



Vlaams Materialenprogramma

OVAM Flanders' Materials Programme

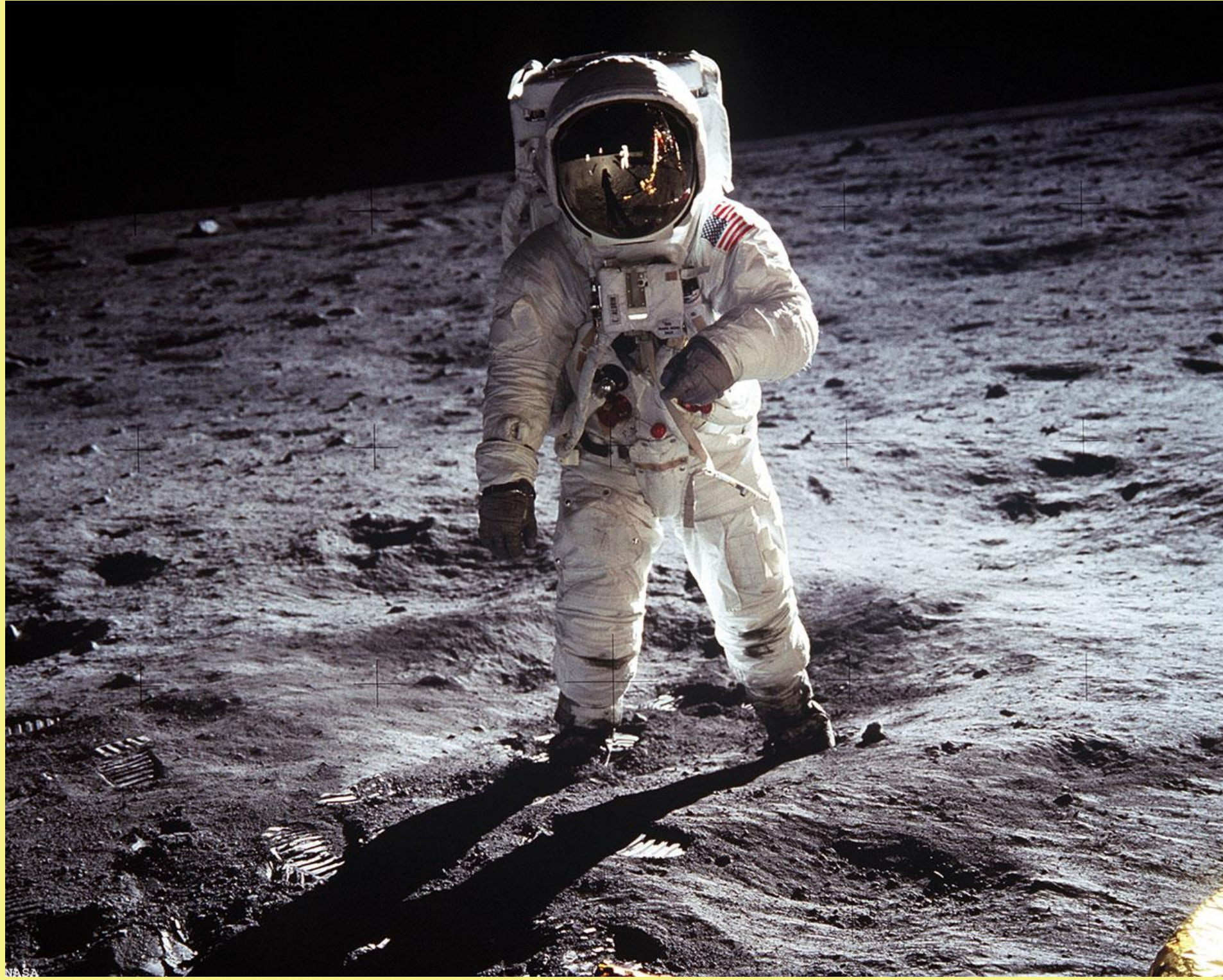
EEA Webinar on 'Resource Efficiency & Circular Economy' March 17 2014

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Agenda

1. 3 short stories to set the scene
2. Transition Management towards a Circular Economy
3. 4 case examples
 - a) Building & construction: modular building
 - b) Bio-economy: the P challenge
 - c) Chemistry: thermosetting plastics
 - d) Metals: end-of-life & 2nd life vehicles
4. Policy recommendations
 - a) Connecting the dots
 - b) Never day 1
 - c) Policy window
 - d) People are key

3 short stories to set the scene ...



1960s

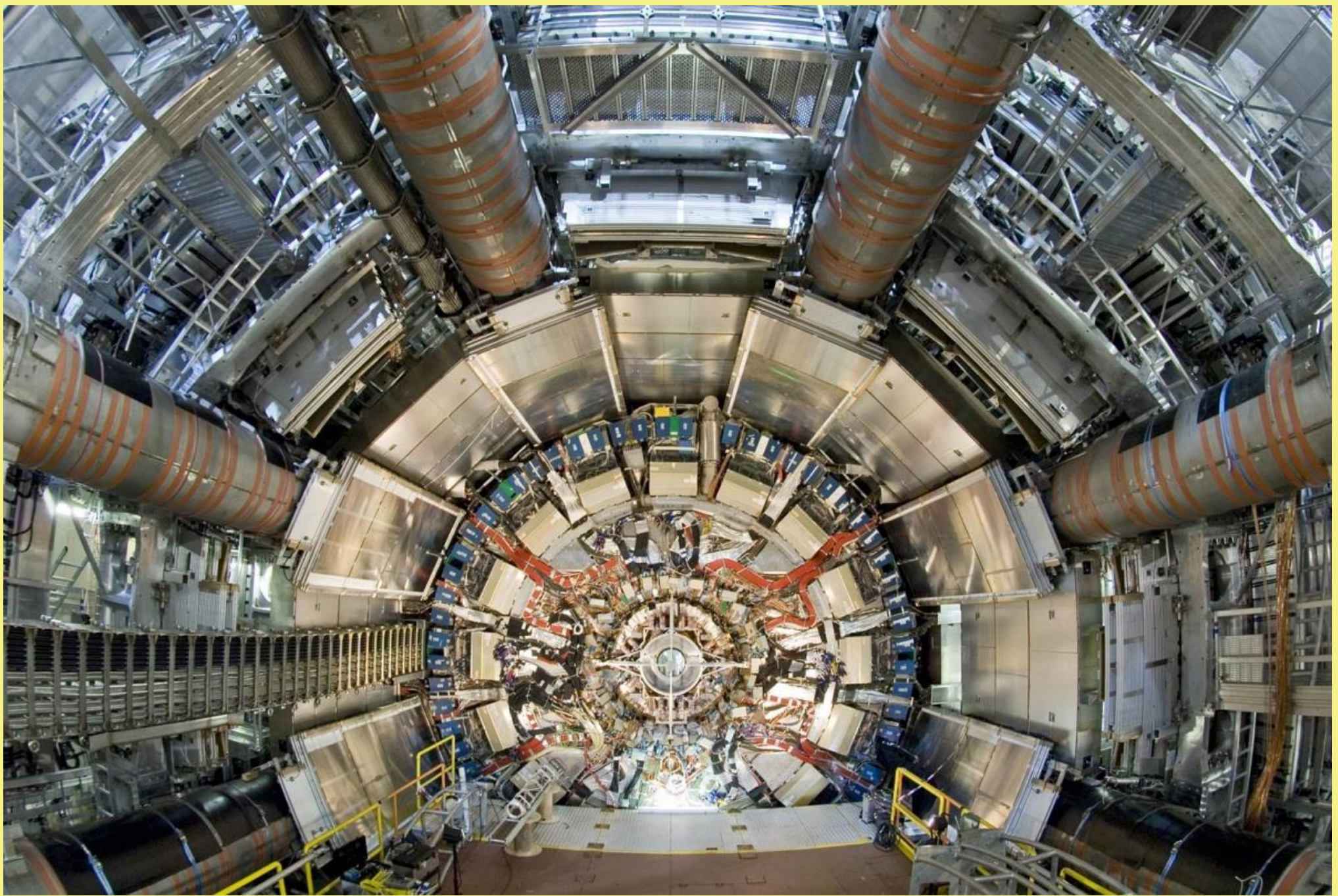
The Goal of Sending a Man to the Moon

"I believe **we possess all the resources and talents necessary**. But the facts of the matter are that we have never made the national decisions or marshaled the national resources required for such leadership. We have never specified **long-range goals on an urgent time schedule**, or managed our resources and our time so as to insure their fulfillment.

This decision demands a major national commitment of scientific and technical manpower, materiel and facilities, and the possibility of their diversion from other important activities where they are already thinly spread. It means a **degree of dedication, organization and discipline** which have not always characterized our research and development efforts. It means we cannot afford undue work stoppages, inflated costs of material or talent, wasteful interagency rivalries, or a high turnover of key personnel.

New objectives and new money cannot solve these problems. They could in fact, aggravate them further—unless every scientist, every engineer, every serviceman, every technician, contractor, and civil servant gives his **personal pledge** that this nation will move forward, with the full speed of freedom, in the **exciting adventure** of space."

John F. Kennedy, 1961



1990s The CERN project

‘Mapping the Secrets of the Universe’

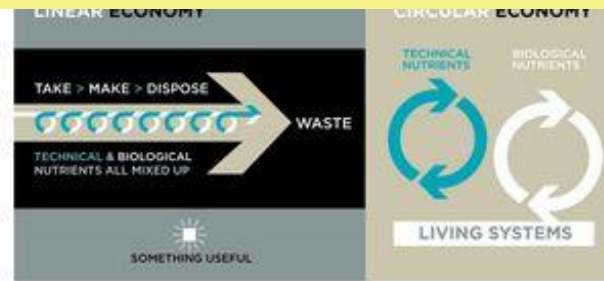
- the Large Hadron Collider at CERN is the **most complex** and expensive scientific experimental facility ever built.
- With its sister experiment CMS Atlas endeavoured to detect of the **Higgs Boson**. On July 4 2012 Atlas reported evidence for the particle’s existence, capping a 40-year search.
- The ATLAS detector weighs as much as the Eiffel tower, 10 million functional elements. ATLAS involved 3.000 scientists, spread across 173 institutes, in 38 countries.
- Turning ATLAS into a reality was akin to putting together a non-linear, **multi-dimensional puzzle of interdependent pieces** brought together on the basis of fluid and changeable concepts rather than stable and delineated patterns.
- Organisation: 7-page MoU; no CEO only a spokesperson; **embryonic concept and myriad of design options left open**.

Source: P. Vandenbroeck, shiftN / CERN

1990s The CERN project

Rethinking the Economy

Roland Clift and Julian Allwood outline how industrial ecology, applying chemical engineering thinking to the management of material flows in the economy, can point the way to an economy that can work long-term.



Why waste should be food.

The idea that recycling is a 'good thing' pretty much pervades the formal schooling system, but it may be due for a long overdue rethink. Recent scientific investigations around recycled cardboard packaging made from old news papers has thrown up...

Europe needs to embrace the closed loop model, says Belgian EU Presidency

As part as Belgium's Presidency of the council of the European Union, Flemish Environment Minister Joke Schauvliege...



Services, not Goods

Rethinking our economic model does not only involve a re-organisation of manufacturing processes, the change goes as far as redefining the relationship between objects and consumers.

Principles of the Circular Economy,
Ellen MacArthur Foundation website

‘Sustainable Materials Management: elements towards a Resource Efficiency Roadmap’

- 2010 **Belgian EU presidency** put Sustainable Materials Management on the EU Agenda and provided building blocks for the 2011 EU Resource Efficiency Roadmap
- In line with the EU 2020 strategy and 7 flagships, the Flemish Government in 2011 selected Sustainable Materials Management as one of 13 **Grand Societal Challenges**.
- Based on the council conclusions and ambitions of the BE EU Presidency the **Flanders’ Materials Programme** was set up.
- Belief in long term sustainability via **3P** approach on the crossroads of economic, ecological and the social dimension.
- Focus on **quadruple helix**: government, industry, science and knowledge institutes & civil society.
- Drafting a **dynamic roadmap** in 2013/4: focus, enhancing existing strengths within EU context, targets & actions, and continuous review & redrafting.
- So far the experience in Flanders has been that the **EMAF / CE** has helped to create an understanding between societal actors that we are tackling the same challenge.

2010s The Circular Economy: the Ellen MacArthur Foundation

Transition Management towards Circular Economy

Transition Management towards a Circular Economy

- What do the stories tell us ? Neil Armstrong marked the beginning of the space era; CERN was unseen as a scientific experiment; but how to tackle a **complex societal challenge** with so many actors, parameters and often conflicting objectives (sustainability versus climate agenda, energy goals, economic growth, social welfare, ...) ?
- Based on the theory of transition management, as developed in the Netherlands and Flanders, The Flanders' Materials Programme seeks **levers to achieve a system transition**.
- Within sustainable materials management the **whole value chain** is taken into account, as well as the 3P approach and the **conditions** necessary to move towards a closed loop.
- Based on the experience of the past 3 years the tipping points are to be found at **the intersection between the bottom-up and top-down** approach: in EU context: how do we connect initiatives such as Cradle 2 Cradle, the Ellen MacArthur Foundation, etc ... and the UNEP Panel, the EU Resource Efficiency Strategy, etc. and create a new sustainable system ?
- **Circular Economy** can strengthen the RE strategy by acting as go between between economic, ecological and social targets, thereby building on the current political socio-economic agenda... and help to build up a tipping point.

**4 cases in the Flanders' Materials Programme
based on 'traditional' strong economic clusters.**

Case 1: building & construction

- **Content:**
 - Modular building = 'lego' blocks >> more reuse of building elements
 - Selective demolition and dismantling >> high quality recycling
- **Bottom-up / Top-down:** innovative SMEs doing test projects / new urban planning dynamics focusing on qualitative and interlaced layers.
- **Transition steps towards a circular economy:**
 - Traditional sector -> shift in mindset of (small) building companies & citizens
 - Green Public Procurement
 - New skills needed

2. Bio-economy

- **Content:**
 - Phosphorous
 - = essential for production of crops
 - = growing demand
 - but limited stocks left + monopoly Morocco
 - Flanders has unique technology for P-recuperation from waste: manure, waste water, organic waste, incineration ashes
- **Bottom-up / Top-down:** innovative SMEs, scientific spin-offs / waste water, soil quality and manure regulation, ...
- **Transition steps towards a circular economy:**
 - Solving a problem before it becomes manifest: P scarcity not yet reflected in market prices; lacking sense of urgency
 - Supply vs demand
 - Norms: e.g. P won from waste water via algae > can they be used in pharma-cosmetics ?

3. Chemistry: thermosetting plastics

- **Content:**
 - thermosetting plastics are increasingly used in electronic equipment, cars, aeroplanes, wind turbines, ...
- **Bottom-up / Top-down:** critical mass building up without specific collection targets or flow / EU CO² and energy objectives stimulating renewable energy and lightweight transport, ...
- **Transition steps towards a circular economy:**
 - Upscaling from start-up & innovative SME to solid business: coping with an unadapted subsidizing system
 - Green Public Procurement
 - Price virgin materials vs recyclates

4. Critical metals

- **Content:**
 - End-of-life vehicles:
 - 500 000 cars exported / year from Port of Antwerp for second or third life in developing countries
 - Are we responsible for ESM end-of-life in developing countries?
 - What about loss of critical metals due to substandard recycling techniques in developing countries?
 - WorldLoop for cars:
 - setting up local collection and recycling facilities based on Flemish know-how
 - shipping hazardous elements + parts needing high-tech treatment (e.g. printed circuit boards) back to Flanders
- **Bottom-up / Top-down:** available high-end recycling technology / safeguarding environmentally sound management & critical materials stocks
- **Transition steps towards a circular economy:**
 - Emerging business by combining beginning & end value chain
 - Public-private participation
 - North-South win-win

Policy Recommendations

Policy recommendations to move towards a Circular Economy

- **Connecting the dots:** as JFK stated 'new objectives and new money cannot solve these problems': complex and large scale challenges need numerous connections between actors and initiatives in times where analysis and specialisation are dominant. Are there enough project calls that allow for embryonic concepts with enough potential?
- **Never day 1:** what are your current strengths in terms of location, education, entrepreneurship, culture, etc. scenario planning and backcastings are nice starting from ideal objectives.
- **Policy window:** how can the combination of elections, societal awareness and pressure, leadership, ... create an opportunity to speed up the transition.
- **People are key:** webinars provide a useful online dissemination platform, but when it comes to matchmaking, valorisation, and project set-up it is the intersection between professional objectives and private engagement where the biggest gains are to be found. What skills need to be introduced in education and on the workforce.
- **Learning journey:** we are welcoming questions, ideas, partnership proposals, ...

Bedankt voor uw aandacht.

Vlaams Materialenprogramma wordt gerealiseerd in samenwerking met:



Het Vlaams Materialenprogramma heeft de ambitie van Vlaanderen een Europese topregio op vlak van duurzaam materialenbeheer te maken. In het Vlaams Materialenprogramma bundelen de bedrijfswereld, de overheid, kennisinstellingen en het maatschappelijk middenveld de krachten en combineren we ambitieuze langetermijn visie-ontwikkeling met beleidsrelevant onderzoek en concrete acties op de korte termijn. In nauw overleg met alle sleutelactoren in Vlaanderen op het vlak van materialenbeheer, identificeerden we 9 hefboomen die tegen 2020 de basis moeten leggen voor een economie waarin materialen draaien in slim gesloten kringlopen.