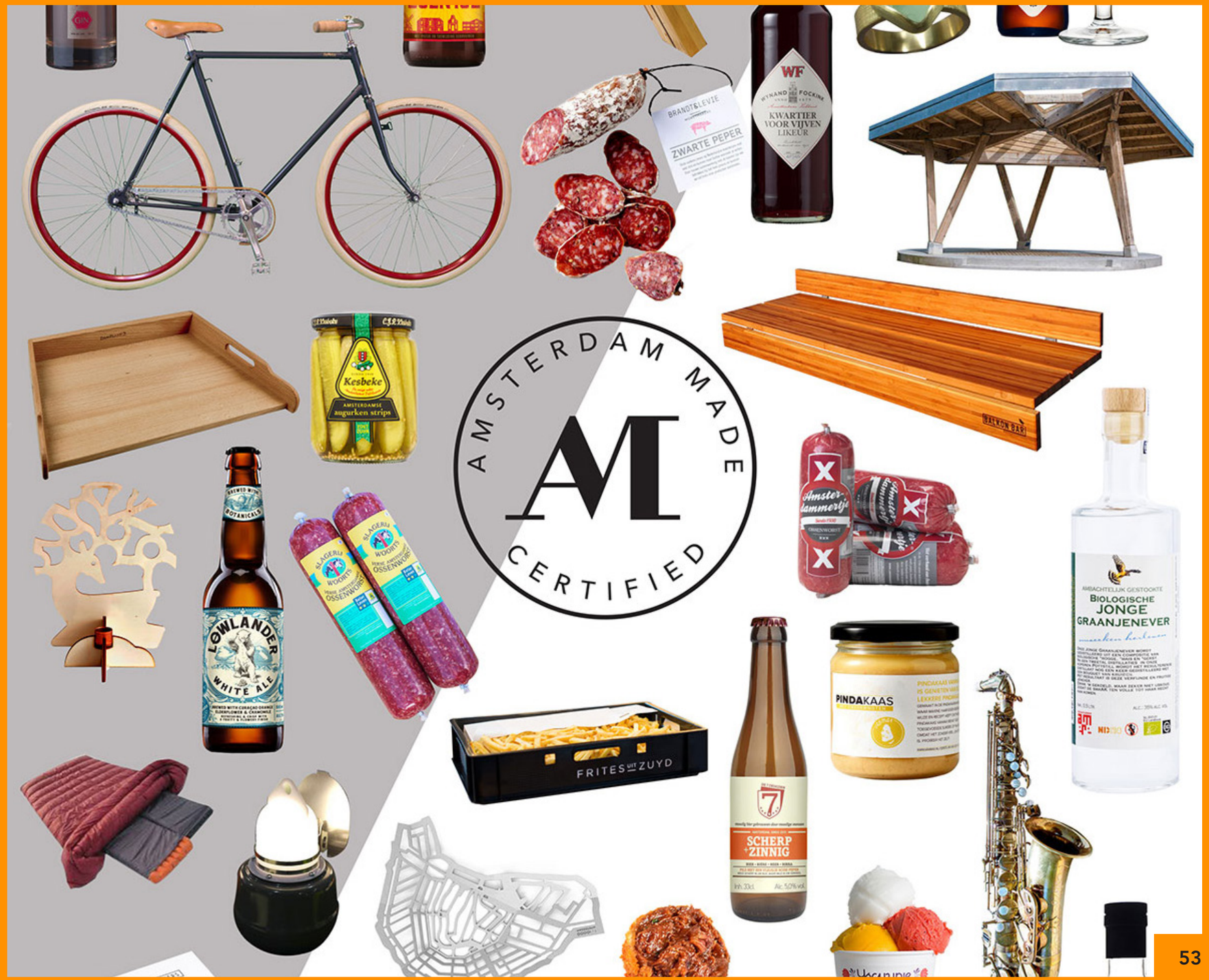
Courses of action

C1.1) The City purchases fewer new products and instead adopts a policy of access over ownership.
The City will purchase fewer new products and will give precedence to 'products as a service' or used and/or reusable and refurbishable products. Purchased products that are not reusable or refurbishable must at least be recyclable and preferably upcyclable at the end of their useful life. Knowledge of circular procurement will be shared and developed as required.

(C1.2) The City supports the development of new circular products and services.
The City supports the development of circular products and services that make maximum use of reused materials or facilitate reuse. This can be achieved by making far-reaching producer responsibility agreements, so that the producer retains responsibility for the products when they are no longer useful to the consumer and is required to collect and upcycle them. The City can also forge procurement and development partnerships with other Dutch municipalities, businesses (including start-ups in residence) and knowledge institutions. In addition, the City acts as a launching customer for these products and services.

Amsterdam Made

Amsterdam Made is a community of over 150 manufacturing companies based in the Amsterdam Metropolitan Area. It is working on solutions for various sustainability challenges, such as helping its member organisations to become more sustainable and reducing the use of raw materials, and it is examining how to make the transition to a 100% circular industry and what consequences this will have. By working together, the businesses in this community are helping each other and others to make the transition to a circular economy.



Consumer goods

Ambition
(C1) The City sets the right example by reducing its consumption



Survey among Amsterdam residents (via the OIS panel):

More than three-quarters of Amsterdam residents are positive about the idea of buying fewer new products for the benefit of the environment.

Consumer goods

Ambition

Caring for our natural resources together

(C2) Caring for our natural resources together

By 2030, the environmental footprint of the textiles, electronics and furniture sold and used in Amsterdam will have been reduced. To this end, the City will work with businesses, local initiatives and knowledge institutions to establish an efficient and accessible infrastructure of sharing platforms, second-hand shops, online marketplaces and repair services by 2023. In addition, we will run various campaigns to encourage the people of Amsterdam to change their consumption habits and reduce what they consume.

Context and policy

Many products are not used for much of the time: they lie dormant in the closet or are parked unused in the street [15,16]. Using these products more intensely by sharing them reduces the demand for raw materials [17]. Examples are clothing libraries, ride sharing platforms or shared use of power tools and other equipment. Once a product is worn out or broken, local craft centres, repair shops or circular shopping centres can repair, refurbish, upcycle or recycle the product into new circular products. The services, buildings and products that enable sharing and repairing platforms form the infrastructure of the circular economy and ensure a minimum of waste and transport. This infrastructure harmonises with the strategy of the Amsterdam Metropolitan Area to upcycle discarded electronics and textiles. The target of the Consumer Goods Transition Agenda is for 100% of products and raw materials to be upcycled by 2030, with a preference for reuse, repair and recycling of components [14].

Allocation of roles

The City manages the processes to connect spaces and initiatives and so creates places where social and commercial organisations and Amsterdam residents can meet. These places must be easily accessible so that they contribute to changing the behaviour of the people of Amsterdam and businesses in the city where this concerns the value placed on personal ownership versus the value of sharing and repairing. Existing successful initiatives such as online marketplaces and sharing platforms can contribute their expertise and networks, and knowledge institutions can also play a prominent role by providing training and on-the-job experience of repairing and refurbishing products.

(C2) Caring for our natural resources together

Position in the doughnut

Networks: **We will forge new connections between businesses, organisations and the people of Amsterdam by stimulating sharing and repairing platforms. These publicly accessible platforms can also lead to more encounters between the people of Amsterdam.**

Work and income: **An increasing demand for sharing and repairing platforms stimulates the demand for labour and skills in these sectors. Craft centres and local platforms can also offer opportunities for groups at a distance from the labour market.**



Social equality: **By expanding the infrastructure for sharing and repairing platforms and second-hand products, consumer goods become more accessible those Amsterdam residents who have less to spend.**

Courses of action

(C2.1) Working together for better products in Amsterdam.
Amsterdam cannot force globally operating industries to sell it higher quality products with longer useful lives and produced under fair working conditions. However, we can seek a dialogue and stimulate innovation, for example in cooperation with knowledge institutions and businesses that are already demonstrating an interest in circular production or that operate locally. Amsterdam can collaborate with knowledge institutions to stimulate circular product designs, so that more and better products and services are produced – a kind of Dutch Design 2.0 – or stimulate business models based on circular principles. Amsterdam is not alone in this and can join up with national initiatives such as those of the Manufacturing Industry and Consumer Goods transition agendas. The City will also seek cooperation with other public authorities, the people of Amsterdam, businesses and knowledge institutions.

(C2.2) Increased awareness of the need to consume less and share more.
The City will gradually establish awareness-raising campaigns and policies using advertising in the public space to encourage people to share, repair and reuse textiles, electronics and furniture. Here too, we will join up with national initiatives and seek cooperation with other public authorities, the people of Amsterdam, businesses and knowledge institutions.

C2.3) Sharing and repairing made easy, accessible and affordable.
The City improves the city's infrastructure for sharing and reuse. To this end, we are connecting existing initiatives and adding new elements where necessary. Examples are 'libraries' for products such as clothing and tools and accessible repair cafés.
The City's spatial planning policy provides for locations for circular services based on innovative concepts. These locations may also have social functions, for example by providing opportunities for people who seek more social contacts or a daytime activity, or work for people at a distance from the labour market. Together with market parties and craft centres, the City invests in accessible, strategically located and fully equipped sites for repair services. Among others, we are cooperating intensively with designers, training programmes, community centres and retailers. Ultimately, the platforms and services for sharing, loaning, refurbishing and repairing should be just as easily accessible as the current stores that sell new, non-circular products.

Extending the useful life of consumer goods

We are seeking ways to prevent products from ending up in landfills through the application of new technologies such as artificial intelligence. For example, we are investigating whether the City's scooter, cars and trucks can be deployed to help identify useful bulk waste along the roadside so that it can be offered for reuse via online marketplaces rather than collected for disposal. We are also looking into a way to encourage residents who log in to the City's website to request the collection of bulk goods to offer their goods to third parties first.



Consumer goods

Ambition
(C2) Caring for our natural resources together

Survey among Amsterdam residents via the OIS panel:

The vast majority of respondents think that producers should be required to design products that can be repaired.

Consumer goods

Ambition

Amsterdam makes the most of discarded products.



(C3) Amsterdam makes the most of discarded products

From 2025 onwards, products that can no longer be repaired must be upcycled, i.e. processed into products with the maximum possible value. With the help of public-private partnerships, by 2025 we want to be able to collect and separate textiles*, electronics, furniture and plastics so that they can be reused, repaired or otherwise upcycled.

Context and policy

Although a City of itself has little power to change global production chains, it can start at the local level by encouraging local producers, retailers and processors to start the transition to upcycling. This starts with an effective collection system and waste products that are easy to process. The City can play an important role in waste collection, while producers can do much to make products upcyclable, such as avoiding the use of glue and toxic substances and providing their products with a materials passport. One instrument to this end is encouraging producer responsibility. This has already been successfully deployed to stimulate the collection and processing of electronics, and this system can be extended to include furniture makers or retailers, as well as major manufacturers of plastic packaging.

Allocation of roles

It is primarily up to the business community to extract value from end-of-life products. They can design products that are easier to recycle and ensure efficient processes for collecting and upcycling them at the end of their useful life. This demands producer responsibility, based on which the City can reach voluntary agreements with businesses. To ensure efficient processing, the City can connect businesses to raw material streams at the Metropolitan level to create a processing cluster. To encourage designers and the people of Amsterdam to make better products and treat them with more respect at the end of their useful lives, the City can collaborate with design schools and carry out awareness-raising campaigns.

* Textiles is one of the priority streams in this strategy and the circular programme in general. The implementation is based on the Circular Textiles policy adopted by the City in 2019 and the Amsterdam Leader in Sustainable Textiles initiative (Timman, 25 January 2019) which focussed on improving the collection, separation and processing of household textiles, establishing the region's reputation as a circular textiles hub, and harmonising with national and European textile policy.

(C3) Amsterdam makes the most of discarded products



Position in the doughnut

Chemical pollution: **By recycling components and materials, fewer chemicals are released into the environment by end-of-life products. This also contributes to the quality of the air and the health of people who work in the waste processing industry.**

Education: **The circular economy demands new skills and creates new jobs for which people will need to be trained.**

Work and income: **New and innovative solutions for upcycling create new opportunities for the business community.**

Courses of action

(C3.1) The City, businesses and knowledge institutions work together to extract value from discarded items.

Instruments: spatial planning, direct financial support, economic frameworks, knowledge, advice and awareness-raising, collaborative platforms and infrastructure

Amsterdam is establishing a 'waste to new materials' cluster of businesses, knowledge institutions and public authorities (including the Port of Amsterdam). This cluster will intensively promote the innovative reuse of recycled materials in new products.

(C3.2) The business community helps the people of Amsterdam to appreciate the value of their goods.

Instruments: regulations, direct financial support, economic frameworks, knowledge, advice and awareness-raising, collaborative platforms and infrastructure

The people of Amsterdam are assisted in retaining the value of materials through effective separation and collection logistics and better ways of processing and upcycling them. This is facilitated by making clear agreements with producers. Wherever possible, differentiated rates are applied for the collection and processing of residual streams.

C3.3) Amsterdam treats discarded but useful goods with respect.

Instruments: regulations, direct financial support, knowledge, advice and awareness-raising, collaborative platforms and infrastructure

Unfortunately, the people of Amsterdam still put perfectly good products out on the street. This is why existing logistics processes, such as the monthly collection of discarded furniture, should be further fine-tuned so that the value of discarded but usable products can be retained as much as possible and these products can get a second life. This is particularly important for furniture and electronics.
The urban management cluster can also play a role here, for example through monitoring and enforcement.

Hub in the Dutch Circular Textile Valley

We usually do not give it much thought, but clothing has an enormous environmental footprint. Cotton cultivation and textile production are among the most polluting industries, and the vast majority of textiles that are collected are recycled into low grade products. The Amsterdam Metropolitan Area acts as a magnet for businesses and initiatives in the clothing industry, so we are working hard to promote the area as a hub in the Dutch Circular Textile Valley. In this initiative, knowledge of sustainable and social textile manufacturing is exchanged with other textile regions around the world, which will contribute to the creation of a global ecosystem for circular textiles.

Consumer goods

Ambition
(C3) Amsterdam makes the most of discarded products



Wieland Textiles's innovative textile sorting machine. This machine efficiently sorts high quality textiles for the production of new clothing.



Built environment

3.6 Built environment



The built environment consists of districts, buildings and public spaces above and below ground. The focus of the circular economy in the built environment is on reducing the use of primary raw materials, which will also indirectly reduce CO_2 emissions. The ambitions for the built environment therefore focus on circular development at the city and district levels, circular municipal procurement policies and circular upgrading of the city's existing built environment. Concrete criteria for circularity[1] in the built environment, and hence also for the feasibility and practicability of the plans, will need to be further developed and rendered suitable for large scale implementation.

Circular construction[2] presents an enormous challenge that requires a tiered approach based on acceptable risks. Numerous projects are already applying many of the principles of circular construction. The challenge now is to learn from these experiences and scale up to a city-wide approach. This requires collaboration with the people of Amsterdam, the market and knowledge institutions. In addition to making these ambitions concrete, we are developing appropriate preconditions and tools to reduce the use of raw materials in actual working practice, which is simultaneously a test for the doughnut model. The task of maintaining and modernising the existing infrastructure of roads and streets, bridges and canal banks, and cables and pipes is likewise enormous and achieving circularity is extremely important here too. Achieving these ambitions requires the adaptation of existing processes, a realistic valuation of the residual value of buildings, new financial and policy instruments, pilot projects, sharing lessons learned, et cetera.

The **first ambition** focuses on the current and future development of the city and involves identifying the prospects for value retention and value creation so that we become more aware of what we have now and what we will need in the future. Circular criteria are increasingly being taken into account in district development plans. These design processes need to focus even more on the entire construction chain in order to take account of future management and maintenance requirements during the design and construction of the built environment. An integral approach to this chain will add value to the circular economy. The challenge is to further explore, test and develop the methods based on the lessons learned, so that circularity becomes the new norm in the development of the built environment. We are also exploring how we can apply circular ambitions to ongoing projects. New financing models are of great importance in this respect, and in the coming years we will need to work out how to develop these models. We will start by formulating more stringent requirements for the Environmental Performance for Buildings assessment that is required by law.

The **second ambition** concerns the City's procurement policy in relation to projects in the public space (above and below ground), the City's own real estate, public real estate, school buildings, land allocation tenders and the encouragement of circularity in future projects. The entire life cycle – from design to reuse and dismantling – is to be given specific attention in the development of public spaces and the City's own real estate. The City will do its best to set a good example and get as much as possible out of existing properties. We will challenge the market to innovate and gradually adapt our own procurement processes to this end.

The **third ambition** involves seeking opportunities for cooperation with external stakeholders in cases where the City is not the developing party, as in the case of renovations of private real estate in the city. We will expand our financial instruments to reward desirable developments and curb undesirable ones. The City stimulates knowledge sharing and shares data on materials and material streams within the city in collaboration with knowledge institutions, experts and organisations at the forefront of the circular transition. We are actively seeking cooperation with the market to promote the supply and demand of recycled and reusable materials so that the existing niche markets can be expanded to close construction industry loops. The City is also developing a platform for sharing circular lessons and successes.

1 The circular criteria for the built environment are: building with fewer materials, building with reused and/or biobased materials, and adaptive and modular construction.

2 Circular construction: "The development, use and reuse of buildings, areas and infrastructure without unnecessarily depleting natural resources, polluting the living environment and damaging ecosystems, using building methods that are economically justifiable and contribute to the welfare of people and animals, everywhere and always." Source: *2018 Circular Construction Industry Transition Agenda.*

Ambition

The transition to circular development requires a joint effort.



(G1) The transition to circular development requires a joint effort

From 2022 onwards, all new urban development (including urban transformation) and public space designs in Amsterdam will be based on circular criteria. This requires collaboration with the people of Amsterdam, the market and other public authorities. Our joint challenge is to reduce the use of primary raw materials in the built environment so that we can meet the 2030 target.

To this end, we are deploying various instruments at the city level, such as thematic studies, and at the district level we are formulating specific, feasible ambitions and instruments.

Context and policy

The shared long-term goal of the Dutch government, the Amsterdam Metropolitan Area and the City of Amsterdam is to be 100% circular by 2050, with an intermediate target of a 50% reduction in primary raw materials consumption by 2030 [1,18]. Amsterdam uses the Doughnut model to make this ambition of a circular economy more concrete, with a focus on more efficient use of raw materials. This is a new way of working, with a broad scope (physical, economic, social and environmental) and focused on the long term.
The needs of the built environment change continuously, while at the same time we want to retain the value of the raw materials for as long as possible, for example by avoiding the need to demolish buildings. In the short and medium term, the district development plans are focusing on increased use of recycled[3] and biobased[4] materials.

Finally, the transition to circular construction must take account of the affordability of living and working spaces and the importance of fostering the support of residents and users. These goals all depend on formulating the right preconditions, with particular attention paid to the financial system underpinning the city's social housing, public real estate and the City's own real estate.

3 Reused materials (also referred to as secondary materials) are materials sourced from previous uses or from residual streams that can replace primary materials. Source: Platform CB'23, *Lexicon Circulair Bouwen*, Version 1.0, July 2019.

4 Biobased materials are materials (products) that are made from renewable, organic raw materials instead of fossil raw materials, for example wood. Source: Platform CB'23, *Lexicon Circulair Bouwen*, Version 1.0, July 2019.

Allocation of roles

The City has the responsibility to lead this part of the transition.
A new set of instruments is needed to achieve the desired ambitions in stages through traditional methods such as land allocation tenders, the issuing of permits, construction tender processes and partnerships. In view of the complexity of circular construction and the limited practical experience, the City is seeking cooperation with the market, knowledge institutions and, where possible, the people of Amsterdam, to identify opportunities and risks arising from circular construction. The insights gained will be used to design the new instruments, i.e. clearly formulated criteria and private and public law instruments required to safeguard the measures in practice.

(G1)The transition to circular development requires a joint effort

Position in the doughnut

Real estate: **This major challenge for Amsterdam's built environment will need to be met through circular construction. The social and other costs of the transition are not always clear. A long-term perspective and the associated cost estimates is required to make cost-benefit analyses within the existing financial frameworks and propose adjustments to these frameworks.**

Work and income: **Large-scale circular construction stimulates the development of new circular products and services. One potential knock-on effect is that new jobs are created. However, jobs may also be lost in conventional industry, so it is important to develop new curricula as well as retraining and lifelong learning programmes. The role of the City is to set clear performance expectations for the market in good time so that market parties have the opportunity to embrace this development and take measures to mitigate the risks associated with innovation.**

Climate change: **The City is committed to reducing CO_2 emissions to fight global warming. The use of primary raw materials in the built environment contributes strongly to CO_2 emissions due to the increasing demand for materials associated with major construction projects throughout the city, but the city's transition to circular construction will contribute to the reduction of these emissions.**



Courses of action

(G1.1) Lower limit: use recycled and biobased materials as much as possible.

Instruments: policy, regulations

The strategy for the built environment focuses on instruments and criteria with a short-term impact. The use of recycled and biobased materials in construction will reduce the need for primary raw materials in the short term. The Environmental Performance for Buildings assessment required by law is an existing national instrument that Amsterdam will deploy to reduce the use of primary raw materials in the short term. The gradual and structural tightening of the current standard in Amsterdam from 1.0 to 0.5 or lower by 2030 will greatly increase the use of recycled and biobased materials throughout the city and create new markets. We will determine the lower limit (or the maximum allowable value) for Amsterdam in 2020 based on our experience with circular construction.

(G1.2) Insight: determine the value of the current built environment.

Instrument: policy

The City plans to make the gradual transition to more efficient use of raw materials part of the process of planning, managing and maintaining the built environment, including public spaces above and below ground. This will require insight, and the focus will increasingly shift to raw materials streams and material use as integral parts of project assessments.
In addition, the City strives for broader value chain analyse[s5] based on the Doughnut methodology, so that it can manage the transition for the city. We are also examining what additional instruments are needed for managing this transition at the district level. This will connect priorities to results and help fulfil the ambition to become a circular economy in the long term. We are gaining this insight by conducting a value chain assessment for the city based on the construction brief described in Space for the City and on the district assessments that have been carried out to date. This first value chain assessment will be completed in 2021.

(G1) The transition to circular development requires a joint effort

(G1.3) Defining and safeguarding the circular ambitions at the city and district levels.

Instruments: policies, regulations, collaborative platforms and infrastructure

No later than 2022, the municipality will formulate circular ambitions for each district in consultation with the stakeholders, and these ambitions will form the basis for the development, transformation and management of the city and the city districts. The ambitions can serve as the basis for land allocation tenders, one-to-one agreements and other arrangements with stakeholders in the relevant district. All projects need to formulate circular ambitions, unless the investment budget for a given project has no scope for this.

The starting point is to develop criteria and preconditions for a circular built environment in the city, in consultation with the market and knowledge institutions. Parties explore how to reduce the ecological impact of building materials through adaptive[6] and modular[7] construction, for example (and in addition to the established lower limit for the city, see course of action 1). The decision-making is based on preconditions that are established as part of the more stringent requirements (legal, spatial, technical and financial).

Specific attention is paid to:

- the integral harmonisation of the circular built environment with the City's other policy objectives
- the financial preconditions for social housing and public real estate
- the effect on income from sales of residential and other real estate with a residual land value
- setting the right example: preconditions for circular municipal real estate
- the phase of management and maintenance of buildings and public spaces (both above and below ground)
- experimental criteria and preconditions of existing trial projects

To ensure that these ambitions do not just remain ambitions, we will make agreements on how they will be translated into concrete and verifiable performance requirements, both for the construction phase and before and after delivery of the project, i.e. for the entire life cycle of the structure. This also applies to city districts that are currently formulating ambitions or that have already established these.

(G1.4) Knowledge: joint knowledge as a starting point.

Instruments: knowledge, advice and awareness-raising, collaborative platforms and infrastructure

A central municipal expertise centre will be established to provide the relevant municipal departments with practical advice about circular construction practices and urban development and to identify restrictive legislation and regulations and get these on the agenda.

(G1.5) New forms of value assessment.

Instrument: economic frameworks

In order to make value retention more financially attractive, in 2021 the City and market parties are experimenting with new ways of valuing the circular built environment. The starting point is the total cost of ownership and total cost of use[8] of the built environment and public spaces above and below ground.

5 A value assessment can involve landscape values, buildings and structures, indoor and outdoor spaces, existing infrastructure and building materials, material streams such as organic materials and waste from households or businesses, public green spaces and biodiversity, water storage, available unused space, air quality, distinct identities, characteristic features of a district, the presence of close-knit communities, specific functions, accessibility, stakeholders who are willing to cooperate to achieve sustainability, liveability, shared mobility, etc. Source: *Circulaire Gebiedsontwikkeling Gemeente Amsterdam (draft)*, 24 October 2019.

6 Adaptive construction involves using methods and materials that ensure that a building retains its functionality and remains sustainable and economically viable throughout its design life in the face of changing needs and conditions. Source: Platform CB'23, *Lexicon Circulair Bouwen*, Version 1.0, July 2019.

7 Modular construction (also referred to as modular design) is the design of a composite structure or element that can be easily and non-destructively dismantled. Source: Platform CB'23, *Lexicon Circulair Bouwen*, Version 1.0, July 2019.

8 The total cost of ownership (TCO) or total cost of use (TCU) concerns the total costs over the product's entire design or useful life. Source: Platform CB'23, *Lexicon Circulair Bouwen*, Version 1.0, July 2019

Buiksloterham

The former industrial area of Buiksloterham is being transformed into a circular city district for living and working. The district functions as a testing ground and offers various opportunities for research, experimentation and innovation in the field of sustainability and circularity. In this district we are testing new concepts and criteria to make smarter use of materials, close loops and use energy from local and renewable sources. We will apply the knowledge gained to other projects in and around the city.

Built environment

Ambition
(G1) The transition to circular development requires a joint effort



Patch22 in Buiksloterham (Hollandfoto/Shutterstock).



Survey among Amsterdam residents via the OIS panel:

The respondents report that, in addition to cars and bicycles, they most often purchase tableware and furniture second-hand.

Ambition

The City sets the right example by formulating circular criteria.

Oostelijke Handelskade 12, municipal real estate with a material passport

(G2) The City sets the right example by formulating circular criteria

From 2023, the City of Amsterdam will implement circular and socially responsible criteria in the development of buildings and public spaces, among other things through its procurement and tender policies, including land allocation tenders. This applies to all stages of the useful life of a structure: from construction and management up to the end of the functional design life (unless this is not feasible).

Context and policy

As the procuring party, the City can encourage the circular economy by subjecting land allocation tenders to circular criteria. In addition, the City is establishing guidelines for social responsibility and circular construction for procurement, tenders and contracts relating to its own projects. This includes the construction, management, dismantling and demolition of the City's own buildings, public real estate, schools, and public spaces above and below ground. Sustainability ambitions are also part of The Green Office, the City's internal sustainability programme.

Because the City plays a major role in the management and maintenance of public spaces above and below ground, this ambition also contributes to the social return[9] for the city by, for example, helping people with a distance to the labour market to find work.

Allocation of roles

This ambition concerns all construction activities of the City of Amsterdam as the procuring party or land allocator. In this role, the City is cooperating with knowledgeable research institutions and consultancies so we can ensure that we ask the contracting parties the right questions, develop the requisite knowledge and share this with builders and building managers. We are cooperating intensively with contracting and knowledge parties in the pilot projects to achieve these goals.



Position in the doughnut

Climate change: **Applying circular criteria to procurement and tendering processes for public spaces above and below ground and land allocation tenders for buildings increases the proportion of recycled and renewable building materials. This reduces greenhouse gas emissions during the production of new building materials.**

Real estate: **The scarcity of affordable rental homes highlights the importance of having a balanced range of housing options that meets the housing needs of different income groups. The application of circular principles such as adaptive and modular construction to land allocation tenders offers an opportunity to create new homes that meet the changing housing needs.**

Employment opportunities: **The application of circular principles and criteria encourages new business activities. This in turn creates a demand for new jobs and skills in the circular economy. By setting a clear course, the City gives market parties time to adapt and develop new curricula or programmes for retraining or lifelong learning.**

9 Social return is an approach to creating more employment opportunities for people at some distance from the labour market. Source: PIANOo Expertisecentrum Aanbesteden.

(G2) The City sets the right example by formulating circular criteria

Courses of action

(G2.1) Extend the useful life: use what's available

Instrument: regulations

The City will first determine whether there is an alternative to purchasing new buildings and infrastructure or otherwise meeting a demand, for example by extending the useful life of existing buildings or reusing municipal assets[10] (e.g. street furniture) elsewhere in the city.

(G2.2) Tighten internal municipal processes: encourage circularity.

Instruments: regulations, direct financial support

The City organises tenders for its own real estate, public spaces (above and below ground) and land allocation tenders such that they encourage circularity, for example by reorganising internal processes.

(G2.3) Organise market research: stimulate innovations.

Instruments: regulations, direct financial support

The City organises circular market surveys prior to tenders for buildings in public spaces above and below ground and for land allocation with a focus on ensuring clearly measurable performance. We will ensure that there is room for innovations in implementation, tendering, maintenance and management in this process.

(G2.4) Municipal assets: what are they worth?

Instruments: regulations, economic frameworks, knowledge, advice and awareness-raising

The City is developing a standardised set of financial instruments to manage initial investments and risks and make existing values explicit. This also takes account of the life cycle phases and residual value of municipal assets, property and land.

10 Assets: buildings, pavement infrastructure (including street furniture), canal banks, bridges, tunnels, public lighting, traffic lights, locks, trees, vegetation (including football fields), etc. Source: Urban Management, City of Amsterdam.

Timber construction

The City is investigating how building with timber could reduce the CO_2 emissions of the built environment. Wood is considered a sustainable building material because it retains CO_2 and its production and processing do not cause as much pollution as those of materials such as concrete do. The council is also studying applications of timber in high-rise buildings in Amsterdam such as flats and office buildings. We anticipate that timber will prove a suitable alternative in a number of scenarios. The Vivaldi building in the Zuidas district will serve as a pilot project. This building consists of a concrete core with a timber shell. Vivaldi is built on top of an existing parking garage.

Built environment

Ambition
(G2) The City sets the right example and formulates circular criteria



The Vivaldi building in the Zuidas district.

A circular road

Circularity principles are being applied to the design of public space in the redevelopment of the Amstelstad district. Among other things, a circular road is being constructed that will remain the property of the construction company, who will remain responsible for the maintenance of the road and retain ownership of the materials. Thanks to the use of this leasing instrument, the road will be more future-proof because its maintenance condition will be managed more closely, increasing the likelihood of the materials being upcycled for another application in the future.



Built environment

Ambition
(G2) The City sets the right example and formulates circular criteria

Ambition

A circular approach to the existing city



(G3) A circular approach to the existing city

From 2025, 50% of all renovations and building maintenance activities in Amsterdam will follow the principles of circular construction. This will apply to the existing social and private housing stock, public real estate, schools, utility buildings and public spaces above and below ground.

Context and policy

The climate ambitions in the Amsterdam Coalition Agreement (55% less CO_2 emissions in 2030) [13] will necessitate a major renovation of the City of Amsterdam this decade: hundreds of thousands of existing buildings will have to be renovated and enormous interventions will be required in the public space. The obvious partners in this ambition are the housing corporations, as they own 45% of the homes in Amsterdam. However, private, social and commercial property owners and school boards will also have to renovate their existing stock or erect new buildings. This offers a unique opportunity to make these renovation and newbuild projects circular. With the energy infrastructure that will be required and the public spaces that will need to be broken up, the ambition of a gas-free and climate-neutral city will involve an unprecedented intervention in the city, affecting all buildings and public spaces.

Allocation of roles

This ambition involves all parties that carry out construction activities in Amsterdam where none of the instruments described in the ambition "The City sets the right example by formulating circular criteria" can be deployed. The City can entice or oblige these parties to cooperate, identify opportunities together with them, provide them with knowledge and facilitate them with data on stocks of materials.

Position in the doughnut

⚖ *Social equality:* **The circular renovation of the existing social and private housing stock leads to less energy consumption per home. Care must be taken to ensure that this leads to a net reduction in living costs, so that households with less disposable income have more financial room for manoeuvre.**

Energy: **Circular renovation contributes to reducing the carbon footprint of buildings. The reuse of materials and sustainable redesignation of buildings contributes to the energy transition and the goal of a CO_2 neutral social housing stock in 2050.**

Chemische vervuiling: **Upcycling and reusing building materials reduces chemical pollution caused by the production of new materials and the destruction of discarded building materials, which also has a positive effect on health.**



(G3) A circular approach to the existing city

Courses of action

(G3.1) Agreements on circular ambitions: invite extra-municipal parties to the table

Instruments: knowledge, advice and awareness-raising, collaborative platforms

The City is formulating and implementing agreements on circular ambitions with as many extra-municipal parties as possible (parties outside the administrative or legal sphere of influence of the City) and with parties that do not participate in municipal tenders. This includes social and private landlords, tenants and school boards and involves attention being paid to the level of ambition, costs and revenues (including specifications) and inclusion of all these factors in management and maintenance plans.

(G3.2) Made-to-measure knowledge: the City provides targeted knowledge and data services.

Instruments: knowledge, advice and awareness-raising, collaborative platforms and infrastructure

The municipality is developing a 'circular toolbox' with information about technical, financial, social, organisational and legal implementation issues and the associated risks. This toolbox integrates existing initiatives as much as possible, such as CB'23 [19], the programme of the Amsterdam Metropolitan Area and Circle City. We are also asking owner associations to provide support. This toolbox can also be used to identify and disseminate values and material streams (e.g. based on materials passports) that encourage closed loops. The City is first studying how the existing financial instruments can best be expanded.

(G3.3) Affordable and scalable: the City stimulates innovation projects.

Instruments: direct financial support, economic frameworks

The City encourages affordable and scalable innovative projects, for example based on competitions that challenge companies, housing corporations, institutions and school boards to beef up their circular ambitions and integrate them in their everyday activities. This also includes initiatives for the development of self-build projects such as building collectives.

(G3.4) Close the loop: retain as much as possible value.

Instruments: regulations, spatial planning, direct financial support, knowledge, advice and awareness-raising, collaborative platforms and infrastructure

The municipality encourages sharing and upcycling of used materials. We will maximise existing and new initiatives as much as possible, such as smart logistics, physical storage spaces and online inventories.

(G3.5) Existing financial and fiscal instruments: make them circular.

Instruments: fiscal frameworks, direct financial support, economic frameworks

The City is expanding the existing financial and commercial instruments to stimulate circular construction practices by owners, investors and managers (e.g. of commercial real estate). The City is first studying how the existing financial instruments can best be expanded.

Sustainable canal banks

During the coming years, Amsterdam will be renovating and replacing hundreds of kilometres of its canal banks. The canal bank along Rechtboomssloot is being replaced with a new bank made of circular concrete, and it will be maintained using emissions-free vehicles and equipment. The lessons learned can be taken into account in other rebuild projects.

Built environment

Ambition
(G3) A circular approach to the existing city



Renovation of Rechtboomssloot.

4. Monitor

The transition to a circular economy is a major and complex challenge. How will we know if Amsterdam is on the right track? To answer this question we will have to measure our progress. The City is developing the monitor to this end. The monitor will enable us to measure whether our goals of halving the use of primary raw materials by 2030 and becoming 100% circular by 2050 are feasible.

The main purpose of the monitor is to chart the extent to which our economy has become circular and to identify areas in which more needs to be done. We will start by calculating the total burden of the raw materials and materials that the city consumes and produces as waste, on the basis of which we can measure the impact on CO_2 emissions and the environmental costs[2].

The monitor does not only examine the use of materials and the cycles they pass through, but also focuses on social aspects such as health, education and equality. As such, the monitor is in keeping with the City's ambition of improving the welfare of all its citizens. The monitor is based on the Doughnut model of the circular economy formulated by the British economist Kate Raworth (see Chapter 2 for a discussion of welfare for all and the Doughnut model).

The monitor initially provides a framework that will be further developed in the coming years. Where no data is yet available, the monitor provides guidelines for the development of indicators. The monitor focuses on the three selected value chains: Food & Organic Waste Streams, Consumer Goods and the Built Environment.

In this chapter we will provide a brief introduction to the monitor and summarise a number of important findings. The monitor is explained in more detail in a separate document (one of four documents including this Strategy).

Climate change and the economy of Amsterdam

Like the doughnut model, the monitor provides insight into the circular economy that goes further than only a restricted focus on the added value of all goods and services. For example, the monitor also takes the environmental impact of goods and social values into account.

To predict effects on climate change, the monitor is used to measure the environmental impact of the production and consumption of goods and services, including the treatment of waste. This impact is translated into a carbon footprint. The monitor is used to calculate this impact for the three selected value chains. In addition, indicators are developed in the monitor to assess the social consequences of the transition to a circular economy.

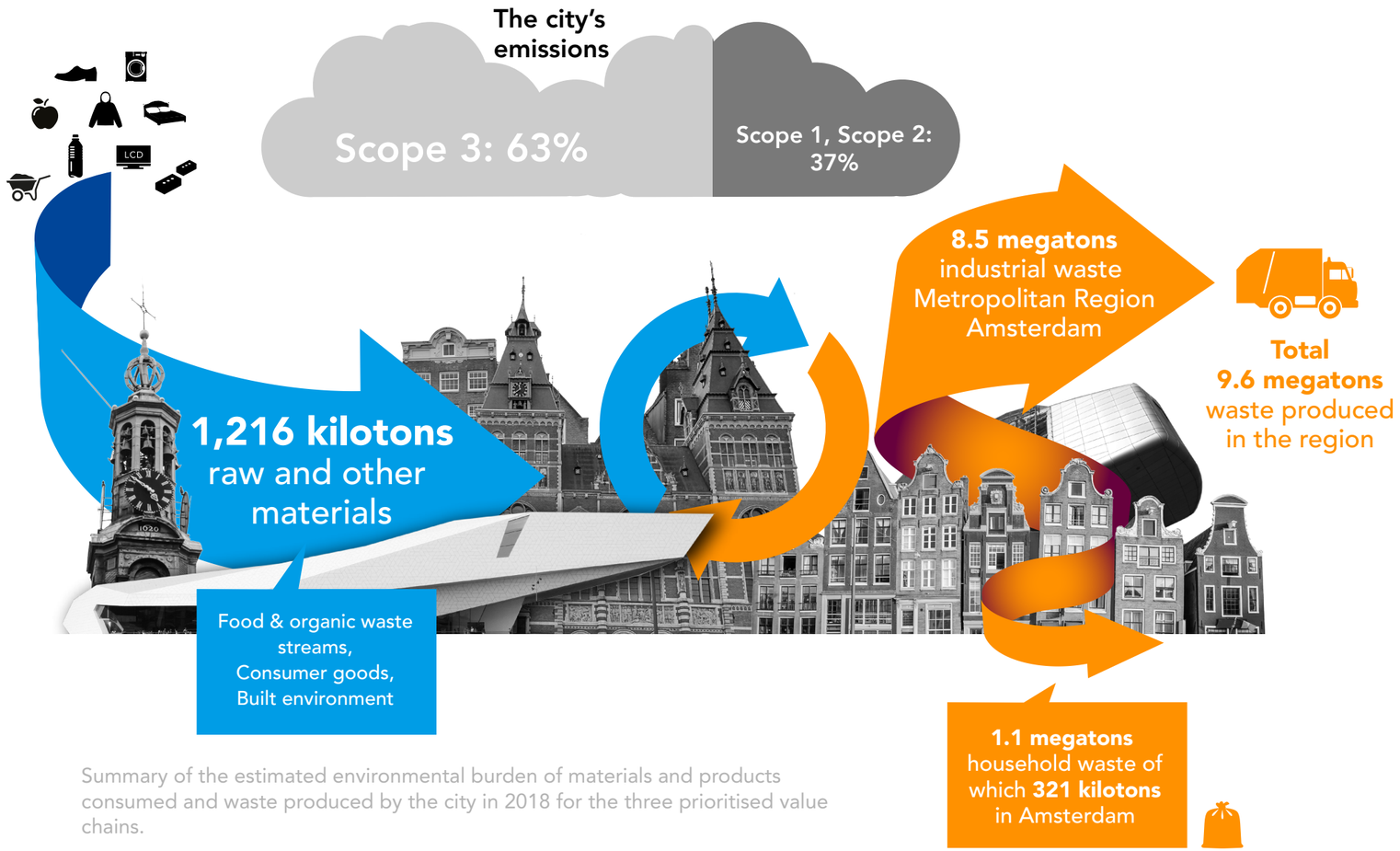
1 Completing the Picture: How the Circular Economy Tackles Climate Change.

2 Environmental costs are the costs of the negative environmental impact of a material or product.

The City estimates that 63% of Amsterdam's total CO_2 emissions are caused by products and materials that are consumed in the city but produced elsewhere (see below). In other words, the transition to a circular economy also plays a crucial role in achieving the climate targets.

The monitor is a first step towards quantifying that 63%. This is worthwhile, because the more we know about the sources of our primary raw materials, the more businesses will be able to opt for recycled or sustainable alternatives.

This version of the monitor includes a small margin for products that are counted twice because they are both consumed and produced in the region, such as the products produced in the chocolate factory in the Amsterdam Metropolitan Area industrial district. The more circular our region becomes, the better we will be able to define the relationship between the three scopes.



Summary of the estimated environmental burden of materials and products consumed and waste produced by the city in 2018 for the three prioritised value chains.

Description	Kton CO_2	Share %
Estimate of total CO_2 emissions (all scopes)	13.540	100%
Calculation of scope 1 and scope 2 CO_2 emissions	5.000	37%
Estimate of scope 3 CO_2 emissions	8.540	63%
% of scope 3 analysed (prioritised value chains)	1.346	16%

General estimate of CO_2 emissions. Scope 1: concerns direct CO_2 emissions caused by burning fossil fuels in Amsterdam; Scope 2: indirect CO_2 emissions caused by Amsterdam's energy consumption; Scope 3: CO_2 emissions outside Amsterdam caused by consumption in Amsterdam.

From Doughnut to monitor

In the document *The Amsterdam City Doughnut*, Kate Raworth and her staff sketched a picture of Amsterdam and held this up against the principles of the circular economy. This City Doughnut reveals the impact of Amsterdam's economy on the environment and society and the monitor builds on this model. Where the City Doughnut provides a snapshot of the city, the monitor provides continuous insight into the ecological ceiling and the social foundations of Amsterdam's economy.

The City Doughnut is a new instrument that the C40's *Thriving Cities Initiative* (TCI) is testing in Amsterdam, Philadelphia and Portland. The TCI welcomes comments and suggestions to improve this instrument at both the conceptual and the practical level so that it can contribute to transformative campaigns in many more cities. The report *The Amsterdam City Doughnut* describes the four lenses in detail and involves examining the city in relation to the people and the environment from four different perspectives, both locally and globally. The illustration on the right provides an overview of the four lenses and the key issue per lens. These lenses were developed in collaboration with a large number of council officials. The result does not comprise a comprehensive study, but rather a holistic snapshot of the city. Nor should it be read as a report, but instead it can be used to define the contours of the transition and encourage co-creative innovation and systematic transformation. In the years to come, this City Doughnut model will be used as a compass for the development of the monitor. The five parts of the monitor are explained on the next page.

How can our cit y be a home to thriving people in a thriving place, while respecting the wellbeing of all people and the health of the whole planet?

	social	ecological
local	What would it mean for the people of Amsterdam to thrive? 1	What would it mean for Amsterdam to thrive within its natural habitat? 2
global	What would it mean for Amsterdam to respect the wellbeing of people worldwide? 4	What would it mean for Amsterdam to respect the health of the whole planet? 3

3 C40 is a global organization for cities with a focus on sustainable development of which Amsterdam is a member.

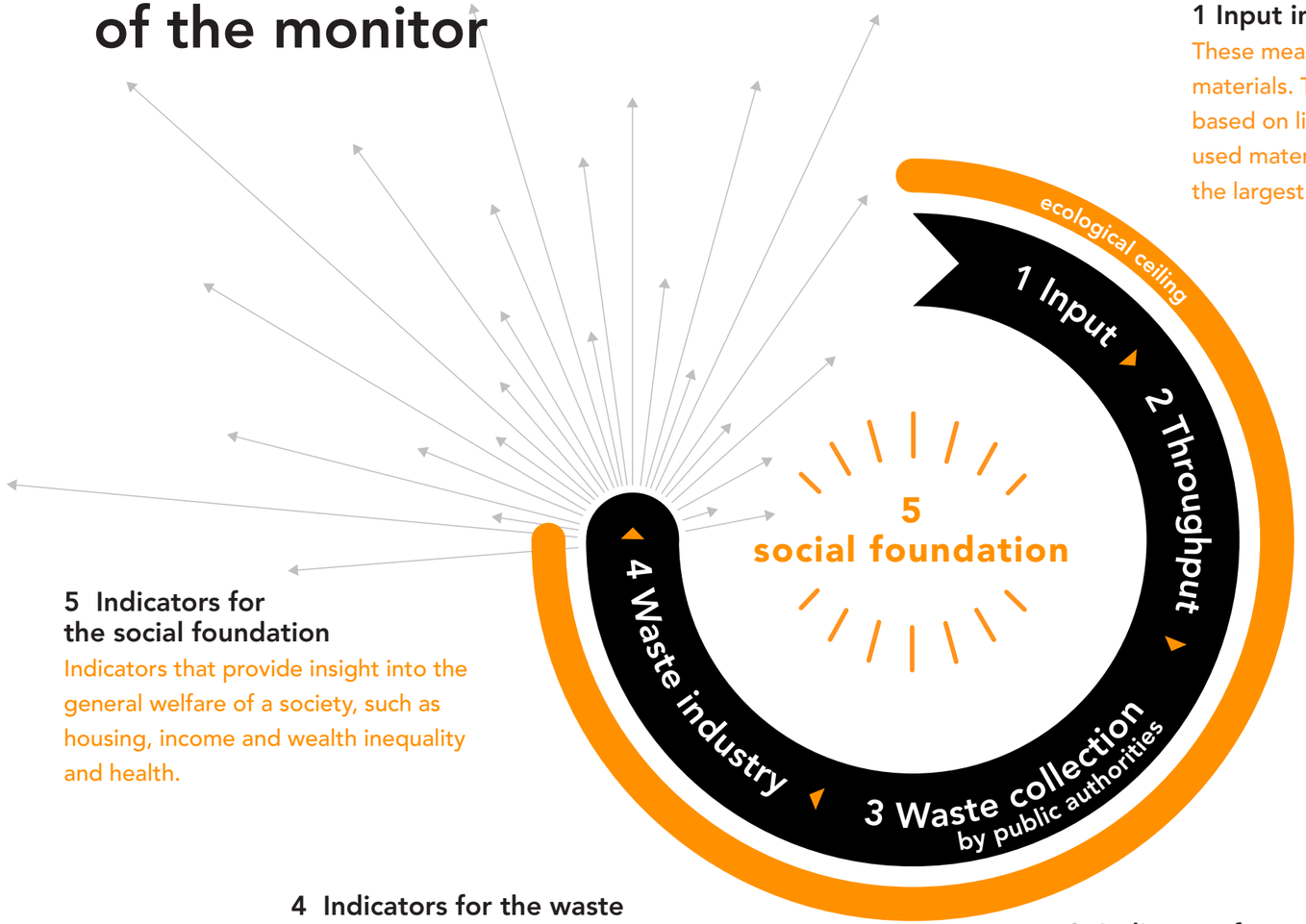
The future of the monitor

In the coming years, the City intends to increase the visibility of the measures towards a circular economy. The Monitor is an important tool to this end. The provisional framework of the Monitor will be further developed in the coming years. In addition to the acquisition of more data, this will also require the development of universal indicators. This can be done in close cooperation with other public authorities, knowledge institutions and the business community.

This is relevant, because a more carefully fine-tuned Monitor can support the transition to a circular city in two ways: in the first place it provides the market with commercial opportunities to develop circular measures, and secondly it gives the people of Amsterdam more confidence that the transition to circularity will improve their welfare (or in any case maintain it).

We are developing the Monitor further by means of Doughnut workshops, data partnerships and the creation of a data platform.

The five parts of the monitor



1 Input indicators[4]
These measure the incoming materials. The input indicators are based on life cycle analyses (LCAs) of used materials in product groups with the largest carbon footprint.

2 Throughput indicators
Throughput refers to the way materials are used and here comprises the predicted reduction of CO_2 emissions based on circular projects in the three selected value chains[5].

3 Indicators for waste collection by public authorities
These indicators measure the public authorities' performance in regard to waste collection (e.g. separating waste and collecting bulk waste).

4 Indicators for the waste treatment processes of regional industries[6]
General indicators for industrial waste streams, broken down by value chain and processing form.

5 Indicators for the social foundation
Indicators that provide insight into the general welfare of a society, such as housing, income and wealth inequality and health.

[4] This part of *the Monitor* was developed by TNO.
[5] Nevejan, C., Sefkatli, P. & Cunnigham, S. (2018). City Rhythm, Logbook of an Exploration. Cultural Sociology (AISSR, FMG).
[6] This part of the framework was developed by TU Delft.

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Publisher's note

The *Amsterdam Circular 2020-2025 Strategy* is a product of the City of Amsterdam in close collaboration with Circle Economy. The City of Amsterdam would like to thank all parties involved for the valuable conversations and insights that contributed to the creation of this strategy.

Publisher
City of Amsterdam

Editors
Circle Economy and the City of Amsterdam

Design and production
Beautiful Minds

Contact
P.O. Box 2758
1000 CT Amsterdam

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