FULL CIRCLE

cities and the circular economy
Contents

Almere, The Netherlands
UpCycle City contest
2

Amsterdam, The Netherlands
Amsterdam Circular: Learning by doing
4

Birmingham, United Kingdom
Industrial Symbiosis in Birmingham
6

Brussels Capital, Belgium
Brussels Regional Programme for a Circular Economy
8

Dusseldorf, Germany
Sustainable procurement of recycled office paper
10

Genoa, Italy
From waste to resources: Genoa looks ahead to a circular economy
12

Ghent, Belgium
A new circular life in Ghent’s Old Dockyards
14

Ljubljana, Slovenia
Paper production from invasive plants
16

London, United-Kingdom
London circular economy route map
18

Lyon Métropole, France
Regenerating industrial ground to produce fertile ground
20

Munich, Germany
Halle 2: The secondhand store as the centre of the local circular economy
22

Oslo, Norway
Circular: bio-resources treatment of food waste, garden waste and sludge from wastewater
24

Strasbourg, France
Industrial territorial ecology at the Port of Strasbourg
26

Turin, Italy
Porta Palazzo Organic Project
28

Utrecht, The Netherlands
Recycled asphalt for the Cremerstraat cycle lane
30

Foreword

I am proud to present this collection of case studies from 15 members of the EUROCITIES circular economy task force, which showcase some of the efforts cities are already starting to develop and implement on the circular economy.

Rapid urbanisation and population growth in recent decades have put a strain on urban resource use, and are challenging city leaders to think up new ways to add value and efficiency along the supply chain. Cities are the right scale and provide the perfect environment in which to test out new models, with some becoming city labs. City administrations can engage with communities and facilitate partnerships between the private sector, consumers and research organisations at the local level, enabling new business models that will drive the transition to a circular economy. They can make use of their public procurement, provide financial incentives or legislate as effective instruments to foster behavioural change.

As exemplified in this publication, cities are proving their strength as circular innovators and facilitators, whether making use of sustainable procurement to purchase office materials, using the waste and by-products of one company as productive input for another, providing a hub for citizens to take direct responsibility to live more sustainably, transforming unfertile and contaminated soil into a valuable product, or running public busses on biogas produced from food waste and wastewater.

Amsterdam’s ambition is to become a frontrunner in the transition towards a circular economy. We were the first city to commission in-depth research into the potential of a circular economy. Other cities have followed a similar approach. This led to the creation of Amsterdam’s integrated strategy and the dedicated programme, “learning by doing”. For example, Amsterdam integrated the principles of circularity from the start in the urban planning strategy of the city’s largest transformation area ‘Harbor – City’ with 70,000 houses.

Joint targeted action at the European scale helps create the right preconditions for a successful transition. This includes legislation to develop the market for secondary materials to avoid the loss of resources from the economy through waste, or benchmarking progress, by developing common indicators for the circular economy.

It is important for cities to learn from each other to increase uptake, especially with so many positive examples of successful programmes. One of the main challenges is to get different partners on board. This can mean setting out the economic case and building awareness of the benefits of a circular transition. The EUROCITIES circular economy task force is committed to sharing our ideas with others – marking a real step up for cities’ involvement in this area. We are encouraging the EU institutions to participate in this open dialogue with our cities. A sustainable and circular future is within our grasp.

Abdeluheb Choho
deputy mayor for sustainability
Amsterdam
The municipality of Almere aspires to become a waste-free and energy-neutral city by 2022. The administration wants to bring the business community and knowledge institutes’ innovative power together to enable co-creation in the field of waste management and upcycling in the urban context.

Approach

Almere’s ambition is to contribute to both resource efficiency and the circular economy in the city and its region. But as the city has learned, new economic activities focused on the production of new circular products are not easy to launch.

The municipality of Almere, the province of Flevoland and the central government are cofounding and facilitating this process, and together they have launched the UpCycle City competition.

This competition is aimed at stimulating start-ups, companies and research institutes to develop business cases that not only introduce innovative solutions for upcycling of waste flows but also encourage collaboration to create a solid financial plan that makes actual economic activity possible.

The winners of the contest were parties whose plans received the highest scores. The administration wants to bring the business community and knowledge institutes to develop business cases that not only introduce innovative solutions for upcycling of waste flows but also encourage collaboration to create a solid financial plan that makes actual economic activity possible.

Challenges

This tender process is innovative and different from most tenders the city had previously conducted. Rather than asking for a specific service or product, Almere asked the entrepreneurs to write a convincing business case that shapes regulations that not only new economic activities but also employment for citizens with a lower education level.

Furthermore, it was difficult to get the right information about the volumes of residual flows that are released yearly with maintenance and management, since they are discharged by contractors who carry out the maintenance work and not by the municipality of Almere.

Regulations also sometimes proved to be difficult. Contracts should be flexible and able to be amended when the government wants to make these residual flows available for economic activity.

Finally, the contest did not mobilise as many participants as expected, potentially as the deadline given to the companies was rather short. Fortunately, the participants delivered and made the UpCycle City contest a great success.

Impact

The city administration has challenged participants to describe a business concept that adds value to residual flows produced during maintenance of the urban public space.

As a government authority, the city used this unique competition as a tool to offer support with co-financing, for example. They helped to develop the best plan with an accompanying business case, making sure innovative ideas can really be achieved.

This is something that has not been done before in the Netherlands. In July 2017, an independent jury of experts selected two winners. The first winner, a collaboration of four companies, now has the opportunity to negotiate first with the municipality of Almere about co-financing, and then about how the municipality can help them realise their business case.

The goal is to develop a sustainable concrete station, where they use mineral flows from the city to create recycled concrete. Their aim is to produce between 80-90% of this concrete, as well as creating green concrete with organic fibres.

A total of €1 million in public funds were available from the Almere Urbanisation Fund in 2017 in order to help to fund the winning proposals. The same amount of €1 million is included in the multi-year programme for the Almere Urbanisation Fund for the next two years 2018 and 2019.

Lessons

Not only was this competition a unique tender in the Netherlands, it also showed that companies and entrepreneurs are willing to work together as soon as they receive a little push from the government. By doing so, new ideas are encouraged, elevated and moved forward.

Companies often see each other as competitors but this tender has demonstrated the synergies they can achieve by working together, especially when the government is involved to help out with financing and regulations.

Giving the participants sufficient time to create their business proposals is another lesson learned, and one that could have made the tender process even more successful. In this case, the time that was given to the participants to submit their business plans was relatively short. With more time, more interested entrepreneurs would have probably been able to enter the contest.

Ruud Roomstra, jury member, Netherlands energy commissioner

“This competition is unique in the Netherlands. We were impressed with the courage shown to collaborate with people that are working in very different fields from each other and to make new connections.”
Amsterdam Circular: Learning by doing

In 2015 Amsterdam commissioned an in-depth study on the potential of a circular economy. The project was the first large-scale research study in the world that uses the ‘city circle scan’ methodology. The scan identifies the areas in which the most significant, tangible progress in realising a circular economy can be achieved. This potential impact is significant and can result in more jobs, bring added value to the city’s economy, and reduce carbon dioxide emissions and material use.

Approach

In Amsterdam, two value chains are very important: the building and construction sector and the organic and biomass industry. The city circle scan showed that the implementation of material reuse strategies had the potential to create a value of €85 million per year within the construction sector and €150 million per year with more efficient organic residual streams. The city involved the private sector and research institutes in this process and they fully agreed with the outcomes.

An innovation programme pooled together forces from both private sector and research institutes, and allowed the city to speed up the transition towards a circular economy. Amsterdam is now running a dedicated programme ‘Learning by doing’ that aims to prove in practice that the circular economy is profitable in all aspects. This project is based on an integrated approach. For example, Amsterdam integrated the principles of circularity from the start in the urban planning strategy of the city’s largest transformation area ‘Harbor – City’ with 70,000 houses. ‘Learning by doing’ is a multidisciplinary effort, not the sole responsibility of the sustainability department but also involves the city departments for spatial planning, purchasing, real estate, economic development, etc.

Focusing on the building sector, Amsterdam launched the first roadmap on circular buildings, which included clear indicators to help and challenge the private sector to develop circular buildings and circular city districts.

Challenges

Research and capacity building are essential to successfully transition towards a circular economy. For the moment, Amsterdam is focusing on the ‘Learning by doing’ programme to show circular economy can have benefits for everyone.

At the same time, Amsterdam is trying to adapt to a circular economy by forging new business models shifting from products to services and creating new legal and financial instruments. The city had to overcome traditional barriers in administration and think about new forms of cooperation, such as cross-sector thinking and multidisciplinary working.

It was crucial for Amsterdam to involve citizens in this transition. As consumers, they are drivers of change, along with the private sector. One of the city’s main challenges has been to translate the concept of circular economy into the daily lives of citizens. At a time of global access to information and communications as well as new forms of democracy, they have a newfound power to shape public policies and deliver their own solutions for the future.

Impact

In the space of a year and a half, Amsterdam has been able to translate the research outcomes into a dedicated programme with projects in the building sector.

The ‘Learning by doing’ programme gives the city a huge opportunity to learn about all aspects of a circular economy and about the role local governments should and could play. It has a clear impact on the city administration. Processes and ways of working have been modified, and the use of governmental instruments like tendering land for circular buildings has become more common. Many municipal departments are now getting involved by launching their own projects.

Thanks to results generated in the research stage, the private sector is willing to commit to multi-stakeholder projects in the city.

An in-depth evaluation combined with strategic advice for the next political term from 2018 to 2022 helps Amsterdam focus on results, with short-term achievable goals.

Finally, the implementation of circular economy initiatives has bolstered the international position of the city. Amsterdam is perceived as a front-runner. For example, Amsterdam integrated the principles of circularity from the start in the urban planning strategy of the city’s largest transformation area ‘Harbor – City’ with 70,000 houses. ‘Learning by doing’ is a multidisciplinary effort, not the sole responsibility of the sustainability department but also involves the city departments for spatial planning, purchasing, real estate, economic development, etc.

Lessons

One key takeaway is to work closely together with the private sector and research institutes. And since circular economy projects rely on a cross-sectoral approach, it is essential to involve the entire city administration from the very beginning.

The circular economy can sometimes be perceived as an abstract and conceptual movement. Project leaders must make the circular economy tangible and practical, for both professionals and citizens.

A good method to achieve a circular economy is to use existing strategies, such as green procurement. A clear starting point for every city is to get an in-depth insight into their city’s make up. Then, based on clear criteria, leaders must choose the most relevant value chains, from both an economic and an ecological perspective.
Industrial Symbiosis in Birmingham

Birmingham is Britain’s youngest and fastest growing city, boasting the highest quality of life of any English city outside London. The city also has the strongest economy outside the capital and is one of the first cities to adopt a proactive industrial symbiosis approach to develop a medium and long-term strategy for sustainable economic development. Often described as ‘the circular economy in action’, the projects born from the industrial symbiosis approach are part of Birmingham’s circular economy strategy.

Approach

Since 2002, Birmingham city council (BCC) has had a strong history of supporting and promoting industrial symbiosis. Until recently, Birmingham was the principal pillar of the circular economy. Over 15 years, industrial symbiosis has consistently initiated and supported multiple projects, together with stakeholders such as the local, world-leading SME International Synergies Ltd, the city’s universities and business community, enabling BCC to take this vital element of the circular economy across the world. Industrial symbiosis involves the facilitation of commercial transactions or activities – synergies – of using waste materials or by-products such as energy, water or other resources generated by companies and integrating them as inputs into the production processes of other companies.

The effect is to keep resources circulating in the economy for longer, leading to the generation of economic, environmental and social benefits. Over this period some of the ‘physical’ manifestations of these actions in favour of industrial symbiosis, have resulted in different projects:

- the creation of the Tyseley Environmental Enterprise Zone (TEEZ)
- the Big City Plan (combining industrial symbiosis with city planning): a 20-year city centre master plan, a vision encouraging and supporting Birmingham’s continuing transformation into a world class city centre. It covers every aspect of the built environment, including sustainable development efforts to address the impact of climate change as part of the future transformation of the city centre
- an energy park and the European Bioenergy Research Institute

BCC has also hosted delegations – industrial symbiosis ‘tourists’ – from at least 25 countries including Turkey, Egypt and China within the last few months. Together with International Synergies, an SME acknowledged for its expertise in devising and managing industrial symbiosis programmes, BCC has spread industrial symbiosis methodology to over 30 countries across five continents and has seen its incorporation in European policy, most recently through the circular economy package.

Impact

The BCC’s long-term support of industrial symbiosis has had real impact on European policy and recommendations, such as the European waste framework directive, or, more recently, the circular economy package. But more importantly, the BCC’s efforts impacted the city and surrounding area. Indeed, the Industrial symbiosis approach has been an excellent policy and strategic instrument that has contributed to multiple city aims including:

- reduction in carbon emissions; in the Tyseley Environmental Enterprise Zone (TEEZ) project for example, there is, up to date, already 1.8 million tons of carbon-dioxide reduction.
- reduction in industrial waste to landfill (job creation); the TEEZ project already created more than three thousand jobs
- demand pull on innovation (particularly engaging local universities)
- supporting the city’s SMEs and micros who suffer from the market failure of ‘time poverty’
- identifying opportunities for inward investment
- identifying opportunities for the export of clean and green technologies
- regeneration of industrial parks
- engaging SMEs and entrepreneurs

Challenges

It has been a challenge to introduce this new concept to a range of stakeholders within the council and the business community of the city and beyond. A further challenge was maintaining the approach over a protracted period of time that saw competing priorities for officer time and a number of changes in the political make-up of the administration at the city level and at the national level, where there was no supporting policy.

It was also a challenge to match industrial symbiosis efforts to local, national and European funding opportunities. Until recently, there were opportunities that required industrial symbiosis activity, but many did not take into account the full scope of impacts that industrial symbiosis could deliver. For example, impact was either monitored as water or carbon savings or jobs or waste diversion, but none asked for all the collective benefits offered by industrial symbiosis.

At the pan-European level, Birmingham city council, and in particular its staff in its Brussels office, had to make the linkages across the various European institutions to demonstrate the cross cutting and circular economy nature of this activity and to generate awareness for industrial symbiosis.

Lessons

The BCC approach on industrial symbiosis has demonstrated that:

- long term support and engagement will deliver greater impact than short-term interventions
- coordinating across departments such as economic development, environment, international relations and planning maximises the benefits
- introducing actions related to the concept in planning and other policy documents also maximises the benefits
- looking outside city boundaries for opportunities and looking at the opportunity cost of not taking this approach is necessary to achieve results
- persistence and consistent messaging on developing an innovative concept has led to worldwide impact

“...At Birmingham city council, we are proud to have embraced the circular economy. Our vision for the city as a whole is that it should be a city of growth where every child, citizen and place matters. It is fitting that the city that spawned the industrial revolution should also introduce the concept of industrial symbiosis. In turn, we seek to address environmental issues through this innovative component of the circular economy. Its local and international reach is impressive with 30 countries already having implemented the industrial symbiosis model. The beauty of the model is its simplicity and transferability with a set of values reflecting the one planet agenda.”

Councillor Lisa Trickett

The Birmingham Circular Economy Community


http://bit.ly/2g82xHa
The Brussels-Capital Region is facing environmental, social and economic challenges similar to those of other European urban regions. On the one hand, the region is highly dependent on material flows from outside the region. It functions mainly as a linear economy, producing large amounts of waste, and it must fight pollution and cut greenhouse gas emissions. On the other hand, despite the city’s role as an important and dynamic economic centre, the unemployment rate of Brussels’ inhabitants is particularly high. It is a major regional objective to create economic activity while working on its environmental goals.

Many European cities have recognised that their current policy instruments such as waste management plans are entry points for affecting change. Now they are clearly expressing a need to develop a broader and more coherent vision – an inclusive approach – that covers all key resources and supports action while fixing priorities and setting measurable targets. The BRPCE offers a direct answer to this.

Impact

Below are some of the first results of BRPCE’s implementation.

- The call for projects ‘Be circular’ launched with the aim to guide and support companies towards the development of circular business models.
- The Urban Renovation Contract was launched as a financing programme with a budget of €110 million to stimulate pilot projects that employ circular economy at the local level.
- “Village Finance” a Brussels support organisation that provides grants for sustainable entrepreneurship was established.
- Two different pilot projects, MODUL 2.0 and BRIC, launched to develop educational modules for workers in the construction sector and train them on circular economy practices.
- The Greenbiz incubator was established to provide companies and start-ups with an area of 8,000 sq metres that includes facilities and services to develop their circular sustainable projects.
- The research study Brussels Circular Economy Transition (BUCETRA) was financed by Innoviris to analyse the economic and environmental potential of the waste streams for a transition towards a circular materials management in Brussels Capital Region.
- A platform was created to identify, prioritise and resolve technical and administrative barriers that block the transition to a circular economy. In this platform, the private sector plays a key role is played.

The BRPCE is an integrated strategy at the city level: a combination of both transversal and sectoral measures, as well as territorial and governance procedures. An integrated approach can only be possible if different stakeholders are involved in the implementation of the measures. Indeed, the 111 Brussels measures are being implemented by about 60 pilots. More than that, each pilot typically involves 2 or 3 stakeholders, both public and private as well as the construction federation, for the practical implementation and follow-up of the measure.

Lessons

In Brussels’ experience, some ingredients are key to developing an efficient circular economy strategy at the city level:

- the establishment of a co-creation process – bottom-up approach – aimed at creating a resource efficient vision for the city is key. In Brussels, this was achieved through preliminary seminars, bilateral meetings with public and private stakeholders and by fully integrating those stakeholders in the practical implementation and evaluation of the process and actions through ad-hoc steering groups.
- ensuring a combination of both transversal and sectoral measures, as well as territorial and governance procedures. An integrated approach can only be possible if different stakeholders are involved in the implementation of the measures. Indeed, the 111 Brussels measures are being implemented by about 60 pilots. More than that, each pilot typically involves 2 or 3 stakeholders, both public and private as well as the construction federation, for the practical implementation and follow-up of the measure.
- promoting new forms of regional collaborative and social economies can be a way to encourage mindset changes not only among stakeholders but also in the wider civil society. In Brussels, this has been done through a specific call for social and collaborative innovative projects.

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Approach

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By considering the Brussels’ building environment as an open-pit mine of material resources, the BRPCE is creating an integrated value chain for construction materials that will generate new jobs and stimulate sustainable entrepreneurship.

“The Brussels Regional Programme for Circular Economy aims at making Brussels a more circular city that meets the needs of its citizens. An example is the work that BRPCE has done in the construction sector. By considering the Brussels’ building environment as an open-pit mine of material resources, the BRPCE is creating an integrated value chain for construction materials that will generate new jobs and stimulate another economic model.”

Céline Fremault, Brussels minister for the environment

The BRPCE is a bottom-up initiative involving several public and private stakeholders through an innovative co-creation process, along with three regional ministries, 15 public administrations, regional advisory committees and almost 60 stakeholders between NGOs and private businesses. After several seminars, working groups and public meetings, the BRPCE was adopted in March 2016. Currently 74 measures have already started, while 37 have begun the first discussions for developing action plans.

The BRPCE is a living strategy. A revision mechanism will take place every 18 months, to challenge the results, amend points for affecting change. Now they are clearly expressing a need to develop a broader and more coherent vision – an inclusive approach – that covers all key resources and supports action while fixing priorities and setting measurable targets. The BRPCE offers a direct answer to this.

The different measures are divided in four areas – cross-functional, sector-based, territorial and governance – and a set of specific targets and indicators have been developed for each of the planned measures.

The Brussels-Capital Region covers an area of 161.38 sq km with a population of more than one million inhabitants. The circular economy is proving to be an innovative and sustainable way to address not only environmental but also social and economic challenges.
Sustainable procurement of recycled office paper

As a densely populated and economically powerful urban area, the city of Dusseldorf recognised the challenge of climate change early on and initiated a process of low carbon and zero waste strategy development.

Approach

Dusseldorf’s city administration consumes about 40 million sheets of office paper annually. On the other hand, the city collects about 36,000 tonnes of used paper and cardboard per year, which is then sold off to recycling companies.

With the primary aim of stimulating demand and ensuring a price reduction for recycled paper, Dusseldorf developed an internal regulation for sustainable procurement, which led to an increase in the use of recycled office paper accounting for 85% of all the city’s paper use in 2016. The active cooperation between the different city departments, in particular between the sustainable procurement and waste management administrations, as well as strong political commitment, has been key to successfully ‘closing the loop’ and ensuring a new circular procurement model.

Challenges

Dusseldorf had made earlier attempts to increase the use of recycled paper. However, they had always resulted in a limited impact. Having the choice between recycled and non-recycled paper made the process of changing the paper in printers too complicated for employees. In fact, the city’s main challenge was to find a recycled paper of good technical and optical quality to use as an ‘all-purpose paper’, and for a sustainable price.

The city found a solution thanks to a German factory that develops recycled office papers with a guaranteed high technical quality and a good brightness. Their paper is very similar to ‘fresh fibre’ paper, allowing the city to roll out only recycled paper in its offices. The solution is certified by the standards defined by the independent ‘RAL Deutsches Institut für Gütesicherung und Kennzeichnung e.V.’ (German Institute for Quality Assurance and Labeling) and its German ‘blue environmental angel’ label (www.blaue-engel.de/en). Another challenge the city encountered was making sustainable, or circular, procurement manageable in the complicated procedures of public procurement. A tender process that simply leaves the decision between recycled or fresh fibre paper to the market will usually result in the lowest bid for low-quality fresh fibre. For this reason, it is pivotal to define neutral and precise quality standards in the tenders to ensure that only papers with good quality will be procured. To establish such quality standards, the city found it essential to use common criteria through national ecocertifications or in EU labels like the EU ecolabel.

Impact

Within one year, the new internal regulations saw the procurement of recycled paper in Dusseldorf’s municipal administration jump from just under 27% in 2014 to more than 81% in 2015 and 85% in 2016. In industrial production, the use of recycled paper corresponded to a savings of up to 60% in energy and 70% in water, while for the city the use of recycled paper meant a reduction in its environmental footprint by about 6.3 million litres of water and 1.3 million kWh of energy annually. In 2016, Dusseldorf participated in the ‘Pro recycling paper initiative’ competition, which is organised annually in cooperation with the German ministry of the environment, the German federal environmental protection agency and the German association of cities and towns. More than 90 municipalities participated in the competition, and thanks to its achievements Dusseldorf was awarded the ‘best climber of the year’ award.

Lessons

Public authorities need, procure and use a large amount of material – which is often connected to a massive input of natural resources. On the other hand, public authorities produce or deal with a lot of waste from used material. This linear economy is the opposite of sustainability. To establish a circular economy, it is essential to link public procurement and material recycling by procuring recycled material. This is an important municipal contribution to ‘close the loop’.

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Lessons

It is always difficult for cities to identify an adequate procurement strategy that can ensure a certain quality of the products. Other cities should request that competitors comply with industry quality standards to keep municipal procurement procedures simple and effective.

It is crucial for a circular and sustainable economy that such labels are further developed for as many different products as possible. Furthermore, promoting sustainable and circular procurement for private households, schools and SMEs can broaden the demand for circular products and develop these products as a market standard for a reasonable price.
Approach

Genoa fully owns the municipal waste management company, AMIU, which over the past few years has completely rethought its strategy and organisational structure. The new strategy is now looking beyond its 40-year linear business model based on the disposal of waste in its landfill site.

In 2014, AMIU adopted a new business model based on value and material recovery and aimed at boosting higher waste recycling rates. A new collection plan was launched with the title ‘From waste to resources’ after involving several stakeholders that include citizens, AMIU employees and the local community.

In July 2017, the new political administration expressed the will to relaunch AMIU’s reorganisation, the city along with its municipal company engaged in various activities, first by designing and implementing a new municipal waste collection plan.

An advertising campaign entitled ‘From waste to resources’ was developed. In order to increase consumer awareness around the importance of recycling, a mobile application called ‘Clean App’ was developed by AMIU to help residents correctly separate waste. It provides rapid and immediate tools to search detailed information on recycling and waste management services. A plan of participatory activities was also launched to help further involve citizens.

AMIU, along with the city of Genoa, designed a municipal initiative ‘general state of the circular economy’, based on the experience of Paris, engaged in a participatory process in which several circular economy initiatives were presented. Feedback from businesses, researchers, academics and heads of networks of the circular economy was collected and published in an urban white paper on circular economy.

Impact

To promote a circular economy and AMIU’s reorganisation, the city along with its municipal company engaged in various activities, first by designing and implementing a new municipal waste collection plan.

Finally, changing AMIU’s internal culture and organisation to adapt it to the new waste management practices proved to be another challenge.

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One of the greatest achievements so far is the creation of LiguriaCircular, a permanent exchange platform on the circular economy that promotes a sustainable development culture – through events and dissemination activities – in the metropolitan area of Genoa and the Liguria region. This project is part of Genoa’s smart city strategy and counts over 200 members including public bodies, companies, universities, research centres, professional associations and more.

Genoa is currently upgrading AMIU separation plants to support more recyclable materials. It is also providing a training programme to AMIU employees in order for them to master the whole new process.

Through its involvement in international groups, networks and conferences such as ACR+, EUROCITIES and the European Circular Economy Stakeholder Platform, Genoa has gained knowledge of the circular economy and is able to learn from other cities while sharing its experience.

Finally, the city got involved in EU-financed projects on circular economy: the first is the FORCE project, aiming to minimise the leakage of four materials from the linear economy – plastic waste, strategic metals from electronic and electric equipment, surplus food and biowaste, and wood waste – and works towards a circular economy. The second is WEENMODELS, aiming to create a new model of waste collection. An analysis of existing good practices was carried out to define a new strategy, and the administration drafted a plan to reorganise the company.

The main objective is to close the loop on waste materials by taking advantage of treatment plants in the immediate regional territory. By doing so, the city intends to achieve higher recycling rates within five years and strengthen the process of circular economy.

Challenges

Due to the complex morphology of its old town, Genoa faced difficulties in implementing the new collection plan.

One of the main challenges was to shape the mindsets of citizens to encourage them to recycle. Furthermore, the increase in the municipal waste tax, due to high investments in the collection plan, also required further communication work.

Finally, changing AMIU’s internal culture and organisation to adapt it to the new waste management practices proved to be another challenge.

Lessons

Implementing a circular economy is not a simple task. First, it requires a shift in mindsets and cultural attitudes from all stakeholders. It needs investment to get citizens involved and receptive to waste prevention and waste separation. These practices are connected to a ‘responsible citizen’ culture, which needs to be strengthened since citizens are the first link in a new circular industrial chain and essential for achieving a circular economy.

Information and communication are other critical factors. Questions like “what’s the process behind the waste bin?”, “why do I separate more and pay more?” or “how can I be sure that recycled materials go into the industrial process again?” call for more effort in terms of consistency of the information process and continuous involvement.

Despite being the first circular economy capital principle, prevention is not sufficiently considered. Cities must abide by recycled waste target laws but they aren’t called on enough to promote prevention practices.

"Circular economy is an important pillar for the development of sustainability policies. In our municipality, we are committed to reinventing the economy of the city. It’s an opportunity to improve the efficiency of our economic system while at the same time creating new business and job opportunities."

Matteo Campora, deputy mayor

Circular economy is an important pillar for the development of sustainability policies. In our municipality, we are committed to reinventing the economy of the city. It’s an opportunity to improve the efficiency of our economic system while at the same time creating new business and job opportunities."
A new circular life in Ghent’s Old Dockyards

In Ghent, Belgium, the circular economy brings together companies, institutions, governments and citizens on the way to sustainability. At the same time, its potential for innovation, job creation and economic development reinforces the attractiveness of the city.

Approach

The Old Dockyards is a waterfront housing project where closing loops at the district level is key. Approximately 1,500 housing units will be constructed through public-private partnerships (PPPs). Ghent wants to develop a holistic approach for the area that encompasses the wider concept of circular economy. The project is supervised by the city of Ghent and the autonomous municipal Ghent development authority (sogent).

Thanks to innovative technologies, some residential buildings in the Old Dockyards will use heating systems based on biogas from black water. Such systems reuse the warm air produced by industrial factories, as well as captured heat and nutrients from used water from dishwashers and laundry machines.

But the Old Dockyards is more than a simple housing project focusing on constructing new low-energy and passive houses. Thanks to the regeneration of the area, new business models such as car and bike-sharing have developed, and the city has launched activities that challenge residents’ linear lifestyles. Indeed, throughout the Old Dockyards, people can already experience the circular economy through the presence of temporary buildings constructed with recycled materials, guided walks, a ‘circular dialogue café’ as well as short-term exhibitions that demonstrate the different possible uses of city infrastructure.

That is why the Old Dockyards project was chosen as one of the good practices inventoried by the Cleantech Cluster Regio Gent, a regional partnership that stimulates the use of clean technologies and the circular economy, with the ambition of making the Ghent region a robust and resilient ecosystem by 2030.

Challenges

Many stakeholders are involved, including different public organisations, private developers and research institutes. In such a complex project that involves a wide spectrum of stakeholders, flexibility is a necessity. During the 10-year planning process of the Old Dockyards project, sogent has invested a lot of time and effort in coordinating the needs and expectations of all actors involved: project partners and surrounding companies, as well as current and future inhabitants.

The project needed strong political commitment to ensure that it had the required financial support. Due to the integrated approach of the Old Dockyards regeneration project, it was not possible to get funds from a single financing institution or programme. Instead, sogent had to apply for different European and regional subsidies and break the project into several sectoral actions, funded by different European and Flemish programmes (e.g. European Fund for Regional Development, the Flemish Fund for City Renewal and the Federal Urban Policy).

Impact

Between the planning phase and the effective realisation of the project, years have gone by. Those delays were transformed into opportunities, giving special attention to the possible temporary use of the grounds, allowing the city to renovate the quay walls and building a bridge for pedestrians and cyclists during that time.

Even though the Old Dockyards site is still under construction, it has already become an integral part of the city. During the long process of tendering, sogent has created temporary areas for city gardening and city farming. This has allowed Ghent’s citizens to rethink land that was once perceived as waste or unusable as a profitable resource.

A very unusual project is the renovation of a series of disused gravel tanks. A team of young architects and an artist transformed this area into a unique multi-purpose public space that is currently used by Ghent’s citizens for several types of events.

Lessons

Through public tenders, sogent has been able to steer the development of the Old Dockyards towards a circular district. Sogent has been able to publish tenders that imposed highly sustainable and circular standards to all the actors willing to take part in the Old Dockyards renovation. As a result, only business and stakeholders able to meet those criteria could join the project.

Furthermore, ownership of the project land is an essential prerequisite to make use of places and buildings on a temporary basis during the different phases of the Old Docks development. By giving the opportunity to citizens to experience circular economy during the execution of the project, Ghent has been able to raise awareness about the project’s objectives and future plans.

The Old Dockyards project also shows the importance of using participative PPPs to scale-up your project. Indeed, PPPs not only allowed the city to work together with different actors and achieve a sustainable business model, but they also ensured that different services, such as water, energy and mobility, are characterised by a circular approach.

http://bit.ly/2xYuH1a

Daniel Termont, mayor

Ghent Belgium

Agnieszka Zajac
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“Our ambition is to further reduce the ecological footprint of Ghent and to evolve towards a climate neutral city. Making sustainable living possible in the city also means allowing a good quality of life in a healthy environment. The Old Dockyards is an excellent example. Sustainability is integrated into every stage of development. This circular economy model is the desired path for Ghent.”
Paper production from invasive plants

Like many cities, Ljubljana is faced with significant overgrowth of Japanese knotweed, a plant on the list of 100 most invasive non-native species worldwide. Ljubljana teamed up with the Re-generacija collective of young designers and architects focused on issues connected to social and environmental well-being, as well as the University Botanic Gardens Ljubljana, the Pulp and Paper Institute and the public waste management company, Snaga, to prevent excessive overgrowth of the plant and reuse it.

Approach

The initiative began with voluntary Japanese knotweed removal campaigns, after which the plant’s dry stems were harvested, ground and processed into paper. Ljubljana is one of the first paper producers in the world to use Japanese knotweed at a semi-industrial level.

The innovative solution tackles the problem of invasive non-native species in an innovative way aligned with the principles of circular economy. The city used the resulting paper for the production of paper bags and notebooks, and the public company Snaga printed the English version of its magazine Snagazin on it.

Challenges

The idea to produce paper from Japanese knotweed on a semi-industrial scale was a pilot project.

The main concern was the effect of Japanese knotweed pulp on papermaking machines. The machines are very sensitive to fibre size, therefore the pre-treatment of the pulp had to be carefully calculated and carried out.

Another concern was the content of impurities in the paper that can affect printing. As it turned out the knotweed paper was quite easy to print on, and no additional measures needed to be implemented.

Impact

The paper production attracted significant media attention and was also very well received by experts and the public. With the shift from linear to circular, the invasive alien species issue is solved while creating a useful product.

The project team presented the results of the project at public events and discussed them at different expert meetings. The residents strongly supported the activities, linking the results with an improved quality of the city’s living environment.

New products are strong ambassadors. They draw people’s attention to the issue and solutions. The project has generated new ideas about future products and initiatives, which makes it an on-going process and a source of inspiration.

The implementation of the project requires interdisciplinary cooperation within the city and across different stakeholders, which provides continuous learning opportunities. The public administration is pushed towards greater open-mindedness, closer cooperation with the business sector and an opportunity to study public needs.

In Slovenia, there are no special areas are faced with the issue of invasive alien species. Although many European cities and urban areas are faced with the issue of invasive alien species, few are using them as a useful resource or material for further zero waste production or manufacture. Ljubljana believes this project is very relevant for other urban authorities in Europe and has great potential to attract public attention and interest.

Lessons

Although many European cities and urban areas are faced with the issue of invasive alien species, few are using them as a useful resource or material for further zero waste production or manufacture. Nevertheless, the implementation of circular economy projects must be adapted to local conditions.

Invasive alien species are a complex subject that requires an interdisciplinary approach. To enrich the project and understand the wide array of circular economy opportunities, the city advises that as many stakeholders as possible should be involved.

The involvement of residents as volunteers is preferable initially to gain new valuable channels for information dissemination and provide new opportunities for green jobs. Ultimately, though, the implementation of circular economy projects must be adapted to local conditions.

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http://bit.ly/2hFxQR

“Ljubljana, like many European cities, is faced with an overgrowth of invasive alien species. Cities, as engines for local development, have the duty and privilege to act as a role model for their residents, visitors and businesses. The transformation from linear to circular shouldn’t be only one of the options, but an obligation that ensures a higher quality of life and sustainable urban development.”

Zala Strojin Božič, project coordinator
London circular economy route map

London is among the oldest of the world’s cities, its history spanning nearly two millennia, and one of the most cosmopolitan. By far Britain’s largest city, it is also the country’s economic, transportation and cultural centre. Over 8 million people live in London and the city is growing fast. With the capital’s population predicted to reach over 11 million by 2050, a more flexible and sustainable approach to products, housing, office space and critical infrastructure is crucial to London’s ability to adapt and grow.

Approach

The London Waste and Recycling Board (LWARB) was established in 2007 by the Greater London Authority (GLA) Act to provide a strategic approach to waste management in London. LWARB delivers three key programmes, one of which is Circular London. This programme works to create the right conditions for circular economy businesses to flourish in London. An economic analysis of the circular economy in London demonstrates the potential for net benefits to the city of up to £7 billion a year by 2036.

In June 2017, LWARB published the Circular Economy route map for London. This document was created with stakeholders from across different sectors, to set a pathway for London to accelerate its transition towards a circular economy through a series of recommended actions for LWARB and its stakeholders. Conservative estimates identify that delivery of the route map could result in contributing £2.8 billion in net benefits per year towards London’s economy by 2036 as well as 12,000 new jobs in the areas of reuse, remanufacturing and materials innovation. London’s ambition is that the city will become the world’s leading exponent of circular economy thinking and practice through collaborations with circular economy businesses and the work of stakeholders and policymakers across the capital.

Challenges

The focus of the route map is based on analysis of economic impacts and residual waste streams within the city. This work identified five key sectors to focus action on: the built environment, food, electricals, textiles and plastics.

For the circular economy to flourish across the city, there needs to be collaboration between buyers and suppliers, different markets and even competitors, this is a challenge but can be really powerful when it happens.

Besides the cooperation between stakeholders, other areas where London needs to focus were identified through eight crosscutting themes highlighted in the route map — communications, collaboration, finance, demonstration, innovation, policy, procurement and business support.

The route map places a strong emphasis on action and practical application. This move from theory to practice, particularly when it involves disruption of ‘business as usual’, can be challenging.

Impact

The route map was created with input from across a wide variety of stakeholders, and as a result, a variety of stakeholders beyond LWARB have committed to assisting with delivery of specific actions within the route map. For example, universities and industry partners have committed to promoting circular economy in education courses or to promoting and encouraging innovation within their areas of influence.

The route map has allowed LWARB to create a strategic plan for facilitating the transition towards a circular economy and has been a catalyst in helping LWARB drive actions. This includes the development of a number of pilot projects, as well as evidence to embed circular economy concepts in London policies.

Examples of this have been to embed circular economy into the Greater London Authority’s group – which includes the Metropolitan Police, London Fire Brigade and Transport for London – and its responsible procurement policy; a large housing redevelopment project in south London where circular economy is being considered from demolition through to the design; and a circular offices campaign, partnering with an organisation called Business in the Community, which encourages circular thinking within office operations of organisations across the capital. LWARB also has a project called Advance London that provides finance and business support to SMEs developing innovative circular economy models. Monitoring the impact and benefit of these examples should provide key evidence and case studies to encourage the broader adoption of circular thinking and policies within London.

Lessons

The route map helps to set out London’s vision and pathway towards circularity. By creating this document with stakeholders, a city can have a much wider impact through buy-in and commitment from different sectors and organisations. The route map is an action orientated plan. It has provided direction for organisations and an opportunity to convene people to focus and deliver action towards the circular economy — to act together rather than individually. A range of stakeholders has created a broad perspective and collaboration, whilst individual actions break down the considerable task of circularity in a city into manageable steps.

This buy-in from stakeholders has helped to shape the actions into sector relevant, achievable tasks. LWARB is creating a ‘collaboration hub’ to get the maximum benefit from this interest. The route map is an initial and evolving framework on which to build London’s circular economy. This encourages organisations to support it and creates a willing community to share a stake in shaping London’s circular trajectory.

“Circular economy has the potential to play a key role in achieving our environmental targets by keeping materials and products in use for longer, reusing and remanufacturing them. LWARB’s route map outlines how we can take advantage of this opportunity and I look forward to seeing examples of circular economy throughout the city inspiring others to replicate London’s success.”

Shirley Rodrigues, deputy mayor for environment and energy

Regenerating industrial ground to produce fertile ground

Lyon Métropole, which includes 59 municipalities and 1.3 million inhabitants, wants to build a sustainable future for its citizens. The Métropole relies on green investments to face environmental challenges. Lyon is also committed to building circular solutions for the region and has been recognised as a “zero waste territory” (territoire zéro déchet, zéro gaspillage) since 2015. In April 2017, Lyon Métropole voted on strategic actions in favour of the circular economy.

Approach

One example of Lyon Métropole’s work on the circular economy is the innovative solutions the city has implemented to sustainably develop its “Chemistry Valley”. Located in the south of Lyon, the Chemistry Valley is a strategic territory for the region whose economic past is closely linked to the chemical industry – synthetic chemistry, specialty chemistry, petrochemicals and refining – involving global players such as Arkema, Bluestar Silicones, ENGIE, IFP Energies Nouvelles, Solvay and Total. The Chemistry Valley is now developing around a diversified and integrated multi-site activity in the fields of chemistry, energy and the environment.

Due to plant relocations in this sector and to the reinforcement of risk regulation, there is significant unoccupied industrial space available in the Chemistry Valley. In 2014, through an initiative called ‘Appel des 30’, Lyon Métropole launched a public-private partnership, with 30 companies including building owners, research and development centres, regulatory and technical experts, as well as financial partners to spark development in the valley. As part of this initiative, the city launched a call for projects in 2014, and then in 2016, inviting innovative industrial project developers in the chemical, energy and environmental sectors to develop activities in the unused property in the valley.

In 2016, the second edition of the call focused on six pillars for major development, including one on “productive landscape”. This pillar aims to test different processes to clean up contaminated soil, produce biomass and create fertile ground. Transforming infertile and contaminated soil considered as waste into a valuable product to develop green cities is part of Lyon Métropole’s circular economy strategy.

Challenges

Developing a productive landscape in an industrial area was well received by surrounding cities. A first challenge though was to connect sectors that do not typically work together: landscaping and contaminated soil experts and the construction sector.

A bigger challenge was to find a business model, considering that fertile ground from agricultural land only cost €25 per cubic metre in Lyon, whereas re-fertilised ground is more expensive. By comparison, fertile agricultural land in the German Ruhr area costs €120 euros per cubic metre. One of the solutions Lyon Métropole considered to tackle this issue is to introduce a clause on re-fertilised soil in its public procurement to increase the sale of these types of soil. Moreover, Lyon Métropole wants to anticipate the growing scarcity of fertile soil by testing innovative solutions in the Chemistry Valley.

Impact

The 2016 call received numerous applications to experiment with “productive landscapes”. Participants showed a lot of interest towards this issue and in the transformation of the valley to circular activities. In April 2017, Lyon Métropole and its partners announced 10 winners of the ‘Appel des 30’.

Three of these winners have projects focusing on:

- treatment and regeneration of soil on industrial property
- clean-up of soil using techniques associated with the area of phytoremediation
- manufacture of living soil, fertilisation of inert soil
- recovery, storage, transformation and utilisation of fertile land
- biomass cultivation

These innovative and circular solutions developed in the valley will help tackle the growing scarcity challenge of fertile lands, while also generating value. Provided these pilot projects are successful, the methodology could then be scaled to bigger projects, thereby increasing the amount of fertile land available.

By gathering public and private actors and by considering the Chemistry Valley as an evolving resource with a flexible production process, Lyon Métropole turned the challenges of unused and polluted land, scarcity of fertile soil and construction waste into a new opportunity. The productive landscape gives Chemistry Valley its status as a test site and makes it a showcase for change in the territory.

Lessons

In the framework of the ‘Appel des 30’, Lyon Métropole did not offer any subsidies to the winners. Instead, it allows them to use the property to demonstrate their processes. While the Métropole did not own much of the property, Lyon played a role in gathering partners, and private building owners to attract innovative projects.

The approach developed through the ‘Appel des 30’ demonstrated that:

- cities should not be afraid to think beyond their competences (e.g. Lyon Métropole offered plots that they did not own with the agreement of the owners for each project)
- public-private partnerships allow co-construction, reaching goals that might not otherwise be possible for the city to achieve alone

“These investments show the industrial dynamic that is underway in the Chemistry Valley. By implementing new activities compatible with the technological risk prevention plan as productive landscape, the call for projects ‘Appel des 30’ is truly innovative.”

David Kimelfeld, former vice-president for economic development of Lyon Métropole
Approach

Halle 2 is a municipal secondhand store that combines circular economy with the idea of actively supporting sustainable lifestyles in Munich. By selling goods that are collected at the 12 Munich recycling centres, Halle 2 extends the lifespan of useful everyday items such as electronic devices, bicycles and textiles. Based on a strong partnership with educational institutions, non-profits and voluntary organisations, Halle 2 is also a good example for active societal responsibility. It offers qualification and training on job perspectives at social enterprises for special target groups, such as young or long-term unemployed people. But Halle 2 is not just a secondhand shop. It also provides a testbed for developing and testing new ways to increase the number of reused items, thus contributing to raising the awareness of waste reduction and secondhand use of items. Halle 2 is a good example of wide collaboration between very different stakeholders and interest groups from different branches. By bringing a wide spectrum of outstanding knowledge, all the actors have together produced a very attractive offer for citizens.

Challenges

Using a secondhand shop as a circular economy laboratory for the city was one of the main challenges faced during Halle 2 project. Led by the positive experience of Munich Waste Management Cooperation’s (AWM) paper and organic recycling circle, Munich has searched for an innovative idea to bring the circular economy into citizens’ everyday lives. However, many residents still perceived the circular economy as an abstract political concept without any implication for real life. This was reflected in the difficulty of coordinating the various usage concepts the stakeholders proposed, while at the same presenting an attractive offer to customers and users.

Tendering social entrepreneurs and implementing a stable supply chain management was another difficulty the project faced. Since the recycling of items has become a profitable activity for Halle 2, the AWM had to develop contracts with the partners involved in the project. The example demonstrates the added value of the circular economy model, where reusing, sharing and cooperating are concrete opportunities for generating jobs and growth.

Impact

Halle 2 has allowed the city of Munich to implement all the pillars of a successful and sustainable circular economy. Indeed, it not only became a vital part of the waste prevention activities of the AWM but also allowed Munich to achieve their strategic targets in reducing the amount of waste, promoting the reuse of goods, improving recycling rates and strengthening a sustainable lifestyle for its citizens.

The model of success of Halle 2 is the systematic cooperation with Munich initiatives, which enrich the thematic horizon of the secondhand store. Halle 2 has become a strong brand as a secondhand store that facilitates the cooperation with social companies to make their activities more visible. It is used for campaigns, auctions, repair cafes, research fields, upcycling activities and other events to promote reuse and recycling ideas.

The tremendous success of the project can also be measured using the number of visitors in the shop and the number of reused items. 3,500 people monthly have visited Halle 2 since the beginning of 2017 and the project expects these figures to increase to 6,000 people per month in 2020. In terms of recycled and upcycled products, Halle 2 has sold almost 15,000 articles per month with an estimated revenue of €50,000 per month. The last figure is particularly relevant and demonstrates the value of reused goods and materials and the potential that a circular model can offer to our economy.

Lessons

1 Always be transparent

By presenting people how circular economy works, cities can succeed in bringing citizens on board, ensuring a profitable cooperation. Munich had success with the organic and paper circles and now aims to explain to citizens the reuse and upcycle circle.

2 Attract different society groups

Munich tried to attract and connect different groups of the society to support the idea of waste prevention and waste reuse. Indeed, Halle 2 was used as a space for cultural and educational events, making people indirectly aware of the importance of circular economy.

3 Don’t be a competitor but cooperate with business

Munich cooperated with existing groups, networks, nonprofit organisations, school projects and social enterprises, rather than be a competitor in the market. In this way, Halle 2 offered a space for showcasing their activities and gain extra visibility.

4 Make your project sustainable

Munich organised the Halle 2 project as a profit centre, seeking to make the project sustainable in the long run. Indeed, a business model that creates revenue is essential to ensure the effectiveness of projects aiming to stimulate a circular economy model.

Munich has taken its ambitious waste reduction strategy to the next level by developing an innovative reuse lab and shop concept. Its Halle 2 municipal secondhand store not only enables citizens to take responsibility for living more sustainably, it also provides opportunities for job creation, educational programmes and voluntary activities.
Oslo has been developing a waste management system based on circular principles to ensure separate waste collection is maximised and transform waste into secondary raw materials. To do so it has actively engaged with citizens, farmers as well as with its city’s public transportation company.

**Circular bio-resources: treatment of food waste, garden waste and sludge from wastewater**

**Approach**

Oslo owns a biogas plant, transforming food waste into biogas, which is used as fuel by buses and garbage collection trucks in the city. Biofertilisers are also produced at the plant and used by farmers to produce food. This plant is the largest biogas plant in Norway with a capacity for 50,000 tons of biological substances.

Today, citizens in Oslo source separate 46% of their food waste in green bags. Likewise, the city’s recycling stations collected 15,300 tons – 27 kg per person – of garden waste in the same year. This waste was then composted and returned to citizens as soil so they could use it in their gardens.

Oslo aims to utilise the bio-resources from its municipal sewage system by sending the sludge to farmers for their agricultural activities. To ensure high quality sludge content, Oslo actively works to reduce the inflow of wastewater containing micro-pollutants to the municipal sewage network.

**Challenges**

Changing citizens’ behaviours remains a challenge, specifically correctly separating their household waste. The bulk of food waste - 64% - is not source separated by citizens, which means this waste ends up in the residual waste stream. In turn, the unseparated waste can only be used for energy recovery purposes.

The national definition of household and commercial waste makes it difficult for Norwegian municipalities to invest in infrastructure for waste treatment that could be used by other municipalities or the private industry. The city’s public treatment plant has unused, free capacity, and the city lacks the necessary capacity for treatment of different waste streams like food waste, residual waste and hazardous waste. For this reason, Oslo’s biogas plant is not utilised to its full capacity, which results in higher cost for citizens.

**Impact**

Since Oslo started source separating household food waste and plastic in 2012, rates of material recovery of the household waste increased significantly. In 2016, 40% of household waste was either reused or recycled, and only 3% ended in landfills.

More than 150 buses in Oslo now run on biogas produced from food waste and wastewaters, which helps reduce the city’s overall carbon-dioxide emissions. The liquid fertilisers used by local farmers reduce the demand for mineral fertilisers. This is beneficial because producing synthetic fertilisers involves mining limited resources such as phosphate rock.

Compost and soil qualities from composting garden waste are very popular with both citizens and professional gardeners and reduce the use of other soil and compost resources based on peat. The success of the Oslo circle of garden waste has inspired the city to invite our neighbouring municipalities to further develop the production and quality of different soil products. The success has also influenced other producers and retailers to replace peat in soil products.

**Lessons**

It is important to have a good dialogue with the future users when developing new products from waste resources. Oslo’s experience was dependent on having a good and constant dialogue with farmers, professional gardeners and the public transport company to produce a product that meets important quality requirements. The dialogue was organised through research and development projects to produce the right quality, understand the effects from the use of the fertiliser and develop guidelines for its use.

It is crucial to involve citizens and be open about the processes of handling their source separated waste. The more the citizens know about the end product of their waste and the processes that transform the waste into new products, the more likely they are to source separate their waste. The city has done this through information campaigns and open days at the different sorting and treatment plants. The citizens deliver garden waste and buy soil products directly at the city’s recycling stations.

“When 660,000 citizens in Oslo do their part of the job by source separating their waste, reuse and discard less waste, the City of Oslo has to do our part. All waste can either be recycled, reused or treated in a sustainable way!”

Lan Marie Nguyen Berg, deputy mayor for environment and transport
Industrial territorial ecology at the Port of Strasbourg

With half a million inhabitants, the ‘Eurométropole’ of Strasbourg is a collection of 33 municipalities and represents a centre of activity in the east of France. Deeply committed to energy transition, the Eurométropole adopted a climate plan in 2009 aimed at energy savings, the reduction of greenhouse gas (GHG) emission and the development of renewable energies.

Approach

The Strasbourg port area has more than 320 established companies with about 10,000 jobs; it is the leading area of economic activity in Alsace. In September 2013, the Eurométropole of Strasbourg initiated an industrial and territorial ecology (EIT) approach in the port as part of its economic and sustainable development action along with the Port of Strasbourg, ADEME, the Grand Est Region and the Port Users Group (GUP). The aim is to optimise the consumption of resources and the production of industrial waste. This approach now involves 22 companies and is expected to grow to 26 in 2018 and 30 in 2019. Collectively, it represents more than 3,000 jobs and over €3 billion in cumulative turnover.

The goal of the approach is to highlight industrial synergies between the different companies in the harbour area, who would like to be part of the project. Several industrial synergies have been put in place through the framework, and some of them are about circular economy such as ones on purchasing, wood waste, electricity, pallets, paper and cardboard and even wash stations.

Challenges

The main challenge was to convince the biggest industries of the value of the project and the approach so that they agreed to dedicate time and communicate their technical data, which is often confidential.

To achieve this, it is essential to quickly demonstrate to companies the economic potential, as well as the project’s environmental benefits. Another challenge is to maintain companies’ interest over time, year after year. Only creating successful synergies can achieve this. Lastly, involving companies with decision-making centres outside of the territory was another challenging aspect of implementing this approach.

Impact

The beneficial impacts of this work are diverse, both from an economic point of view for the participants, but also from an environmental point of view, developing sustainable solutions for the protection of the environment. The seven synergies that are now being successfully implemented have contributed to:

- an annual reduction of 3,267 tons of carbon-dioxide GHG emissions in the sector of wood waste
- 100% responsible purchases for office supplies, thanks to bundled purchasing
- the valorisation of paper: more than 3,500 tons of locally recovered cellulosic waste with an estimated savings of €16,000 per year
- over 41,000 litres of water and €4,700 saved per year thanks to the synergy of wash stations: several companies are equipped with a fleet of heavy vehicles whose maintenance and washing are carried out through providers located outside the port area. In 2015, a member company in the process undertook work to renovate its maintenance workshops and to equip itself with a new ecological washing station. It recycles at least 75% of the water used and collects rainwater through the roof of the workshop. Today two companies benefit from these facilities.

Lessons

The advice that can be drawn from this experience is undoubtedly always to make sure that businesses remain at the centre of the system since they are the real actors for its success. It is important to speak their language and integrate their predominantly economic issues without underestimating the ethical commitment that some leaders may hold, both in the beginning and throughout the process. Companies must also be rapidly integrated into the governance of the project and its financing in a spirit of public-private partnership. Moreover, unlike other examples of EIT, there is no leading company in the approach adopted in the port of Strasbourg. This allows the initiative to multiply the synergies and to mobilise different actors.

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Catherine Trautmann, president of the Port of Strasbourg, vice president of the Eurométropole de Strasbourg
Porta Palazzo Organic Project

Facing dramatic deindustrialisation and an uncertain future, the city of Turin implemented processes that paired physical redevelopment with strategic planning to promote citywide revitalisation and economic restructuring in the 1990s. While the transformation has been profound, current challenges call for more circular strategies and an inclusive approach.

Approach

The Porta Palazzo organic project has three main objectives. The first is to reduce food waste through the collection and distribution of unsold foods in the largest open-air market in Europe and, in the process, ensure that those in need can access quality foods in a dignified manner. Secondly, the project seeks to increase the amount of materials that will be reused or recycled, thereby reducing the amount of incinerated material. Lastly, the project also furthers the city’s social inclusion agenda by providing a meaningful way for volunteer asylum seekers to engage in their community through the collection of unsold foods.

Developed with the help of a private partner, Novamont S.p.A., Turin has implemented an innovative system to encourage the proper separation of food waste. The system consists of distributing special carts, which are designed to collect food waste and easily move through the tight spaces of open-air markets. The carts allow vendors to easily and quickly clamp biodegradable bags to the carts and to fill them as they sell their products. They can then bring the carts to the appropriate collection hub to properly sort food waste. Intercultural mediators were also required to increase awareness around food waste and defuse possible tensions around the distribution, free of charge, of unsold foods.

The Porta Palazzo organic project has one of the largest open-air markets in Europe and, through the collection of unsold foods, the system consists of distributing special carts, which are designed to collect food waste and easily move through the tight spaces of open-air markets. The carts allow vendors to easily and quickly clamp biodegradable bags to the carts and to fill them as they sell their products. They can then bring the carts to the appropriate collection hub to properly sort food waste. Intercultural mediators were also required to increase awareness around food waste and defuse possible tensions around the distribution, free of charge, of unsold foods.

Impact

The results speak for themselves: from an initial starting point of approximately 45% of total waste in the market being sorted and recycled properly, the amount of food waste that is properly sorted has increased significantly from roughly 8% of the total to nearly 33%.

The project now recovers nearly 400 kg of unsold products every day for redistribution at the market itself or through nearby community facilities, thereby extending further its reach. In addition to the significant impact the project is having on promoting a more circular economy, there are also numerous social benefits emerging. The volunteers engaged by the environmental NGO, asylum seekers from sub-Saharan Africa, and north Africa, have become extremely fond of the project. For many of the volunteers, it represents an opportunity to engage with the local community, to contribute time and energy to a project of direct social benefits to other community members and to develop leadership skills. The city, together with the NGO, is now exploring ways to document the volunteer experience to allow volunteers to demonstrate their community engagement experiences. The project can also represent an initial step on the path towards social, cultural and economic integration for some.

Lessons

The Porta Palazzo organic project has demonstrated that:

- The institutional conditions for such complex, multi-sector and multi-stakeholder circular economy projects require strong political will and capital in order to motivate and coordinate the various project partners over the long-term, including different sectors of the local administration.
- Circular economy initiatives require thinking outside the box to align distinct interests and partners for multiple-win solutions.
- The social prerequisites for the successful engagement of volunteers and outreach to local stakeholders include strong community relations to secure the collaboration and buy-in of the participants in the project.
- Perseverance on the part of both the public administration and project partners is key to surmounting scepticism.

“The Porta Palazzo Organic Project represents exactly the kind of multi-layered partnership and active citizen engagement that can lead to successful circular economy initiatives capable of advancing a comprehensive sustainability agenda to achieve environmental and social goals.”

Alberto Unia, deputy mayor
Recycled asphalt for the Cremerstraat cycle lane

Utrecht, one of the four biggest cities in the Netherlands, aims to be climate neutral in 2030 and to reach a fully circular economy by 2050. In the shorter term, Utrecht is committed to increasing its share of circular procurement from 4% of the annual spend in 2016 to 10% by 2020. Utrecht’s sustainable vision is also reflected in its aspiration to become the most bike-friendly city in the world.

Approach

The sustainable goals of the Dutch city are all reflected in the Cremerstraat cycle lane, which was finalised in September 2017. This project involved the transformation of an existing brick road into a 900-metre cycle lane. This case clearly shows the challenges the city has to face in its transition to a climate neutral and circular city. As the fastest growing city in the Netherlands, Utrecht has high procurement volumes in the building and civil engineering sector. The Cremerstraat cycle lane project aims at developing a cycle lane to be part of a longer cycling highway between the centre of Utrecht and its suburbs. Utrecht challenged the contractors to submit a circular solution for the asphalt that was to be used in building the road. The selected contractor (KWS) submitted a bid that contained two innovative elements:

- less asphalt: two instead of three layers of asphalt
- 100% recycled asphalt for the lower layer

Challenges

The main challenge in this project was to convince the internal decision makers to depart from the standard procurement procedures and from the standard specifications as defined in Utrecht’s public space manual. In order to stimulate innovation, the procurement team wanted to include functional specifications instead of technical specifications in the tender documents. The team also asked the potential contractors to provide a life cycle analysis to prove that their proposed solution was the most sustainable.

A second challenge was to get the approval of the road administrator, the municipal employee in charge of the maintenance of the Cremerstraat, for the new solution. His concern was that divergence from the manual standards would lead to uncertainty in the future maintenance costs. Therefore, only the lower layer could be made of 100% recycled asphalt. The top layer was still made with new asphalt as required by the manual standards.

Impact

Cycle roads typically consist of 3 layers of asphalt. The solution of the contractor was to increase the thickness of the foundation enabling them to reduce the amount of asphalt to 2 layers. Regular asphalt has a high environmental impact and carbon dioxide footprint as it consists primarily of raw materials, extracted from a quarry and delivered by ship. Reducing the total amount of asphalt minimises the environmental impact.

The second sustainable solution in this project is the use of 100% recycled asphalt in the lower asphalt layer. Utrecht’s standard approach for the lower layer is to apply up to 50% of recycled asphalt. The overall project required 69% less new asphalt than for standard construction.

Utrecht applied the environmental cost indicator (ECI) to calculate the environmental impact of the project. The ECI value is determined by using a life cycle assessment (LCA) database. Regular asphalt has an ECI of €10.16 per ton and recycled asphalt has an ECI of €3.37 per ton. The overall ECI value of the cycle lane is 68% lower than in a design with regular asphalt.

Lessons

- Apply functional specifications instead of technical specifications in the tender document. This prompts the supplier to deliver new solutions.
- A political decision can be an important incentive to convince internal decision makers to go ahead with circular solutions. In 2015 a motion was passed by the city council to experiment with low carbon dioxide asphalt. This motion was essential to bringing internal stakeholders onboard.
- Assess what solutions have been applied in the market for similar projects. The experiences and lessons learned from these projects may facilitate the internal decision making process.
- The environmental cost indicator (ECI) has proven to be a useful tool in the procurement process for assessing the sustainability of materials.

“Utrecht wants to be completely circular in 2050. One of the ways we want to achieve this is through Utrecht’s own procurement, as is done with sustainable asphalt in the Cremerstraat.”

Yvonne Hofman, Deputy Mayor Utrecht, the Netherlands

http://bit.ly/2ImYWih


Lot van Hooijdonk, deputy mayor

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"Utrecht wants to be completely circular in 2050. One of the ways we want to achieve this is through Utrecht’s own procurement, as is done with sustainable asphalt in the Cremerstraat."
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