

World Resources Forum 2019

Closing Loops - Transitions at work

FEB 2019
24-27
Antwerp
Belgium



WE MAKE
TOMORROW
BEAUTIFUL
OVAM



Dear reader,

For almost four decades, the Public Waste Agency of Flanders (OVAM) has been working on a sustainable waste and materials policy. With success, because our region has become a leader in this field in Europe.

Nevertheless, we note that our material footprint is still far too large for the carrying capacity of our planet. What's more, our studies also conclude that 60% of our carbon footprint derives from how we deal with waste and materials.

That is why Flanders has resolutely chosen to close material cycles and to shape the transition to a circular economy. From our experience we know that the best way to do this is to learn from each other's best practices. Hence our initiative "Closing Loops - Transitions at work", an event for the interactive exchange of ideas and inspiration at the WRF 2019.

I am very pleased to present to you the rich outcomes of this fruitful exchange that brought together... 750 participants from more than 60 countries for this congress. I would like to thank all the participants, sponsors, workshop organisers, keynote speakers, and so on for their cooperation in making this forum such a success.

Enjoy reading!

Henny De Baets

CEO, Public Waste Agency of Flanders (OVAM)

Dear reader,

The WRF conference in "a room with a zoo" in Antwerp was a very special one. It was one of the most sizzling WRF conferences ever, with a diverse program of speeches, talks and discussions, music, a fashion show, and site visits. It also brought very diverse participants and stakeholders together. Ranging from Her Majesty the Queen, in her capacity as Ambassador of the UN Sustainable Development Goals, to business leaders, city officials, national and international government delegates, researchers, consultants, NGOs and in particular ... many young people.

The miracle of the multi-stakeholder dialogue approach, for which the WRF has a growing global recognition, came to life in Antwerp. No wonder that the feedback was excellent, and the follow up actions numerous and strong. And we know that most of the fruits of such conferences are invisible, resulting from official and informal dialogue, careful planning and coincidence, precious butterflies of inspiration flapping their wings in the heart of Europe and pollinating global impact.

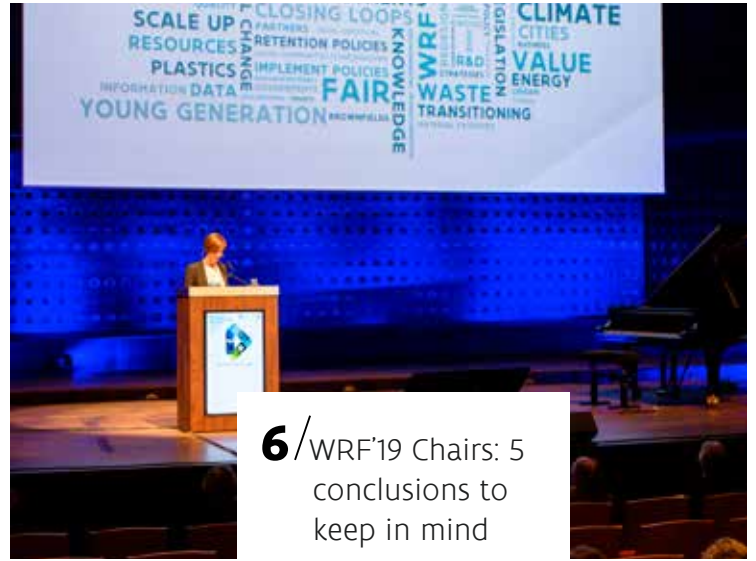
The Antwerp WRF'19 conference has boosted our common knowledge about the circular economy approach and how to make it work. It has inspired us all to keep fighting and to keep building a sustainable future together.

Bas de Leeuw


Managing Director of the World Resources Forum





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INSIGHTS FROM THE PLENARY SESSIONS

During the plenary sessions some of the world's most renowned experts shared their views on how to tackle important issues such as climate change and biodiversity head on.

According to Bruno Oberle, the president of the WRF, the most important challenge we are facing with regards to climate change, the Sustainable Development Goals (SDGs) and the circular economy is the mobilisation of political and public support. Yet all agreed that the time is now. Climate protesters have

created the momentum needed to force the issue. "We need to wake up now and take the concerns of young people very seriously", said Dianne Dillon Ridgley (Executive Director of the Women's Network for a Sustainable Future) during the appropriately named 'wake up session' on Tuesday morning.

Systemic change

And although many countries have already taken a few steps in the right direction, a more systemic approach is required. Hans Bruyninckx (Director of the European Environment Agency): "We have to change the key systems of our society, namely the energy system, the food system, the mobility system and the urban system. We therefore need to address the core drivers of those systems: policy-making, business decisions and our financial system."



Two other keynote speakers zoomed in on that last aspect. Janez Potočnik (former European Commissioner for the Environment and current co-chair of the UN International Resource Panel) for instance said that our economy must be based on the principles of sustainable production and consumption (SDG 12). “Without this shift to a sustainable economy, it is not only impossible to meet the environmental SDGs, it is also unlikely that we will achieve goals such as ending hunger and eradicating poverty.” Sandrine Dixon-Declève, co-president of the

Club of Rome agreed: “At the Club of Rome, we look beyond GDP and focus on new economic theories. We must look at new ways of measuring people’s wellbeing and wealth distribution: we need new indices.”

Inclusion and partnerships

When it comes to devising concrete solutions and policies, all stakeholders must be included. According to Dianne Dillon Ridgley this results in a better outcome, one that takes into account important issues such as equality and

equity. Koen Van den Heuvel, the Flemish Minister of Environment, agreed that all societal actors need to be involved in the decision-making process: government members, academics, representatives of industry, civil society ...

Co-creation and partnerships across sectors and national borders were also at the centre of the WRF event. The innovative projects presented put into practice SDG 17: strengthening the means of implementation and revitalising the global partnership for sustainable development.



WRF'19 CHAIRS: 5 CONCLUSIONS TO KEEP IN MIND

Participants at WRF'19 were drawn from international, national and regional governments, business, research institutes and networks, and NGOs. After two days of discussions they came to the following conclusions.

1 The circular economy is an enabler for climate policy

The circular economy's potential to enable carbon emission reductions is an 'overlooked' truth. The figures are clear: over half of greenhouse gas emissions can be directly linked to our materials footprint. We have to link the policy agendas on resource efficiency and climate change and break the silos by making strong connections between networks, institutions and policies. Monitoring of the carbon and material footprint shows the current global impact of production and consumption patterns. Circularity and low carbon should become decisive criteria in funding and financial governance.

2 Cities are pioneers of circular change

Cities are the places where the distance between production and consumption is small and loops can be closed locally. The circular economy can best thrive here. With 60 percent of the world's population living in urban areas by 2030, the challenge is to urgently rethink our cities, so as to turn them into productive cities for the benefit of companies and citizens. Local knowledge and local action play a vital role. This way we can counter the brutal consequences of our linear economy where resources such as land and water are increasingly "extracted". They become scarce resources in the hands of a few, where loss of ownership forces people to migrate into urban areas, putting unsustainable pressure on cities.

3 Soil and land are in need of a supporting framework

Soil is more than food and fuel: soil is a natural capital, a cornerstone for human and ecosystem health and global natural cycles. With healthy soils, we can use less land to produce more. This creates space to return land to nature. Soil organic carbon should be taken more into account as an important parameter to assess soil health and productivity. We need incentives to make the users of soil and land behave as stewards, by establishing a global policy framework and by creating synergies with other policies such as biodiversity, agriculture, energy and climate. framework and by creating synergies with other policies such as biodiversity, agriculture, energy and climate.

4 Lifestyles have to change radically over the next decades

To achieve the SDGs and climate targets, changes in consumer lifestyles need to be radical and need to start now. The recent 1.5 Degree Lifestyles Report shows that within the next 30 years, citizens in many industrialised countries have to reduce their carbon footprints by 80-90 percent or more, and in emerging economies by 30-80 percent, to reach the 1.5 degree climate target. To change our lifestyles, we need proper infrastructure, regulations, pricing, education. Just raising awareness and exchanging information is not enough to mobilise the critical mass that is needed to make the real systemic breakthroughs for institutional change. Lifestyle changes should be based on both efficiency and sufficiency policies. The young generation is protesting in the streets. They put pressure on decision-makers to finally act. They trigger a broad societal debate on our lifestyles. Of course one size does not fit all. A just and inclusive transition requires a holistic approach to all the SDGs. If we can imagine the future, we can create it together.

5 The transition to a circular economy needs coordinated global action

Many promising circular and low-carbon initiatives to achieve SDGs are ongoing. It is a matter of scaling up and mainstreaming, of making them economically viable and competitive with linear and fossil-based business models. Taking into account external costs by giving value to natural capital and applying environmental performance indicators are the missing links. We need the political courage to organise a systemic shift, by exploring the option of a UN Convention on Natural Resources Management. Such a framework should set a common objective to achieve the SDGs, with SDG 12 as the umbrella goal. It should contain common targets and timelines on resource efficiency, to have a common understanding where we are heading. It should establish a monitoring, reporting and verification system, to be able to assess where we are. Digitalisation, tracers for material flows, symbiosis platforms etc. are important tools in this. Last but not least, action plans at all levels (global, national and local) should be part of the framework.



CITIES AND REGIONS AS LABORATORIES FOR CIRCULAR CHANGE

By 2030 around 60 percent of the world's population will be living in urban deltas, where 80 percent of global GDP will be produced. This ever-expanding urbanisation requires innovation, creativity and new ways of cooperation in order to provide for good living conditions with minimal impact. Closing the loops of resource flows in urban regions is a key strategy. Cities can pioneer this change.

Keynote speaker Professor Saskia Sassen from Columbia University, argued that the circular economy can really flourish in cities because nowhere else is the distance between production and consumption so small. The seemingly informal 'disorderly' sphere also offers a fertile breeding ground for creative social innovations. But a major shift in thinking needs to take place. In big cities such as London and New York the real economy and people's welfare often lose out to financial and commercial interests. Professor Sassen pointed to the role of multinationals whose activities are often seen as development, but which are in fact causing damage to the local economy and requiring city and municipal authorities to spend more to tackle the challenges. "There is a lot of unprofitable capital that can be used to produce attractive changes in our cities."

In a masterclass given by Professor Sassen, Belgian, Dutch and Pakistani students concluded that downsizing consumption is essential. Furthermore, the circular economy should not be seen as a technical issue of reducing the use of resources but should be politicised as a new model for sustainable welfare.

Majid Batambuze (Mayor of Jinja, Uganda) and Graham Alabaster (UN Habitat) put emphasis on the 'Southern' perspective. They pointed out that we should also recognise the opportunities of small and medium-sized cities. In Uganda, the circular economy is already common practice, out of necessity. The emphasis on more informal and community-driven innovation was also discussed by a panel after a showing of the documentary 'System Reset', which explores the story of change in our economy.

Organised by: OVAM (www.ovam.be), the Catholic University of Leuven (www.kuleuven.be/english) and DRIFT (www.drift.eur.nl)

ANTWERP, A CITY WHERE CIRCULARITY MATTERS

The City of Antwerp in Flanders used its workshop to show a number of pioneering projects and plans to boost its ambition to become a circular city and a testing ground for circularity.

The discussion sparked some interesting opinions: a strong circular city is only possible when its residents, businesses, students and knowledge institutes are included. Additionally, strategic partnerships within the leading sectors will strengthen the ecosystem around a circular city. Communication is key to connecting with stakeholders. It is also an important tool to promote co-creation across all target groups.

Organised by: City of Antwerp (www.antwerpen.be)

TEMPORARY URBAN RESOURCES

An urban centre where temporary use is combined with public-private partnership, social innovation and citizens' engagement to create new spaces for more circular resource management: this is the premise of urban resource centres. What makes these temporary centres successful? And what challenges do initiators face?

Unlocking the potential of urban resources through new use of urban spaces

The workshop on this subject highlighted risks of social exclusion and financial losses. Most attendees agreed that the city should play an important role in trying to mitigate those risks. Co-creation processes and incentives need to be put in place to make the project a success.

Organised by: EUROCITIES (www.eurocities.eu) and the Urban Agenda Partnership on Circular Economy (www.ec.europa.eu/futurium/en/urban-agenda).

From city blight to urban might

In Ostend (Flanders, Belgium) a former fishing cooperative building is being transformed into a breeding ground and lab for entrepreneurs, makers, social actors, arts organisations and citizens' initiatives. The initiators and stakeholders of this project are members of the local community. This project was the inspiration for the discussion on a new temporary use project in Sijsele that is still in the works. Participants of this workshop brainstormed about possible ideas for circular repurposing.

Organised by: OVAM and the Bond Beter Leefmilieu (www.bondbeterleefmilieu.be).

The UrbanWINS approach

The 'UrbanWINS approach' workshop focussed on material flows, waste prevention and innovative business models for a circular economy in cities. It offered interactive insights on how participatory decision-making can be put into practice.

Organised by: ICLEI (www.iclei.org/)

INSPIRING OVAM!

For years, Flanders has been setting the tone globally in closing loops and sustainable materials policy. This workshop organised by OVAM was meant to inspire others to implement similar policy measures and to get inspiration from them at the same time.

Participants learned about six ground-breaking Flemish policy measures. Firstly, OVAM showed the significant impact on recycling rates of a landfill and incineration ban, implemented in 1998. As a result, by 2014 more than 70 percent of waste was being recycled and nearly 5 kilograms of waste per person being reused. Evidence from Flanders indicates that 'pay-as-you-throw' schemes are an effective policy measure. Some 20,000 producers in Flanders have joined one of its eight Extended Producer Responsibility (PRO) schemes. The workshop also highlighted the work of Circular Flanders. This hub brings together governments, companies, civil society and the knowledge community. Together they have launched some 'green deals' including one on Circular Construction, in which 225 stakeholders participated. OVAM also talked about TOTEM (Tool to Optimise the Total Environmental impact of Materials), which it launched in 2018 to help building professionals determine the environmental footprint of buildings. Last but not least, OVAM presented the website 'circle tips', an interactive platform for knowledge sharing.

Organised by: OVAM (www.ovam.be)





PRESERVING SOIL AND LAND

Awareness is growing that land and soil play a crucial role in our economy and in achieving the Sustainable Development Goals (SDGs). Several sessions were dedicated to the subject. They dug deeper into solutions on how to handle and safeguard land and soil as valuable resources in closed loops, taking into account the long-term systemic impact.

Soil and land are vital yet finite resources. They are however at risk globally from degradation and climate change. The sustainable management of soil and land is fundamental to discussions about the future of water, food and energy to support a growing global population. This was illustrated by three keynote speakers during the global session on soil and land. Professor Rattan Lal of the Ohio State University focused on how to reconcile greater food and nutritional security with the need to improve the environment. He spoke of major breakthroughs in eco-intensifications, which means producing more with less land and less water. Professor Lal also mentioned aeroponics, aerofarms, hydroponics and aquaponics as possible means of using less soil and land.

Hans Bruyninckx of the European Environment Agency, explained that we must see our land and soil as a valuable resource. He repeatedly commented that he is deeply concerned about the loss of biodiversity in Europe. This is largely due to landscape fragmentation, especially in Flanders (Belgium). “We need a Paris agreement for biodiversity”, he added. Claudia Olazábal of the Land Use and Management Department of the European Directorate-General for Environment, pointed out

that there is no European soil and land management policy because some major countries have blocked attempts to draft such policies. She also pleaded for a new narrative. She said that European, national and regional policy-makers must see soil as a living organism that is not only the cornerstone of our food and energy system, but also important to our health and nature’s health.

So how can we protect these valuable resources sustainably as we work on a way forward? According to the speakers we will need to foster a transition to more sustainable and multifunctional land use and ensure more resource-efficient land use. Furthermore, we must change and improve soil and its governance (e.g. foster sustainable eco-intensification and restoration of soil health), and increase stakeholder participation and multidisciplinary cooperation. We also need to link soil and biodiversity protection, climate, land-use planning, and behavioural sciences to increase the involvement and uptake of land users. Lastly, it is necessary to integrate soil and land policy on a global level and in a systemic way, taking into account the driving forces.

Organised by: OVAM (www.ovam.be) and the European Commission (www.ec.europa.eu)

COCOON LANDFILL MANAGEMENT: FROM LANDFILL TO USEFUL RESOURCE

In Europe there are over 500,000 landfills. They must be considered as dynamic stocks of resources that can be integrated into the economy.

In the workshop 'COCOON landfill management: from landfill to useful resource', results of the Interreg Europe Project COCOON were shared on mapping, good practices and regional policy in Flanders and the Netherlands for Enhanced Landfill Mining.

An interactive discussion led to several conclusions. Central is the conclusion that the landfill paradigm needs to change from a risk-based, static view to a comprehensive, long-term, multi-phased Dynamic Landfill Management vision.

Organised by: VITO and Cleantech Flanders
More information: www.interregeurope.eu/cocoon

TOWARDS STEWARDSHIP AND CIRCULAR USE FOR SUSTAINABLE LAND AND SOIL MANAGEMENT

How can we avoid the degradation of the soil, sediment and water systems and enhance the use of their ecosystem services? This central question was explored in two workshops.

In the first workshop, the speakers all agreed that we can only achieve these goals by restoring degraded lands and soils through circular land and soil management. Land stewardship was mentioned as an interesting tool to stimulate circular land and soil use. This means recognising our collective responsibility to retain the quality and abundance of our land, air, water and biodiversity, and to manage this natural capital in a way that conserves all of its social, economic and environmental values. Stewardship also implies a stakeholder-inclusive process that brings together neighbours, authorities, farmers, climate experts and companies who may have competing land claims. An interdisciplinary and holistic approach is needed to connect these partners and establish mutual trust. Furthermore, new forms of cooperation need to be established (for example community land

trusts) and new policy and legal frameworks must be put in place.

The second workshop focused on circular use of land and on 'soil inclusive' urban planning. Additionally, opportunities for circular soil and sediment management were mentioned. It was for instance argued that there is a need for incentives to enhance producers and users to reuse excavated soil and sediment in a sustainable way. This can be achieved by:

- adopting a cascade system to indicate added value and induce stewardship;
- introducing CO₂ taxes on raw materials, clean soil and sediment;
- extending the producer responsibility period; and raising awareness among consumers.

Organised by: Deltares (www.deltares.nl/en/), RWS (www.rijkswaterstaat.nl/english), University of Hasselt (www.uhasselt.be/en) and OVAM (www.ovam.be)



SUSTAINABLE MATERIALS AND WASTE MANAGEMENT IN A CIRCULAR ECONOMY

A growing group of countries have decided to close their borders to imports of low-quality waste or second-hand goods. This intensifies the challenge for Western countries to reduce the production of low-quality waste and to find new local markets for reusables and recyclables.

The global session focused in particular on the import of low-quality plastics and second-hand clothing and the ecological and socio-economic impacts of these flows. Heng Yon Kora of the Community Sanitation and Recycling Organisation (CSARO) in Cambodia and Cordie Aziz of Environment360 in Ghana discussed the situation in their home countries. Panellists Björn Appelqvist from ISWA and Carolina D’Cunha from the European Commission put these problems in a global and European perspective. Peter Börkey presented the OECD’s work on policies for better plastics management.

The discussion led to the conclusion that bans and other protectionist measures taken by low- and medium-income countries are not always effective, as there is a chance that they don’t succeed in implementing or enforcing them. The increase in waste in low-income countries such as Cambodia and Ghana is not only caused by international materials influx, but is also linked to the adoption of a Western, consumption-driven lifestyle. To tackle the issues, measures should focus both on the demand side and the supply side.

Organised by: OVAM (www.ovam.be)

THE 'NEW PLASTICS ECONOMY'

Consumers and businesses all over the world are becoming more and more aware of the impact of plastics on the environment. How do we keep plastics in the economy and out of our oceans? Several workshops were dedicated to the topic.

Plastics: a sustainable material for the future

Plastics are often depicted as a key symbol of the linear economy. Through facts, figures and innovation the organisers of the workshop on the future of plastics demonstrated that the material has the potential to be as recyclable as glass, paper or metal. Following the panel discussion, the audience and the presenting industrial partners Indaver, Jindal and Total agreed that the following steps should be taken:

- a game-changing innovation in recycling is crucial, and is ongoing at R&D and pilot scale;
- the collection and sorting of plastic material needs to improve, which requires innovations;
- there is a need to speed up and scale-up but the process should not be rushed;
- eco-design can tackle some recycling issues at an earlier stage;
- circular value chain cooperation is the key to success. All actors

need to join forces to stimulate and facilitate the collection, sorting and recycling of plastics.

Organised by: Essenscia (www.essenscia.be) and Catalisti (www.catalisti.be)

Plastic for Lunch

These conclusions were echoed in the workshop on how to best address the issue of marine litter. This discussion highlighted the need to educate consumers and younger generations. They can increase public pressure on governmental decision-makers or key business players.

Organised by: FSLCI e.V (www.fslci.org) and IUCN (www.iucn.org)

E-Circular: innovations to unlock waste prevention and circularity

Climate-KIC wanted participants to rethink the production and consumption systems for plastic and to identify digital innovations to unlock waste prevention and circularity for the plastics industry. Nine energising pitches brought together start-ups,

policy-makers, academia and industry to network and co-create.

Organised by: Climate KIC (www.climate-kic.org)

Generation Plastics: infinite resources of innovation

The Shift invited the next generation to challenge established companies and organisations such as Suez, Sodexo and Carrefour on the "REs": reduction, reuse and redesign of single-use plastics.

Organised by: the Shift (www.theshift.be/en)

Plastics2Chemicals

In this workshop, Indaver presented its innovative solution for 'end-of-life' plastics that cannot be recycled. By 2020, Indaver plans to have an operational demo-plant (with a capacity of 15,000 tonnes per year), the first of 10 facilities that will be built throughout Europe.

Organised by: Indaver (www.indaver.com/be-en/home/)

MAKING WASTE SMART – HOW EPR SYSTEMS ARE CLOSING THE LOOP

How can Extended Producer Responsibility (EPR) systems across Europe help society and businesses move to a circular economy? This question was the main focus of the workshop.

The non-profit packaging and packaging waste recovery and recycling systems currently serve over 200 million inhabitants and recycle over 20 million tonnes of packaging per year. EPRs are also leading in innovation, with technology being crucial in solving the remaining challenges that stakeholders working on the transition towards a truly circular economy are facing.

During the workshop the speakers described how big data and new technologies can be used to close loops in waste management. Two pilot projects, the Smart Waste Platform and Planta 4.0, were discussed. Both projects have resulted in a number of improvements: the adjustment of container shapes and sizes, more efficient collection routes, the zoning of the collection area etc.

The workshop's discussion session came to the following conclusions:

- collecting, improving and using data for evidence-based decision-making has to become the new organisational culture at all levels of government. This is necessary in order to achieve EU recycling objectives; and
- EPR schemes have the potential to boost recycling while safeguarding the supply and quality of recycled materials, including plastics. Yet EPR schemes will still have to optimise all areas of the waste collection and treatment process if they are to comply with the EU's 2030 targets. This means using cutting-edge technologies. However, not all EPR organisations can invest in such technologies because of the existence of competing schemes in some countries.

Organised by: EXPRA (www.expra.eu/) and Ecoembes (www.ecoembes.com/en/home)

SETTING BINDING TARGETS TO DIMINISH WASTE AND INCREASE REUSE

In this workshop Komosie and RREUSE looked into the usefulness of implementing targets on material waste, energy waste and food waste.

Experts from Komosie illustrated the benefits of imposing targets with three different cases: material waste, food waste and energy waste targets. The discussion afterwards led to the following conclusions:

- binding targets are essential on every level (local, national, international) in meeting circular objectives on food waste, energy consumption, water savings and the reuse of household goods;
- a system analysis is needed to figure out the most efficient phase in the process to set targets. Furthermore, binding targets can't be successful without having clearly identified who is responsible for reaching them: sanctions must also be put in place;
- targets should be ambitious and dynamic enough to stimulate change and involve all the stakeholders implicated in the value chain;
- targets towards reaching a circular economy should also take social impacts and job creation into account;
- targets may not be necessary when there are incentives (including financial incentives); and
- extended Producer Responsibility schemes should comply with waste prevention and prepare for reuse targets beyond recycling in order to truly contribute to a circular economy.

Organised by: Komosie (www.komosie.be) and RREUSE (www.rreuse.org)

PACKAGING WASTE CHALLENGES

Packaging is necessary to preserve products or protect them during transportation. Yet it has come under heavy scrutiny by the public. What challenges do all stakeholders face to recycle packaging successfully and how can obstacles be overcome?

Plastic packaging waste, a 360° approach on collection

Fost Plus, the Belgian Producer Responsibility Organisation (PRO), presented a new nationwide collection scheme: door-to-door collection of all plastic packaging waste using the 'New Blue Bag' for all plastic and metal packaging and drink cartons. The objective is clear, yet very ambitious: offering the most extensive high-quality recycling solutions for all types of plastic packaging waste. Fost Plus offered a clear and realistic vision of the challenges and solutions for the design of the packaging, as well as for sorting, recycling and reuse. Key players in the recycling process such as Renewi, Colruyt, Van Heeden, and Wellman Recycling France took part in the discussion.

Organised by: Fost Plus (www.fostplus.be/en)

The eternal life of shrink hoods

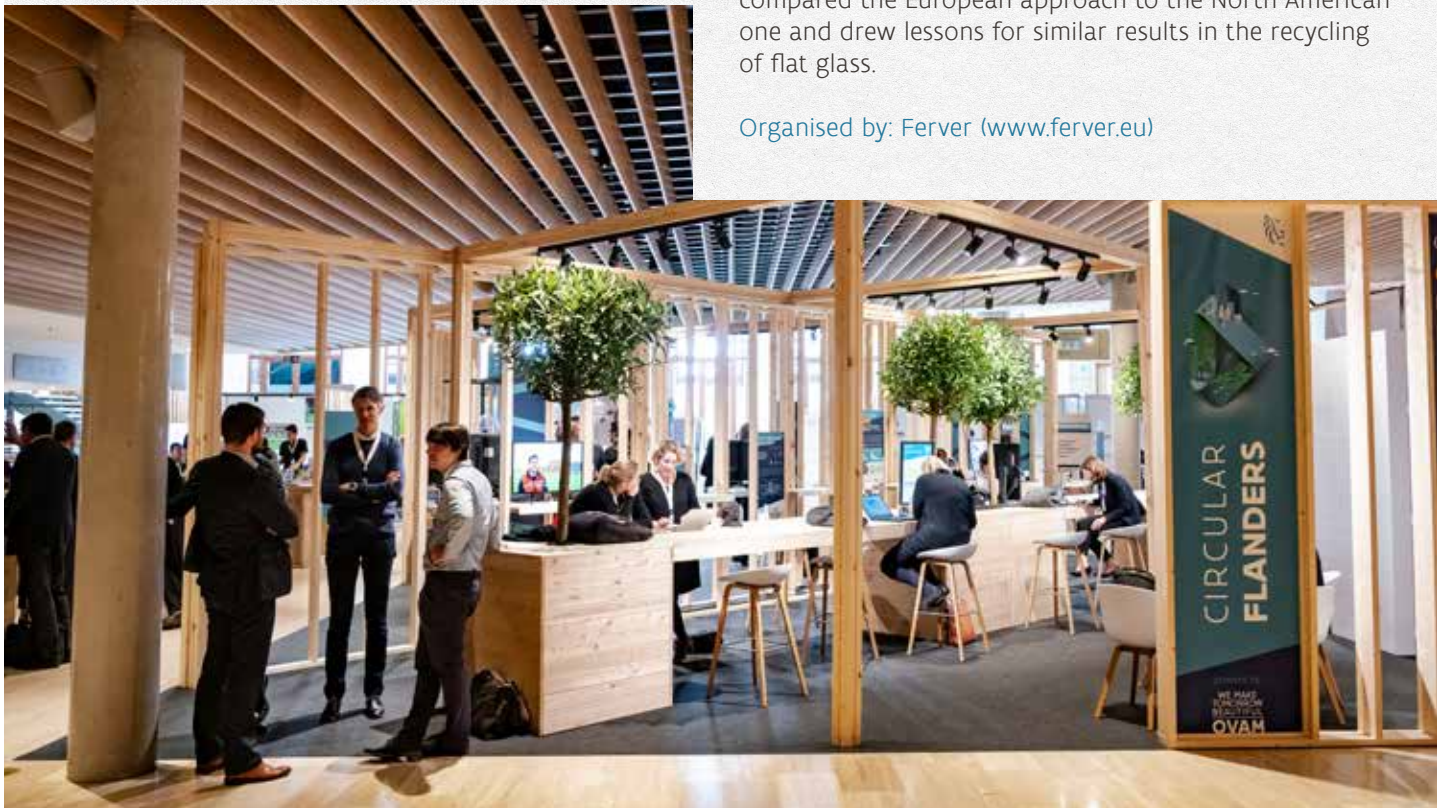
Valipac presented a pilot project to keep the shrink hoods of building materials in the cycle for longer. A value chain approach involving all actors: packers, construction contractors, waste collectors, recyclers and manufacturers of shrink hoods, is a precondition. An interactive discussion with speakers from Total, University of Antwerp, Rymoplast and Oerlemans Plastics led to many new ideas to move the project further along.

Organised by: Valipac (www.valipac.be)

Glass, the End of Waste success story in Europe

Ferver focused on the success of packaging glass recycling in Europe, related to end-of-waste criteria. Speakers compared the European approach to the North American one and drew lessons for similar results in the recycling of flat glass.

Organised by: Ferver (www.ferver.eu)



CHALLENGES AND OPPORTUNITIES FOR CIRCULAR BUILDINGS

In Flanders (Belgium) up to 40 percent of waste can be traced back to construction. How can the construction sector in Flanders and in the rest of the world close the loop?

Stimulating new business models in the building and real estate sector

The workshop showcased new business models for building products, offering a value chain perspective with new insights for planners, investors, policy-makers and owners of buildings. A presentation by BC-Architects highlighted customer and societal demands. A panel discussion revealed benefits as well as the challenges and lessons learnt with regard to circular products and solutions.

Organised by: German Sustainable Building Council (DGNB) (www.dgnb.de/en)

Make and take design principles and solutions for closed material loops in the building sector

In 2015, The Waste Agency of Flanders (OVAM) published a set of 23 design principles to increase the versatility, adaptability and thus the circularity of buildings. This workshop allowed construction professionals and expert researchers to share experiences and make an interactive assessment of these principles.

Organised by: VUB (www.vub.be) and VIBE (www.vibe.be)



The importance of quality assurance and data in closing the C&D Waste loop

VCB showed that, even though the recycling of construction & demolition waste in Flanders is already over 90 percent, it is possible to go even further. This can be done by improving quality, and increasing users' and designers' trust in these products. Quality assurance systems and traceability organisations are important tools to guarantee that recycled materials are free of hazardous components and technically fit-for-purpose. A database such as the one developed by Tracimat Flanders, which contains all materials inventoried during pre-demolition audits, identifies the materials in buildings that will become available. This crucial information for producers, users and recyclers of materials is an essential first step to further enhance the circular economy. It will allow them to align investments in recycling capacity, based on actual figures and trends.

Organised by: VCB (www.vcb.be) and Tracimat (www.tracimat.be/)

Towards a strategy for a circular resource management system in road engineering

The workshop gave speakers from government, academia and industry the chance to consider methods, obstacles, opportunities and case studies relating to a resource recycling management system for public road works. A workshop for this newly-formed international group will take place in September 2019 in Vienna. In 2020, a follow-up workshop will be held at the University of Antwerp.

Organised by: University of Antwerp (www.uantwerpen.be/en/research-groups/emib/rers/)



EXPLORING THE FUTURE ROLE OF PORTS IN A LOW CARBON, CIRCULAR ECONOMY

The centuries-old role of ports in fostering welfare and trade now enters a completely new era, defined by climate change and the need for sustainable added value alongside new forms of logistics. It is no longer merely about the expansion of central hubs for global trade flows, but about new approaches vis-à-vis their hinterland, industrial clusters and their spatial conception. So how do ports facilitate, catalyse and gain from the implementation of low-carbon, circular strategies in globalised markets? This question was discussed during the global session.

Dries Depauw from Renewi, a waste-to-product company operating in nine countries, argued that ports can become 'circular hotspots' as there is expertise in logistics, recycling and the chemical industry available. Patrick Verhoeven presented the World Port Sustainability Program (WPSP), as a facilitator for ports to explore this new role. Michel Leyseele and Hedda Eggeling from the Port of Antwerp and the Port of Rotterdam explained their

plans to turn their logistical hubs into circular hubs. The two ports have also launched pioneering projects on carbon capture and storage and have set up regional steam networks.

According to Jorge Lara from the Fundación Valenciaport (Spain), there are several barriers to the transition from ports to circular ports. These include largely untested business models, the difficulty of replicating best practices from one port to another, a lack of standardised regulation in the circular economy, and funding and financial constraints for these initiatives. To tackle these bottlenecks, LOOP-Ports was launched in 2018. This project aims to facilitate the transition to a more circular economy in ports through the creation of a Circular Economy Network. LOOP-Ports provides an innovation ecosystem around port activity and stimulates circular economy initiatives in ports.

Organised by: Port of Antwerp
(www.portofantwerp.com/en)



At the end of the last conference day, participants could listen to the music of the renowned pianist and composer Jef Neve.



Her Majesty the Queen: "In order to reach the UN Sustainable Development Goals, we also need new ways of looking at economic development, new patterns of consumption and circular use of natural resources."



Participants attended a gala dinner at the Grand Café Horta.



The 41 workshops stimulated interaction amongst the participants.



Some of the rooms at the conference hall were inhabited by prehistoric creatures.



Janez Potočnik (current co-chair of the UN International Resource Panel) was one of the keynote speakers.



The Belgian group Trashbeatz entertained the crowd by playing their drum kits made out of trash.



During several workshops participants were asked to come up with possible solutions for local and/or complex problems.



MAKING DIGITAL TECHNOLOGIES DRIVERS FOR CIRCULAR CHANGE

Industry 4.0 can be seen as an important technological driver for circular innovation. However, the introduction of digital technologies will fail to trigger a real transition as long as systemic shifts are absent and key facts and figures are missing.

In a global session on smart industry, experts focused on what all stakeholders – policy-makers, smart technology developers and businesses – can do to facilitate the implementation of digital technologies in order to make the transition to a circular economy. Introducing the topic, Dr. Wayne Visser from Antwerp Management School mentioned the broader context of the circular economy, while Helen Versluys from Mobius and Mirari Zaldua from Tecnia respectively looked from

a business and policy-makers' perspective. Peter Sabbe from Recupel and Marc Dillen from VBC presented good practices, including ones from Tracimat on quality assurance, data collection and traceability in the electronics and buildings sector.

Karl Vrancken from VITO moderated the panel discussion. All experts agreed that in order for technology to stimulate the transition towards a circular economy, a systemic shift is necessary. This means the involvement of multiple stakeholders along the value chain, the arrival of innovative enterprises and business models, a stimulating policy environment, and access to financial means. Public authorities play a pivotal role in this systemic shift. They need to formulate the right conditions and provide a stimulating framework. They can also lead the change through circular public procurement, by developing innovative financing

models, by harmonising circular economy regulations and standards, and by empowering consumers to adopt a sustainable lifestyle. Discussions focused on the following lessons. Firstly technology and data don't solve the challenges of collaborating and transparency. Secondly digital circular economy can deliver economic and socio-economic values. Thirdly businesses and organisations need to aim for appropriate-tech rather than high-tech because 'smarter' isn't always smarter. Fourthly a digital circular economy brings opportunities for crowd-driven actions. Fifthly bringing the benefits of transparency to the consumer has brand benefits. And lastly businesses and organisations must find the right balance between investments in ICT on the one hand, and training and reorganisation on the other.

Organised by: VITO (www.vito.be/en)

THE POSITIVE IMPACT OF DIGITAL INNOVATIONS ON THE CIRCULAR ECONOMY

Several exploratory reports have hinted at the positive role that digital innovations may play in the transformation towards more circular business activities. In three workshops several recent case studies were presented that prove this theory.

Digital business innovation stimulating a circular economy

During the workshop the speakers showed that smart technology has the potential to disrupt linear business models. For instance, the installation of sensors in products can facilitate the product-as-a-service business model. Furthermore, smart technology such as sensors, installed to improve maintenance schemes, can potentially lead to a reduction of the environmental footprint of operations as a whole.

Yet key information about the impact of Industry 4.0 on material consumption and environmental footprints is missing. This information could help convince manufacturers to switch to a circular business model. According to a study conducted by TNO, circularity is not yet a driving force for manufacturing business and organisations in the Netherlands. It will only be the case when they have a clear idea of the value proposition. An in-depth assessment of the impact of smart industry on material consumption and environmental footprints is expected to take place in the Netherlands in late 2019.

Organised by: TNO (www.tno.nl/en/), VITO and Agoria (www.agoria.be)

A disruptive waste collection engine

Recupel showcased a digital auction mechanism to enable a currently unserved market of SMEs to dispose of their e-waste with minimal effort, at minimal cost and with licensed operators.

Organised by: Recupel (www.recupel.be/en)

How can knowledge on secondary raw materials be improved?

This workshop presented the findings of two European projects – the ongoing ORAMA and the completed ProSUM. The speakers explained how the knowledge base on the use of raw materials across all lifecycle stages can be improved; this will involve collaboration between multiple stakeholders.

Organised by: TU Berlin (www.tu-berlin.de/menue/home/)

HOW CAN (DIGITAL) TOOLS FOSTER CIRCULAR ECONOMY BUSINESS PRACTICES?

Companies and consumers are increasingly using digital tools to gather information and improve their circular economy impact. A workshop on this subject showcased a range of innovative and well-designed digital tools that help companies and consumers evolve towards more circular practices. The aim was to identify and investigate key criteria for successful circular economy tools.

Speakers from Solvay, EY, Excess Materials Exchange, Too good to go, and For Good presented five successful tools

that advise consumers and companies on how to become more circular. More specifically, the tools help to measure circularity and connect market actors. One common element is user friendliness. Digital technology unlocks new possibilities but will only provide functional solutions if it can be configured in easy-to-use tools.

The potential for digital tools for the circular economy is substantial. Private companies and entrepreneurs will take the lead in developing innovative applications. Policy-makers in turn need to foster this evolution by facilitating the availability and sharing of information. Moreover, for platforms that aim to turn the waste of one company into a resource for other actors in the supply chain, simplifying the procedures for transboundary waste shipments is crucial.

Organised by: EY (www.ey.com/be/en/home)



CIRCULAR ECONOMY AS ENABLER FOR CLIMATE POLICY

CO₂

Industry

The climate challenge is not only an energy-related problem. Material use has a significant impact on carbon emissions. Looking at global warming as both a material-related problem and, by extension, a problem caused by the linear economy, opens perspectives for a range of new solutions to combat climate change.

Research demonstrates that the transition to a circular economy and to a low-carbon economy are closely entwined challenges. Strategies such as circular design, reuse, repair and recycling lead to both savings in material consumption and in greenhouse gas emissions. During the global session Dr. Harry Lehmann from the German Environment Agency presented key results of a study that showed that Germany could abate its greenhouse gas (GHG) emissions by 95 percent by 2050 and lower its raw material consumption by almost 60 percent. This study addressed climate mitigation and resource efficiency on a regional and global scale in a systemic way.

Luc Goeteyn from OVAM presented three policy messages about the link between the circular economy and climate change based on work by OVAM. Firstly, policy on the circular economy and on climate change should be developed in an integrated way as 55-65 percent of greenhouse gas emissions are directly related to the management of material. Secondly, alongside traditional greenhouse gas accounting, which is based on territorial emissions, the carbon footprint of consumption needs to be taken into account. For instance, Flanders has seen a gradual decrease in territorial CO₂ emissions in the past 15 years. However, the carbon footprint of Flemish consumption has risen, most likely due to the delocalisation of CO₂-intensive production outside Flanders, feeding our growing consumption rates.

Thirdly, prices for linear consumption and production goods need to be adjusted upwards (e.g. by shifting taxes from labour to material consumption), in order for businesses and customers to choose a circular option. Producer responsibility needs to be extended to include measures at the beginning of the chain.

Dr. Paul Ekins (UNEP, UCL) stressed that economic instruments and a fiscal tax shift are crucial elements in the evolution to a circular and low-carbon economy. Until now, only a few countries have experimented with economic instruments. They did so in a very fragmented way which is not enough to stimulate a real transition.

Dustin Benton (Green Alliance) explained that circular economy policy would keep the UK on track to meet its carbon budgets by 2027 and 2032. Reductions in GHG emissions have to take place in sectors that are very difficult to decarbonise (e.g. construction and car manufacturing). Supply-side interventions like carbon capture and storage are less achievable in the short run.

Session moderator Dianne Dillon Ridgley asked a poignant question: we know it is possible and feasible to reach a circular and low carbon economy so why is it not happening? The speakers gave several possible explanations: a shift to a low-carbon economy requires long-term solutions while politics is still about short-term goals because of the never-ending election cycles; people will only accept measures to stimulate a sustainable economy and lifestyle if these measures are fair, trustworthy and easy to understand; and education is very important to change people's mindset.

Organised by: OVAM

To learn more about the OVAM publication linking the circular economy and climate change, go to <https://www.ovamenglish.be/media> and click on 'Seven messages about the circular economy and climate change'

ELECTROMOBILITY AND THE CIRCULAR ECONOMY

Mobility is a key area for the transition towards resource-efficient and climate-friendly economies since electric vehicles will lower our emissions. Yet the mining, transportation and processing of materials needed to produce car batteries has a serious impact on our environment. How should we tackle this predicament?

In the future electric and/or self-driving cars will become mainstream. But all experts agree that this future is only possible when it is embedded within the circular economy. This means for instance that sharing cars must be stimulated as well as other means of transportation such as public transport, cycling or walking. Car batteries also need to be designed to make less use of critical raw materials. In addition, the technology used in batteries needs to be standardised in order to be easily recyclable.

Participants at the workshop were asked to consider the challenges surrounding electromobility. After extensive discussion, they provided several recommendations for policy-makers, inter alia:

- build a mobility hierarchy (by analogy with the waste hierar-

chy). The hierarchy considers the potential socioeconomic and environmental impacts at each level, which can then be used to educate and coach students and businesses on circular and sustainable mobility;

- organise local hubs and networks to reduce the overall need for mobility; and
- evaluate the potential economic and environmental benefits of providing incentives for circular businesses developing sustainable transport systems.

The participants also had recommendations for businesses:

- engage in new forms of cross-sector collaboration (e.g. mobility, energy, ICT);
- localise reuse and recycle options to safeguard valuable components and material; and
- enable information sharing about components and material across supply chains (e.g. through RFID, blockchain).

Organised by: Marie Curie Circular European Economy Innovative Training Network 'Circuit' - Leiden University (www.universiteitleiden.nl/en)



1.5-DEGREE LIFESTYLES



If the world is to achieve the 1.5°C target, we need to be radically change our lifestyles and consumption patterns. This is one of the key messages coming from the study “1.5-Degree Lifestyles: Targets and options for reducing lifestyle carbon footprints” launched at the WRF.

Researchers at the Japanese research institute IGES, in collaboration with Finnish Innovation Fund Sitra, launched a study which demonstrates that changes in consumption patterns and dominant lifestyles are a critical and integral part of the solutions package addressing climate change. Lewis Akenji, Director for Sustainable Consumption and Production at IGES said: “In this study we analyse how our lifestyles can be compatible with the 1.5°C aspirational target.”

Lifestyle carbon footprints

The publication establishes the first global per-capita lifestyle carbon footprint targets for 2030 to 2050. Lifestyle carbon footprints are calculated by adding GHG emissions

directly emitted and those indirectly induced from the final consumption of households. Lewis Akenji: “Citizens in industrialised countries would have to cut their lifestyle carbon footprints by about 80-93 percent or more within the next 30 years. Emerging economies would need to cut theirs by about 23-84 percent.”

Radical change

It does not mean that individual households are solely responsible for reducing the footprints. “We need governments to radically rethink sustainability governance and need businesses to develop new business models to shift infrastructure, the economic system, and to shape consumer choice and patterns.”

CIRCULAR FASHION

More than €430 billion a year is lost due to inefficient recycling of clothes. In a circular business model, those losses could be turned into business opportunities and advantages, contributing to resource efficiency as well as growth and jobs.

Among the main conclusions of the workshop ‘making textiles circular’ was the need to improve recycling technologies in order to process the products that will be collected to meet forthcoming obligations on separate collection. For this, a value chain approach is key. Attention should be given to product lifetime extension, promotion of green purchasing among public authorities, good and effective Extended Producer Responsibility schemes, mandatory recycled content and uptake of recycling and sorting technologies. Last but not least, innovation and research are crucial and therefore funding opportunities need to be made available and the right framework conditions need to be created to encourage private investments.

Organised by: the European Commission (www.ec.europa.eu)

STIMULATING ACTION FOR SYSTEMIC CHANGE

How can we accelerate the systemic change towards a circular society? Two different yet complementary options were discussed.

There’s no such thing as waste - true or false?

‘Intermediary’ organisations such as value chain organisations, industry associations and chambers of commerce can accelerate transformative change. With systemic innovation and innovative partnerships as key components of this change, participants concluded that intermediary structures can and should formulate clear demands for regulation – for transparency, circularity and equal conditions.

Organised by: the Union of International Associations (www.uia.org)

Circular Procurement and Green Deals

This workshop dived deeper into the potential of Circular Procurement to boost innovation, steer consumer behaviour and create markets for circular business models. Green Deals can help to set up experiments, fruitful cooperation and knowledge exchange. The organisers aimed to inspire organisations to set up their own Green Deal pilots using circular procurement and to stimulate them to scale up.

Organised by: RWS (<http://www.rijkswaterstaat.nl/english>) and OVAM (www.ovam.be)



Executive Officer

step-initiative.org

Solving the E-Waste Problem Initiative

www.step-initiative.org

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THE GLOBAL METAL FLOWS IN A CIRCULAR ECONOMY

Global trade flows can play an important role in ensuring that materials remain in the economy as long as possible. This includes trades to recover secondary materials. Such materials are not always collected and processed in a sustainable or inclusive way, creating the risk of low-resource efficiency and sham recycling. A debate is imminent on optimising these flows so that loops are closed in a high quality and sustainable way.

According to Sonia Valdivia from WRF, the informal sector enables some developing countries to reach collection rates of 80-90 percent. Yet all speakers agreed that it is both necessary and possible to improve collection rates, especially in industrialised countries. Elisabeth Smith from the Solving the e-Waste Problem Initiative (StEP) noted the importance of international guidance by multilateral organisations (e.g. through Conventions).

Jaco Huisman from the European Commission's Joint Research Centre (JRC) highlighted the role of EU level policies and sound scientific data in decision-making. Transboundary movements of end-of-life products (or waste) should align with responsible sourcing principles and the requirements of international Conventions (i.e. the Basel Convention). Sonia Valdivia (WRF) and Didier Appels from Close

The Gap explained that this is an issue especially when trading with smaller economic operators from developing countries.

Luis Tercero from the Fraunhofer Institute used copper recycling as an example of the immense potential for recycling. Egbert Lox from Umicore said that to cover the global demand for metals both mining and recycling are needed. He urged large-scale investments in new recycling technologies.

Lastly, Close The Gap discussed the role that reuse of products or leasing can play improving circularity. However, these business models face local or sectoral challenges. For reuse, collection schemes need to be cost-efficient even at a very small scale.

Organised by: World Resources Forum Association (<https://www.wrforum.org/>)

COPPER AND THE CIRCULAR ECONOMY

Demand for copper is rising. One-third of that demand is met by recycled material. But there is more to sustainability and responsibility than recycling – there are challenges and opportunities along the value chain.

The workshop provided perspectives from around the globe. These were the main conclusions:

- to meet increasing demand in future, it will be necessary to recycle and mine copper;
- different economic models, such as a shared economy, need to be explored to meet the increasing demand for use of copper in renewable energy and energy efficiency applications, among others;
- incentives for collecting small electronic scrap are needed, to provide smelters with enough material to run at full capacity and to prevent material losses in the supply chain; and
- the challenges and opportunities in circularity are different for developing countries and Europe. Developing countries can increasingly provide primary and secondary materials with socioeconomic benefits if managed properly. Europe can promote requirements on sustainable mining and recycling in the developing world to increase the protection of people and the environment.

Organised by: International Copper Association (<https://copperalliance.org/>)

HOW TO IMPROVE HIGH-QUALITY RECYCLING OF E-WASTE

For every tonne of electronic waste Europe recycles, 2 tonnes fall off the radar. The workshop on global electronics waste focused on how to ensure that e-waste flows are directed towards high-quality recyclers.

Panellists debated how to reduce barriers and bureaucracy, decrease non-compliant recycling of copper, and tackle illegal e-waste shipments. The conclusions are summarised as follows:

- Member States implement the EU Directive on waste electrical and electronic equipment (WEEE) very differently. This impedes the level playing field for the collection, shipment and high-quality treatment of e-waste;
- minimum quality standards for WEEE treatment should be mandatory at EU level;
- shipping e-waste is cumbersome due to the permits needed. A fast-track notification procedure for shipping waste to pre-consented facilities would help; and
- e-waste collection rates are still low as individual habits prevail even if incentives exist.

Organised by: Eurometaux (<https://eurometaux.eu/>) - EERA (<https://www.eera-set.eu/>) - WEEE Forum (<https://weee-forum.org/>)

EXTRACTING VALUE FROM SLAG

UNEP and EC highlighted the need to increase the recycling of non-ferrous metals. Closing the loop for such materials also enables the recovery of precious metals.

The growing complexity of non-ferrous-metals increases the level of impurities contained and, hence, inert slag

production during recycling. Average recycling efficiency rate is 98 percent. Slags can be used as a construction material, but this is increasingly seen as controlled linear landfilling. This triggers research on higher value applications such as staircases, carbonated bricks, pigments and so on. Yet the regulatory framework and standardisation needs to be further developed to allow broader implementation of these recycled materials.

Organised by: VITO (<https://vito.be/en>) and Umicore (<https://www.umicore.be/en/>)



BIO-ECONOMY: CIRCULAR BY NATURE!

The transformation from fossil-based to biobased materials will be one of the main challenges for future generations. However, fitting new organic materials in the current economic model, and realising synergies between the bioeconomy and the circular economy is far from easy.

During the global session Nelo Emerencia, director programming Bio-based Industries Consortium, Dr. Dirk Carrez, Executive Director of the Bio-based Industries Consortium, and Dr. Barend Verachtert, Head of the Agri-Food chain Unit at DG RTD gave insights on how we can realise a circular bioeconomy. First of all, be successful we must look at the bioeconomy in a systemic way: building bridges between different bioeconomy sectors is of key importance.

Secondly, a huge challenge lies in the mobilisation of potential feedstocks. The bioeconomy can use a large array of feedstock, but the road from potential to real feedstock is often difficult. A large potential is situated in Central and Eastern Europe. Thirdly, regulations must be established at European level, but also have to offer some flexibility in order to adapt to specific situations and to the needs of Member States and regions. This due to specialisation of



bioeconomy clusters in specific feedstock and/or end products. Fourthly, multi-stakeholder participation is crucial: primary sectors as well as brand owners and end consumers are strategic partners. And lastly, public authorities must also be involved to de-risk the emerging biobased industry.

Organised by: Biobased Industries Consortium (<https://biconsortium.eu/>) and Flanders' Food (<https://www.flanders-food.com/>)

STRATEGIES FOR BIOWASTE AND BIOBASED MATERIALS

The recently adopted EU Waste Package includes the obligation for separate collection of biowaste by the 31st of December 2023. Hence, markets for recycled organic products need to be created in all Member States.

Marketing tailor-made compost and digestate-based products

Speakers and participants of the workshop came to the following conclusions:

- separate collection of biodegradable waste will improve the quality of compost and digestate and confidence in these products.
- quality assurance focusing on input, process and reasoned use of the waste is a precondition for the use of compost and digestate-based products in growing media. expanding the range of compost and digestate products will increase market potential;
- markets need tailor-made compost and digestate-based products;
- compost and digestate have a high potential to reduce greenhouse gas emissions.

Organised by: ECN (www.ecn.nl) and Vlaco (www.vlaco.be)

How to develop, implement and improve a biowaste strategy

These conclusions were echoed during the VLACO workshop which outlined a best practice on biowaste strategy in Flanders. Over the past 25 years, Flanders has focused on

both prevention (small cycle) and professional treatment (large cycle). This is accompanied by quality assurance and smart marketing of compost. Demonstrating the intrinsic value of circular products such as compost and digestate is key. Calculating CO₂-equivalents for example, shows that the use of compost and digestate can have a positive impact on climate change. VLACO's carbon footprint tool was demonstrated during the workshop.

Organised by: Vlaco (www.vlaco.be)

Wood as a sustainable resource to abate climate change

This workshop concluded that the current mitigation effect of EU forests represents 13 percent of total EU emissions (569 Mt CO₂), with an additional potential of 442 Mt CO₂ by 2050. On top of the measures agreed upon in the Paris Agreement, there is still a gap of 500 billion tons CO₂ equivalent to reach the 2°C target. Wood, forests and reforestation as well as the substitution potential of wood for fossil based products (eg in the building sector) are an important part of the solution.

Organised by: VITO (<https://vito.be/en>)

CIRCULAR VISITS

WRF participants had the chance to visit 7 circular sites in Antwerp and in Ghent.

BIO BASE EUROPE PILOT PLANT

Bio Base Europe Pilot Plant is an open access pilot & demonstration plant for bio-based products & processes in the Port of Ghent. BBEP assists by bringing scientific research to scalable industry relevant environment or even to (pre-) industrial scale. Since its establishment BBEP served over 100 customers, (mainly EU) in over 200 different projects for development, scale up or pilot production.

www.bbeu.org/pilotplant/expertise/

UMICORE HOBOKEN

At Umicore's Hoboken plant precious metals from industrial by-products and everyday items such as old mobile phones, laptops, car catalytic converters are obtained...Participants had a chance to take a virtual tour of the plant and listen to in-depth presentations from the environmental experts.

<https://www.umicore.be/en>

BLUE GATE ANTWERP

Petroleum South was once the very heart of the Antwerp petroleum industry. But this petrochemical history left its mark on the soil. Today, the site has been cleaned up, ready for a new chapter: Blue Gate Antwerp. During a workshop the experts explained how this public-private

project came into being and detailed their plans for the future. For example, Blue Gate Antwerp will have its own heating network. Going forward Blue Gate Antwerp aims to produce more energy than it consumes, making it a climate-neutral site by 2030.

www.bluegateantwerp.eu

RECYCLING PARK IBOGEM

Flanders is an international top region for separate collection and recycling of waste. This visit to the recycling park and reuse shop of Ibogem showed participants how separate collection and sorting of a wide variety of household waste streams is organised.

www.ibogem.be

THE CIRCULAR CHURCHILL INDUSTRIAL ZONE

Participants had the opportunity to visit the Churchill Industrial Zone. The former location of the Opel car factory, will become a hub for sustainable industrial projects in the manufacturing or process industry. Energy projects that promote the use of sustainable energy in the port cluster will also find a home there in the future. The site is located in an industrial area near the biggest integrated petrochemical cluster in Europe. This will make it easy to establish partnerships for closing loops.

<https://www.portofantwerp.com/en/churchill>

ECLUSE AND INDACHLOR

In the Waasland Port of Antwerp the industrial steam network 'ECLUSE' will replace the fossil fuel-based energy supply for a number of large-scale chemical companies with steam. ECLUSE is set to become the largest industrial steam network in Europe and will provide reliable and cost-efficient energy to six chemical companies. In the French port of Dunkirk, Indaver is developing a very similar form of industrial symbiosis. Participants who visited the Indaver waste-to-energy facility heard more about its recycling plant IndaChlor® in Dunkirk, which is currently under construction.

www.indaver.com/be-en/home

CIRCULAR SOUTH

Circular South is encouraging smarter, more efficient use of energy, water, waste and materials through an innovative community-driven approach. For example, the city and its residents will jointly test advanced technological solutions (i.e. smart home devices, nudging, reward systems, etc.), through online and offline activities. These trials will allow the project managers to evaluate the various new solutions by measuring residents' awareness and behavioural change.

www.antwerpenmorgen.be/projecten/circular-south/over



3 DAYS, 3 DESIGN CHALLENGES TO CUT DOWN E-WASTE

Fifteen students from different nationalities and educational backgrounds took part in the Recupel E-Loop Challenge. In doing so they explored innovative solutions for preventing, eradicating and recycling e-waste.

Electronics and digital devices help us work more efficiently in every area of life. But our appetite for digital products and services is growing at breakneck speed. What feeds this appetite? Innovation of course – which has to keep pace with consumer demand. Unfortunately, the electronic waste produced is also keeping pace with these developments.

To keep our future from being inundated by a mountain of e-waste, we've got to become pioneers and experts to meet this challenge head on. Recupel joined forces with OVAM, Circular Flanders, The Argonauts

and WRF to invite students to tackle three challenges during a three day bootcamp. The organisations selected 15 student out of 1,800 candidates, giving them the opportunity to showcase their talents with immediate access to a worldwide network of experts.

Circular solutions

The E-Loop Challenge offered three design challenges each with a different outcome.

1 Design for re-use

How can we design shareable electronics, produce them to last longer and/or make them easier to reuse? In the role of researcher working for an electronics giant, the students opted for a pay-for-use concept. With LOOPTOP, students could rent their laptops instead of buying them. The laptop is also personalised based on the consumer's behaviour.

2 Design for collection

What would a perfect collection system for electronics look like? The participants came up with a way to collect e-waste at a university campus. WEEE-CYCLE is a sharing platform and online app. A points system encourages students to bring in, reuse and repair their electronics.

3 Design from recycling

How could we recycle collected e-waste to ensure the highest possible value of the upcycled product? The students developed a concept in which schools are offered discarded appliances such as washing machines. LEARN E-BLOCKS teaches pupils how electronic appliances work or puts them at their disposal to create something new.

OVERARCHING CHALLENGES

WRF'19 identified some cross-sectoral challenges when it comes to implementing a circular strategy such as knowledge gaps, stakeholder participation, the need for a coherent and strategic vision and programme, the need to develop a scientific research agenda and how to monitor and report... In this chapter we give an overview of the workshops that discussed these possible roadblocks.

CIRCULAR EUROPE: THE FUTURE OF CIRCULAR ECONOMY PROGRAMMING

The European Commission's circular economy package has increased the number of initiatives across Europe. But circular businesses and projects are fragmented, making international synergies difficult. What can be done to stimulate not only the shared economy but also the sharing of expertise?

The workshop identified challenges in optimising circular economy programming across Europe. It produced the following recommendations:

- it is difficult to prioritise certain areas as they are all interwoven. Yet during the discussion, some participants said more attention must be paid to raw materials, waste, plastics, water, food and construction and demolition;
- funding needs to be increased for research and development in upscaling materials and production technologies related to eco-design;
- aside from new technologies and business models, we must also invest in behavioural change and stimulation of market demand;
- adopting circular practices is highly dependent on the degree of cooperation between different sectors of the value chain. Therefore, actions that include all actors should be favoured. Partnerships between various actors, business networks and alliances must be established; and
- data quality needs to improve. This means researchers and experts ought to create more accurate data, improve unified data presentation systems, share data and initiate standard reporting.

Organised by: CICERONE H2020 (<http://cicerone-h2020.eu/>)

GLOBAL REPORTING STANDARD FOR SUSTAINABLE MATERIALS AND WASTE MANAGEMENT

GRI is revising its disclosures on waste to bring waste disclosure in line with international best practice on circularity and sound management of all wastes.

The workshop 'road tested' the direction of the draft revised waste disclosures with participants and enabled a discussion on the revised waste disclosures' role as a powerful and standardised tool for businesses putting circularity principles into practice.

There was broad support for the direction of the key draft elements from the waste disclosures review. Participants highlighted that readers of reports on sustainability want to:

- know how reporting organisations manage their waste-related impacts and prevent waste generation through circularity;
- understand the profile of waste that an organisation is handling, including its quality (e.g. toxicity) and its quantity (i.e., mass or volume);
- know what targets an organisation sets and how, and their relevance;
- understand who is responsible for the waste-related decision-making process in an organisation; and
- see credible and comparable data

Organised by: Global Reporting Initiative (GRI) <https://www.global-reporting.org/standards/work-program-and-standards-review/review-of-gri-waste-disclosures/>

BENEFITS OF RESPONSIBLE RESEARCH AND INNOVATION FOR SUCCESSFUL TRANSITIONS

Research and Innovation play a vital role in transitions at work. The better aligned with societal needs, concerns and expectations, the more impact R&I will have.

The workshop introduced the Horizon 2020 concept 'Responsible Research and Innovation' (RRI), which calls for the participation of all stakeholders in R&I processes

right from the beginning. In the interactive session participants were invited to share experiences of obstacles with regards to stakeholder inclusion during the eight stages of R&I projects and discuss potential solutions applicable to their work contexts.

Organised by: Federation of German Scientists as part of the NewHoRRizon project (Horizon 2020) (<https://newhorizon.eu/>)

REDEFINING VALUE: THE MANUFACTURING REVOLUTION

A key aspect of the circular economy is the concept of value retention and creation of new value within economic production-consumption systems. How can we stimulate the adoption of value retention processes?

After an introduction by Co-Chair Janez Potocnik on the role and work of the UN Environment International Resource Panel, Professor Nabil Nasr presented the Panel's report on value retention processes (VRPs) in the circular economy. The term "value retention processes" refers to remanufacturing, refurbishment, repair and direct reuse. The report identified several barriers that hinder the adoption of VRPs and proposes the following policy recommendations to overcome them:

- establish and enforce clear standards, guidelines, and compliance for each VRP;
- invest in accelerated VRP adoption via funding for R&D and skilled labour;
- lead by example by VRP-friendly public procurement;
- engage and educate customer markets;
- implement accessible and efficient end-of-use product collection systems to support reverse logistics;
- adopt, accept and align VRP definitions;

- eliminate regulatory barriers that interfere with the movement of cores and finished products; and
- include VRPs as gateway activities to recycling.

Additionally, the following industry priorities were formulated:

- facilitate intra-firm resource and knowledge sharing;
- partner with other industry members to provide active customer market education and awareness;
- modify design priorities to include essential VRP principles;
- provide transparent and credible information to customers about VRPs and VRP product quality;
- develop, ratify and enforce VRP standards and practices;
- collaborate with industry members and policy-makers to identify and communicate about key barriers; and
- evaluate existing product lines to identify new opportunities for VRPs.

Jocelyn Bleriot from the Ellen MacArthur Foundation illustrated the positive impact VRPs can have on resources. Circular measures can, for instance, reduce the primary steel required to support mobility by 70 percent.

Organised by: UN Environment International Resource Panel (<https://www.resourcepanel.org/>)

WRF IN NUMBERS



750
participants



60
countries were represented



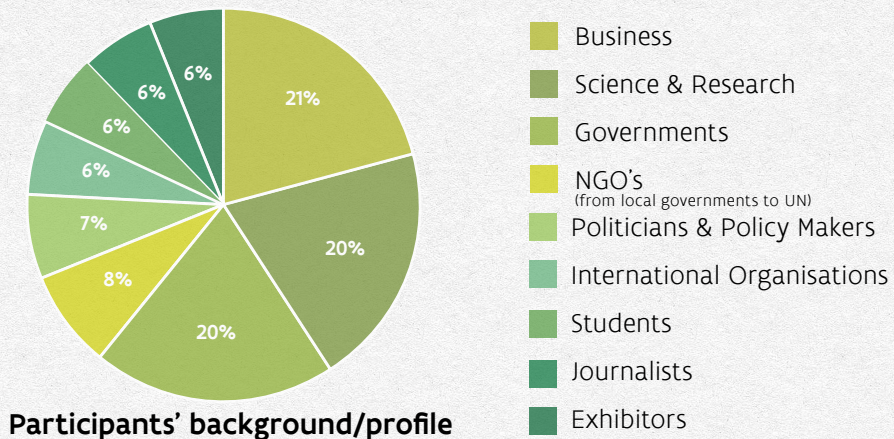
9
global sessions



41
deep dive workshops



7
circular visits




1
sustainable event

vegan food, no goodie bags, hotels and public transport within walking distance and CO₂ compensation.



3
documentaries on Circular Economy



15
students participating in the E-loop Challenge bootcamp to tackle e-waste

#WRF19



 **World Resources Forum**
@WRFSwitzerland

Mr. President, the world is concerned with Climate Change and Resources Management. Happening now in Antwerp, Belgium, at @WRF19Antwerp #WRF19

 **Recupel**
@Recupel_Be

15 students out of 1.800 applicants worldwide, are invited to the World Resources Forum by Recupel and Ovam to tackle three challenges about e-waste. We are looking forward to meet, inspire and work together with these young potentials! #WRF19 #ewaste

 **Jan Verheyen**
@persAtOVAM

BREAKING NEWS. We are very pleased, and proud to confirm that her Majesty the Queen will attend next week's World Resources Forum in Antwerp. #WRF19 @WRF19Antwerp

 **Prof Wayne Visser**
@WayneVisser

Looking forward to speaking at the World Resources Forum in #Antwerp next week on #digital #innovation for the #circular-economy #WRF19 @WRF19Antwerp

 **WRF19**
@WRF19Antwerp

While transferring to your next workshop, be sure to grab a circular coffee from @CirculFlanders and a WRF Journal on the way! #WRF19

 **WRF19**
@WRF19Antwerp

The @Recupel_be E-Loop Challenge has called on students from around the globe to brainstorm about possible solutions to prevent, eradicate and recycle e-waste. Check out the results during Closing Session this afternoon! #WRF19

 **Livia Formisani**
@LiviaForm

"Circular" #music instruments at the #WRF19 gala dinner with @Trashbeatz - including a drum set made out of recycled plastic tanks! #CircularEconomy #sustainability

 **Lucy Chamberlin**
@LucyChamberlin

Come on! Heads of Club of Rome and European Environment Agency are telling us to wake up, smell the coffee and take radical action: as a start we need a global carbon law to halve emissions every decade #WRF19 #Antwerpen #climatechange #SDGs #planetarylimits #biodiversityloss

 **Karel Van Acker**
@KarelVA

I only can echo @WRFSwitzerland: thanks for a super organization of the #WRF19 @Pers-AtOVAM, for the many inspiring contacts and content, and above all... for the wake up call to accelerate at all levels our efforts towards #circulareconomy in fighting @climatechange

 **Yeshna Dindoyal**
@_Yeshna

I'm grateful to have been selected among with 15 students around the world to participate in the #worldresourcesforum in Belgium. Had the chance to meet the Queen of #Belgium and discussed climate issues, ewaste and youth empowerment. Dear Youth, we need you! #youthpower #wrf19

 **ACR+**
@ACRplus

Thank you to our member #OVAM for this edition of the #WRF19 with highly interesting and inspiring discussions and participants. Thank you also to project partners for presenting @URBANREC_H2020 and #FISSAC on this occasion.

 **World Resources Forum**
@WRFSwitzerland

Thank you, @OVAM_Ecodesign @PersAtOVAM for the excellent cooperation, teamwork, professionalism, good laughs and friendship!

WRF'19 WOULD LIKE TO THANK

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CONCEPT, COPYWRITING
AND DESIGNER
Pantarein Publishing

PHOTOGRAPHY

OVAM, Shutterstock,
A Room With A Zoo

RESPONSIBLE PUBLISHER
OVAM

LEGAL DEPOSIT NUMBER
D/2019/5024/14

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