



## Just Transition Platform – Project fiche:

# CHEMELOT CIRCULAR HUB

This document is part of a series presenting information and lessons learned on policy approaches at national, regional or local level supporting a just transition to a climate-neutral economy. The Just Transition Platform (JTP) assists EU Member States and regions to unlock the support in this transition. Visit the JTP website: Visit the JTP website: [https://ec.europa.eu/regional\\_policy/funding/just-transition-fund/just-transition-platform\\_en](https://ec.europa.eu/regional_policy/funding/just-transition-fund/just-transition-platform_en)

**Member State:**

The Netherlands

**Region:**

Limburg

**Sector:**

Chemical Industry

**Total project budget (€):**

€4 billion (over 10 years)

**Financing conditions (co-financing rate):**

N/A

**Sources of funding:**

EU funding: So far €9.6 million via Horizon Europe more calls expected. Investing agenda foresees synergy and leveraging private / public funding, from multi-level regional/national/European funding.

**National funding:**

N/A

**Regional funding:**

N/A

**Duration:**

10 years (2020-2030)

**Responsible Managing Authority/Agency:**

Brightlands Chemelot Campus/ Chemelot Circular Hub Office

## Summary

The Chemelot Circular Hub (CCH) initiative is a collective alliance by public and private stakeholders in the ARRA region (Antwerp, Rotterdam, Rhine-Ruhr Area) that aims to be a growth accelerator towards a circular society, concentrated on the Research & Innovation of materials and chemicals. To achieve this goal, a broad alliance of companies, governments and knowledge institutes has developed a joint Circular Economy Action Plan and Investment Agenda 2020-2030. The initiative aims to open up new perspectives for industry, science and the economy, and a cleaner and healthier living environment for residents. Currently, 21 projects are in progress or preparation, ranging from the realisation of sustainable circular raw material flows to the electrification of processes. The educational system will be transformed by training the teaching staff with new circular knowledge and skills – within the Circular Academy.

Furthermore, CCH is planning the creation of a living environment, starting with test neighbourhoods and centres such as city labs, where the circular society emerges in connectivity between knowledge centres such as Brightlands Chemelot Campus and the urban environment. Within this context, CCH acts as one large laboratory, where start-ups, scale-ups, science and the chemical industry work closely together. Training programs aimed at circularity ensure the connection with a vital labour market and offer new job opportunities. One of the pillars of the Hub is linked to circular competencies, to strengthen the employment market's position in the region, and transforming the educational system and training the teaching staff with new circular knowledge and skills via the Circular Academy is on the agenda.

## Type of activities:

Overall, the activities focus on: developing circular strategies for chemistry and material production; promoting research in the area of circular economy; strengthening the regional economy (economic and social); and accelerating sustainability and the climate transition on the regional, national and EU levels. Among the activities are captivating young generations and securing their loyalty with educational programs focused on circularity, appealing career prospects and the connection to a vital labour market. This also applies to people who are interested in retraining to acquire circular knowledge and skills. As precise actions the CCH has foreseen key activities to reach its goals, the single activities are grouped in 21 building blocks:

1. Circular Design
2. Waste as a raw material source for carbon and hydrogen
3. Biogenic raw materials
4. Reduction of non-CO2 emissions
5. Electrification
6. Integration
7. Strengthening the education chain
8. Employability and involvement of people
9. Real estate for education and research
10. Setting up labs and professional premises
11. New investment and the establishment of new circular activities
12. Security of supply of circular and biogenic raw material
13. Security of renewable energy supply
14. Adequate capacity for logistics infrastructure
15. Urban-industrial symbiosis
16. Test neighbourhoods and centres such as City Labs
17. Youth health
18. Acceleration of sustainable energy consumption
19. Intelligent handling of waste in society
20. Strengthening Euregional links and connections
21. Social support and regional pride

## Goals and approach:

The Chemelot Circular Hub is structured in four building blocks which have been prepared through a bottom-up approach by four teams (a total of 50 stakeholders), representing different pillars and summarising the multi-level approach of the initiative.

These pillars are divided as follows:

**Pillar 1: Circular Innovation and applications:** Inventing and using new processes using new materials.

**Pillar 2: Circular Human Capital Agenda:** Reskilling people to enable their success in the circular economy and attract them to the region.

**Pillar 3: Circular Fundament:** Arranging the logistics of the circular production processes and establishing industrial-urban symbiosis.

**Pillar 4: Circular Society:** Chemelot Circular Hub aims at delivering six societally coherent goals:

**Goal 1: Accelerate the transition towards a circular and climate-neutral economy and generate environmental returns.** By increasing 25% of hydrogen production without CO2 and reducing by 25% the water usage as well as the harmful substances emitted to the surface water.

**Goal 2: Generate economic returns by strengthening the foundations of the regional economy, creating new competitive circular revenue models and synergies, expanding from the chemical- and materials cluster to amongst others the manufacturing industries.** Finally, offer opportunities for entrepreneurs, regional small- and medium-sized enterprises (SMEs), multinationals, suppliers and customers.

**Goal 3: Generate societal returns.** Through attracting employment perspectives and places to live and work, the creation of a cleaner, safer and healthier living environment and promote the region as Circular Hub to include local stakeholders and citizens to participate.

**Goal 4: Increase the labour participation.** This is done by providing competent people with new future-proof and attractive jobs, retraining the existing workforce to acquire circular knowledge and skills, attracting younger generation talents to the region and, lastly, reducing brain drain of the regions, especially in the younger generation.

**Goal 5: Strengthen the region's knowledge position.** This is to be implemented through the attraction of talent, education institutes, innovation centres, the process industry and manufacturing industry, cultivating cooperation among these.

**Goal 6: Establish Chemelot Circular Hub in the Euregion as a showcase of European cooperation, by increasing (EU) regional and national earning capacity and accelerating sustainability and the climate transition.**

## Important outputs, results or achievements:

The Chemelot Circular Hub can be still considered in the planning and structuring phase and have for now elaborated a concrete Circular Economy Action Plan and Investment Agenda 2020-2030 to reach its goals together with their partners.

Until now the CCH started work on one of 21 projects that are being prepared, namely, the research and demonstration project SYSCHEMIQ which was funded by Horizon Europe with €9,6 million. SYSCHEMIQ's aim is to increase the contribution in the recycling and reuse of plastic in new products.

Further planned projects are:

**FUREC (Fuse Reuse Recycle):** This project focuses on the production of sustainable hydrogen for the chemical industry.

**Brightsite:** A research and innovation centre for sustainability within the chemistry sector, providing knowledge and expertise within the CCH.

**Vertoro:** This company focuses on the re-use of chemical waste from paper, pulp and cellulose ethanol factories to produce crude lignin oil, for further production of biobased materials, such as resins, alternative biobased fuels and chemicals.

Overall, six flagships to cover Chemelot Circular Hub's innovation & application need to be created to reach the goals and reach sustainable circularity. These flagships can build on the knowledge available in the many knowledge- and educational institutes present at Chemelot Campus, including the research at low TRL levels – for which the Chemelot Campus is well-positioned with Maastricht University and the Aachen Maastricht Institute for Biobased Materials. The CCH will continuously track initiatives and will periodically update this paragraph of the CEAP.

According to the Investing agenda of the CCH, the initiative would create a total of 8,000 to 16,000 new jobs and contribute to the South Limburg national income with an increase of 10%.

## Scalability<sup>1</sup> and transferability<sup>2</sup>:

The CCH initiative is scalable only to a small extent. The geographic location is an important factor for the CCH. The initiative operates on the regional level but includes cross-regional and Euregio collaboration together with the Netherlands, Flanders and North-rhine Westphalia. One of the key success factors is the concentration of companies, public and private research institutions within the so-called ARRA chemical cluster, which allows the cross-sectional collaboration, the emergence of synergies and focus on innovative projects.

A degree of transferability is given with certain constraints. While the Brightlands Chemelot Campus is unique in its size, composition and location within ARRA, the initiative is specifically tailored to the ARRA region and its historical industrial and geographical characteristics. The CCH approach, goals and activities could be transferred to other regions within the European Union. Certainly, the condition of having a cluster region would be helpful to create similar synergies and collaborations to have a similar concentration of cross-sectoral expertise to enable synergies within a systematic circular hub, such as the CCH.

## Key success factors and lessons learnt:

As key success factors and strengths, the CCH has identified the concentration and size of the Chemical Cluster in Limburg and the ARRA as a key success factor as the fifth biggest economic centre of gravity in the Netherlands, with an important contribution to the national earning. Furthermore, the companies located at Chemelot South Limburg accounts for 20% of the direct added value generated by the sector in the Netherlands. As a consequence, the CCH sees a high potential in impacting the whole of the Netherlands. Thanks to its central location in the Euregio and Europe, the CCH identified its cross-bordering collaboration as one of its strengths.

Moreover, one of the most obvious strengths is the combination of several stakeholders from different companies.

## Key challenges:

Firstly, the challenge regarding the ability to innovate and improve business so that an indispensable contribution to the transition to a sustainable, circular economy in the Netherlands can be made, was addressed. The question concerning, what investments in new first-in-kind installations are needed and which parties with new technologies should be part of the Chemelot Circular Hub are to be discussed. Furthermore, questions related to employees were part of the challenges CCH encountered: How can the employment market's position in the region be strengthened to ensure it will be able to fulfil the Chemelot Circular Hub's long-term growth ambitions? Lastly, challenges relating to the ecosystem that CCH wants to create were posed: What is needed for the transition of Chemelot and its external environment to create a Chemelot Circular Hub with European significance? How can the surrounding cities and regions be developed to build a leading circular testing ground with simultaneous improvement of both the physical and social living environment?



## Tools for supporting economic diversification and reskilling/upskilling via projects:

- supporting firms to become more innovative and adjust from 'traditional sectors' to new technologies
- providing workforce and start-up with training and upskilling programmes
- encouraging knowledge exchange and cooperation between larger and smaller firms
- ensuring well-targeted financing and investment
- building private and public sector capabilities for innovation
- scaling business innovation networks and support clusters
- capitalising on unique regional strengths for innovation
- strengthening entrepreneurial networks

<sup>1</sup> Scalability entails that a policy approach can be adapted to a bigger scale than just the local context.

<sup>2</sup> Transferability entails that a policy approach can be applicable to a similar setting and replicated.

## Central framework conditions<sup>3</sup>:

The Brightlands Chemelot Campus is located in the heart of the ARRA chemistry cluster (Antwerp, Rotterdam, Rhine-Ruhr Area). The ARRA employs 340,000 jobs in chemicals and accounts for 40% of the European chemical sales. The Brightlands Cluster as part of the ARRA chemistry cluster employs 8,100 jobs within 110 companies and factories.

The Chemelot Circular Hub is in Limburg, which due to its location in the centre of the ARRA region allows a cross-border and cross-sectoral collaboration between different public and private stakeholders. This regional characteristic is combined with a history of collaboration that goes on for 80 years and connects 150 companies in the Euregio. Thanks

to its strategic location, the Chemelot Circular Hub can collaborate and rely on alliances from the Industry, Research & Innovation, Education & Competence building and the Government & Society sector within Limburg and bordering regions. Its special location has made the Brightlands Chemelot Campus the first European Circular Hub that boosts innovation and business growth by giving combining knowledge, infrastructure and entrepreneurship in the sector of materials and chemicals. All the latter combinations of characteristics allow creating an R&D community that boosts innovation and focuses on sustainable processes and biomedical solutions to create solutions for the global challenges in the world and support sustainable living.

## Outlook:

The CCH initiative is for the time being planned to go on until 2030. Indeed, the Investing agenda is foreseeing a planned period of 10 years (2020-2030). However, some goals within the Circular Economy Action Plan refer to the year 2050 as a target. Additionally, the CCH is collaborating with the ministries

across borders of Economic Affairs and chemical branches of the Netherlands, Flanders and North-Rhine-Westphalia in the trilateral strategy which is planned to last until 2050. An extension of the initiative lifetime could be possible.

<sup>3</sup> Framework conditions encompass the institutional, informational and socio-economic factors that determine a given environment (contextual information), e.g. market conditions, access to finance, tax regulation, infrastructure and support.

## Partners & contacts:

- Bert Kip, CEO Brightlands Chemelot Campus
- Joris de Beer, VP DSM Netherlands
- Pieter Meekels, Alderman Municipality of Sittard-Geleen
- Nick Bos, Member of the Executive Board of Maastricht University
- Saskia Brand-Gruwel, On behalf of VISTA and Zuyd, Member of the Board of the Zuyd University of Applied Sciences
- Stephan Satijn, Provincial Executive of Limburg
- Frank Kuijpers, General Manager Corporate Sustainability SABIC
- Tys van Elk, Managing Director LIOF
- Marinke Wijngaard, Director Circular Economy TNO
- Arnold Stokking, Chairman of the Green Chemistry New Economy coalition

### Website:

<https://www.chemelotcircularhub.com/en>

## Sources:

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