



The SMARTPILOTS project:

Improving policies in support of shared pilot facilities to increase their impact on the Key Enabling Technology Industrial Biotech and the European Bioeconomy

ACTION PLAN for the REGION of FLANDERS

To be implemented and monitored from April 2018 – March 2020

Represented in this project by Bio Base Europe Pilot Plant (Partner 1) and Department EWI (Partner 2)



DEPARTEMENT
ECONOMIE
WETENSCHAP &
INNOVATIE

Table of Contents

1.	Introduction.....	4
1.1	The SmartPilots projects.....	4
1.2	What are shared pilot facilities and why are they important?	4
1.3	A Bioeconomy for Europe.....	4
1.4	A Circular Economy for Europe	4
1.5	Shared pilot facilities for the circular bioeconomy	5
2.	General Information.....	5
3.	Policy Context in Flanders	5
3.1	Flanders European Structural and Investment Funds	5
3.1.1	Value of ERDF Programme 2014-2020	5
3.1.2	Priority Axes and Specific Objectives.....	5
3.1.3	Specific Objectives relevant for the SmartPilots Project	6
3.2	Flanders Spearhead Cluster Policy.....	6
4.	Policy Recommendations from the SmartPilots project resulting from the interregional learnings.	7
4.1	Why are Shared Pilot Facilities (SPF) important?.....	7
4.2	Why do Shared Pilot Facilities (SPF) need support?	7
4.3	Support for SPF with respect to building infrastructure and maintaining infrastructure state-of-the-art (CAPEX).....	7
4.4	Support for SPF with respect to operating infrastructure (OPEX)	8
4.5	Interregional cooperation	8
4.5.1	Interregional cooperation Support for interregional collaboration in regional instruments	8
4.5.2	Interregional support for SPF in investing in complementary equipment.	8
4.5.3	Interregional support for SPF investing in education and training.	9
5	Interregional learning: Gaps and Best Practices	9
5.1	Interregional learning: Best Practices identified by the SmartPilots Consortium	9
5.1.1	Best Practices – Direct Support	9
5.1.2	Best Practices – Indirect Support	10
5.1.3	Best Practices – Interregional Cooperation	11
5.2	Interregional learning: Gaps identified in Flanders after gap analysis.....	13
6.	Actions identified in Flanders to respond to the gaps detected	14
	Action 1: Include regional innovation funding for pilot actions in the R&D&I framework of Flanders ...	14
	Action 2: Revisit the Cluster Pact to structurally embed ERDF funded Research and Innovation Infrastructures (SPF) and build synergies with innovation funding	15
	Action 3: Develop structural regional voucher schemes to increase access of companies to the higher TRL Shared Pilot Facilities.....	18
	Action 4: Smart specialisation dialogue for bio-economy extended to Flanders Investment and Trade	20

7. Monitoring activities	21
8. Endorsement of the action plan	22

1. Introduction

1.1 The SmartPilots projects

SmartPilots is an Interreg Europe funded project that brings together the open access pilot facilities (Shared Pilot Facilities, SPF) for Industrial Biotechnology operating across the EU. Through the exchange of experiences and sharing of best practice, the partners aim to agree regional action plans for “Improving policies in support of shared pilot facilities to increase their impact on the key enabling technology Industrial Biotech and the European Bioeconomy”.

1.2 What are shared pilot facilities and why are they important?

As Shared Pilot Facilities for the Key Enabling Technology ‘Industrial Biotechnology’ speed up sustainable innovation, they are a crucial element in dealing with societal challenges such as developing a sustainable, innovative and knowledge-based economy in Europe, creating jobs and meeting climate targets. Shared Pilot Facilities are open access research and demonstration facilities investing in a broad spectrum of state-of-the-art equipment and offering required expertise with the aim to help innovative companies scale-up their successful research to an actual industrial innovation (= Technology Readiness Level - TRL increase). Collaboration, in an early stage of innovation, with open access shared pilot facilities maintaining a high level of innovation capability, substantially lowers the financial risk for the innovating company and speeds up the commercialization of their new product or process. The long lead time associated with commercialization of novel industrial biotechnology processes causes many companies to fail. Shared Pilot Facilities help companies to bridge this ‘valley of death’ by reducing time, cost and risk substantially when scaling up innovations from lab scale to industrial scale. Furthermore, Europe recognizes too much R&D is deployed outside of Europe. Funds for support of the demonstration phase of promising innovations in the field of industrial biotechnology / bio-economy, are available, but companies find it difficult to access these funds. Shared Pilot Facilities can help companies to access these funds.

1.3 A Bioeconomy for Europe

On 13 February 2012, the European Commission (EC) adopted the strategy "Innovating for Sustainable Growth: A Bioeconomy for Europe". This strategy proposes a comprehensive approach to address the ecological, environmental, energy, food supply and natural resource challenges that Europe and indeed the world are facing. This strategy formulated the definition that “the bioeconomy encompasses the production of renewable biological resources and the conversion of these resources and waste streams into value-added products, such as food, feed, bio-based products and bioenergy.’ Following this definition, the bioeconomy brings together various sectors of the economy that produce, process and reuse renewable biological resources (agriculture, forestry, fisheries, food, bio-based chemicals and materials and bioenergy) and is supported by three pillars.

- Investments in research, innovation and skills
- Reinforced policy interaction and stakeholder engagement
- Enhancement of markets and competitiveness.

1.4 A Circular Economy for Europe

The EU’s Roadmap and Action Plan for a Circular Economy “Closing the Loop” was published in 2015 and identifies biomass and biobased materials as critical to the introduction of circular value chains across the EU. The review of the Bioeconomy Strategy is defined within the action plan as a milestone for identifying the progress of the sector and what intervention is required to support growth and competitiveness. This was completed in November 2017 with the following findings and recommendations. • The 2012 EU Bioeconomy Strategy and Action Plan is delivering on key actions in the Action Plan. • The opportunities that the bioeconomy offers and the importance of Bioeconomy Strategy coordination are increasingly recognised by EU Member States and regions. • Further mobilisation of investments is still needed, which requires a stable regulatory environment. • Policy coherence needs to be better addressed, as well as the design and

implementation of the Strategy and its Action Plan. • The current policy context highlights the need for a sustainable, circular bioeconomy. • Better monitoring and assessment frameworks are needed to assess progress.

1.5 Shared pilot facilities for the circular bioeconomy

Considerable policy activity has taken place at the European level to introduce technologies that can support a bioeconomy and the transition to circular principles for the manufacture, use, re-use, recycling and disposal of consumer goods. SPF are ideally situated to support and respond the challenges of this transition through supporting the commercialisation of the underpinning technologies and their associated value chains. They are able to provide support to industrial research, on an open access basis, taking concepts that are emerging from academic and private research and development, determining the feasibility of industrial application and then scaling the technology through piloting and demonstration actions to reach commercially relevant production volumes.

2. General Information

Project:	SmartPilots
Partner organisation:	Bio Base Europe Pilot Plant
Other partner organisations involved (if relevant):	Department EWI
Country:	Belgium
NUTS2 region:	Flanders
Contact person:	Hilde Vermeulen (EWI)
Email address:	hilde.vermeulen@ewi.vlaanderen.be
Phone number:	+32 2 553 57 90

3. Policy Context in Flanders

The Action Plan aims to impact:

- Investment for Growth and Jobs programme (section 3.1)
- European Territorial Cooperation programme
- Other regional development policy instrument (section 3.2)

Name and reference of the policy instrument addressed:

3.1 Flanders European Structural and Investment Funds

3.1.1 Value of ERDF Programme 2014-2020

€175.592.099

3.1.2 Priority Axes and Specific Objectives

Axis 1: Strengthening research; technological development and innovation

- *SO1.1 Strengthening infrastructure for R&I and the capacities for developing to performance, and the promotion of centers of expertise, in particular those of European importance*
- *SO1.2. Promotion of company investments in R&I by open innovation and support of technological, applied research and testing grounds for fast product validation and first productions.*

Axis 2: Enhancing the competitiveness of SMEs

- *SO2.1 Creating an entrepreneurial culture by stimulating intrapreneurship and new forms of entrepreneurship*
- *SO2.2 Promoting a business-friendly climate with local and provincial authorities*

- *SO2.3: Improve knowledge and implementation of innovative business models at SMEs*
- *SO2.4: Promoting an international business climate 22*

Axis 3: Supporting the shift towards a low-carbon economy in all sectors

- *SO3.1: Increase of extensive energetic renovations of residential buildings to near-zero energy levels*
- *SO3.2: Improved sustainable urban mobility systems that fit into a municipal / urban climate plan*
- *SO3.3: increased energy efficiency among SMEs (energy-efficient company buildings and production processes)*
- *SO3.4: Removing bottlenecks in the development of green heating and heating networks*

Axis 4: Sustainable urban development (Antwerp and Ghent)

3.1.3 Specific Objectives relevant for the SmartPilots Project

The Flanders Operational Program (2014-2020) puts priority in increasing the R&D intensity from 2,4% (2011) to 3% (2020). The investment priorities to achieve this are:

- 1.1. Strengthening infrastructure for R&I and the capacities for developing top performance, and the promotion of centers of expertise, in particular those of European importance.
- 1.2. Promotion of company investments in R&I by open innovation and support of technological, applied research and testing grounds for fast product validation and first productions.

The emphasis is on the Flemish Smart Specialisation Strategy that includes the KET Industrial Biotechnology as driver of the bio-based economy, as part of the Smart Specialisation domain 'Sustainable Chemistry'.

Bio Base Europe Pilot Plant (BBEPP), a bottom-up initiative, is an open access shared pilot infrastructure as described in priority 1.1 that enables priority 1.2 for the bio-based economy. BBEPP proved to play an instrumental role in various innovations.

Support to such shared pilot facilities is currently on an ad-hoc basis and supported international cooperation is very difficult. This situation jeopardizes long-term business planning and puts its long-term viability at stake. As stated above, a general framework for support to research infrastructures like BBEPP (SPF) does exist. Improvements in the OP will therefore consider how to address:

- Structural policy instruments for high capital investment and high maintenance costs of SPF.
- Structural support for users of SPF from within and outside of the region.

3.2 Flanders Spearhead Cluster Policy

Flanders' government adopted in July 2015 a new support framework for cluster policy in Flanders. This consists of two types, the spearhead cluster policy to realise smart valorisation objectives in order to match research and industrial specialisations in top down identified cluster domains that are of strategic interest for Flanders' region. For the selected spearhead clusters, the Flemish government concluded Triple-helix Cluster Pacts (incl. a competitiveness program) for max. 10 years. Catalisti is the Spearhead cluster for Sustainable Chemistry.

The second type are the smaller scale clusters, or 'innovative company networks', selected through bottom up calls for short term small cluster networks (3 years) that complement the top down Spearhead Cluster approach.

4. Policy Recommendations from the SmartPilots project resulting from the interregional learnings.

4.1 Why are Shared Pilot Facilities (SPF) important?

As Shared Pilot Facilities for the Key Enabling Technology 'Industrial Biotechnology' speed up sustainable innovation, they are a crucial element in dealing with societal challenges such as developing a sustainable, innovative and knowledge-based economy in Europe, creating jobs and meeting climate targets. Shared Pilot Facilities are open access research and demonstration facilities investing in a broad spectrum of state-of-the-art equipment and offering required expertise with the aim to help innovative companies scale-up their successful research to an actual industrial innovation (= Technology Readiness Level - TRL increase). Collaboration, in an early stage of innovation, with open access shared pilot facilities maintaining a high level of innovation capability, substantially lowers the financial risk for the innovating company and speeds up the commercialization of their new product or process. The long lead time associated with commercialization of novel industrial biotechnology processes causes many companies to fail. Shared Pilot Facilities help companies to bridge this 'valley of death' by reducing time, cost and risk substantially when scaling up innovations from lab scale to industrial scale. Furthermore, Europe recognizes too much R&D is deployed outside of Europe. Funds for support of the demonstration phase of promising innovations in the field of industrial biotechnology / bio-economy, are available, but companies find it difficult to access these funds. Shared Pilot Facilities can help companies to access these funds.

4.2 Why do Shared Pilot Facilities (SPF) need support?

Shared Pilot Facilities should be considered as shared investments in equipment and expertise. As SPF get no risk premium for the continuous and large investment needed to remain state-of-the-art, a full commercial business model is not viable. Therefore, public investment in SPF is indispensable and ensures that the high cost of pilot and demonstration actions can be mitigated for e.g. SMEs through the availability of open access capabilities. Due to market failure there is underinvestment from the private side in these SPF. However, the positive externalities for the innovation system as a whole (i.e. job creation and investments in new production lines at the SPF customers premises) justify public support to shared pilot facilities.

4.3 Support for SPF with respect to building infrastructure and maintaining infrastructure state-of-the-art (CAPEX)

Support should be given to overcome market failure:

- Open access pilot and demo infrastructure investments could be financed through ERDF or through regional / national support (as ERDF funds might be limited in some regions).
- These financial instruments should fit into a wider bio-economy and innovation policy to assure that the ecosystem that feeds the SPF with sufficient projects is available. To deliver the most competitive products in terms of techno-economics and environmental impact, and to stay at the forefront of innovation, critical mass is required for Shared Pilot Facilities, both in hardware and people (=equipment and expertise). Priority should be given to invest in existing facilities to keep their state-of-the-art equipment up-to-date and thus deliver the best possible service. Starting new initiatives risks diluting available infrastructure and expertise and thus delivering suboptimal results as not all possibilities can be tested and compared.

To maximize the impact of SPF, regional policy makers should also create mechanisms to allow support for interregional and international collaboration between SPF and their users. Essentially, the investment in a production line with concomitant job-creation will occur in the region where the technology-owner stems from, and not in the region where the SPF is located.

4.4 Support for SPF with respect to operating infrastructure (OPEX)

Ideally this type of support fits into a triple or quadruple helix setting that contains the following elements:

- Financial instruments that fit into a bio-economy and/or innovation policy embedded in a regional smart specialisation strategy.
- Public private partnerships that co-develop the infrastructure and capabilities from low to higher TRL (e.g. the Flemish Spearhead clusters, the UK Catapults).
- A portfolio of instruments for supporting projects. These instruments access an earmarked budget. The project instruments support projects along the TRL scale and include the higher TRL (TRL5 and up). Projects with higher TRL can be promoted e.g. by higher scores for collaborative projects between industries and academia or for research project going up to TRL 5 (cfr. H2020).
- Intermediators encouraging and monitoring the appropriate use of this portfolio of instruments: experts in bio-economy and innovation that inform and support potential applicants wrt setting up projects (e.g. innovation agents or business developers for the spearhead clusters).
- An innovation one-stop-shop service that includes access to SPF as well as access to accompanying consulting services to overcome non-technological innovation barriers. This can be achieved by voucher support: vouchers are a fast and non-bureaucratic way of financial support. Previous experience from SPF with voucher systems showed that the best response was achieved with vouchers that were sufficiently large (from €30.000 - 100.000) but require a co-funding from the applicant.

4.5 Interregional cooperation

4.5.1 Interregional cooperation Support for interregional collaboration in regional instruments

There are currently few regions that support regional actors to cooperate with or to subcontract tasks to actors from another region, e.g. to SPF from outside the region. In the case of SPF however, this would be beneficial for the region since SPF are highly capital intensive. It is therefore detrimental to invest in SPF for every single region, as many SPF would not be able to survive due to too few projects to feed them with. Starting new initiatives risks diluting the already available technologies and expertise, resulting in SPF offering suboptimal services.

- A better strategy is to promote the use of existing SPF, even if this means using an SPF located in another region. Since the investment in a new production line after a successful scale-up campaign in an SPF will occur in the region where the technology-owner stems from (and not in the region where the SPF is located), this would not result in less economic impact for the region of origin.
- The regional financial instrument could include an impact evaluation assessing the applicants' plans to invest in their region of origin. This will create a win-win situation: a well-equipped, state-of-the-art SPF can deliver processes that are techno-economically and environmentally more competitive and thus have the best possible chance at making a successful market entry. This will ensure a sound investment and sustainable job creation.
- A crossborder initiative such as the Vanguard Initiative stresses the need for supporting interregional collaboration using regional instruments (<http://www.s3vanguardinitiative.eu/>). The Vanguard initiative is a network of regions that wishes to exchange information and setup joint investments in innovative sectors where market-failure occurs. It thus promotes interregional cooperation with the aim to create a larger leverage effect than each region can do in its own.

4.5.2 Interregional support for SPF in investing in complementary equipment.

There is currently no interregional instrument for infrastructure investments in complementary equipment in the different SPF. This could be organised the following way:

- By labelling ERDF calls linked to interregional collaboration.

- By setting up an Interreg (for infrastructure investments), where the regions do not need to be adjacent. A type of Interreg Europe where investments in infrastructure are possible.
- By setting up an ESFRI analogue aimed at higher TRL infrastructure.

4.5.3 Interregional support for SPF investing in education and training.

A sort of 'COST Action for high TRLs' would be a useful instrument. Exchanges could allow researchers/students to work at a pilot or demo infrastructure and get as such acquainted with the particularities of scale-up from science and research to industrial implementation. As Pilot facilities are in operational modus, expenses for education and training are typically not covered. SPFs however are open to such exchanges as it could enlarge their network and facilitate recruiting (learning on the job).

5 Interregional learning: Gaps and Best Practices

5.1 Interregional learning: Best Practices identified by the SmartPilots Consortium

5.1.1 Best Practices – Direct Support

Policy and Strategy

Use of clusters to evidence need for infrastructure investment.

- Flanders BioBased Valley (FBBV), Flanders
- Le Pôle IAR, France <https://www.iar-pole.com/>
- Bioeconomy Cluster Mittel-Deutschland, <http://en.bioeconomy.de/>
- Biobased Delta, The Netherlands

Horizon 2020 (Framework Programmes) and European Structural and Investment Funds

Synergies

- Flanders shared pilot facility (BBEPP) finding synergies between ESIF and H2020. <https://www.interregeurope.eu/policylearning/good-practices/item/671/shared-pilot-facilities-finding-synergies-between-esif-and-h2020/>

ERDF to finance infrastructures of certain Pilots (Tees Valley, Flanders, Province of South-Holland, Helsinki-Uusimaa)

- Capabilities developed based on regional innovation drivers within the national and EU context.
- Leverage of match funds from regional national or internal sources

National and Regional Programmes

Core Revenue Support

- Catapult programme (UK), Fraunhofer Institutes (DE), National Research Institute (FI) covering the entire innovation trajectory: co-development of infrastructure and capabilities for higher TRL in parallel to development of the networks connecting industries and academia (results in encouragement of using the pilot facility with the innovators). Direct influence on government budget in UK. <https://www.interregeurope.eu/policylearning/good-practices/item/1372/value-of-catapult-centres/>
- The Academy of Finland supports investment in research infrastructure which is primarily allocated to new infrastructure and to significant upgrading of existing infrastructures. In deciding on research infrastructure funding, priority is given to proposals that have been presented in Finland's Strategy and Roadmap for Research Infrastructures 2014–2020.

5.1.2 Best Practices – Indirect Support

Policy and Strategy

State Aid Exemptions

- In Flanders, collaborative projects between industries and academia get higher score / funding rates, which is an incentive to collaborate.

Networks and Clusters

- Networks and clusters link potential customers to expert services aso. Shared Pilot Facilities.
- Established networks and innovation centres support Shared Pilot Facilities.
- Strong cluster activity in certain regions: Bio-Economy Cluster (DE), IAR (FR), Clib21(DE), Biobased Delta (NL)
- In Flanders: Spearhead clusters as a fly wheel of the smart specialisation strategy (public/private partnership between authorities and industry, industry driven), intercluster calls and calls for the transition domain ‘Circular Economy’.
- In Flanders: Strategic context set with IB (industrial biotechnology) roadmap by CINBIOS, Bio-Economy strategy (Ceebio – search tool, interdepartmental workgroup Bio Economy)

Innovation Support Structures

- UK (Innovate Tees Valley) & Flanders (Innovation Centres): business support services (hiding the wires) helping SMEs to identify and access the right funding mechanisms and innovation support agency

Horizon 2020 (Framework Programmes)

Innovation Vouchers

- Establishment of voucher programmes through INNOSUP (<https://ec.europa.eu/easme/en/innosup>) with coordination by EASME to provide innovation vouchers for 75% of project costs up to a maximum of €60K eg. H2020-SuperBio (<http://www.h2020-superbio.eu/>). Whilst limited in scope, these vouchers are valuable for accessing pilot facilities to validate high potential technologies.

European Structural and Investment Funds

Access to Finance

- The use of ERDF, EIB and regional funds to create a JEREMIE fund (Joint European Resources for Micro to Medium Enterprises, http://www.eif.europa.eu/what_we_do/resources/jeremie/index.htm). This provides access to finance across a range of business and has a specific priority for technology companies.

Innovation vouchers

- Interregional partnership within the North-West European region ran an Interreg North West Europe project entitled ‘Bio Base NWE’ (2013-2015, <http://www.biobasenwe.org/en/home/>). This project won the RegioStars Award 2017 in the category ‘Smart Specialisation for SME Innovation’. The project offered technological support provided by the Shared Pilot Facility ‘Bio Base Europe Pilot Plant’ to SMEs through innovation vouchers up to 30.000 EURO. These vouchers were easily accessible by SMEs (low administrative burden, fast procedure) and allowed innovators to establish the data required to assess the techno economics of their innovative technology, to perform life cycle analysis and/or to produce prototypes to test and validate the innovation in the market. 27 SMEs received financial support through the project. This support created a substantial leverage effect: up to €71million of investments and the creation of 320 new jobs in the biobased economy in North-West Europe. <https://www.interregeurope.eu/policylearning/good-practices/item/422/voucher-for-sme-to-access-pilot-demo-infrastructures/>

- An interregional partnership currently runs the Interreg NWE project entitled 'BioBase4SME' (March 2016 – February 2019, <http://www.nweurope.eu/projects/project-search/bio-innovation-support-for-entrepreneurs-throughout-nwe-regions/>). Next to other services such as workshops, training or biocamps, SMEs can again get vouchers, up to 100.000 EURO to get technological and/or non-technological support from a range of service providers. The vouchers are easily accessible by SMEs (low administrative burden, fast procedure). The support offered through the voucher system can consist of: Technical assistance such as scale-up to pilot scale; Life Cycle Assessment; Techno-economic evaluation; Market research; Feedstock analysis; Social acceptance; Business planning and business plan support ... or a combination thereof.

H2020 Seal of Excellence

- Seal of excellence (<https://ec.europa.eu/research/soe/index.cfm?pg=home>) implemented in Lombardy and under evaluation in multiple other regions as well. Flanders: SME-applicant to SME instrument with score above threshold but not granted could receive funding through ERDF for Phase 1 & phase 2 projects.

National and Regional Programmes

Accounting Practices

- Italy: projects related to industry 4.0, advanced manufacturing or bio economy can apply flexible depreciation rules (hyper or super) for investments
- France: CIR agreement: French companies accessing services of recognised research organisations get a tax reduction on the invoices up to 30%, depending on the nature of the activities (CIR). System open to foreign research organisations to apply for the CIR agreement.
- Province of South-Holland: Regional and Dutch Ministry of Economic Affairs offer various funding options to support biobased economy developments, incl. tax benefits for innovation R&D projects
- Lombardy region: Tax credit for R & D investment covering some eligible expenses including those incurred for technical expertise and industrial and biotechnological patents who have provided good economic returns in the bio economy sector

Spin Out Activity

- Spin out activity ARD has established biotechnology companies to create value and, by necessity, to generate possible financing sources as a non-recurrent alternative to the absence of EU support.

Use of national grant budgets to support subcontracts in different member states

- Flanders and UK allow beneficiaries of support mechanisms to source expert services or capabilities outside of the region (still to be motivated and preference to be giving to partners within the region). (eg. in Flanders: <https://www.interregeurope.eu/policylearning/good-practices/item/1480/innovation-r-d-company-grant-scheme-of-flanders-innovation-and-enterprise/>)

5.1.3 Best Practices – Interregional Cooperation

Policy and Strategy

Interregional collaboration of regions, clusters, RTOs

- Interregional collaboration of regions (eg. Vanguard Initiative (<http://www.s3vanguardinitiative.eu/>) and clusters (eg. Bio Innovation Growth mega Cluster, BIG-Cluster, <http://www.bigc-initiative.eu/>) to evidence need for future late stage funding and to avoid duplication of initiatives. BIORIZON (RTOs in NL-FL), BIG-Cluster (clusters from NRW, NL, FL), Vanguard Initiative

European Strategy Forum for Research Infrastructures (ESFRI)

The European Strategy Forum on Research Infrastructures (ESFRI) is a strategic instrument created in 2002 by the Member States and the European Commission to develop the scientific integration of Europe and to strengthen its international outreach (https://ec.europa.eu/research/infrastructures/index_en.cfm?pg=esfri). ESFRI gives national authorities the opportunity to explore common and integrated activities for the best development and use of research infrastructures of pan-European relevance, with enhanced visibility and access to the research community for industry.

The aim of ESFRI is to complete the RIs incubation and start the implementation within a maximum of one decade. To help with this development, there have been tailored calls in Horizon 2020 (INFRADEV1-4) that were open only for ESFRI RIs.

ESFRI status signifies visibility in terms of strong scientific excellence that is well recognised in Europe, as well as globally. It helps building long-term funding commitment with regional and national governments as well as other funding instruments and organisations in national and EU contexts.

The ESFRI roadmap is an established framework, with a transparent application and development process. This is seen as a quality promise or guarantee. Entering the ESFRI roadmap and achieving the status of an ESFRI project requires fulfilment of certain criteria, and proposals need to pass international and independent review. This is a demanding process and requires commitment from all participating organisations as well as from national authorities.

The ESFRI model encourages long-term partnerships and commitment between project partners. This can include the sharing of investment costs and the risks involved. The benefits of this will lead to increased knowledge transfer and more strategic planning of infrastructure investment.

Investments in new facilities will typically be financed by research grants from national research councils, ministries or the European Regional Development Fund.

The operational costs are covered by external projects.

VTT has coordinated ERIFORE – European Research Infrastructure for Circular Forest Bioeconomy – an InfRADEV-1 project (GA No 654371, 1.1.2016 – 31.1.2018) under the Horizon 2020 Framework Programme. The future mission of the ERIFORE consortium is to establish an open access distributed research and innovation infrastructure for circular forest bioeconomy in Europe. ERIFORE focuses on the science and innovation bridge needed to develop and commercialise novel biorefinery process concepts for production of value-added chemicals and materials from forest-based raw materials. The main result of the ERIFORE project as an ESFRI design study is the action plan to become a distributed research infrastructure on the ESFRI roadmap in 2020.

Lessons can be learned from this ESFRI experience, the instrument focusses on research infrastructure (low Technology Readiness Level, TRL) rather than innovation infrastructure (high TRL).

Horizon 2020 (Framework Programmes)

Horizon 2020 criteria

- Horizon2020 criteria call for at least three different entities from three different member states or associated countries for any project to be eligible. This makes Horizon2020 an ideal mechanism for interregional cooperation with EU member states and associated countries. The SME instrument is an exception on this rule, as this can be applied for by a single entity.

Interreg

Use of cross border funds to finance establishment of pilot facilities of European interest

- Bio Base Europe worked through the cross-border priority for Flanders and the Netherlands to develop a jointly match funded investment programme that established the initial Bio Base Europe Pilot Plant capability in Flanders alongside the Bio Base Europe Training Centre in Netherlands.

Innovation Vouchers

- Supported by Interreg NWE, these provide limited but crucial funding for SMEs in the NWE Interreg region, linking innovation support partners across a range of disciplines and making it available to SMEs.

Sharing Experiences

- SPFs working together to understand complimentary and competitive advantages to influence future financial instrument priorities through the Interreg Europe SmartPilots project.

5.2 Interregional learning: Gaps identified in Flanders after gap analysis

- **Gap 1:** Circular economy was selected as transition domain and bio economy embedded in circular economy, not dedicated
- **Gap 2:** BBEP infrastructure was financed through ERDF money, but cannot operate as partner in support mechanisms available for the spearhead clusters. BBEP and EWI together with Vlaio are investigating current bottlenecks with regards to use of ERDF financed innovation capable infrastructure in Flanders (BBEP as exemplary case) within the context of the Spearhead clusters. VLAIO investigates how to support pilot and demo projects as well as required infrastructure (higher TRL projects – living labs).
- **Gap 3:** ERDF projects: No funding available for keeping infrastructure operational and relevant.
- **Gap 4:** Lack of complementary equity and debt financing in bio-innovation and pilot investments
- **Gap 5:** Lack of level playing field for product applications in biomass, focus on energy
- **Gap 6:** Flanders SME portfolio (<https://www.vlaio.be/nl/subsidies-financiering/kmo-portefeuille>) provides small vouchers of up to €10k. SMEs are not using these particular vouchers for accessing pilot infrastructures, as the voucher amounts are suboptimal for demonstration activities.

6. Actions identified in Flanders to respond to the gaps detected

Action 1	Action 1: Include regional innovation funding for pilot actions in the R&D&I framework of Flanders
1. Background	<p>The context</p> <p>The partner regions of the SmartPilots project presented each other the possibilities for pilot facilities to get regional direct and indirect funding as well as the international cooperation options. This was the basis for defining a good practice business model that keeps open access pilot infrastructure (capex) operational and relevant for the Regional Smart Specialisation domains related to bio-economy. The Flanders' Research and Innovation Strategy for Smart Specialisation, the RIS3-document as ex-ante condition for the approval of the Operational Programme 'Investment for Growth and Jobs in Flanders 2014-2020' includes 8 Cluster domains, including 'Sustainable Chemistry' and 'Specialised Agro-food Industry'. For these domains, Flanders expressed the intention to deploy Industrial Biotechnology as key enabling technology for its biobased economy. Based on this RIS3, the Operational Programme contributes to increase the R&D expenditures of Flanders GDP from 2,4% (2011) to 3% (2020) under the first ERDF priority axis 'stimulate research; technological development and innovation', with as first investment priority: <i>'Strengthening infrastructure for R&I and the capacities for developing top performance, and the promotion of centers of expertise, in particular those of European importance'</i> (SO1.1)</p> <p>Lessons learned from the SmartPilots project:</p> <p>Shared pilot facilities in the biobased sectors are quite new: the impact (in terms of sustainable growth and jobs) of SPFs for the region where it is located is not always clear. To define an optimal business model, partners carefully analyzed the legal status of the different SPFs and possibilities for pilot facilities to get or not get regional direct and indirect funding and funding options for interregional cooperation. Flanders shared some concerns with the business models of partner regions that implement the Smart Specialisation domains in the area of bioeconomy. An effectively working sustainable business model finds funding for a balanced portfolio of operational activities to result in payback modalities for the capital investments (capex): operational investments consist of contract research vs. public research (opex) in compliance to state aid rules. Out of the regional gap analyses of the direct and indirect funding, it was observed that many pilot facilities of the project are limited to mainly subcontracting possibilities to get funding, while this is not the case for the Shared Pilot Facilities VTT, Fraunhofer and CPI that are recognized as Research Organisation and integrated in large organizational structures that can cope with the 80/20 rule for state aid compliance as their accounting is part of a large organization structure. On the other hand, Shared Pilot Facilities having the status of 'undertaking' confirmed not being able to collaborate in public R&I projects due to co-funding issues (investment of SPF in innovation of which they do not own any IP or would not have any revenues). However, Shared Pilot Facilities scale up innovative processes from lab scale to pilot towards industrial scale. As SPFs work at the very heart of innovation, not being able to get public funding to collaborate in innovation projects on operational basis would a loss for a region that invested in an SPF.</p>
2. Action description	<p>Under the ERDF call launched by Flanders' Agency for Innovation and Entrepreneurship VLAIO (Call 109 'Support the dissemination of technologies aiming at the valorisation of knowledge and bringing it to the market'), Bio Base Europe</p>

	<p>Pilot Plant has been granted the project for new infrastructure investments (IMPACT). This investment was taken as a momentum to address the issue of legal status of the Bio Base Europe Pilot Plant as the current situation hampered BBEP to participate in R&D&I projects funded by VLAIO. Interregional learning on the legal status of SPFs was shared with the managing authority of the Flanders Government, VLAIO, that participated as stakeholder in the SmartPilots project. Thanks to the SmartPilots examples of Fraunhofer and UK Catapult, EWI and VLAIO have taken steps to address the bottlenecks, starting to negotiate the limitations in the framework of the Spearhead cluster Catalisti where Bio Base Europe Pilot Plant was not eligible for regional innovation funding. The outcome of the discussions within EWI and with AIO was the recognition of Bio Base Europe Pilot Plant as a Research Organisation.</p> <p>The status of Bio Base Europe Pilot Plant would have never been ‘debloked’ without the SmartPilots project.</p>
3. Players involved	Cfr above steps BBEP, EWI, VLAIO cluster and legal units
4. Timeframe	Ongoing-2020
5. Costs	Expert costs to solve state aid questions form Bio Base Europe Pilot Plant
6. Funding sources	Not relevant – legal staff of AIO
7. Programme management related implications	Enhanced regional IPR funding (further to the recognition as Research Organisation in Flanders R&I policy) would strengthen the open access character that at this turn gives possibilities to improve innovation-driven development in cooperation with open access SPF under the ERDF programme.
8. Expected impact and results of the policy improvement	This would lead to an increased innovation-driven project portfolio that can be funded under ERDF programme and as result more innovative potential to implement smart specialisation domain of bioeconomy in the region.
9. How will the implementation of this action be monitored	<ul style="list-style-type: none"> • Increased activity of the Bio Base Europe Pilot Plant in the Cluster of Catalisti with VLAIO support • Substitute or complement regional money of cluster activities with ERDF money

Action 2	Action 2: Revisit the Cluster Pact to structurally embed ERDF funded Research and Innovation Infrastructures (SPF) and build synergies with innovation funding
1. Background	<p>The context</p> <p>“Demonstration projects” (TRL 6/7) bridge the gap between R&D results and market replication and scale-up. They originate from real transition challenges and innovation opportunities. The innovative idea, concept, application should be transferred into real economic or societal value to get the transition priorities identified in the Flanders Vision2050 document (Circular Economy, Industry 4.0) to the real economy. The partners presented regional examples on their business community functioning to tackle this level playing field between the industrial biotechnology as a KET versus the transition challenges towards a Bio-economy. The SmartPilots partners found out how shared pilot and demo infrastructures are supported by (i) direct support (directly support the infrastructure), (ii) indirect support (support to innovators for using this type of infrastructure, or for piloting activities in general), and (iii) how regions cooperate to enable joint support for SPF and/or for use of SPF.</p> <p>Lessons learned from the interregional learning within the project</p>

	<p>Out of the benchmarking of funding options of the SmartPilots partners, ERDF was considered to be the best programme to directly fund shared pilot facilities for the higher TRL (Technology Readiness Level) projects. However, key factor for success is the synergy building through combining ERDF and R&I funding from Horizon2020. This was identified as one of the Good Practices in the SmartPilots.</p> <p>As a result of the recognition of Bio Base Europe Pilot Plant to be eligible as Research Organisation for VLAIO R&D funding (cfr Action1), the mainly ERDF funded Bio Base Europe Pilot Plant is now in a better position to take up its role in the Catalisti cluster as cooperative pilot partner and a multipurpose living lab to move innovation to higher TRLs for a Sustainable Chemistry in Flanders.</p> <p>The ongoing spearhead cluster policy as part of the new cluster framework adopted by Flanders' government in July 2015, intend to realise these smart valorisation objectives in order to match research and industrial specialisations in top down identified cluster domains that are of strategic interest for Flanders' region, the so-called spearhead clusters or smart specialisation. Therefore, the Flemish Government concluded Triple-helix Cluster Pacts (incl. a competitiveness program) for max. 10 years. Catalisti is the Spearhead cluster for Sustainable Chemistry. Smaller scale and bottom up calls for 'innovative company networks' (3 years) complement the topdown Spearhead Cluster approach.</p>																		
<p>2. Action description</p>	<p>The spearhead clusters where member companies need to find 50% co-financing for the structural working, could benefit more from ERDF programmes to fund the higher TRL stages of the innovation projects and in this way accelerate scale-up processes of the industry.</p> <p>The first step in this direction was following the discussions held between the Flemish SmartPilots partners (EWI and Bio Base Europe Pilot Plant) and VLAIO- to link the two strategic objectives of ERDF 1.1 <i>Strengthening infrastructure for R&I and the capacities for developing top performance, and the promotion of centers of expertise, in particular those of European importance</i> and 1.2. <i>Promotion of company investments in R&I by open innovation and support of technological, applied research and testing grounds ('living labs') for fast product validation and first productions</i>. This resulted in the OP to an actual ERDF specific call (nr 130): <i>"Support the dissemination of technologies aiming at the valorisation of knowledge and bringing it to the market – linked to the cluster policy "</i></p> <p>One of the selected projects was the BIO BASE FLOW project (nr 1235) of Bio Base Europe Pilot Plant, linked to Catalisti Spearhead Cluster of Sustainable chemistry.</p> <p>Outcome of the Cluster Call: projects granted</p> <table border="1" data-bbox="414 1624 1444 2116"> <thead> <tr> <th><u>Project + promotor</u></th> <th><u>Spearhead cluster (SPC) involvement</u></th> </tr> </thead> <tbody> <tr> <td>1233 - InQbet Accelerator (P&G) in Diegem</td> <td>SPC Catalisti</td> </tr> <tr> <td>1237 - DataHub voor AgroFood (ILVO)</td> <td>SPC Flanders Food</td> </tr> <tr> <td>1245 - Ligno Value Pilot (VITO)</td> <td>SPC Catalisti</td> </tr> <tr> <td>1231 - LOG!VILLE (POM Antwerpen)</td> <td>SPC Flanders Logistics Cluster (copromotor)</td> </tr> <tr> <td>1235 - Bio Base Flow</td> <td>SPC Catalisti</td> </tr> <tr> <td>1242 - Centrum Bouw 4.0 (WTCB)</td> <td>IBN (innovative company network)</td> </tr> <tr> <td>1222 - Onderzoekgebouw VEG-i-TEC (Ugent)</td> <td>SPC Flanders Food</td> </tr> <tr> <td>1238 - DUVAL (AGFA)</td> <td>SPC Catalisti</td> </tr> </tbody> </table>	<u>Project + promotor</u>	<u>Spearhead cluster (SPC) involvement</u>	1233 - InQbet Accelerator (P&G) in Diegem	SPC Catalisti	1237 - DataHub voor AgroFood (ILVO)	SPC Flanders Food	1245 - Ligno Value Pilot (VITO)	SPC Catalisti	1231 - LOG!VILLE (POM Antwerpen)	SPC Flanders Logistics Cluster (copromotor)	1235 - Bio Base Flow	SPC Catalisti	1242 - Centrum Bouw 4.0 (WTCB)	IBN (innovative company network)	1222 - Onderzoekgebouw VEG-i-TEC (Ugent)	SPC Flanders Food	1238 - DUVAL (AGFA)	SPC Catalisti
<u>Project + promotor</u>	<u>Spearhead cluster (SPC) involvement</u>																		
1233 - InQbet Accelerator (P&G) in Diegem	SPC Catalisti																		
1237 - DataHub voor AgroFood (ILVO)	SPC Flanders Food																		
1245 - Ligno Value Pilot (VITO)	SPC Catalisti																		
1231 - LOG!VILLE (POM Antwerpen)	SPC Flanders Logistics Cluster (copromotor)																		
1235 - Bio Base Flow	SPC Catalisti																		
1242 - Centrum Bouw 4.0 (WTCB)	IBN (innovative company network)																		
1222 - Onderzoekgebouw VEG-i-TEC (Ugent)	SPC Flanders Food																		
1238 - DUVAL (AGFA)	SPC Catalisti																		

	<p>The impact of the above biobased demonstration projects will be monitored to assure it better reaches out to the target groups of companies and objectives of the OP call, namely fostering linkages between R&I funding, more particularly the Flanders Spearhead Cluster policy and other relevant R&D support frameworks (incl. Horizon2020) and the ERDF projects.</p> <p>Simultaneously, the EWI thematic contacts and the VLAIO transition managers of domains 'Industry 4.0' and 'Circular Economy' (lead by Flanders Circular embedded in OVAM, a Flanders public waste handling society) will roadmap the transition needs in the cluster. Bio Base Europe Pilot Plant will define how it could contribute to the investment demands of the cluster facilitated value chains. In this way the bio-economy will become an integral part of the strategy of circular economy. EWI will streamline intercluster domains to accelerate relevant transitions defined in Flanders Vision2050 in a more effective way in the ERDF OP. To strengthen the interregional component, this Bioeconomy team of EWI and VLAIO will also facilitate Vanguard labelled calls for Flanders engagement in/through interregional cooperation.</p> <p>In this way, the sharing capacity to take forward lower TRL innovation projects of the clusters to ERDF funded piloting and demonstration will be strengthened in the spearhead cluster policy through synergy building with ERDF and cross regional smart specialization.</p> <p>(a) Bio Base Europe Pilot Plant (also active in the Vanguard pilot bio-economy) participates in extended team meetings of the Spearhead cluster Catalisti to facilitate links with collaborative research and innovation projects to accelerate scale-up of company innovations through pilot and demonstration facilities. Also, the thematic NCP will be involved for interregional project opportunities. <i>participants: BBEPP, Spearhead cluster Catalisti, VLAIO H2020 NCP bio-economy (Capacity building for upstream activities)</i> <i>timing: ongoing</i></p> <p>(b) The VLAIO cluster unit will report EWI on the monitoring of the Catalisti Cluster Pact (Chemistry agreements with biobased cluster) with regard to the partnering activities with Bio Base Europe Pilot Plant, and Vanguard initiative to connect & get the biobased industry better involved for the transition priorities, incl. through cross-border cooperation (e.g BIG-C).</p> <p>(c) The results of both steps will give input to ERDF calls to more optimally align Flanders' innovation support mechanisms ('VLAIO prolongation of the innovation trajectory') with ERDF funding options for pilots and with Horizon2020 opportunities into the support trajectory and the ecosystem. Finally, we will conclude how these linkages between innovation projects & ERDF funded open access demonstration facilities incl. cross-border cooperation could be more specified in Cluster Pacts.</p>
3. Players involved	EWI, VLAIO R&D innovation, Cluster unit, thematic NCP, ERDF contacts
4. Timeframe	Ongoing-March 2020
5. Costs	Roadmap study if relevant
6. Funding sources	Smart Pilots phase 2
7. Programme management related implications	<ul style="list-style-type: none"> • Reinforcing the position of multipurpose living labs in the spearhead cluster pacts • Identifying relevant intercluster and interregional transition areas as input for the next ERDF call.
8. Expected impact and results of the	A Cluster Pact and ecosystem that better integrates SPF to accelerate transition investments and that includes ERDF funding (cfr Vanguard actions) for higher TRL activities through

policy improvement	<ul style="list-style-type: none"> ○ Building synergies and cumulating funding of ERDF with H2020 and regional VLAIO innovation funding
9. How will the implementation of this action be monitored	<ul style="list-style-type: none"> • Number of innovation projects with follow up ERDF funding or regional innovation money substituted by ERDF • Roadmap for funding intercluster activities: building synergies between innovation support and ERDF funding

Action 3	Action 3: Develop structural regional voucher schemes to increase access of companies to the higher TRL Shared Pilot Facilities
1. Background	<p>The context</p> <p>An important learning and best practice identified within the context of the Smartpilots project is the use of voucher schemes as an indirect and interregional support instrument for shared pilot facilities:</p> <ul style="list-style-type: none"> - Voucher schemes lower the threshold for companies to access pilot and demonstration facilities. - Accessing these facilities and their interregional networks have shown to be very beneficial for SME's to increase the TRL of their technology, to find the right partners to complement their value chains or to fill expertise gaps in their businesses. - As collateral result, these voucher schemes as indirect support mechanisms improve the sustainability of the infrastructure investments in these facilities. <p>Lessons learned from the interregional learning within the project</p> <p>2 major gaps are identified:</p> <ul style="list-style-type: none"> - The exchange of practices within the SmartPilots project provided evidence that the existing voucher amounts of the Flanders SME voucher scheme are suboptimal for demonstration activities. SMEs are not using these particular vouchers for accessing pilot infrastructures. The maximum voucher amount of 10 000€ in Flanders is far from sufficient for scale-up projects in the bio-economy: the project sizes in the bio-economy are much bigger. For example, 100k€ (BioBase4SME) and 60k€ (SuperBio) vouchers have proven to be more suitable for this kind of demo testings. - Appropriate voucher amounts are subject of projects, allocated on a first come first served basis with budget- and time limitations, constraints and rules particular for the specific project.
2. Action description	<p>The objectives of this action are:</p> <ul style="list-style-type: none"> - To develop and evaluate a structural regional voucher scheme with appropriate voucher amounts and grant modalities for pilot testing at higher TRL. - As flanking support actions: assisting companies in finding appropriate vouchers grant schemes and the appropriate infrastructure and capabilities interregional if not available in own region. <ul style="list-style-type: none"> • In view of a optimization of return on regional infrastructure investment for the existing and planned pilot and demo infrastructures (cfr action 1 & 2) and to lower threshold for companies to access these infrastructure, establishment of a structural voucher scheme to access these facilities will be studied. • The modalities and financial resources of the Flanders' voucher schemes (AIO, VITO PRODEM voucher) will be assessed, success factors,

	<p>modalities & required resources of different relevant regional, interregional & European voucher schemes (eg BioBase4SME (NWE project), H2020 SuperBio (INNOSUP project), KET4cleanproduction (H2020), IBISBA (H2020) will be assessed to select best options for Flanders.</p> <ul style="list-style-type: none"> Managing the vouchers is an important consideration. Out of the presentation by Lombardy region of the Seal of Excellence initiative implemented with ERDF in the first phase and their plans for the second phase, the ERDF administrative burden has shown to be disproportionately heavy both for applicant as for managing authority. It will be studied who and how such vouchers are ideally allocated (AIO, Spearhead clusters or pilot facility operators) to keep burden and threshold as low as possible for all actors. <p>3 meetings will be held with AIO and involved players to select best options:</p> <ul style="list-style-type: none"> Following the Lombardian Seal of Excellence for SME instrument phase 1, allocate ERDF complemented with regional money for demo vouchers to access the pilot and demo infrastructures (resulting from Action 1 & Action2). Or review and adopt modalities of Flanders' structural voucher/grant framework to better tailor funding needs to pilot services based on the experiences of ongoing EU project voucher schemes. Identify most appropriate managing organisation for these vouchers <p>Flanking Support actions:</p> <ul style="list-style-type: none"> A digital one-stop-shop with a comprehensive overview (modalities, type of services eligible...) of the available voucher grant schemes tailored to the needs of Flanders' biobased companies will be created. All existing voucher mechanisms suitable for funding pilot purposes in the bio economy will be diffused in one central place. This will lower threshold for companies to access pilot & demo infrastructure and to test their innovation at higher TRL. It will be evaluated how to create an interface with the European databases (existing and under construction) on the existing higher TRL pilot and demo infrastructure to facilitate companies to find partners for multiple actor projects and interregional matchmaking in case knowledge, relevant expertise or infrastructure are not available in the own region.
3. Players involved	<p>EWI and VLAIO (managing authority of SME voucher, R&D and cluster support options to pilots) Bio Base Europe Pilot Plant VITO</p>
4. Timeframe	<p>September 2019- December 2019</p>
5. Costs	<p>App. 2 million € voucher budget for pilot (incl ERDF money) Operational costs for website tools for brokerage</p>
6. Funding sources	<p>Structural and/or project budgets for demo vouchers</p>
7. Programme management related implications	<ul style="list-style-type: none"> design of voucher scheme with required voucher amounts and grant modalities for pilot testing at higher TRLs develop guidance and brokerage tools to facilitate cooperative funding and to facilitate partner matches for step up to bigger multiple actor and cross-regional projects ERDF as an option for multiple actors' innovation projects to be funded
8. Expected impact and results of the policy improvement	<ul style="list-style-type: none"> Increased number of SME's accessing the pilot and demo infrastructure (through vouchers).

<p>9. How will the implementation of this action be monitored</p>	<ul style="list-style-type: none"> • Continuation of successful project voucher modalities on structural basis • Use of introduced matchmaking tools • Number of website (portal) hits for access • Number of vouchers allocated to companies
--------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------


<p>Action 4 Action 4: Smart specialisation dialogue for bio-economy extended to Flanders Investment and Trade</p>	
<p>1. Background</p>	<p>Helsinki-Uusimaa Region presented during their interregional seminar a comprehensive approach for Smart specialisation as basis for prioritizing ERDF resources in their Region: Flanders has been inspired by the elements highlighted in this entrepreneurial discovery process which is mainly about creating platforms between clusters and infrastructures for internationalisation of value chains and to create collaborative leadership: this is the core of smart specialisation and enables to move from an often too much inward looking oriented smart specialisation process of a region towards an outwarding looking approach that connects quadruple helix actors, and integrates relevant flows of goods among regions. This is very relevant for Flanders bio-economy and for Flanders ERDF programming and the broader approach for internationalisation that encompasses more than only export and FDI but is about technology showcases, co-development, strategic alliances, as shown by the Finnish partner.</p> <p>Flanders' innovation and smart specialisation policy often does not exceed awareness creation and reporting and dissemination of research results. As a result, the economic, industrial and societal valorisation of research results into new and innovative products, processes and services remains too limited and is not translated into entrepreneurship. This bottleneck, the so-called innovation paradox needs to be better addressed to create higher economic added value and jobs in the region. To move away from this 'business as usual' in policy for smart specialisation, new mechanisms and tools might help to improve the regional innovation strategy.</p>
<p>2. Action description</p>	<p>EWI will meet with Flanders Investment & Trade (FIT) to look for possibilities to better deploy the economic potential of IB KET internationally, following the presented key elements of Smart specialisation approach in order to connect to knowledge and infrastructure in a smarter way. FIT is partner in the ERDF project "Flanders accelerates" that promotes 'Sustainable materials, resources & chemistry' as one of the smart specialisation investment priorities of Flanders. FIT is also partner in Flanders E.E.N. consortium that helps businesses in matchmaking all over Europe. The networking initiated through FIT attendance in interregional seminars and site visits of the project will be continued to shape the development of 'Sustainable materials, resources & chemistry' as investment priority of Flanders. EWI and FIT project contact will mainstream project activities/tools developed by the ERDF project 'Flanders accelerates' with SmartPilots and in the Flanders RIS3 document for the cluster domain 'sustainable chemistry' in order to better reflect the S3 approach. In view of the S3 preparations for the next program period, a writers' team of VLAIO and EWI already updated the current RIS3-document in 2017 into a strategic S3 note and an operational note. In order to better implement the international collaboration, the team will integrate project matchmaking tools to better deploy interregional innovation and cluster cooperations on the operational level to increase the international visibility of Bio Base Europe Pilot Plant for Flanders' Smart Specialisations, and to realise the potential for scale, scope and spillovers for knowledge production and use on interregional basis.</p>

	<p>The outcomes of this extended dialogue with FIT will be taken up in a reviewed note of the cluster domain 'sustainable chemistry' integrating S3 insights from the ERDF project 'Flanders accelerates' with smart pilots insights. The EWI/VLAIO writers' team S3 will use this document for the preparations for S3 and interregional innovation investments for the post 2020 programming.</p> <p>This will also feed into the Government Agreement 2019-2024 that is currently under preparation by Flemish administrations and that will be presented to the new Flanders Government after the elections in May 2019.</p>
3. Players involved	<p><i>Operational level:</i> EWI/VLAIO writers team and FIT representative of project 'Flanders accelerators', NCP/EEN contact point bio-economy</p> <p><i>Strategic level:</i> EWI/VLAIO writers' team S3 strategic note Smart specialization & Flanders Bioeconomy interdepartmental working group</p>
4. Timeframe	<p>Timing for tools 2018- end 2019</p> <p>Timing for S3 strategy: June 2019- Beginning 2020</p>
5. Costs	Not relevant
6. Funding sources	Not relevant
7. Programme management related implications	<ul style="list-style-type: none"> • RIS3 Cluster domain 'Sustainable Chemistry' revisited with S3 learnings from 'Flanders accelerates'. • Operational tools could open interregional cooperation possibilities for the shared pilot facilities with partners abroad and can serve as input for forthcoming ERDF call content.
8. Expected impact and results of the policy improvement	<ul style="list-style-type: none"> • Take up tools from e.g. the ERDF project of FIT, 'Flanders accelerates' to result in improved business matchmaking possibilities. • Enhanced RIS3 policy community for bioeconomy (VLAIO-EWI team with FIT).
9. How will the implementation of this action be monitored	<p>Number of Flanders RIS3 positions influencing post 2020 ERDF programme, for example policy for interregional innovation investments (component5)</p> <p>Number of tools and actual take up in Flanders RIS3 policy.</p>

7. Monitoring activities

The monitoring of the implementation of the proposed actions will be on regular basis, both within the region according the steps defined in the action plan and also informing the SmartPilots partners on regular basis through telco and meetings for mutual advice and for streamlining interregional elements. Given the strong need for increased policy interaction, Bio Base Europe Pilot Plant proposes to transfer the lead partnership for the second phase to the Flanders project partner 2.

8. Endorsement of the action plan

<p><i>The AIO (Flanders Enterprise and Innovation Agency) herewith agrees to support and promote the implementation (and where appropriate implement) the actions detailed above.</i></p> <p><i>I confirm that I have the required authority of my organisation to do so and that the required authorisation process of my organisation has been duly carried out.</i></p>	
Date:	16/11/2018
Name and job title:	Johan Hanssens, Secretary General of department EWI
Signature:	 <p>Johan Hanssens Secretaris-generaal</p>
Stamp of the organisation:	<p>Vlaamse overheid Departement EWI Koning Albert II - laan 35 bus 10 1030 BRUSSEL</p>