European Union
European Regional
Development Fund

Smart Chemistry Specialisation Strategy

"Report on recommendations for the Involvement of Stakeholders and Governance of Regional Innovation Strategies in Limburg"

February 2017

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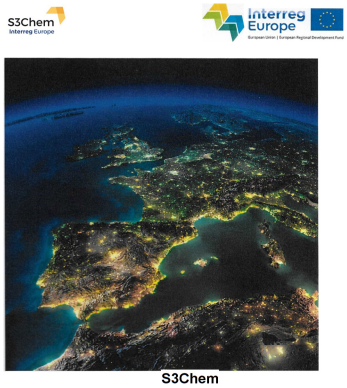
1. Description of RIS Governance

1.1 General Description

As already stated in the 1st semester analysis S3Chem: "*Report on current status of implementation of Regional Innovation Strategies in Chemical regions",* the region of Zuid-Nederland did not start a new strategic planning process for the drawing up of the RIS3, but the process was geared towards building and capitalising on the deep-rooted, time-tested tradition of triple helix cooperation and the resulting strategies, strategic networks and implementation programs. This process entailed the collaboration of companies, knowledge and research institutes, regions and cities.



It was a process that also clearly took into account the scale of the region: large enough for focus, critical mass and cohesion but open and diversification-oriented at the same time.

Most of the programs that are based on the RIS3 have a time horizon up to 2020. The strategic pillars for the RIS3 Zuid-Nederland are:

- the Brainport 2020strategy;
- the strategic Board of Zuidwest-Nederland Agenda;
- provincial economic agendas and programs;
- the implementation programs of the triple helix organisations in the southern sub regions of the Netherlands;
- roadmaps and innovation contracts of the relevant top sectors;
- various studies and benchmark reports.

These strategic pillars form an integral part of the RIS3. The aforementioned strategies, policy and implementation programs were realised by means of a bottom-up process of 'entrepreneurial discovery'. The available strategies have a high degree of complementarity and jointly cover the entire region of Zuid-Nederland.

The RIS3 Zuid-Nederland does not merely focus on (a number of) economic sectors and within these on thematic priorities per sector. It contains a more generic approach towards the identified priority sectors/cluster and the cross-overs between these sectors.

Concerning Chemistry and Materials the following parties are involved in the development and implementation of the RIS3 Zuid-Nederland in Limburg:

a) the management authority (MA) for the operational program OPZuid;
b) the triple helix network organisation Limburg Economic Development;
c) the province of Limburg and Brightlands Chemelot Campus.

Ad a) OPZuid management authority (MA)

The Operational Program South Netherlands 2014 - 2020 (OPZuid) is the result of an intensive joint preparatory process with all regional partners who can contribute to growth and employment in South Netherlands.

The three southern provinces were in charge of this process and they worked closely together with representatives of urban networks in the Southern Netherlands and representatives from universities, research institutions, industry and other authorities.

An important first step in the preparation of the Operational Program was writing a joint first draft containing the main headlines of the new OP. Working from the various provincial development agendas the main headlines were defined in the period from mid-2011 to mid-2012. As part of this process two stakeholder-meetings were organized.

A second important step in the preparation process was the development of the regional investment strategy for smart specialization (RIS3) by representatives of the triple helix network organizations, the three provinces and main cities. This strategy outlined the regional focus and priorities to strengthen innovation and R & D in the southern Netherlands and is the foundation for the use of ERDF funding in this Operational Program. RIS3 Zuid-Nederland was officially accepted in April 2013.

Based on RIS3 Zuid Nederland and the first joint draft the cooperating partners did start the preparation of the OP at the end of 2012. Separated working groups (with subjects JESSICA, JEREMIE and synergy to other programs) provided additional input.

During this process there was a regular alignment with the national government, the other Dutch ERDF-regions and the European Commission, concerning the strategic and organizational contours for the ERDF program. The regional stakeholders were consulted periodically to ensure that the OP kept meeting their agenda for 2020.

The following committees are involved in the implementation, monitoring and evaluation of the program:

- Management authority – Stimulus program management
- Supervisory Committee;
- Steering Committee;
- Expert committee.

The province of North Brabant has been appointed as Management Authority (MA) for the Operational Program South Netherlands 2014 - 2020 and has, as such, the ultimate responsibility for the content and financial implementation of the program. In this role, she will be accountable to the European Commission.

Stimulus Program management is a department of the province of North Brabant and carries out the OPZuid 2014-2020, in close collaboration with support centres in the provinces of Limburg and Zeeland. Stimulus advises and facilitates project applicants, and will assess and monitor the progress and legitimacy of the projects.

The Supervisory Committee monitors the correct implementation of the program, also evaluates the implementation and progress made towards achieving the objectives and finally advises on the Management Authority's proposed modifications to the program.

The Supervisory Committee was established by the Management Authority.

The mission of the Steering Committee is to give the Supervisory Committee both solicited and unsolicited advice on strategic and substantive steering of the program. It could include changes in the implementation of the program or program management. The Steering Committee was established by the Management Authority.

The Independent Expert Commission is responsible for the substantive assessment of project applications. Stimulus program management will check the application for completeness and appropriateness within the program. The External Expert Commission assesses the quality of applications on the basis of five nationally established criteria. The Expert Commission gives a weighty advice to the Management Authority based on the qualitative ranking of the applications.

The Expert Committee has a solid core and a flexible shell. The core consists of two members, including the chairman. They should ensure continuity in the review. The flexible shell consists of about three members, who are elected per call from a longlist. These members will be selected on substantive grounds and availability. The Expert Committee was established by the Management Authority

Ad b) Limburg Economic Development (LED)

LED is founded in 2013 by the three central municipalities in South Limburg as an instrument for a joint economic policy and nearly every municipality in South Limburg contributes to the budget of LED. Foundation LED is a development organization, urges the Brainport2020 projects, stimulates, facilitates and accelerates where necessary. It focuses on the further development of project ideas into a good and feasible project plan.

The triple helix composed program committees are the backbone of the organization. They discover and explore opportunities that boost the South Limburg economy. Where needed LED stimulates these opportunities.

In the board of LED are representatives of the municipalities in South Limburg, the province of Limburg, employer's organization LWV, regional development agency LIOF, Chamber of Commerce, educational institutions, hospitals in South Limburg, Brightlands Campuses and some individual companies.

LED is a member of the Brainport Network, South-East Nederland and is one of the six triple helix organisations which assist the management authority of OPZuid in the development of the quality of projects fitting within the Regional Innovation Strategy of South Netherlands (RIS3) and OPZuid.

Ad c) the province of Limburg and Brightlands Chemelot Campus

The province of Limburg has played an important role in the development and implementation of RIS3 / OPZuid. The province also has, as provincial authority, its own economic agenda and program focus on stimulation of the innovativeness of Limburg (top) companies and the

strengthening of business conditions. An important element of this policy is the development of Research & Business campuses and at the moment Limburg houses four of these campuses.

These campuses are united under the 'Brightlands'-mark and they located in:

- Brightlands Health Campus in Maastricht, (Regenerative medicine, precision medicine & innovative diagnostics);
- Brightlands Chemelot Campus in Sittard-Geleen, (Smart materials and sustainable manufacturing);
- Brightlands Smart Services Campus in Heerlen (Data science and smart services);
- Brightlands Greenport Campus in Venlo (Food and nutrition).

The Brightlands Chemelot Campus (BCC) is active in the field of Chemistry and Materials and is a joint triple helix initiative of the Province Limburg, DSM and Maastricht University.

The BCC B.V. was founded in 2011 by the Province Limburg, DSM and Maastricht University. Since the organisation was established, quality real estate (including external financing) was realized and a science program and other infrastructure were established.

Four institutes (InSciTe, BMC, CHILL and AMIBM) were founded at the Brightlands Chemelot Campus. Within these institutes famous knowledge institutions, including RWTH Aachen, Technical University Eindhoven and TNO are conducting research with international businesses. At the BCC also several research department of companies (DSM, Sabic, Isobionics, Arlanxeo) are located.

In 2016 the Center Court was opened at the BCC. The Center Court is the heart of the rapidly growing community of Brightlands Chemelot Campus, which employs more than 1,800 knowledge workers at present. These are closely linked to regional, national and international companies and institutions.

In the Center Court central facilities are established for all parties at the campus, including state-of-the-art meeting and conference rooms, a conference facility with an auditorium, restaurant facilities, an espresso bar and sports facilities.

Governance: BCC B.V. has one CEO and a Supervisory Board.

2. Involvement of regional Stakeholders

2.1 OPZuid

In the implementation process several broad stakeholder-meetings were organized to discuss a joint first draft containing the main headlines of the new OP.

An advisory board was working on the development of the regional investment strategy for smart specialization (RIS3). This strategy outlines the regional focus and priorities to strengthen innovation and R & D in the southern Netherlands and is the foundation for the use of ERDF funding in this Operational Program. In this advisory board the triple helix network organizations, the three provinces and main cities were represented.

Separated working groups (with subjects JESSICA, JEREMIE and synergy to other programs) provided additional input to this advisory board.

The regional stakeholders were consulted periodically to ensure that the OP kept meeting their agenda for 2020.

In the Supervisory Committee are represented: the employers and employees organisations, the main cities, knowledge institutes, environmental organisations, the three provinces, the Dutch Ministry of Economic Affairs and civil society.

The Supervisory Committee monitors the correct implementation of the program, also evaluates the implementation and progress made towards achieving the objectives and finally advises on the Management Authority's proposed modifications to the program.

In the Steering Committee are represented the triple helix organizations, the national and provincial governments and Local authorities. Its mission is to give the Supervisory Committee both solicited and unsolicited advice on strategic and substantive steering of the program. It could include changes in the implementation of the program or program management.

The goal of OPZuid is to recruit good quality projects. In the project and program management the regional triple helix organisations in South Netherlands - networks of enterprises, governments and research institutions – assists in the development of the quality of projects fitting within the Regional Innovation Strategy of the South Netherlands (RIS3) and OPZuid.

Other tools:

- websites
- newsletters
- brochures
- banners
- press releases
- public summary annual report
- regional meetings to inform potential applicants

Limburg Economic Development (LED)

In the board of LED are representatives of the municipalities in South Limburg , the province of Limburg, employer's organization LWV, regional development agency LIOF, Chamber of Commerce, educational institutions (higher and medium vocational training institutes, Open University Heerlen, Maastricht University), hospitals in South Limburg, Brightlands Campuses and some individual companies (Rabobank, APG).

In the eight program committees entrepreneurs, research institutions and governments in South Limburg work together for a stronger economy They are the backbone of the LED-organization and they discover and explore opportunities that boost the South Limburg economy.

The composition of a program committee is based on the triple helix concept. Representatives from business serve as figurehead (tractor) of the committees. For example, the industry has a leading role in the development of the LED-program. It is supported by representatives of the educational and research institutions and government.

Other tools:

- websites
- newsletters
- stakeholder meetings
- press release
- annual reports

Brightlands Chemelot Campus Community

In 2016 the Center Court was opened at the BCC. This Center Court is the heart of the rapidly growing community of Brightlands Chemelot Campus, which employs more than 1,800 knowledge workers at present. These are closely linked to regional, national and international companies and institutions.

Students and researchers from Maastricht Science Program and the Master Biobased Materials Maastricht University and the students and teachers associated with CHILL (Chemelot Innovation and Learning Labs; a joint venture between Zuyd University, Arcus College and Leeuwenborgh) will use the state-of -the-art laboratories and environments in Center Court.

In the Center Court central facilities are established for all parties at the campus, including state-of-the-art meeting and conference rooms, a conference facility with an auditorium, restaurant facilities, an espresso bar and sports facilities.

Center Court facilitates (in-) formal meetings and events and encourages cooperation across borders. Primarily for anyone with a passion for the development of advanced materials and sustainable technologies, but also for those who can support the development of new services, activities and talent.

Four institutes (InSciTe, BMC, CHILL and AMIBM) were founded at the Brightlands Chemelot Campus. Within these institutes famous knowledge institutions, including RWTH Aachen, Technical University Eindhoven and TNO are conducting research with international businesses. The further development of these institutes is stimulated by staring up substantive research projects.

The intension is that these institutes will bind knowledge, create new business (start-ups) and facilitate existing companies. Existing SMEs and start-ups can take advantage of these knowledge institutes (applied research).

In terms of business development the accent will be more and more placed on facilitating and creating new start-ups and business for existing (regional) SME's.

<u>Maastricht Science Program</u>

The Maastricht Science Program includes a wide range of courses at different Brightlands Campuses. At Brightlands Chemelot Campus, for example, they are offering a course in Biomedical Engineering.

Maastricht University started also a Master Biobased Materials.

Zuyd University of Applied Sciences has a faculty Applied Science where Biobased material is an important theme. *Biobased* is also an important policy theme of the province of Limburg

Other tools:

- websites
- newsletters
- press releases
- (in-) formal meetings
- the vision "Chemelot 2025" has been drawn up in co-operation with relevant stakeholders (business, campus and governments) to further strengthen the economic and spatial motor function for South Limburg.

Following institutes at the Brightlands Chemelot Campus play an important role in the science community:

AMIBM (Aachen Maastricht Institute for Biobased Materials):

- Maastricht University, Sciences, Department of Biobased Materials, located at Brightlands Chemelot Campus,
- Fraunhofer-Institut für Molekularbiologie und Angewandte Ökologie (IME), Aachen,
- Institut für Textiltechnik (ITA)-RWTH Aachen,
- Helmholtz Institut für Angewandte Medizintechnik (AME), Aachen.

The mission of AMIBM is to replace traditional polymer building blocks with innovative and sustainable alternatives for the development of novel and environmentally beneficial materials. The goal is to develop these novel materials into innovative products for technical and medical applications. The research program involves interdisciplinary research in at least four key sectors along the biobased materials value chain, each striving for a higher grade of sophistication than the current state-of-the-art.

The AMIBM offers a unique approach covering the entire biobased materials value chain including raw materials (such as feedstock), polymers (materials) and the end products derived from them (applications). Applications include biobased materials for medicine, environmental protection and industrial applications.

Chemelot InSciTe (Institute for Science & Technology)

- Province of Limburg,
- Technical University Eindhoven,
- DSM,
- Maastricht University,
- Maastricht University Medical Center+.

Chemelot InSciTe is a public-private institute in which parties are willing to jointly invest in developing marketable biobased materials that create less of a burden to the environment and biomedical material solutions for sustainable and affordable health care. InSciTe is open to other parties and actively seeks partners – from academia and industry (SME's or Big companies), and from all over the world – that complement the expertise of InSciTe and share its vision and ambitions.

BMC (Brightlands Materials Center)

- TNO,
- Province of Limburg.

BMC will apply scientific knowledge to questions from society or industry. Scientists and industry professionals will work with students in joint research programs in the field of sustainable packaging, lightweight mobility, electronics, polymer-based, 3D printing and recycling.

BMC will bring top scientists and industry professionals together to develop sustainable, breakthrough materials and application technologies that will change the market.

BMC has access to an international network of affiliated universities and companies. In joint research programs, scientists and specialists collaborate to develop sustainable technological innovations in the field of plastics.

CHILL (Chemelot Innovation and Learning Labs):

- DSM,
- Sabic,
- Zuyd University of Applied Sciences,
- Arcus College,
- Leeuwenborgh Opleidingen,
- Maastricht University.

CHILL offers an innovative learning, work, and research environment where companies (from start-ups to multinationals) and knowledge institutes (from intermediate vocational education institutes to universities) can work together to develop new knowledge and new products.

CHILL ensures that enough highly-trained professionals enter the sector and contribute to highlighting the importance of modern chemistry and its role in a sustainable society. CHILL offers also chemistry courses for students and professionals.

The main research field are:

- Sustainable Synthesis and Production with a focus on micro flow;
- Material Engineering with a focus on nanostructured materials;
- Biobased Materials, which focuses strongly on materials for 3D printing.

2.2 Participation Challenges

Related to Chemical and Materials and the Brightlands Chemelot Campus the main challenges for RIS governance are:

- further reinforcement of the regional knowledge infrastructure (research institutes and education programs) as well as valorisation of knowledge (new business model IP);
- further expansion of scientific institutes in the sense that substantive research projects will start, which will bring more knowledge workers, new business activities (start-ups) and support to existing companies;
- more industry and open innovation (business development and support of start-ups);
- optimisation of high value infrastructure: the Brightlands Chemelot Campus and its facilities (more opening towards regional SME's);
- further improvement of infrastructure (roads, pilot plants and real estate).

Special for the chemical industries:

- further transformation from raw materials to biomass, (bio)waste and other resources that are less burdensome to the environment or which even result in a positive C02 balance;
- Increasingly, the chemical sector will be seen as innovative, clean and safe and as an essential industry producing clever products that limit the negative impacts of economic activities on health and the environment;
- to produce more energy-efficiently and to achieve diversification in raw materials, focused R&D, sustainable innovation and facilitating legislation are important.

The regional triple helix shareholders of Brightlands Chemelot Campus (province of Limburg, DSM and University of Maastricht) are involved in the further development of Brightlands Chemelot Campus, its research instituts and innovative collaboration projects coming fom these.

3. Networks and Clusters

3.1 Brightlands Chemelot Campus Communities

Four public/private science institutes with a focus on performance, biomedical and biobased materials are located at BCC. There is a comprehensive cooperation between these institutes and companies with the other Brightlands campuses and other institutes in the field of crossovers (Health, food and ICT). Around these institutes specific networks and clusters arise aiming at the themes of the institutes and at many (cross-border) projects that are financed by EU (Horizon 2020), Interreg, ERDF and several provincial and national governmental funds.

Brightlands Chemelot Campus is a unique community that combines basic research, applied research, value creation and education to accelerate business growth.

The business development team of Brightlands Chemelot Campus B.V. strengthens the communities by offering a range of products and services (IP positions, facilities, networks and venture capital) to support entrepreneurs in the successive development stages of their company, ranging from start-ups to corporate enterprises.

The Brightlands Chemelot Campus is an open innovation centre where a large community of knowledge, research and education institutes and companies is located. Many entrepreneurs, scientists and students are working on innovation at the campus. Brightlands Chemelot

To stimulate the power of development and the innovative capacity it's important that not only the technology and research capacities of the institutes and companies should be stimulated, but also that environments are created where it is easy to make contacts and to have discussions (about innovative ideas, methods and knowledge) between entrepreneurs, scientists, students, institutes and companies.

Vivid communities

Brightlands Chemelot Campus believes in the efficacy of communities. The (mini) communities at Brightlands Chemelot Campus will help residents to do their job in a more efficient way and improve the quality of their work.

The following communities are active at Brightlands Chemelot Campus.

- Science Lectures;
- Entrepreneurs Community;
- Young Professionals Community;
- Secretary United;
- MarCom Community;
- Café Latino;
- Health Program (Fitness, Yoga, etc.).

Some of these communities are organized in collaboration with the other three Brightlands campuses, e.g. the Entrepreneurs Community and the Young Professionals Community.

Most of the Brightlands Chemelot Campus Communities are functional and informal.

Website: www.brightlands.com/brightlands-chemelot-campus

3.2 **Cluster SourceB:**

The following stakeholders are involved in the cluster SourceB:

- Brightlands Chemelot Campus;
- University Maastricht;
- DSM;
- Brightland Greenport Campus;
- Regional development agency LIOF;
- Province of Limburg

Limburg wants to be a nationally and internationally recognized hotspot for Biobased Economy. The mission is to accelerate and strengthen the transition to biomass as a key industrial raw material.

Anyone who is active or wants to be active in the area of Biobased Economy can participate.

SourceB will initiate and stimulate existing and new biobased business and research activities. SourceB is cooperating with AMIBM, Chemelot InSciTe and Chill.

At BCC Maastricht University started a Master Biobased Materials and Zuyd University of Applied Sciences has a faculty Applied Science where Biobased material is an important theme. *Biobased* is also an important policy theme of the province of Limburg

Main priorities of SourceB are knowledge and technology development for the (pre-) processing of a variety of biomass to various high-quality application fields.

Website: www.source-b.nl

Worth mentioning at this point is also a development in the field of Regenerative Medicine. On a national level the strong partners in this field are gathered in a new initiative called **RegMedXB** (*Regenerative Medicine Cross-Border*). The idea is to combine strong academic research in the provinces of Zuid-Holland, Utrecht, North Brabant and Limburg and connect these with counterparts in Leuven-Belgium (and later maybe with other regions across the border). In Limburg the research institutes LINK at Brightlands Maastricht Health Campus and Chemelot InSciTe at Brightlands Chemelot Campus are not only involved but play a major role. Especially the knowledge and research on biomedical materials that can be used in the development of new implants, is strong in Limburg.

It is not an established network or cluster yet but it certainly holds promises for the future!

Website: www.regmedxb.com

4. Identification of the thematic priorities

a) The thematic innovation priorities that can be funded by OPZuid / ERDF are:

- "Stimulation of research and innovation and the development of links and synergies"
  - Strengthening and broadening the southern Dutch open innovation system in crossovers between the international top clusters and between national and international top clusters, including a greater SME participation.
  - Strengthening the valorisation potential of SMEs in international and national top clusters, in order to contribute to the solving of identified societal challenges and strengthening the top clusters.
  - Sustainable strengthening of the system in which supply and demand of labour forces in the RIS3 top clusters are aligned, to maximize the innovation potential of the top clusters.
- "Research, innovation and use of low-carbon technology"
  - Stimulating of innovation coupled with smart deployment of low carbon technologies and instruments for urban environments.

These priorities focus on the top clusters in southern Netherlands, including chemistry and materials in Limburg.

At the Brightlands Chemelot Campus companies and institutes are located which focus on smart materials, smart chemistry and sustainable manufacturing. Special research institutes are founded for performance, biobased and biomedical materials. There is not only a comprehensive cooperation between these companies and institutes, but also with other companies and institutes in the field of crossovers (Health, food and ICT) and with the other Brightlands campuses.

The development of materials include the entire value chain and focus on sustainable and efficient production. The cooperation with partners at the Brightlands Chemelot Campus and the Chemelot industrial site is important for the development of smart and sustainable chemistry.

Brightlands Chemelot Campus combines basic research, applied research, value creation, and education to accelerate business growth.

b) The main thematic priorities at Brightlands Chemelot Campus are:

- Performance materials

The development of new polymers and new applications of polymers is important for health, food, energy and mobility. The basis for this development are social needs and market demands. The research focuses on technology platforms serving major application domains of the plastic industries: lightweight mobility, integrated electronics, sustainable packaging and comfortable housing.

- Biobased materials

Biobased materials are important to reduce the environmentally load. The research focuses on the development and production of biobased materials and building blocks, to optimize the entire chain of renewable raw materials.

- Biomedical materials

Biomedical materials are important to reduce health costs in the future. These materials comprise a wide range of substances that can be used in a growing number of human health care applications.

Regenerative medicine is a new dimension in the health world. Its goal is to invent, build and supply innovative solutions by tapping into the healing powers of our own bodies by using autologous or allogeneic cells. Its goal is to maintain human health at a reasonable cost by moving from a palliative, disease-controlling health care system to solutions that actually cure diseases.

- Sustainable technologies

At Brightlands Chemelot Campus a whole range of technologies is available for further research and development in the area of Advanced Materials, including: Laboratories, Cleanrooms, Pilot Plants, Mini Plants, Advanced analytical equipment, Knowledge and expertise.

General Innovation Priority	Specific innovation/ research field	Sustainable technologies/ research field
Performance Materials	- Lightweight mobility - Intergrated electronics - Sustainable packaging - Comfortable housing	Sustainable and efficient production
Biobased Materials	- Optimize chain of sustainable raw materials	Sustainable and efficient production
Biomedical materials	- Regenerative medicine	Sustainable and efficient production

Tabel 1 – Limburg Chemical Priority Topics

Many of the projects of the companies and institutes are funded by:

- Horizon 2020,
- Interreg,
- OPZuid/ERDF,
- National funds,
- Regional/provincial funds.

5. Conclusions and recommendations

5.1 Strengths and weaknesses

Strengths

The strengths of the existing RIS Governance are strong triple helix cooperation and good regional, cross-border and international connections. The region and surrounding regions have a high concentration of knowledge and research institutions.

Many of these institutions are related to chemistry and materials; also health and food are important themes. The latter is of interest to potentials for cross-over developments.

Cooperation with the cross-border regions provides a sufficient critical mass.

The presence of Brightlands Chemelot Campus in South Limburg is another strength. Many chemical and materials companies (small and large) and research institutes are located at the Campus and the surrounding industrial area. The whole chain from product development to commercial exploitation can be covered.

The campus is founded by the province of Limburg, Maastricht University and DSM. The commitment of a large chemical company like DSM is an important support base for the stimulation of materials and chemistry.

At the Campus 1800 knowledge workers are active and there are several research institutes and training institutions located. An extensive network and many facilities support these knowledge workers, institutes and companies to function optimally and to contribute to the open innovation centre.

In general there is broad support by participation of many stakeholders (governments, companies and research and knowledge institutes).

In South Limburg nearly every municipalities contributes to the costs of LED (€ 8 per capita).

Finally, many funds are available to support the development in Chemistry and Materials. Many on-going development projects appeal to general funds of the EU, national and provincial governments, specifically to:

- ERDF South Netherlands
- Interreg VA: Limburg is part of three Interreg areas

Weaknesses

The weaknesses of the existing governance have partly to do with the many stakeholders in various bodies (OPZuid, LED, Brightlands Chemelot Campus with various institutes). This leads to a lot of consulting and coordination and is time-consuming.

Differences in legislation and regulations hamper cross-border cooperation.

The priorities of ERDF South Netherlands are broader than chemistry and materials. Due to a limited ERDF budget not every chemistry and materials proposal can be granted.

Limburg is more than just the Brightlands Chemelot Campus and multiple chemical and materials companies are located outside the Campus and the Chemelot industrial site. It takes extra effort to involve these companies (and especially the SME's).

It is also sometimes problematic to continue the involvement of the member municipalities in LED. Brightlands Chemelot Campus is important, but some municipalities in Limburg have also other priorities.

STRENGTHS	WEAKNESSES
Strong triple helix cooperation	Brightlands Chemelot campus is important, but some municipalities have also other priorities.
Broad support by participation of many stakeholders	Lot of consulting and coordination and is time-consuming
Good regional, cross-border and international connections	Differences in legislation and regulations hamper cross-border cooperation
Presence of Brightlands Chemelot Campus (BCC)	Extra effort to involve companies (and especially the SME's) outside BCC.
High concentration of knowledge and research institutions in region and surrounding regions	ERDF budget is limited and open for more theme's
Many chemistry and materials, institutes as well as health and food. Good potentials for cross-over developments	The interests and agendas of stakeholders are not always parallel.
Commitment of a large chemical company (like DSM)	
Many knowledge workers and good facilities.	
Availability of large number of funds	

5.2 Needs for improvement

On November 23, 2016, the Managing Authority of the OPZuid invited some 60 stakeholders for a discussion related to the progress of the program up to then. Attendees came from the Steering Committee, the Supervisory Committee, the Expert Committee, the three provinces, the regional development agencies and the six triple helix organisations. The goal of the meeting was to get answers to questions as what the expectations had been at the start, to what extend results had been achieved towards these expectations and what possibly could and should be adjusted in the remaining program period in order to meet these (or even higher) expectations.

In general there was a high degree of contentment with the way the program had got so far. Especially the level of quality of the supported projects was described as more than satisfactory. Some suggestions with regard to content of the subsequent calls for proposals were made.

One specific point was raised that had to do with governance of the OPZuid.

The independent Expert Committee is responsible for the substantive assessment of ERDF project applications. Apart from the fact that they can choose to give more priority to a different theme than chemistry and materials, they may also decide to support a chemistry and materials project application that does not come from the roadmaps. The suggestion was made in the meeting to grant projects on the basis of compliance with the formulated roadmaps and not only based upon the selection by the Expert Committee.

However, this would only be possible in those top sectors where roadmaps are actually formulated such as Chemistry & Materials. Also, the selection by the Expert Committee was an important strategic choice in order to look for the best qualitative projects.

It was concluded that there is no urge to actualize the (governance of) OPZuid before the evaluation. Certainly options are open with a view to the next generation structural funds after 2020!

5.3 Expectations to interregional learning

We expect interregional learning to provide a contribution to a sound implementation of RIS3 South Netherlands, especially with respect to the Chemistry & Materials Cluster in Limburg.

This will be possible by supporting the process of identifying, initiating and developing new projects in the fields of Chemistry & Materials to be funded under the Operational Program ERDF as well as the Operational Programs Interreg VA for the Euregions in which the Province of Limburg participates.

Also, interregional learning should give support to the cooperation between the relevant stakeholders from science, industry and government within the Chemistry & Materials Cluster in developing joint innovation projects, with a special role for the Chemelot Campus.

In general, advanced materials and their applications have a key role for product innovations, but product developers and (plastic) engineers need to have enough technological knowledge. Limburg is blessed with many knowledge institutes in Limburg and in the surrounding regions/countries, but the (cross-border) cooperation between the product developers and engineers and the knowledge institutes could be improved. One possibility to make this happen, is to bring these people and institutes together within a (cross-border) event on advanced materials.

Brightlands Materials Center is working on this idea and we would like to learn from the experiences of our partners about this approach.

Following on the previous point, we believe it is desirable that more contacts exists between the various research institutes in the S3Chem regions (and with companies).

Finally, we will be using the project and its results in the constant adaptation of innovation support measures. Good experiences from other regions will be considered in the drafting and implementation of support schemes, especially aiming at the participation of SME's in relevant (Campus) activities which needs to be improved.

6. Annex: Regional Stakeholders

a) Public Authorities:
   1. Province of Limburg
   2. Management authority OPZuid
   3. LED; Limburg Economic Development

b) Networks and Clusters:
   1. Brightlands Chemelot Campus Communities
   2. Cluster SourceB

c) Industry:
   1. Royal DSM
   2. SABIC
   3. ARLANXEO
   4. Avantium
   5. Isobionics

d) Science:
   1. AMIBM (Aachen Maastricht Institute for Biobased Materials)
   2. Chemelot InSciTe (Institute for Science & Technology)
   3. BMC (Brightlands Materials Center)
   4. CHILL (Chemelot Innovation and Learning Labs)
   5. Maastricht university – Maastricht Science program
   6. Master Biobased Materials Maastricht University
   7. TUE Technical University Eindhoven

6.1 Public Administration Stakeholders

provincie limburg

Name of the Public Entity: *Province of Limburg*

Description of Main Competencies and Responsibilities / Role in RIS Implementation (

The province of Limburg has played an important role in the development and implementation of RIS3 / OPZuid. She also has, as provincial government, its own economic agenda and program focus on stimulation of the innovativeness of Limburg (top) companies and the strengthening of business conditions. An important element of this policy is the development of Research & Business campuses and at the moment Limburg houses four campuses.

The Brightlands Chemelot Campus (BCC) is active in the field of Chemistry and Materials and is a joint triple helix initiative of the Province Limburg, DSM and Maastricht University.

Contact Details:

Name : *H.M.M.G. (Huib) Daniëls*

Position : *strategic senior (Cluster Economy and Innovation)*

Address :

Limburglaan 10

6229 GA Maastricht

The Netherlands

P.O. box 5700

6202 MA Maastricht

The Netherlands

Phone : *+31 (0)43 389 74 27*

Email : *hmmg.daniels@prvlimburg.nl*

Website : *www.limburg.nl*

Name of the Public Entity: *Stimulus Program management*

Description of Main Competencies and Responsibilities / Role in RIS Implementation (

The province of North Brabant has been appointed as Management Authority (MA) for the Operational Program South Netherlands 2014 - 2020 and has, as such, the ultimate responsibility for the content and financial implementation of the program. In this role, she will be accountable to the European Commission.

Stimulus Program management is a department of the province of North Brabant and carries out the OPZuid 2014-2020, in close collaboration with support centers in the provinces of Limburg and Zeeland. Stimulus advises and facilitates project applicants, and will implement and monitor the progress and legitimacy of the projects.

Contact Details:

Name : *Remco Reisinger*

Position : *Head Stimulus Program management*

Address :

Gebouw De Witte Dame

Emmasingel 26 (Lichtplein)

5611 AZ Eindhoven

The Netherlands

P.O. box 585

5600 AN Eindhoven

The Netherlands

Phone : *+31 (0)40 2370100*

Email : *info@stimulus.nl*

Website : *www.stimulus.nl*

Name of the Public Entity: *Limburg Economic Development (LED)*

Description of Main Competencies and Responsibilities / Role in RIS Implementation (

Foundation LED is a development organization, urges the Brainport2020 projects, stimulates, facilitates and accelerates where necessary. It focuses on the further development of project ideas unto a good and feasible project plan.

LED is one of the six triple helix organizations which assist the management authority OPZuid in the development of the quality of projects fitting within the Regional Innovation Strategy of the South Netherlands (RIS3) and OPZuid.

Contact Details:

Name : *Leo Burdorf*

Position : *secretary*

Address :

Poststraat 8

6135 KR Sittard

The Netherlands

Phone : *+31 (0)43 328 25 65*

Email : *info@ledbrainport2020.nl*

Website : *www.ledbrainport2020.nl*

6.2 Cluster/Networks/Initiatives

Name of the Organization: *Brightlands Chemelot Campus Communities*

Type of Organization:

- ☒ Informal network without legal personality
- ☐ Project-funded network / cluster without legal personality
- ☐ Member-funded network / cluster with its own legal personality

Financing

- ☒ % of members fees
- ☒ % of public funding
- ☒ % incomes from services provided
- ☐ % other… (specify)

Structure / Members:

Students and researchers, closely linked to regional, national and international companies and institutions. At present: more than 1,800 knowledge workers at the Brightlands Chemelot Campus

Description of the Main Competencies / Fields of Activities (in headwords)**:**

Research institutes communities:

Around the Brightlands Chemelot Campus institutes specific networks and clusters arise aiming at the themes of the institutes and at many (cross-border) projects

Vivid communities:

The (mini) communities at Brightlands Chemelot Campus will help entrepreneurs, scientists and students who are working on innovation at the campus to do their job in a more efficient way and improve the quality of their work. The relevant activities are: Science Lectures, Entrepreneurs Community, Young Professionals Community, Secretary United, MarCom Community, Café Latino and a Health Program (Fitness, Yoga, ect.).

Relevant Thematic Innovation Priority / Research Field:

performance, biomedical and biobased materials & sustainable technologies

Contact Details:

Name : *Astrid Verberne*

Position : *Manager Community Development*

Address:

Urmonderbaan 22
Center Court (Level 1)
6167 RD Sittard-Geleen
The Netherlands

P.O. Box 18
6160 MD Sittard-Geleen
The Netherlands

Phone : *+31 6 10655531*

Email	: *astrid.verberne@brightlands.com*
Website	: *www.brightlands.com/services-facilities/campus-community*

Name of the Organization: *SourceB*

Type of Organization:

- ☒ Informal network without legal personality
- ☐ Project-funded network / cluster without legal personality
- ☐ Member-funded network / cluster with its own legal personality

Financing

- ☐ % of members fees
- ☐ % of public funding
- ☐ % incomes from services provided
- ☐ % other… (specify)

Structure / Members:

Anyone who is active or wants to be active in the area of Biobased Economy can participate.

Description of the Main Competencies / Fields of Activities (in headwords)**:**

The mission is to accelerate and strengthen the transition to biomass as a key industrial raw material. With interested companies new projects will be started.

Relevant Thematic Innovation Priority / Research Field:

Knowledge and technology development for the (pre-) processing of a variety of biomass to various high-quality application fields

Contact Details:

Name : *Bart van As*

Position : *Business developer Biobased Brightlands Chemelot Campus*

Address :

Urmonderbaan 22 *P.O. Box 18*

Center Court (Level 1)

6167 RD Sittard-Geleen *6160 MD Sittard-Geleen*

The Netherlands *The Netherlands*

Phone : *+31 6 52 64 78 60*

Email : *Bart.vanAs@Brightlands.com*

Website : *www.source-b.nl*

6.3 Industry Stakeholders

Name of the Company: Royal DSM NV

Indicators Employment / Turnover	
Number of Employees: 20.786	Relevant Category: ☐ < 10 ☐ 10 to 49 ☐ 50 to 249 ☒ > 250
Turnover €/a: 7.9 billion euro,	Relevant Category: ☐ max. 2 Mio. € ☐ max. 10 Mio. € ☐ max. 50 Mio. € ☒ more than 50 Mio. €

Description of Main Competencies / Fields of Activities (in headwords)**:**

Royal DSM is a global science-based company active in health, nutrition and materials. By connecting its unique competences in life sciences and materials sciences DSM is driving economic prosperity, environmental progress and social advances to create sustainable value for all stakeholders simultaneously.

Relevant Thematic Innovation Priority / Research Field:

Smart materials and Sustainable manufacturing

Contact Details:

Name : *Lieke de Jong-Top*

Position : *Senior Communications Manager, Science & Innovation*

Address:

DSM Innovation Center

Urmonderbaan 22

6167 RD Geleen

The Netherlands

Phone : *+31 (0)46 477 0111*

Email : *lieke.jong-tops-de@dsm.com*

Website : *www.dsm.com*

Name of the Company: *SABIC (Saudi Basic Industries Corporation)*

Indicators Employment / Turnover

Number of Employees: 1600	Relevant Category: ☐ < 10 ☐ 10 to 49 ☐ 50 to 249 ☒ > 250
Turnover €/a:	Relevant Category: ☐ max. 2 Mio. € ☐ max. 10 Mio. € ☐ max. 50 Mio. € ☒ more than 50 Mio. €

Description of Main Competencies / Fields of Activities (in headwords)**:**

At the industrial site Chemelot SABIC has two naphtha crackers, three high-density polyethylene plants, four low density polyethylene plants, two polypropylene plants, a benzene / butadiene plant and an ETBE plant.

In 2016 SABIC opened a new research facility on the Brightlands Chemelot Campus in Geleen.

Relevant Thematic Innovation Priority / Research Field:

chemicals and polymer materials

Contact Details:

Name : *Dieter Hollmann*

Position : *Site Director Geleen*

Address :

Europaboulevard 1, 6135 LD Sittard

Postbus 5151,

6130 PD Sittard

The Netherlands

T Phone : *+31 (0)46-722 2222*

Email :

Website : www.sabic-limburg.nl

Name of the Company: *ARLANXEO*

Indicators Employment / Turnover

<table>
<tr><td>Number of Employees: …….</td><td>Relevant Category:
☐ < 10
☐ 10 to 49
☐ 50 to 249
☒ > 250</td></tr>
<tr><td>Turnover €/a: …….</td><td>Relevant Category:
☐ max. 2 Mio. €
☐ max. 10 Mio. €
☐ max. 50 Mio. €
☒ more than 50 Mio. €</td></tr>
<tr><td colspan="2">Description of Main Competencies / Fields of Activities (in headwords):
ARLANXEO is one of the world's largest suppliers of a series of high-quality rubbers based on ethylene-propylene. ARLANXEO was founded in April 2016 as a joint venture of Lanxess AG (50%) and Saudi Aramco (50%). The new headquarters is situated in Maastricht.
Saudi Aramco is the largest oil company in the world and a major energy supplier.
Lanxess AG is a German chemical company active in the production of chemical additives and semi-finished products, plastics and synthetic rubber.
The products are divided into three groups:
1. Industrial chemicals,
2. Synthetic rubber,
3. Plastics.
In 2011 Lanxess took over DSM Elastomers in Geleen. At the moment ARLANXEO manufactures Keltan®, a range of high quality ethylene-propylene based rubbers (EPDM) at the industrial site of Chemelot.</td></tr>
<tr><td colspan="2">Relevant Thematic Innovation Priority / Research Field:
Energizing Chemistry – development and manufacturing of chemical products and provide services in a safe and sustainable way.</td></tr>
<tr><td colspan="2">Contact Details:
Name : Geert Schreurs
Position : Site Manager
Address : ARLANXEO Netherlands B.V.
Urmonderbaan 24
6167 RD Geleen - The Netherlands
Phone : +31 (46) 70 20 690
Email : geert.schreurs@arlanxeo.com
Website : www.arlanxeo.com</td></tr>
</table>

<table>
<tr><td colspan="2">Name of the Company: Avantium</td></tr>
<tr><td colspan="2">Indicators Employment / Turnover</td></tr>
<tr><td>Number of Employees:</td><td><u>Relevant Category:</u>
☐ < 10
☒ 10 to 49
☐ 50 to 249
☐ > 250</td></tr>
<tr><td>Turnover €/a: …….</td><td><u>Relevant Category:</u>
☐ max. 2 Mio. €
☐ max. 10 Mio. €
☒ max. 50 Mio. €
☐ more than 50 Mio. €</td></tr>
<tr><td colspan="2">Description of Main Competencies / Fields of Activities (in headwords):
Avantium develops efficient processes and sustainable products made from biobased materials. From invention to commercially viable production processes.
Avantium’s Renewable Chemistries business unit focuses on developing and commercializing innovative products and processes in the renewable & sustainable chemistries space.</td></tr>
<tr><td colspan="2">Relevant Thematic Innovation Priority / Research Field:
Sustainable technology advance materials & biobased materials</td></tr>
<tr><td colspan="2">Contact Details:
Name : Tom B. van Aken
Position : Chief Executive Officer

Address :
Avantium – Brightlands Chemelot Campus
Urmonderbaan 22
6167 RD Geleen
The Netherlands

Phone : +31 (0)20 586 8080
Email:
Website : www.avantium.com</td></tr>
</table>

Name of the Company: *Isobionics*

Indicators Employment / Turnover	
Number of Employees: …….	Relevant Category: ☐ < 10 ☒ 10 to 49 ☐ 50 to 249 ☐ > 250
Turnover €/a: …….	Relevant Category: ☒ max. 2 Mio. € ☐ max. 10 Mio. € ☐ max. 50 Mio. € ☐ more than 50 Mio. €

Description of Main Competencies / Fields of Activities (in headwords)**:**

Isobionics is an ingredients company developing, producing and selling a range of natural products in the flavour and fragrance market, using its proprietary platform technology

Relevant Thematic Innovation Priority / Research Field:

Development of high quality natural aromas and flavors through biodegradation (white biotechnology)

renewable materials and low carbon / energy footprint

Contact Details:

Name : *Toine Janssen.*

Position : *CEO*

Address :

Urmonderbaan 22, bldg 45.01.05,

6167 RD Geleen,

The Netherlands

Phone : *+31 433 02 02 12*

Email : *Info@isobionics.com*

Website : *www.isobionics.com*

Name of the Research Institution:
AMIBM (Aachen Maastricht Institute for Biobased Materials)

Number of Researchers: 54

Type of Institution	**Research Category**
☐ University	☐ Basic Research
☒ Research Institute	☒ Industrial Research
☐ Research and Centers for Development, that are operated by industrial enterprises	☒ Experimental Research

Description of Main Competencies / Research Areas (in headwords)**:**

The mission of AMIBM is to replace traditional polymer building blocks with innovative and sustainable alternatives for the development of novel and environmentally beneficial materials. The goal is to develop these novel materials into innovative products for technical and medical applications. The research program involves interdisciplinary research in at least four key sectors along the biobased materials value chain, each striving for a higher grade of sophistication than the current state-of-the-art.

Relevant Thematic Innovation Priority / Research Field:

The AMIBM offers a unique approach covering the entire biobased materials value chain including raw materials (such as feedstock), polymers (materials) and the end products derived from them (applications). Applications include biobased materials for medicine, environmental protection and industrial applications

Contact Details:

Name: Richard Ramakers

Position: Managing Director

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The Netherlands

Brightlands Chemelot Campus, Building 110

Phone: +31 (0)6 81130077

Email: richard.ramakers@maastrichtuniversity.

Website: *www.brightlands.com/research-business/research-institutes/amibm*

www.brightlands.com/companies-institutes/amibm

www.maastrichtuniversity.nl/research/institutes/aachen-maastricht-institute-bio-based-materials

Name of the Research Institution: *Brightlands Materials Center (BMC)*

Number of Researchers: *30*

Type of Institution	**Research Category**
☐ University ☒ Research Institute ☐ Research and Centers for Development, that are operated by industrial enterprises	☐ Basic Research ☒ Industrial Research ☒ Experimental Research

Description of Main Competencies / Research Areas (in headwords)**:**

BMC will apply scientific knowledge to questions from society or industry. Scientists and industry professionals will work with students in joint research programs to develop sustainable, breakthrough materials and application technologies that will change the market.

Relevant Thematic Innovation Priority / Research Field:

Sustainable packaging, lightweight mobility, electronics, polymer-based, 3D printing and recycling.

Contact Details:

Name : *Marnix van Gurp / Peter Wolfs*

Position : *Managing Directors*

Address :

Brightlands Materials Center

Urmonderbaan 22 (Gate 2)

6160 MD Geleen

The Netherlands

P.O. Box 18

6160 MD Geleen

The Netherlands

Phone : *+31 46 476 6121*

Email : *info@brightlandsmc.com*

Website : *www.brightlandsmaterialscenter.com*

6.4 Science Stakeholders

Name of the Research Institution: *Chemelot InSciTe*

Number of Researchers: *11*

Type of Institution	Research Category
☐ University	☐ Basic Research
☒ Research Institute	☒ Industrial Research
☐ Research and Centers for Development, that are operated by industrial enterprises	☒ Experimental Research

Description of Main Competencies / Research Areas (in headwords)**:**

Chemelot InSciTe is a public-private institute in which parties bundle their strengths in the development and application of biomedical materials and the production of biobased building blocks.

Chemelot InSciTe's biomedical and biobased RT&D programs focus on helping proven concepts and ideas further develop in the technology readiness level towards business development and commercialization.

Relevant Thematic Innovation Priority / Research Field:

*The **biomedical** RT&D program is centred around three disease areas: cardiovascular, orthopedics and ophthalmology. InSciTe's focus on translational research aims to establish proof of concept in first patients.*

*InSciTe's **biobased** research is built on the strong belief that the route towards making materials by smarter approaches via developing sustainable production processes for biobased materials from renewable feedstock is one of the key answers.*

Contact Details:

Name : *Emiel Staring*

Position : *Managing Director*

Address :

Urmonderbaan 20F (near Gate 2 Chemelot Campus)

6167 RD Geleen

The Netherlands

Phone : *+31 46 70 22 800*

Email : *info@chemelot-inscite.com*

Website : *www.chemelot-inscite.com*

Name of the Research Institution:

Chemelot Innovation and Learning Labs (CHILL)

Number of Researchers: *29*

Type of Institution	**Research Category**
☐ University ☒ Research Institute ☐ Research and Centers for Development, that are operated by industrial enterprises	☐ Basic Research ☒ Industrial Research ☒ Experimental Research

Description of Main Competencies / Research Areas (in headwords)**:**

CHILL offers an innovative learning, work, and research environment where companies (from start-ups to multinationals) and knowledge institutes (from intermediate vocational education institutes to universities) can work together to develop new knowledge and new products.

Relevant Thematic Innovation Priority / Research Field:

The main research field are:

- *Sustainable Synthesis and Production with a focus on micro flow;*
- *Material Engineering with a focus on nanostructured materials Biobased Materials;*
- *Biobased Materials, which focuses strongly on materials for 3D printing.*

Contact Details:

Name : *Peter Engelen*

Position : *Director*

Address :

Urmonderbaan 22, Gate 2, Center Court

6167 RD Geleen

The Netherlands

Phone : *+31 46 763 21 10*

Email : *info@chillabs.nl*

Website : *www.chillabs.com*

Name of the Research Institution:

Maastricht University,

Faculty of Humanities and Sciences (FHS)

Department of Biobased Materials

Number of Researchers: *5*

Type of Institution	**Research Category**
☒ University	☒ Basic Research
☐ Research Institute	☒ Industrial Research
☐ Research and Centers for Development, that are operated by industrial enterprises	☒ Experimental Research

Description of Main Competencies / Research Areas (in headwords)**:**

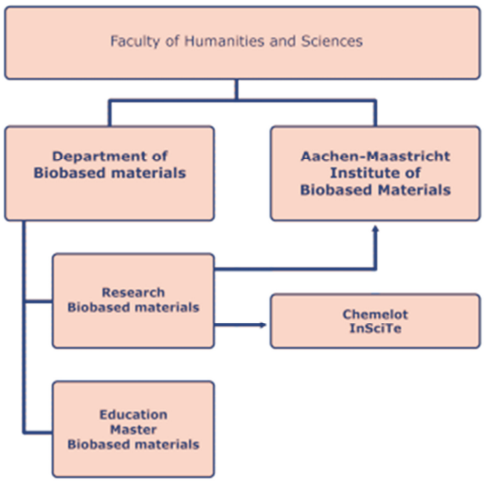
Maastricht University (UM) is the most international university in the Netherlands and, with more than 16,000 students and 4,000 employees, is still growing. The university stands out for its innovative education model, international character and multidisciplinary approach to research and education.

Education and research at Maastricht University is organized in faculties and schools. In total there are six of these entities. One of these entities is the Faculty of Humanities and Sciences.

The Faculty of Humanities and Sciences (FHS) is the incubator and home of several outstanding departments and prestigious institutions in education and research.

One of these departments is the Department of Biobased Materials (BBM)

The department has two main pillars; education and research. The education pillar represents the Biobased Materials master program. The research pillar represents an international group of scientists that participate in projects within the institutes AMIBM (Aachen-Maastricht Institute for Biobased Materials) and Chemelot InSciTe (Institute for Science and Technology).



Relevant Thematic Innovation Priority / Research Field:

The research field is closely related to the two related institutes.

In summary these fields are:

Providing the missing link between fundamental and applied research and the market in the field of biobased materials by developing an integrated, interdisciplinary research program. The program focuses on new strategies to produce advanced biobased materials in a sustainable and economical way. It also emphasizes the development of these novel materials into innovative products with high added value for technical and medical applications.

The developing of healing biomedical materials for high quality, affordable healthcare and also processes to produce biobased materials from renewable raw materials that do not compete with the food chain.

Contact Details:

Name : *Yvonne van der Meer*

Position : *Head Dept. of Biobased Materials*

Address :

Postal address

Maastricht University

Department of Biobased Materials

Brightlands Chemelot Campus

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6167 RD, Geleen

The Netherlands

Phone : *+31 (0)43 388 2296*

Email : *bbm-secr@maastrichtuniversity.nl*

Website : *www.maastrichtuniversity.nl*

Name of the Research Institution: **Maastricht Science Program**
Master Biobased Materials

Number of Researchers: *21*

Type of Institution	**Research Category**
☒ University	☒ Basic Research
☐ Research Institute	☒ Industrial Research
☐ Research and Centers for Development, that are operated by industrial enterprises	☐ Experimental Research

Description of Main Competencies / Research Areas (in headwords)**:**

Maastricht University (UM) is the most international university in the Netherlands and, with more than 16,000 students and 4,000 employees, is still growing. The university stands out for its innovative education model, international character and multidisciplinary approach to research and education.

Maastricht Science Program (MSP) is an English language, internationally oriented, Liberal Arts & Sciences program. Students are free to design the program of their choice by choosing courses from an extensive offer of natural science courses in the fields of biology, chemistry, physics, mathematics, biomedical engineering, biomaterials, neuroscience and entrepreneurship, combined with interdisciplinary courses. The MSP is part of the Faculty of Humanities and Sciences of Maastricht University (see also annex 15).

The MSP combines the Problem-Based Learning (PBL) with a Research-Based Learning (RBL) as an integral part of the education. In RBL, you work on contemporary research topics as part of your study. During courses and skills trainings, you examine research problems for which the answers are not yet known. You also conduct your own research in close cooperation with scientists and researchers during the project periods and the Bachelor Thesis Research. This allows you to apply your knowledge and to make your own discoveries, rather than simply learning about existing theories. The practical aspects of your study take place at the Brightlands Chemelot Campus, where the Maastricht Science Program has state-of-the-art laboratories.

Master Biobased Materials

The Master Biobased Materials is a two-years master's program taught at the Brightlands Chemelot Campus. It focuses on the development of novel, biobased materials that are necessary for the transition to a sustainable economy.

The Biobased Materials Research Group participates in the Aachen-Maastricht Institute for Biobased Materials (AMIBM) and the Chemelot Institute for Science & Technology (InSciTe); they collaborate with various partners on a number of projects.

Relevant Thematic Innovation Priority / Research Field:

Development of novel, biobased materials that are necessary for the transition to a sustainable economy
Contact Details: Name : *Birembaut, F.G.A. (Fabrice)* Address : *Postal address* *Visiting address* *Maastricht University* *Kapoenstraat 2* *Maastricht Science Program* *6211 KW, Maastricht* *P.O. Box 616* *6200 MD, Maastricht* Phone : +31 43 388 5190 Email : *fabrice.birembaut@maastrichtuniversity.nl* Website : www.maastrichtuniversity.nl/education/bachelor/bachelor-maastricht-science-program

Name of the Research Institution: Technical University Eindhoven, Department of Mechanical Engineering; Section Polymer Technology

Number of Researchers: 10

Type of Institution	**Research Category**
☒ University ☐ Research Institute ☐ Research and Centers for Development, that are operated by industrial enterprises	☒ Basic Research ☒ Industrial Research ☐ Experimental Research

Description of Main Competencies / Research Areas (in headwords)**:**

Technical University Eindhoven (TU/e) is a research university specializing in engineering science & technology. TU/e has nine departments, one of them is Mechanical Engineering. This department has several research groups and one of them is Polymer Technology.

The mission of the research group Polymer Technology is to provide education and conduct research in the broad area of Polymer Technology, i.e. the industrial arts of manufacturing of polymer-based products. Special emphasis is placed on bridging the gap between science and technology in the area of polymer processing and design, through the use of experimental and computational tools in the modelling of the full thermo-mechanical history of material (elements) during their formation, processing and final design, to quantitatively predict the properties of processed objects.

The TU/e participates in Chemelot InSciTe and also works together with Brightlands Materials Center. Participation in these partnerships is in line with the TU/e strategy to achieve a High Tech Materials Center.

Relevant Thematic Innovation Priority / Research Field:

The main research areas are:

- *Applied Rheology and Process Modelling*
- *Chaotic Mixing and Multi-phase Flows*
- *Contact and Surface Mechanics*

Contact Details:

Name : *prof.dr.ir. P.D. Anderson*

Position : *Chair Polymer Technology*

Address:

Building 15
PO BOX 513
5600 MB Eindhoven
Gemini-Zuid 4.139
Eindhoven
The Netherlands

Visiting address
Den Dolech 2
5612 AZ Eindhoven
The Netherlands

Phone : *+31 (0) 40 247 8453*

Email : *P.D.Anderson@tue.nl; pt@tue.nl*

Website : *www.tue.nl*

7. Main sources of information:

1) Report on current status of implementation of Regional Innovation Strategies in Chemical Regions (first semester analysis S3Chem);
2) Minutes of Regional Innovation Stakeholder Group Meeting; 19 January 2017;
3) RIS3 Zuid Nederland, Smart Specialisation strategy;
4) Operational program Zuid-Nederland 2014-2020
5) Website Stimulus: www.stimulus.nl/opzuid/;
6) LED Policy Plan 2014-2020 (*"Focus, samenwerking en passie"*)
7) Website LED: www.ledbrainport2020.nl;
8) Policy plan Province of Limburg; *"Innovatiekracht Chemie en materialen / Brightlands Chemelot "*
9) Website Province of Limburg: www.limburg.nl;
10) Vision Chemelot 2025
11) Website Brightlands Chemelot Campus: www.brightlands-chemelot-campus;
12) Website Sittard-Geleen: www.sittard-geleen.nl;
13) Websites AMIBM:
    - www.brightlands.com/research-business/research-institutes/amibm;
    - www.brightlands.com/companies-institutes/amibm;
    - www.maastrichtuniversity.nl/research/institutes/aachen-maastricht-institute-bio-based-materials;
14) Netherlands Enterprise Agency: Monitoring Biobased Economy in Nederland;
15) Website BMC: www.brightlandsmaterialscenter.com;
16) Website InSciTe: www.chemelot-inscite.com;
17) Website CHILL: www.chillabs.com;
18) Website cluster SourceB: www.sourceb.nl
19) Websites Royal DSM:
    - www.dsm.com;
    - www.chemelot.nl;
20) Website SABIC: www.sabic-limburg.nl;
21) Website ARLANXEO: www.arlanxeo.com;
22) Website Lanxess: www.lanxess.com;
23) Website Avantium: www.avantium.com;
24) Prospectus Avantium NV
25) Website Isobionics: www.isobionics.com;
26) Website Maastricht University: www.maastrichtuniversity.nl
27) Website Maastricht Science Program: www.maastrichtuniversity.nl/education/bachelor/bachelor-maastricht-science-programme
28) Website Technical University Eindhoven: www.tue.nl
29) Newspaper: "Financieele Dagblad";
30) Newspaper: "de Limburger;"
31) News site: www.wijlimburg.nl/nieuwsoverzicht;
32) Wikipedia.