CIRCULAR ROTTERDAM.

A self-regulating city in which we deal smartly and efficiently with materials, water, energy and waste.

ROTTERDAM. MAKE IT HAPPEN.

Picture: Guido Pijper

ABOUT THIS MAGAZINE.

Rotterdam is known as a city of doers, pioneers and for its "talk less, do more" mentality. Where every day many people, companies and institutions work together to help each other, and the city move forward. Experimenting is not shunned, rather embraced. Innovation is not scary, it is like the blood that runs through the veins of the enterprising Rotterdammer.

The major challenges of today and tomorrow are about sustainability, energy transition and the development of a new, circular economy. Rotterdam is very ambitious on these topics and likes to play a pioneering role. For example, the Maasstad has set the goal that circularity will be the norm by 2030. By 2050, the urban economy should be fully circular.

But how do we do that, how do we change from a traditional linear economy to a circular economy where production and consumption are perfectly aligned and waste no longer exists? There is no one-size-fits-all answer, not even a simple solution. The development of a circular society is a process of joint learning and discovery, trial and error, the courage to stick your neck out and, above all, the passion and will to move forward. Even if the road is a bumpy one. Because together we want to make our city better, more beautiful, healthier, smarter and more honest and because we are striving for a sustainable future.

This magazine shows how Rotterdam thinks and acts when it comes to circularity. What is the role of the port? How does sustainability and circularity play a role in events and festivals? What do BlueCity and RDM have to do with it? What about Erasmus MC? Are we heading in the right direction at all? These and other questions are addressed in this magazine. You will also find information and inspiration about Rotterdam sheep, a floating farm, responsible beer and Buurman who makes beautiful things from city wood.

The stories in this magazine were produced by the collaborating parties of the Rotterdam Brand Alliance 'Rotterdam. Make It Happen.' Want to know more? Check www.rotterdammakeithappen.nl. Have the stories inspired you and would you like to contribute to the development of the circular Rotterdam economy?

Send us a message via info@rotterdambrandingtoolkit.nl. We are happy to connect you with the right people and organizations.

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Picture: Marc Nolte

Picture: Eric Fecken

3 QUESTIONS TO.

We kick off this magazine with three questions to Mayor Ahmed Aboutaleb and Climate Alderman Chantal Zeegers.

ROTTERDAM CIRCULAR. DON'T THOSE WORDS CONTRADICT EACH OTHER?

Mayor Ahmed Aboutaleb (AA):
On the contrary. When asked how we can live sustainably in the future, residents and entrepreneurs are providing their own answers. It has long been clear that the economy of the future will be circular and local. For many innovative, creative entrepreneurs, this is already self-evident. Together with the city, we are going to ensure that Rotterdam is 100% sustainable by 2050. Where one person's waste is another person's raw material.

Chantal Zeegers, climate alderman (CZ):
Together we are going to make sure that we produce more sustainably, buy more consciously and dispose of things in a better way. From jeans to baguettes, from toilet seats to skyscrapers, everything is made of raw materials and can become raw materials again after use. We need to get rid of the linear economy with CO^2 emissions and waste. This is more necessary than ever.

DO YOU HAVE AN EXAMPLE OF SUCH A COMPANY?

CZ: Rotterdam-based architecture company Superuse Studios is one such business where circularity is at the core of how their architects work. They have now spread their wings internationally.

AA: Recently I was allowed to inaugurate Hardt Hyperloop's new headquarters and experience center in M4H, which was fantastic. That company is developing a European hyperloop system in which people or goods can be transported by hyperloop train through a low-pressure tunnel. As a result, speeds of up to 1,200 km per hour can be achieved in theory! Rotterdam participates in Hyperconnected Europe, a city network that supports the development of a hyperloop network.

HOW DOES THE COUNCIL SUPPORT THESE DEVELOPMENTS?

CZ: With "Circo Tracks," for example. That's where Rotterdam entrepreneurs are immersed in circular entrepreneurship for a few days. And they build a network to move forward.
We also have a Circular Information Desk. Entrepreneurs often encounter barriers in practice, such as outdated laws and regulations. With the Circular Information Desk we want to help circular entrepreneurs on their journey. We also help entrepreneurs to get started with a special circular subsidy scheme that helps to make their production process more sustainable, to implement a business plan, to work with residual streams or to make people more conscious of how they use stuff or food.
For example, creative Bureau Kongsi was able to use the money to place special Bike Repair Stations around town, where anyone can repair his or her bicycle free of charge 24 hours a day. And at "The Swap Shop," people can now exchange clothes. There are already two well-run permanent locations.

AA: And, last but not least, as a large organization, we take our role as a client seriously and purchase (wholesale) from local circular entrepreneurs whenever possible. This also creates new opportunities in the city.
All circular businesses and initiatives, large or small, contribute to our ambition to be waste-free by 2050. Together with Chantal, I look forward to welcoming and supporting more and more innovators in our city in the coming years!

Text: Nienke Landré

"ULTIMATELY, THOUGH, IT HAS TO HAPPEN OUTSIDE."

Monique de Moel

If there is any place in the Netherlands where energy transition is taking shape, it is in the Rotterdam port and industrial area. Aspiring to be the most sustainable port in the world, the port aims to achieve around 55 per cent CO^2 reduction by 2030 and to be completely CO^2 neutral by 2050. Monique de Moel, new business manager and Circular Economy programme manager at the Port of Rotterdam Authority, explains how the port intends to realise this ambition together with other parties.

Picture: Lennaert Ruinen

The Port of Rotterdam Authority manages, operates and develops the port and industrial area. Together with companies in the port and government, the Port Authority is working on a future-proof port. To achieve its 2030 and 2050 ambitions, the Port Authority has set up a programme consisting of four pillars. 'In those pillars we try to realise concrete projects,' Monique explains. Because you can say what you like on paper, but in the end it has to happen outside.'

EFFICIENCY AND INFRASTRUCTURE.

The first pillar on which the strategy rests is efficiency and infrastructure. Together with parties in and outside the port of Rotterdam, the industry is working on measures to reduce energy consumption and the arrival of new infrastructure needed for the transition. 'Within this pillar, several projects have been launched,' continues Monique. 'The realisation of a heat network, for example. Pipelines are now being laid that will allow us to transport heat from the port industry to homes in The Hague and eventually to businesses and greenhouses. Another project, Porthos, is about capturing and storing CO^2 under the North Sea. We also need to strengthen the power grid to make businesses more sustainable.'

A NEW ENERGY SYSTEM.

Infrastructure is an important prerequisite for the second pillar: renewing the energy system. 'Industry needs to switch from gas, oil and coal to renewable electricity and (green) hydrogen. We are working with partners on the advent of a hydrogen system. For example, a new hydrogen pipeline is coming through the port of Rotterdam, which will soon form the basis for the hydrogen infrastructure in Rotterdam. In addition, 24 hectares on the Maasvlakte are earmarked for the conversion park that converts green electricity from offshore wind farms into green hydrogen via electrolysis. Shell is building Europe's largest green hydrogen plant here.'

A NEW FUEL AND RESOURCE SYSTEM.

For a clean industry and port, the transition to new raw materials and fuels is essential. Fossil raw materials will be replaced by the use of raw materials made from biomass, recycled materials and green hydrogen. Rotterdam is already home to Europe's largest biofuel cluster. 'Projects in this third pillar include a biofuel plant with a capacity of 820,000 tonnes per year, which Shell is now building,' Monique illustrates. 'This plant will be one of the largest of its kind in Europe for the production of sustainable aviation fuel and renewable diesel from waste. Finnish company Neste has announced its intention to invest €1.9 billion in a similar new biofuels plant. Another example: Xycle is building a plant in the port of Rotterdam that will convert 20,000 tonnes of non-mechanically recyclable plastic into high-quality renewable feedstock annually.'

MAKING TRANSPORT MORE SUSTAINABLE.

The fourth pillar is making transport more sustainable. 'Globally, shipping emits about three per cent of all CO^2 every year,' Monique knows. 'Because shipping is a very efficient mode of transport though, an awful lot is transported by sea worldwide. We are therefore trying to make not only shipping but also road transport and inland navigation cleaner. Within this pillar, among other things, we have started a project around the electrification of inland navigation, where we run inland vessels on battery containers. The first ship is now sailing and we are scaling it up. Another project is about shore power: ships moored in the port will then use power from the grid instead of their own diesel generators.'

COLLABORATION.

To achieve 55 per cent CO^2 reduction by 2030, some 60 different projects are currently underway. 'To take concrete steps, we are working with parties at many levels,' Monique stresses. 'We have a circular agenda at the regional level, but it is of course important to look beyond our own region to see what is happening. That is why we attach great value to cooperation at national and European level. After all, the Rotterdam port industrial area occupies a prominent position there.' Large projects usually have a lead time of around seven years, from the initial idea to the operational phase. 'It may seem that the four pillars and their associated projects stand alone, but there is a great connection and they reinforce each other. So when hydrogen is produced and imported, those are also new raw materials for chemistry. And you also need the energy transition to make the right processing in the feedstock transition. It is important that every project is successful.'

ESTABLISHED AND NEW COMPANIES.

The Port Authority facilitates many new developments and thinks and works with the business community. 'Companies that embrace innovation towards a circular economy,' Monique adds. 'We also try to introduce new innovative companies to the port industrial complex that want to establish new technologies here. Together with companies, we look for the most suitable locations for the establishment of new factories. Among other things, we look at value chains, logistics possibilities and synergies with the existing cluster.'

2050.

Assuming the ambition is achieved, does a carbon-neutral port area look very different in 2050 than it does today? Monique: 'We assume that in 2050 people will still be using all kinds of products that will still need to be made at that time. Much of today's industry will still be there in 2050 and it won't necessarily look different then. Only the raw materials that go into it and the energy carriers will be different. And just as we see tankers carrying oil now, we will soon see tankers carrying hydrogen. They may look different, but they will still be ships on the Waterway.'

"WE ARE WORKING WITH PARTNERS ON THE ADVENT OF A HYDROGEN SYSTEM."

Picture: Worcflow

Text: Rotterdam. Make It Happen.

CHEERS WITH CIRCULAR BEER.

You know when a beer tastes even better? When it's brewed circularly! Harm van Deuren, Managing Director Stadshaven Brewery, can definitely talk about that. His state-of-the-art brewery incorporates all technologies to brew beer in a circular way. This has led to a vibrant enterprise with an wonderful and tasty end result!

On the quayside of Rotterdam's Merwehaven, in the 100-year-old fully restored fruit shed, enjoy a circularly brewed beer with a view of passing cargo ships. Meanwhile, cows feast on residual waste and old scooter batteries are given a second life.

FROM OLD SCOOTER BATTERY TO NEW BATTERY.

The state-of-the-art brewery recovers all energy and water: condensation is collected and reused just like the cooling water. And there are 1,000 solar panels on the roof of the brewery and surplus energy from the solar panels is stored using old batteries from e-scooters that work as big batteries.

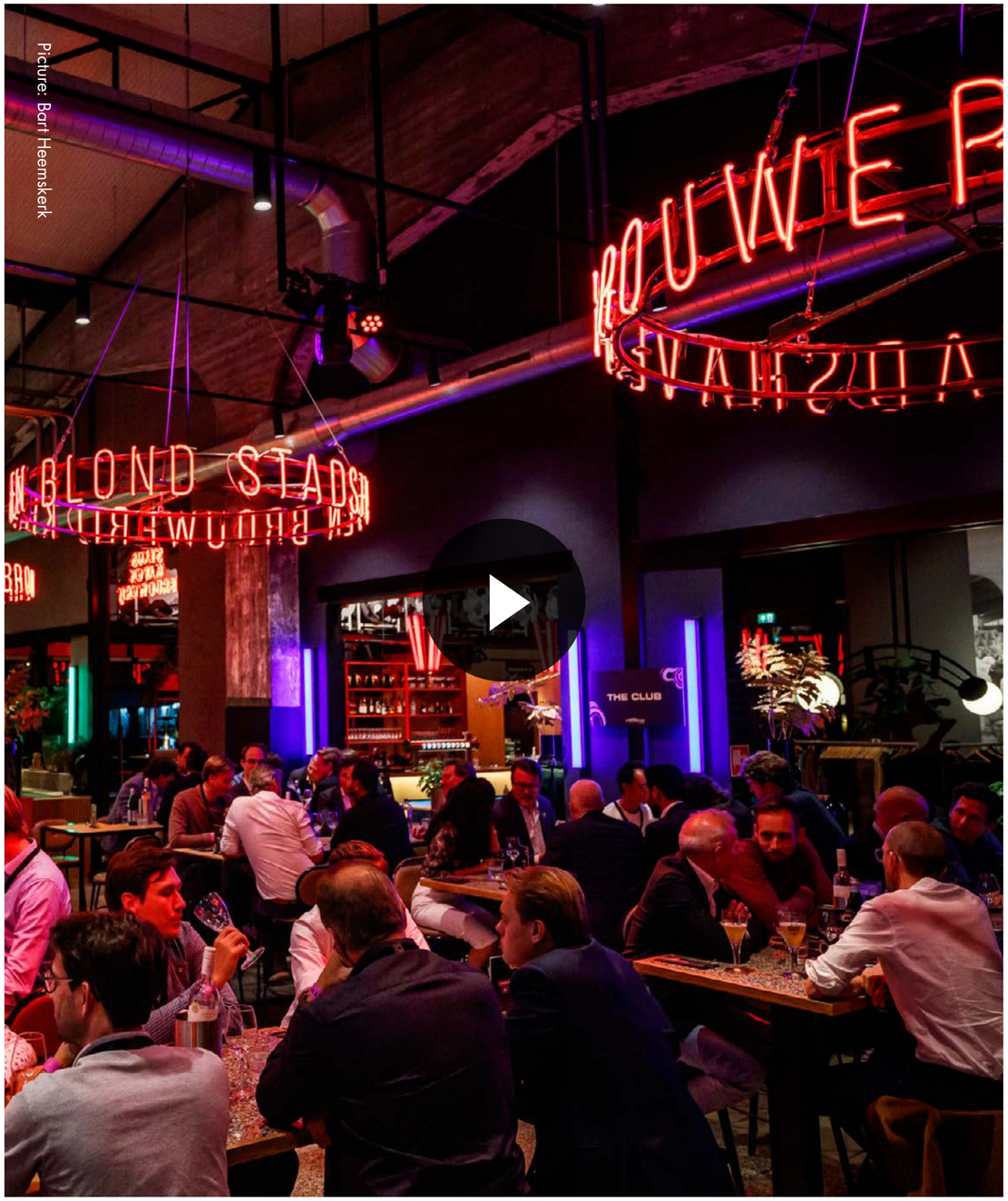
CONVERTING WASTE WATER INTO BREWING WATER.

Stadshaven is also working with neighbours down the street. Rainmaker is a company that specialises in making water from the air or by purifying seawater, for example. Van Deuren: 'Their mission is to provide clean water to regions where drinking water is scarce. They do this all over the world. In our brewing process, they make a pilot plant with which they collect our waste water. And they study how to purify it and turn it back into brewing water. When you consider that to make 1 litre of beer, 4 litres of water are needed, this is of course a great innovation!'

COWS & BREAD.

The third innovation involves yet other neighbours: the cows of Floating Farm, the floating farm, on the other side of the Merwehaven. Van Deuren: 'Bostel, also known as spent malt, is a by-product of beer brewing. It is highly nutritious; it contains enormous amounts of protein and energy and is very suitable as animal feed. Every day, a forklift from Floating Farm picks up a whole load from our shed. According to our neighbours, each cow gives 2.5 litres more milk daily as a result. But you can also use bostel very well in human food products. Jordy's Bakery also bakes its beer bread with it.

Why is Stadshavens Brewery putting so much effort into sustainability? Van Deuren: 'I see it as taking responsibility as an entrepreneur, that's just part of our times. We are all on the same earth and we all want to have a good time. I'd rather add something than tear something down. It's about being a little nice to the people around you, your environment and the planet as a whole. And it makes you sleep better, at least I do!



Picture: Bart Heemskerk

Picture: Lennaert Ruinen

Text: Nienke Landré

"WE DON'T JUST WANT TO TALK, WE WANT TO ACT!"

Joost Trines and Gerda IJff

Sustainability is gaining an increasingly prominent place on the agenda in Rotterdam's events sector as well. Gerda IJff, manager Events at Rotterdam Topsport and Joost Trines, coordinator Urban Events at Rotterdam Festivals, explain how 'their' organisation handles the sustainability of events.

Rotterdam Topsport and Rotterdam Festivals: foundations that both want to strengthen the city's image in their own way. Rotterdam Topsport does that by positioning Rotterdam nationally and internationally as the leading top-class sports city in the Netherlands. And Rotterdam Festivals supports and promotes the city's broad and distinctive festival and cultural offerings. In 2018, the *Green Deal or No Deal* motion was passed in the Rotterdam City Council. In doing so, the council asked the college to commit to a Green Deal between event organisers and the council. The aim: a widely supported plan for the most sustainable event policy possible, including the implementation of the necessary facilities.

SUSTAINABLE DEAL.

'A sounding board group was then formed from within the council, bringing together 11 event organisers, Rotterdam Festivals, the council and an expert body on sustainable events. Based on these talks, the Sustainable Deal Events & Festivals was laid down. The parties involved have expressed their ambition to achieve sustainable objectives on five different themes within three years,' says Joost Trines, who is responsible for the coordination and implementation of the Sustainable Deal from Rotterdam Festivals, among other things. 'Because of corona, the deal was only signed in January 2022 and it will remain in force until 2024. After that, we are obviously not done. The deal is mainly a booster to get the sector and the city council on board in becoming more sustainable.'

FIVE THEMES.

The Sustainable Deal has five themes. 'It's about communication and awareness,' Joost lists. 'About energy transition, which means we are committed to emission-free energy sources and fossil-free mobility of visitors to the festival. It is about circularity, i.e. separating waste streams on the festival site and collecting plastic cups for reuse. The fourth theme is climate resilience, through which we want to ensure restorative measures and new planting in city parks to protect and enhance biodiversity. And finally, it is about healthy living, in which we work with local suppliers and offer a wider vegan choice in catering. The participating organisers all have their own spearheads and choose for themselves which themes they are active on.'

WIDE SCOPE.

The 11 event organisers have a heterogeneous composition. 'That's what makes it so interesting,' Joost thinks. 'The participants range from a small student association to a large event like the World Port Days, from music to culture, from free to paid entrance, from little to a lot of experience with sustainability. We do focus mainly on outdoor events, though. With such a wide scope, we get a nice interaction of parties sharing knowledge and parties learning from it.' The participants meet regularly to exchange experiences and share knowledge.

NATIONAL SPORTS AGREEMENT.

Rotterdam Topsport is also participating in a sector-wide collaboration on sustainability. 'We have committed to the National Sport Agreement, of which sustainability of sports facilities is an important part,' says Gerda IJff. 'A Sustainable & Circular Events Action Plan has been in place since 2020. Herein, we also focus on five themes: mobility, raw materials, water, energy and catering. The goal is quite ambitious, because as a sports sector and the participating business community, we want to lead the way in achieving the climate goals. The first national pilots started last year: golf, a football match and World Squash Championship. Ninety per cent of our events take place indoors, while the Sustainable Deal focuses mainly on outdoor activities.'

AWARENESS.

According to Joost, communication and awareness are very important themes for both Rotterdam Festivals and Rotterdam Topsport. 'It's about involving visitors in the sustainability experience. You have to explain what the organisation is doing in the field of sustainability, but the audience should not throw the cups on the ground afterwards. Legislation on deposit systems and reusable cups is due in 2024. People need to be re-educated and realise that this is the new reality.' Gerda: 'What we also push for is for the venues in particular to be sustainable. At Ahoy, for example, the roof is full of solar panels, they work with locally produced food and they monitor what is thrown away during an event so that they can adjust the purchasing system accordingly. Parties like us and the city council could steer more on this.'

CHALLENGES.

Joost sees a challenge in the Sustainable Deal in two themes: energy transition and circularity. 'We are very much aiming for emission-free, i.e. fixed power points at event locations instead of diesel generators. But the facilities for fixed connections are far from available everywhere in Rotterdam. We need a party like the city council in the deal for that. In addition, Rotterdam operates an after-separation system of waste: in other words, waste is collected in one bin and separated afterwards. But legislation is coming in 2024 that says waste must be separated at events and at least 75 per cent of disposables must be demonstrably processed separately. So that cannot be combined with the council's circular thinking.'

SECOND SHELL.

Even though the deal was signed last year, more parties are looking to join. Joost: 'That's why we developed a second shell of event organisers in 2022, which we are including in the talks. Because the more parties lead the way, the more the whole sector and also the suppliers will move along. We just have to reduce our footprint. Then we can talk at length about where we want to be, but we just want to do it. And Gerda, Rotterdam Topsport is hereby invited to our second shell!'

"WE ALSO PUSH FOR VENUES IN PARTICULAR TO BE SUSTAINABLE."

Picture: Ossip van Duivenbode

Text: Nienke Landré

"MAYBE ONE DAY I WILL WALK IN CLOTHES FROM MY OWN FLOCK."

Together with two subcontractors, city shepherd Martin Oosthoek herds 2,500 sheep in and around Rotterdam. Good for biodiversity. And for the local wool supply ... you would think. Unfortunately, for years the Rotterdam wool was burnt because it did not yield anything. That changed, when Martin started talking to the council about it.

It was actually a casual remark that got the ball rolling. Martin was talking to a council official about the ins and outs of his herd. 'I said that the grazing was going well, but that it was a shame that the wool was being thrown away,' says the city shepherd. 'Every year 5,000 kilos of wool just went into the incinerator. There had to be another way, right? The man agreed with me, because this did not fit in with the city's circular ambitions.'

SEA CONTAINER WITH 5,000 KILOS OF WOOL.

Martin was put in touch with the Green Streams transition director at the council. 'She handled that very well and turned it into a special project: The Soft City. Designer Christien Meindertsma, who can make the most beautiful things out of wool, was asked to collaborate on this project.' The designer brought all her knowledge of designing and producing with local wool to the project, as well as her love for the soft yet extremely strong material. She was allowed to indulge herself on a sea container with 5,000 kilos of Rotterdam sheep's wool. Even though the material was labelled as waste wool, Christien was pleasantly surprised by the good quality.

MANY APPLICATIONS.

Apart from clothing, wool also has other circular applications. For instance, composite foam padding in cars and furniture could very well be replaced by wool in a much more environmentally friendly way. During her work for the project, Christien Meindertsma even invented something else. She discovered that you can machine felt 3D with wool without using water. This makes it possible to make larger objects, for instance to replace foam rubber. In addition, sheep wool can be used in products for air purification or insulation, as soil improver, design products made of felt or biobased building material for green roofs.

COSTUME MADE OF ROTTERDAM WOOL.

Martin is happy that something is now being done with the wool. 'For example, I have seen a costume made of Rotterdam wool, which really doesn't make you look foolish. Incredible what they can make with the wool of our sheep. It made me look at wool differently myself. When picking out sheep, I now pay more attention to their fleece. Whereas before I was mainly interested in a good grazing sheep with good flock behaviour. Maybe one day I will walk around in clothes from my own flock. Cool, right?'

Text: Nienke Landré

DOING IS THE BEST WAY OF THINKING.

Sabine Biesheuvel and Jouke Goslinga

They know each other: Sabine Biesheuvel, one of the founders and director of BlueCity, and Jouke Goslinga, program manager of RDM Rotterdam (part of Rotterdam Makers District). Both are passionate advocates of the manufacturing industry. If we want to achieve circular economy, we need many more creators. More crafts, less consultants. They are firmly convinced of that.

Picture: Lennaert Ruinen

Seven years ago, there was mostly talk about circular economy, but little happened. ‘That’s why we started BlueCity, a primal Rotterdam initiative,’ Sabine explains. ‘At the time, many idealists were mainly concerned with circular economy. However well-intentioned, we thought it was time to take the circular economy from light to large by setting up serious businesses.’ With the help of an impact investor, the 12,000-square-meter former Tropicana swimming paradise was purchased, which then served as an experiment in circular construction. Additionally, BlueCity started renting out indoor spaces to circular entrepreneurs, 50 of whom have now found a place in the building. ‘We are helping these entrepreneurs with their business and its scaling up. What characterizes us is a very positive and constructive attitude towards what is possible. And when you start, it’s not perfect yet, but at least you’ve started.’

THE ROTTERDAM MAKERS DISTRICT.

The Rotterdam Makers District is the hotspot for the new generation of creators focused on making the city and port more sustainable. ‘This is where the municipality and Port Authority are working together to develop a new environment devoted to innovation,’ Jouke explains. ‘In addition to the physical development, the network of entrepreneurs and cooperation with the education sector are particularly important. The district is developing on both sides of the Meuse River and has energy transition and digitalization as key innovation themes. At RDM, a strong maritime and offshore cluster has emerged over the past decade; in M4H, the focus is on mobility and circularity. M4H offers opportunities as an experimental and growth location for these very areas. The area is changing from an old port and industrial area into an innovation environment with living, learning and working, with places for experimenting and socialising. Precisely this combination is distinctive and makes it an excellent environment to work together on techniques and technologies for a sustainable city and port. With collectivity as the basis for circularity.’

NURSERY.

What binds BlueCity and the Rotterdam Makers District is the manufacturing industry. What I like about BlueCity is that you just started doing it,’ says Jouke. ‘The other day a visitor said that doing is the best way of thinking. If we’re not careful, we’ll over-analyze everything and lose that “talk less, do more” image. And we can talk quite well in the city by now, but we find it hard to take action. That’s why it’s so great that there are initiatives like BlueCity. Together we are a breeding ground for innovative talent, experimenting in abundance with circular products, materials and business models. Our goal as RDM is not just to give startups a hug, but to offer opportunities to the most interesting and relevant ones. With us, most startups that contribute to a smart and clean port are one step ahead.’

MORE MONEY FOR CREATORS.

Much needed, because the manufacturing industry seems to have almost disappeared from the Dutch landscape. ‘If we really want to go for the circular economy, we cannot do without creators, without crafts,’ Sabine argues. ‘You can’t eat from a services sector alone. We really need more makers who work concretely with raw materials and bring sustainable, repairable or recyclable alternatives to the market. We need more people growing or making tangible products that we also pay for according to value. We have started paying people who have no calluses on their hands but can only press enter far too much. Someone who can craft a fantastic table earns 45 euros an hour at best. While a consultant who writes a report that ultimately only delays important transitions gets at least 110 euros an hour. When you know how hard it is to make or grow something, you revalue what you have and treat things differently. Moreover, if you start paying them more, you make the manufacturing industry an actual alternative for young people.’

CONCRETE ASSIGNMENTS.

A few years ago, according to Jouke, “being a startup entrepreneur” seemed like a hype way of life and there were more companies to mentor startups than there were startups. ‘Fortunately, that is receding somewhat. For a startup, the most important thing is a concrete order from, say, the Port Authority to make and deliver something. There have to be realistic business cases. Like BlueCity, RDM has an information and inspiration role to all kinds of parties. We try to work with parties who want to join us, the pioneers, in an inspiring way to see what is possible. RDM works together with the Port Authority, the local council and educational institutions such as Techniek College Rotterdam and Hogeschool Rotterdam. No innovation without young talent and hands! At RDM, you can collaborate with students as a startup and/or SME by applying for an education project.’ Sabine: ‘We are also trying to get SMEs on board in the current transition, as in the New Nassen program in which the City of Rotterdam is also participating. In this way we offer economic opportunities to catering entrepreneurs by putting healthy and sustainable dishes on the menu and promoting them.’

MKB.

Even if the power of innovation is mainly in circular startups, they are not going to get the big power transition off the ground on their own. Large corporates like Shell and Vopak are really working on innovation in their own way and they will make huge progress,’ Jouke believes. But in between startups and corporates are the SMEs, and especially in our region they are perhaps the most powerful parties. There are many family businesses among them, which often have a different horizon and sense of responsibility and where there is a lot of momentum. A very important group to work with innovation.’

"WE WANT TO TAKE THE CIRCULAR ECONOMY FROM LIGHT TO LARGE."

Picture: Daniël Verkijk

Text: Nienke Landré

MATERIAL WITH A STORY.

Buurman Rotterdam is all about local reuse. A circular DIY shop where you get used materials and Rotterdam city wood. Wood that is also used in the open wood workshop for furniture-making courses.

Besides being a circular DIY and furniture workshop, Buurman, located on the Keilewerf, is also a waste management company. 'At various locations around the city, we collect usable residual materials from museums, festivals, construction companies and exhibitions, among others,' explains co-founder Laura Rosen Jacobson. 'We started Buurman seven years ago because we saw that far too many good building materials were disappearing into containers and being disposed of as waste. While these materials could still be reused to a superlative extent.'

ROBUST BITE BOARDS MADE OF ROTTERDAM CITY WOOD.

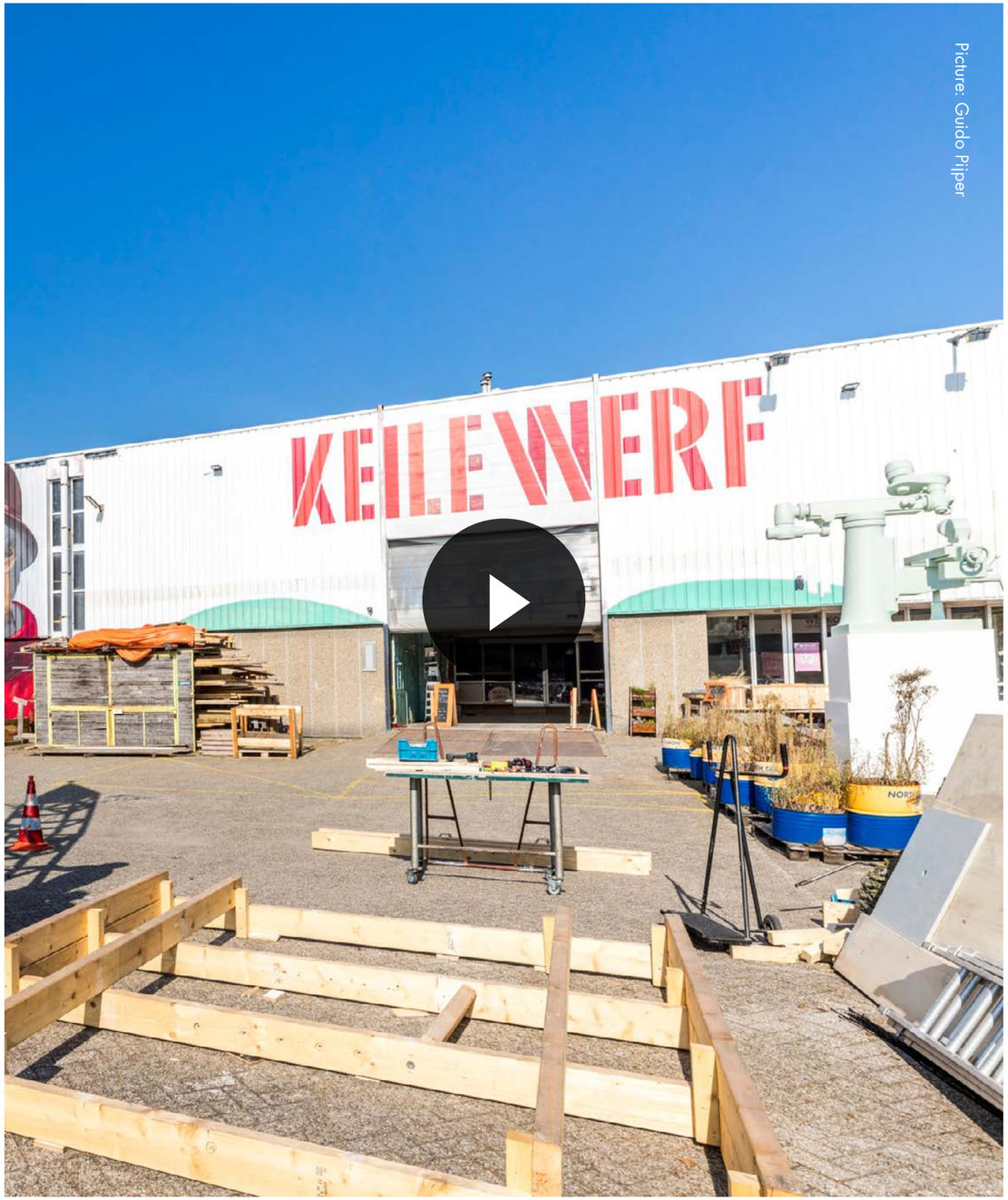
Buurman also rescues felled urban tree trunks from the chipper. 'Urban trees can be cut down for various reasons,' Laura Rosen Jacobson explains. 'Because of an illness, for example, a renovation or old age. Such a shame if that wood ends up in the chipper, because what could be better than local wood? Funnily enough, many Dutch wood species are undervalued, such as ash and plane tree, while they can be processed very well into beautiful products.' At Buurman, they turn felled trees into Rotterdam city wood and robust bite planks. We know exactly where each tree has stood and why it was felled,' says Buurman.'

MISSION.

Today's waste management no longer fits the sustainable goals of tomorrow's world, Buurman believes. A world in which themes such as resource scarcity, circular economy and reduction of CO^2 emissions play an important role. 'Building materials left over after a construction project or event often disappear into the incinerator,' Laura Rosen Jacobson knows. 'But you can often still make all kinds of things with them. In our construction market, we collect all kinds of leftover material. This can be scrap wood, but also ironware, panel doors or stained-glass windows. We then sell this "material with a story" at a competitive price to DIY enthusiasts and professionals. So they can use it again for their own projects. After all, it is our mission to involve Rotterdammers in reusing residual materials. That way, together we contribute to the circular economy.'

FURNITURE MAKING.

Getting Rotterdammers involved in reusing wood also happens in the open workshop, where Buurman offers furniture-making courses at three levels. We work with materials from our circular construction market. This way, we teach people that they don't have to go to Ikea right away if they need a new piece of furniture. Just learn to make it yourself. You'll have much more fun, too!'



Picture: Guido Pijper


Picture: Lennaert Ruinen

Text: Nienke Landré

"THE SECTOR ACCOUNTS FOR ABOUT SEVEN PER-CENT OF CO^2 EMISSIONS."

Nicole Hunfeld and Diederik Gommers

Each patient in Erasmus MC's intensive care unit (ICU) accounts for seven rubbish bags, or 17 kilos of waste per day. Throughout the hospital's ICU, 250,000 kilos of materials were used in 2019, most of which are not recyclable. This can and must change, according to intensivist Diederik Gommers and ICU pharmacist Nicole Hunfeld.

The amount of waste that passes through Erasmus MC's ICU in a day was only really noticed during the covid period. That is why head of ICU Diederik Gommers and ICU pharmacist Nicole Hunfeld wanted to investigate how things could be done differently and, above all, better. 'You saw the medical staff walking in and out all day long with these big rubbish bags full of waste,' says Diederik. 'That felt so wrong.' This awareness led to The Green Intensive Care project, which explores the possibilities of a circular and sustainable ICU. Aiming for a waste-free ICU with reusable resources. 'We commissioned an analysis to find out how polluting our ICU is. When that report was available, we wrote a scientific paper on it. Because the analysis made the medical waste streams visible, the urgency was then felt in the rest of the organisation as well. When covid had settled down a bit, the board of directors thought we should pick up this gauntlet.'

NON-RECYCLABLE MATERIALS.

The analysis maps how many materials and raw materials are used by the ICU and their impact on the environment. 'Among other things, the ICU uses 108 disposable gloves, 57 gauzes and 34 infusion bags per day per patient,' illustrates Nicole. 'By visualising this with nice pictures and graphs, everyone could immediately see what the problem is.' The analysis also revealed what raw materials and substances the medication and products such as plasters and needles are made of. For instance, an incontinence pad, eight of which pass through each ICU patient every day, contains various plastics and wood chips. 'You cannot separate those materials and such a mat is therefore not recyclable,' Nicole continues. 'We have no choice but to throw away the used mats. The same goes for the disposable gloves, made of nitrile. But so are the plastic jackets and all the other protective gear we had to wear during covid. Now that we know which products are in our waste and which of them are most harmful to the environment, we started to investigate with TU Delft what it would take to change that in the supply chain. And what environmentally friendly alternatives are available for the materials we use.'

TOO MANY MATERIALS.

There has been a strong focus on infection prevention in recent years, resulting in excessive use of equipment. 'Everything was focused on sterility and preventing infections,' Diederik states. 'We never asked ourselves whether we were not overdoing it. And what the effect of all those packaged materials is on sustainability. Now, with every product we take in our hands, we ask ourselves why it is packaged the way it is. Take a bag we use to dialyze patients. It has a plastic bag around it and that, in turn, comes in a box. As a healthcare sector, we produce 300,000 tonnes of waste a year in the Netherlands. That goes straight into the incinerator, because hospitals are legally not allowed to separate waste. In addition, the sector is responsible for about seven per cent of CO^2 emissions. All hospitals in the Netherlands are as polluting as Tata Steel. All in all, this was an eye-opener for us, and we became convinced that sustainability should also be a part of healthcare.'

GREEN TEAMS.

With a share of around seven per cent in national CO^2 emissions, the healthcare sector actually has a negative impact on people's health. 'That's very contradictory,' Diederik acknowledges, 'but it is true. For example, our waste goes to the incinerator, we do not yet use green electricity and many patients and staff come to the hospital in a fossil-fueled car. So we can already contribute to people's health by being less polluting. For young doctors and nurses, this is becoming more and more a matter of course. We already have more than 30 Green Teams in house, for instance. In these teams, employees from all departments think along about what we can do together to become more sustainable. In this way, we hope to put Erasmus MC on the map and attract young people to come and work in the healthcare sector.'

GREAT COLLABORATIONS.

In 2021, Nicole won the Sustainability Award for The Green Intensive Care project. The award is a prize from Erasmus University Rotterdam (EUR) and is intended for initiatives that contribute to, among other things, embedding sustainability in the DNA of the organisation. 'There were a lot of reactions to this, followed by great collaborations,' she recalls. 'With economists and buyers from the EUR, for example, and startups from TU Delft. We are bringing them all together in a big consortium to see if we can accelerate sustainability together. There is a lot of great energy involved. Everyone has the same goal and wants to think along. Rotterdam was one of the first municipalities in the Netherlands to form the Health Care Climate Table. This is where Rotterdam's hospitals join forces to substantially reduce their CO^2 emissions and environmental pollution. Apart from tackling wastage of raw materials, we are also looking at purchasing sustainable materials and energy. You have to be big to tackle this properly, to get manufacturers, suppliers and policymakers on board.'

POSITIVITY.

According to Diederik, a green ICU and making healthcare as a whole more sustainable have been under consideration for a long time. 'We are making small steps, but the topic is very much intertwined with what we do. It's in care, in health, in attracting young people. We really needed this after covid. It makes us happy to talk about it, we laugh together and it also helps to get the positivity back in. Students are welcome with ideas and some really exciting experiments arise from that. It is a nice cross-pollination, which gives us all a lot of energy.'

"AS A HEALTHCARE SECTOR, WE PRODUCE 300,000 TONNES OF WASTE A YEAR IN THE NETHERLANDS."

Picture: Willem de Kam

Text: Nienke Landré

BECOMING EUROPE'S HYDROGEN HUB: ONE OF ROTTERDAM'S AMBITIONS.

Rotterdam aims to reduce CO^2 by over 9 million tonnes by 2030. Green hydrogen as an energy carrier for a circular economy has a prominent role in this ambition. Thus, the port of Rotterdam will become the centre for the production, distribution and use of hydrogen. This will make the port area the hydrogen hub of Europe.

To achieve its hydrogen ambitions, Rotterdam is investing in knowledge, technology and infrastructure. To name but a few: by 2025, four green hydrogen plants are to be built on the Maasvlakte: so-called electrolysers, which make hydrogen from electricity and water. Pipelines will transport the hydrogen from the electrolysers and import terminals to users in the port and hinterland of Rotterdam.

HYDROPOWER TAXI.

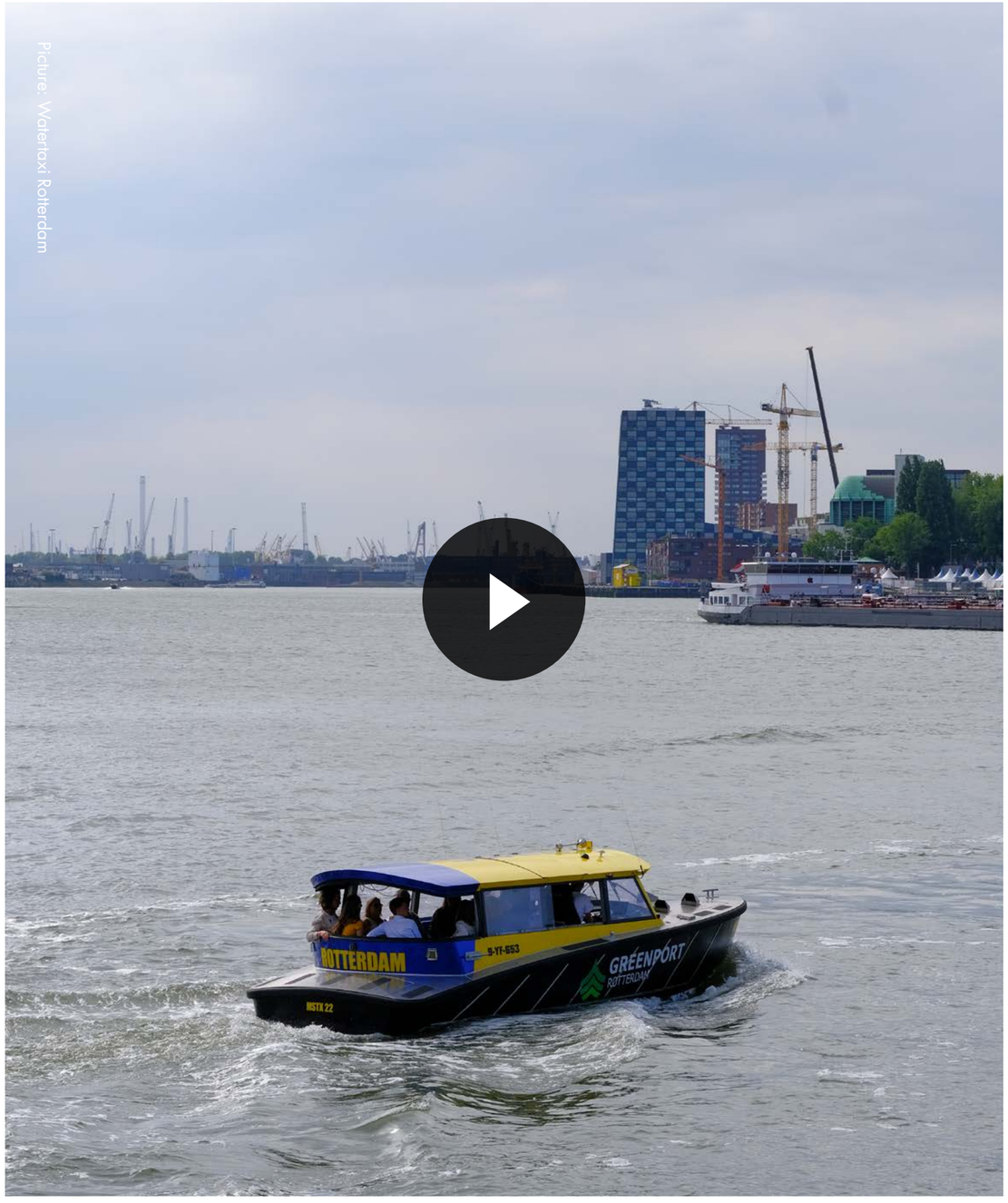
The power of innovation: that's what we believe in in Rotterdam. The regional innovation cluster and manufacturing industry in the port can engage in the development of new hydrogen technologies. For example, the cleantech startup zepp.solutions launched the very first hydrogen-powered water taxi during World Port Days in September 2022. Jonas Brendelberger, co-founder of zepp.solutions, helped build the hydrogen water taxi for almost two years. 'The advantages of this hydrogen application are many,' he continues. 'For starters, the hydrogen fuel cell system emits only water and no pollutants. In addition, you can refuel hydrogen, so you don't lose time recharging a battery. Moreover, our system is compact and also quiet.'

HYDROGEN APPLICATIONS.

Zepp.solutions builds hydrogen-based fuel cell systems for medium to heavy duty markets. 'Apart from our office in Delft, we have a test facility at RDM Rotterdam,' Jonas continued. 'A great, innovative place for us!' Besides on water, many hydrogen applications are also conceivable on land and in the air. Among other things, zepp.solutions is working with other parties on hydrogen trucks, a tractor that can move containers at a port terminal and a hydrogen excavator. Jonas himself is mainly concerned with hydrogen applications on water. 'Such as the hydrogen water taxi, but also the Ab Initio, the hydrogen training ship of the Shipping Transport College.' Zepp.solutions is also working on a hydrogen-powered aircraft, the first commercial flight is expected to take off from Rotterdam to London in 2028.

CLEAR STRATEGY.

''There are lots of different applications that could benefit from our fuel cell systems,' Jonas knows. 'To be able to deliver the same performance emission-free in the future, as they do today based on diesel. This is only reinforced by a clear strategy from the port and Rotterdam's ambition to become Europe's hydrogen hub.'



Picture: Watertaxi Rotterdam

Text: Nienke Landré

"TRANSITION IS IN THREE THINGS: AWARENESS, URGENCY AND ALTER-NATIVES."

Derk Loorbach

In the study of Derk Loorbach, director of DRIFT and professor of socioeconomic transitions at EUR, there is an unusual table. A linear relic, as it is made from old aircraft parts. 'And so circular after all,' he laughs. A conversation about the transition from a linear to a circular economy.

Picture: Lennaert Ruinen

HOW CIRCULAR IS THE ROTTERDAM ECONOMY AT THE MOMENT?

'We are on our way, but the economy is still very much linear. The port of Rotterdam is the largest industrial hub in the linear economy in the north-western hemisphere. The port's business model is entirely based on the linear economy: we mine raw materials somewhere in the world, process them into a product, which we throw away after use. All kinds of companies have started making all the things we want. Governments have contributed to this, because these companies provide jobs and revenue for the government through taxes. Even in the city, a lot is still linear: we get our food and building materials from outside, do something with them in the city and what remains goes with the rubbish farmer or disappears into the sewer. When it comes to the environment and what we dump in it, we are now mostly concerned with being less bad. Those factories and those cars are already there, we say, let's try to make them a bit cleaner. We do try our best to do it less badly, but in doing so we also partly maintain that linear way of producing and consuming.'

FROM LESS BAD TO CIRCULAR: DOES IT WORK OUT A BIT IN ROTTERDAM?

'In Rotterdam, we have developed a better system of waste collection and separation and we use the heat released from waste incineration to heat houses, so they don't have to use natural gas. These are good developments in themselves, but they are all still very much in that linear system. Because ultimately, we still need waste to produce sustainable heat. In the last five to 10 years, however, a new development has emerged, which is about transforming that linear model: we minimise raw material use, maximise product reuse, and we reuse raw materials to the highest possible quality. For example, by using the same amount of goods with more people, such as with shared cars. The idea is that people will act, produce and consume much more on the basis of what is renewable. Then you look much more at what is already nearby, what we can share and how we design new things in such a way that they can be repaired and reused if they break down.'

WHAT IS ALREADY HAPPENING IN THAT AREA IN ROTTERDAM?

'Check out BlueCity, a fantastic place! The architects of Superuse Studios have redeveloped this former tropical swimming pool in a circular way. They have shown that we should and can build differently, circularly. So no making new concrete and putting in new stuff, but starting with what is already there. In BlueCity, there are all kinds of small businesses that form their own ecosystem, in which they do not compete with each other but use each other's flows and convert circularly into something that also has economic value. That requires a lot of creative entrepreneurship. The challenge lies in the economic conditions. The competition is still in that linear economy, in which a lot of negative impact is not taxed. That is unfair competition. The municipality of Rotterdam is thinking about this: how to make it easier for circular caterers, for example, to establish themselves. But existing businesses and industry cannot suddenly do things completely differently. Some heroes do, but most choose to become a bit more sustainable. You see that in the city too. We want a healthy food environment, but all those snack chains do bring in rents and provide jobs. At the moment, it is still mainly a balancing act between linear optimisation and really opting for circular.'

A GREAT DEAL IS ALREADY HAPPENING IN THE PORT OF ROTTERDAM IN THE CIRCULAR FIELD, THOUGH...

'There, they have long been working on all kinds of policies to make the port circular. A fascinating conceptual challenge, but also very interesting from a practical point of view. What BlueCity does on a small scale, happens on a very large scale in the port. One factory needs a lot of heat, while another factory produces a lot of heat. With smart technology and by putting those factories close together, they can help each other. But the same applies to other flows. Chemical recycling of fossil plastics, for instance, after which they can make new plastics from basic polymers. The Port Authority is very busy trying to very specifically attract other companies to the port of Rotterdam that fit well into the ecosystem they are building. And at the same time, they are thinking about how to deal with the phasing out of the linear economy. '

ARE YOU OPTIMISTIC ABOUT THE TRANSITION TO A CIRCULAR ECONOMY?

'If we look at transitions in the past, they are characterised by a period of five to 15 years in which an entire social system completely changes its structure and form on a very large scale. Think of the transition from horse and cart to car, or from coal stove to gas. There is always some kind of moment when that process kicks into gear, only you can only recognise it in retrospect. When I look back, a lot is shifting and the momentum is much greater than about 10 years ago. That transition momentum lies in three things: awareness, urgency and the alternatives. In historical transitions, these are the three recurring ingredients. In addition, triggers are needed. In society, these often involve a crisis, a breakthrough or leadership. Something that catalyses a movement within, say, a local council to change the rules of the game. In such a way that what used to be alternative now becomes normal. The municipality of Rotterdam is currently in the midst of this. More and more people will eventually move to that other side. They will join the experiment, so that even more people will see it. When we look back on this conversation in 2030, we really will be in a different world. Then we will have set up the mobility, energy and food systems based on circular principles. And we'll still be sitting at this aeroplane table...'

"AT THE MOMENT, IT IS STILL MAINLY A BALANCING ACT BETWEEN LINEAR OPTIMISATION AND REALLY OPTING FOR CIRCULAR."

Picture: Iris van den Broek

Picture: Guido Priper

SUSTAINABILITY? DAILY NEWS IN ROTTERDAM!

With a solid dose of 'sense of the future' and ever-present determination, Rotterdam's leading position in sustainability comes as no surprise. This is the city of farmland at altitude and the city where large, industrial warehouses are transforming into new breweries. Anything you give attention to grows: Rotterdam inspires with sustainable initiatives and provokes new innovations. Rotterdam has a lot of sustainability to look forward to in the coming years!

Click here for an overview of inspiring sustainable Rotterdam initiatives

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