

Minutes of the Innovation Fund – Circular Economy workshop

European Commission, Madou Auditorium, 3/12/2019

Introduction

Emmanuelle Maire, from DG ENV, opened the workshop explaining that climate policies acknowledge more prominently the role of the circular economy only recently, as a result of scientific evidence. The most recent, the UN-Environment's Emissions Gap Report 2019 published last week.

This was confirmed by **Peter Handley**, from DG GROW, who underlined that materials efficiency is an unexploited area to reduce emissions. The Energy Intensive Industries Master Plan under preparation includes roadmaps for such sectors.

Christian Holzteiner (DG CLIMA) welcome this first event on the Innovation Fund and the Circular Economy. It is the first one covering the circular economy, even if more than 30 similar workshops on the Innovation Fund have been organised so far by various sector associations and Member States.

Keynote speech: Janez Potočnik, International Resources Panel (IRP)

Mr. Potočnik presented some global facts and figures:

- Population growth and its pressure over resources.
- Inequality, in a planet where a few people accumulate more wealth than all the poorest.
- One third of food waste, which means also useless land use, useless labour force, useless energy, etc.
- More than 50% of urban buildings and infrastructure by 2050 is not yet built.
- One million plastic bottles by minute.
- We are the first generation more likely to die because of lifestyles than because of infectious diseases.

On the other hand, people are more interconnected and interdependent than ever before.

He presented the DPSIR (Drivers – Pressures – State – Impacts – Response) concept, underlining that it is key to act over drivers. For example, on the causes of migration, instead of building walls we should be investing in the countries that provide migrants in order to create local jobs.

The IRP shows that the problem is not scarcity of resources, but their irresponsible use. To deliver on the Sustainable Development Goals, the catalyzer is Sustainable Consumption and Production (SCP).

The recent IRP's Global Resources Outlook reaches the following conclusions:

- 1- Global resources use has more than tripled since the 1970s.
- 2- Material productivity started to decline around 2000, due to shift of production to low-resource efficiency countries.
- 3- 90% of biodiversity loss and water stress, as well as 50% of climate impacts is due to resources extraction and processing phase. Also one third of air pollution and health impacts.

IRP's models show that decoupling is possible, leading to increase of wealth and well-being.

Mr. Potočnik called the Commission to build the announced Green Deal around the Circular Economy, to give a bigger picture of the economic and societal transformation that is needed.

So far, most climate policies have focused on energy, but it is now clear that further connections with land, water and material use are needed, including nature-based solutions. He presented some data from the recent Ellen McArthur Foundation report “Climate battle: An incomplete picture?” about the emissions reduction potential in sectors like cars (70%), food (49%) or built environment (38%). We need a paradigm shift, moving from cars to mobility, from bulbs to light or from CDs to listen to music. In sum, dematerialisation and rethinking ownership.

Concerning digitalisation, he reminded that “technology is not bad, not good, neither neutral” (1st law of technology by Kranzberg), and raised the importance to orientate digital advancements towards energy and resource efficiency, while making the ICT sector carbon neutral.

A lot can also be done at regional and local level and by citizens themselves.

He finalised his speech reflecting on why changes are so difficult:

- 1- Short-termism prevails in politics and enterprises decision-making.
- 2- The logic of quantity-driven profits, illustrated by the GDP, is still dominant.
- 3- Vested interest: even if enterprises are already preparing the future, strategically, they keep the status quo as long as possible because it benefits them.
- 4- The only possible transition must be fair, just and inclusive.

For him, the Green Deal must be an intergenerational agreement, based on the “sustainability, first” principle. He reminded that nature itself is circular.

Keynote speech: Eline Boon, Ellen McArthur Foundation

Eline Boon presented a figure showing that 55% of GHG emissions come from energy (energy systems, transportation and buildings) and 45% from products (agriculture, land use, industry). Based on these data, it is clear that the next challenge is to address the 45%, and the pathway is the Circular Economy.

Only in five sectors (steel, cement, aluminum, plastics, food), 9.3 billion tons of CO₂e can be eliminated by 2050, which is the equivalent of all forms of transport globally. This implies (1) design, substitute materials, waste elimination; (2) Reusing, recirculating materials; and (3) regenerative agriculture, with carbon sequestration in soils and products.

She explained the approaches that are needed to reach the potentials in the built environment (38% GHG emissions reduction), mobility (70%) and food (49%). This requires a systemic change, innovation and stakeholder’s engagement.

The Innovation Fund: Christian Holzleitner

Mr. **Holzleitner** presented the European Commission’s strategic long-term vision for a prosperous, modern, competitive and climate-neutral economy by 2050 – the Communication “A Clean Planet for All”. It is structured around seven building blocks:

- 1- Energy efficiency
- 2- Renewable energy
- 3- Mobility
- 4- Industry and the Circular Economy
- 5- Infrastructure and Interconnections

- 6- Bioeconomy and carbon sinks
- 7- Carbon capture and storage (CCS)

The Innovation Fund is very focused on industry. However, it raises the question of trade-offs between bioeconomy and carbon sinks. We need to produce more from nature, but we also need to increase carbon sinks. This creates competition over land - a sector that is already affected by climate change – as we see in agriculture, where efficiency decreases. He is very optimistic about CCS, notably with Norway and the Netherlands exploring possibilities to use depleted oil and gas fields for storage sites for CO₂ from various countries around the North Sea.

Mr. **Holzleitner** explained that the Commission’s vision includes a scenario focused on “changing behaviours”, making these consistent with WHO recommendations. This leads to massive GHG emissions reduction in agriculture, especially livestock, which liberates land for afforestation and reforestation and more biodiversity. Then, less technological CCS would be needed.

In any case, the Innovation Fund is about technologies: renewable energy; hydrogen, carbon capture, use and storage; energy-intensive industry (including substitute products or processes); and energy storage. The goal is to drive low-carbon technologies to market, and sector-coupling is very much welcome.

He explained the differences and complementarities with other EU instruments (Horizon Europe, LIFE, Cohesion Funds...), the selection criteria (GHG avoidance, degree of innovation, project maturity, scalability and cost-efficiency) and procedure (two-stages).

He finished his intervention answering several questions:

- It is difficult to assess the emissions savings based on a life-cycle assessment, because beneficiaries cannot control all stages, from extraction to re-use, recycling or disposal.
- Proposals covering different industrial phases (e.g. renewable energy and energy-efficient desalination) should assess where the maximum decarbonisation potential, risks and benefits are.
- The aim is to publish the first call in June 2020. This would allow adopting award decisions for the grants in Q4 2021.
- It is difficult to justify funding to projects that have already started. State aid rules apply when there is Member State funding involved.

Presentations from individual projects

The afternoon presentations focused on individual projects, in order to inspire future Innovation Funds applications.

Kamila Slupek, from **Eurometaux**, explained that recycling and circularity is already the business model of the EU metals industry. In general, recycling requires less energy than extracting metals and minerals. However, for rare and precious materials, the issue is the high energy requirements to recycle them.

She pointed out and explained four innovation needs in these sectors, presenting also examples of technologies:

- 1- Sorting and recovering scrap, which quality is uneven and therefore an economic barrier (Hydro company, Germany)
- 2- Better use of by-products – such as the “red mud” (RemovAl projects)
- 3- Recovery from low-grades ores, sludges and slags (MetGROW project).
- 4- Lowering energy requirements for some processes.

An important message, very often repeated during the event, is that innovation and regulation must go hand in hand, in order to maximise the re-use of metals.

Ulrika Håkanson and **Daniel Högnelid** from **LKAB**, a major mining mineral company with 4,200 employees in 12 countries, working on more than 30 minerals, presented the ReeMAP projects, on raw materials recovery from waste, especially Rare Earth Elements (1% of global production can be recovered), phosphorus and gypsum (100% of Sweden needs). They referred to the EU Raw Materials Initiative, where LKAB is included.

Mats Wendel, from **PEAB Asphalt**, explained how a Swedish funding initiative rather similar to the Innovation Fund was a catalyzer for change in a conservative sector like construction. PEAB has launched eco-asphalt, with strong reduction of emissions, especially in the production phase. This can be complemented with carbon-free transport, to increase even more the GHG emissions avoidance.

The main technology consists on replacing traditional oil burners with heavy vegetal oil, wood pellets or light bio-oil. They are also using Reclaimed Asphalt Pavement (RAP), which becomes a major source. This required solving several innovation challenges, in order to ensure quality for future use, as well as environmental- and health-friendliness. Combining the two approaches, PEAB obtains 61% emissions reduction. However, in many countries there are still legal and normative barriers to use such recycled asphalt.

Katarina Malaga, from **RISE CBI**, presented examples of the circular economy applied to concrete – the second most largely used material in the world. She underlined that the Swedish roadmaps for climate neutrality in Sweden have been an incentive to develop these solutions. As we cannot change the chemical process to produce cement, the decarbonisation solutions for concrete focus on:

- Construction demolition waste recycling: This approach requires sorting CDW, to make it become a concrete aggregate. A current housing project achieved prefab elements constituting of 30-95% of CDW.
- Supplementary cementitious materials (clays and bio-ashes), which required a lot of analysis to assess the chemical and mechanic properties of the final concrete.

In all cases, the R&I process has been a success and new materials are approved for use in Sweden.

Sloth André Eriksen, from **Asetek**, explained that, presently, data centres represent 4% of power consumption, equivalent to air traffic. Eurostat estimates that, by 2030, they can represent 20% of EU power consumption. Looking a movie online is equivalent, in energy consumption, to boiling 50 cups of coffee.

This means that the heat produced in data centres must be recovered. Asetek patented a technology to reduce power consumption of data centres by up to 50% by water-cooling rather than air-cooling. This technology is used in many places, especially in Japan where power is very expensive.

The big problem is that data centres have no regulations or standards to reduce power consumption or improving the re-use of heat waste. For big digital companies, which are mainly based in the EU, this is not a priority, at least until they will be obliged to recover heat waste.

The potential is huge: recovering data centres heat in Europe can reduce emissions by 4%, which is more than moving to electric cars. He recommended some solutions:

- Placing data centres near district heating.
- Servers sold in the EU should be designed in a way that allows waste heat re-use.

The Danish city of Aalborg is already using this technology, with success.

Laure Baillargeon, from DG GROW, underlined the role of plastics recycling. We need to think plastic waste as a resource, and also changing feedstock for plastic bottles – the JRC is working on it.

She briefly presented the Circular Plastics Alliance, which covers the whole plastics value chain. Its goal is to make circular plastics a reality by promoting increased use of recycled content.

Christian Holzleitner closed the meeting welcoming the workshop and reminding that the circular economy is part of the Innovation Fund. He was happy to see that calculating CO2 emissions savings in circular economy projects is not that complicated. He encouraged the participants to discuss with other player, like the EIB, which are developing methodologies to calculate emissions avoidance.

He explained that an Expert Group meeting on the Innovation Fund will take place on the 18 December 2019.