http://www.interregeurope.eu/bridges/

# Action plan of Kainuu region, Finland

## I Profile of the Action Plan

| | |
|---|---|
| Project: | BRIDGES |
| Partner organisation: | Regional Council of Kainuu, PP2 |
| Other partner organisations involved: | Kainuun Etu Oy, PP1 |
| Country: | Finland |
| NUTS2: | East & Northern Finland |
| Region: | Kainuu |
| Contact person for PP2: | Jouni Ponnikas, jouni.ponnikas@kainuu.fi, +358 40 574 0804 |
| Contact person for PP1: | Antti Toivanen, antti.toivanen@kainuunetu.fi, +358 44 5514559. Ninetta Chaniotou, ninetta.chaniotou@kainuunetu.fi, +358 44 5514559. |

## II Policy context

*Table 1 The Action Plan aims to impact*

| | | |
|---|---|---|
| Investment for Growth and Jobs programme, name of policy instrument here | | X |
| Type 1: Implementation of new projects | X | |
| Type 2: Change in the management of the policy instrument (improved governance) | X | |
| Type 3: Change in the strategic focus of the policy instrument (structural change) | | |
| Other improvements not corresponding to types 1-3 (please comment) | | |
| European Territorial Cooperation programme | | |
| National instrument (Parliament funding decision EK31/2018) | | X |

Name of the policy instrument: Kainuu RIS3, part of the Sustainable growth and jobs 2014–2020 – Finland's structural funds programme 2014FI16M2OP001, Sub-programme for Northern Finland. BRIDGES focus: Kainuu RIS3 Pr2, specific objective 2.2.

Improvement needs: (1) Criteria for & upscale investments in Bio-based economy; (2) Partnerships addressing region's RIS3 mismatches between productive & RDI base; (3) Enhance centres of expertise and innovation for better RIS3 implementation, (4) leverage of resources for innovation.

**Contents**



**List of figures**



**List of tables**

# III Overview of the action plan

Kainuu joined the project in order to identify, adapt and adopt better ways to impove the RIS3 delivery on the ground, focusing on bio-based industries. This was / is constrained by the Kainuu RIS3 as well as by contextual conditions. The latter include overall framework conditions (small critical mass of the regional economy and absolute priority to invest in effective economy renewal actions) and the improvement needs also acknowledged in the project: (1) Criteria for & upscale investments in Bio-based economy; (2) Partnerships addressing region's RIS3 mismatches between productive & RDI base; (3) Enhance centres of expertise/competence and innovation for better RIS3 implementation (KE- CC), (4) leverage of resources for innovation.

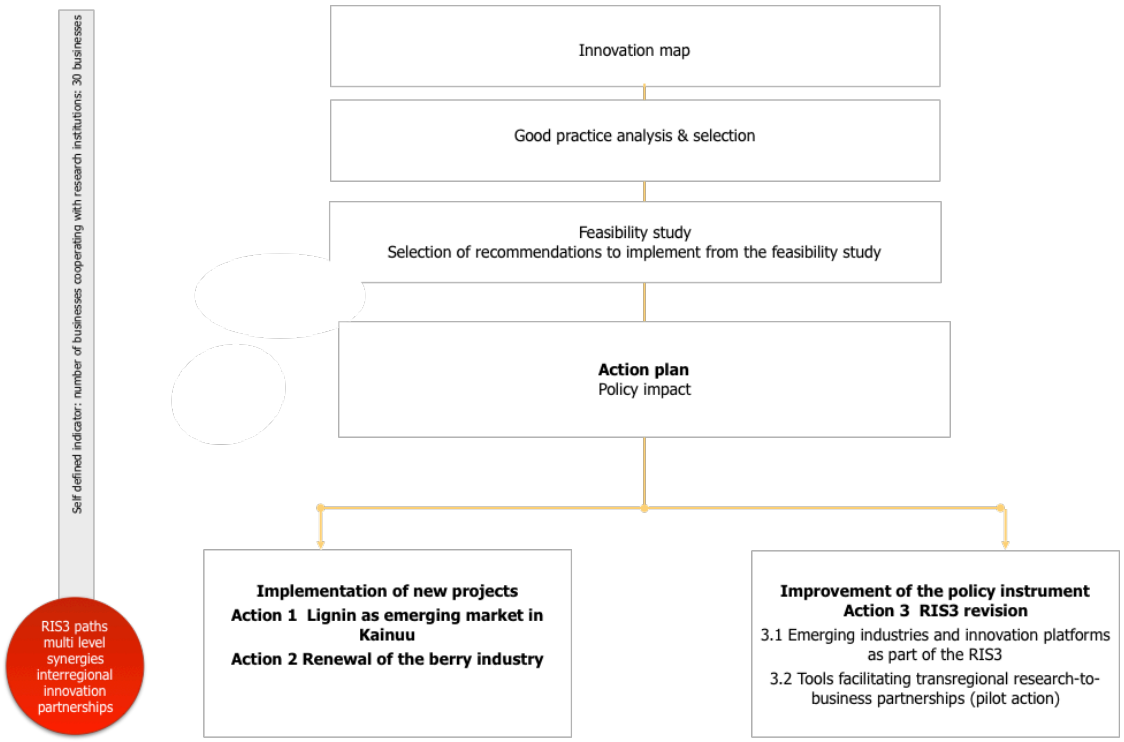
For Kainuu, the 'RIS3 path' that resulted from the BRIDGES project, is about the development of new industries (emerging) through tested methodologies related to centres of competence (good practice transfer), reinforcing existing natural resources industries by investing im interregional partnerships especially research-to-business options, and revising the RIS3 implementation methodologies to take into account these issues. The policy impact continues to address the RIS3. It is achieved by implementing new projects and the improving the governance of the policy instrument. The Kainuu action plan is summarised in Table 2 and Figure 1.

*Table 2 Summary of PP2/PP1 action plan including funding sources and policy instruments*

| Action | Policy instrument impact | | Funding sources | | | |
|---|---|---|---|---|---|---|
| | Implementaton of new projects (RIS3) | Governance improvement (RIS3 revision) | Structural Funds (ERDF) | National funds Decision number: EK31/2018 | ETC | Own budget |
| **Action 1** | Lignin as emerging industry | | | 160 000€ | | |
| **Action 2** | BERRY+ platform | | Funds for setting up and running the BERRY+ platform: 105 000€<br><br>Funds foreseen in the approved INNO BIO project (staff and travels) for participating in the BERRY+ processes | | | |
| **Action 3** | | Programmes for emerging industries<br><br>Innovation platforms<br><br>Tools facilitating transregional research-to-business | | | Funds for the pilot action: 52 000€ Tools facilitating transregional research-to-business partnerships | Funds for the pilot action: 46 500€ Tools facilitating transregional research-to-business partnerships<br><br>Funds for the |

| Action | Policy instrument impact | | Funding sources | | | |
|---|---|---|---|---|---|---|
| | Implementaton of new projects (RIS3) | Governance improvement (RIS3 revision) | Structural Funds (ERDF) | National funds Decision number: EK31/2018 | ETC | Own budget |
| | | partnerships | | | | RIS3 revision. |

*Figure 1 Action plan PP2/PP1 concept*




# IV Policy learning

PP2/PP1 transfer four good practices:

- **The Bio economy Science Centre (BioSC):** The GP works towards developing new specialisations aligned with the RIS3 of the region. The motivation for the development of new specialisations is industry -driven. Large, market leader businesses indicate to the BioSc, which operates as an upscale centre of competence with formal linkages to centres of excellence, their interest towards diversifying into new specialisations. The BioSc is proposing to all its stakeholders a comprehensive initiative called 'development of a new market'. The approach is structured into various coherently conceived and complementary projects addressing research (commercialisation of excellence, applied research, market intelligence), investments, education, skills, and business services. An agreement is made among all stakeholders (including public funders) for implementing the new comprehensive initiative. The result of

the initiative is the development of new markets and strengthening of regional, cross-sectorial clusters. Kainuu was very happy to come across this GP and understand its comparative advantages. As a development methodology it indicates a solid path for renewing the economy through comprehensive & coherent initiatives ensuring the place -based approach: Kainuu does NOT practice till now the 'new markets' approach described above. The critical difference is that traditionally, when developing a new industry, the focus has been on 'new business development' and not 'new market' development. It follows that while there are many projects aligned with the RIS3, they do not have follow up or stress complementarity, they do not achieve constructing regional advantage. This hinders the overall RIS3 effectiveness and even more so the emergence of new specialisations. The GP convinced us that there are more options possible, it legitimised the comprehensive approach as an operational policy implementation tool. To be able to transfer well the GP, the terms of reference of the lignin feasibility study included also the request to take into account the comprehensive, 'new market development' approach. The concept of the 'new market development' is transferred to Action 1 of the PP2/PP1 action plan (implementation of new projects) and Action 3 RIS3 revision (improvement of the governance of the policy instrument), Activity 3.1 Emerging industries and innovation platforms.

- **Big data traceability** and **High technology farming**; both approved to the JRC RIS3 platform: The innovation platforms were a new thing when BRIDGES started. By studying the good practices it was clear that there are many potential advantages, for example: they can support more permanent partnership schemes; they can be the base for multi-lateral as well as bilateral transregional innovation initiatives; they can benefit from multiple sources of funding; IE projects can act in complementarity to the platforms. Kainuu's experience in transregional cooperation has been mostly through Interreg projects. Our experience with Interreg III C, IV C, IV B, and the IE projects has been very positive. However, there is a risk after some point that the continuity of cooperation is lost. However, for a region like Kainuu, interregional cooperation is a very important knowledge intensive, scaling-up "pull factor", i.e. interregional options are very much in demand. The innovation platforms provide additional types of such options: transregional research-to-business, business-to-business, business-to-research, research-to-research with potential for bilateral and multilateral innovation partnerships, and new project generation; they give the tools for exploiting regional strengths systematically. The concept of the innovation platform is transferred to Action 2 and Action 3. ACTION 2 focuses on submitting an application for an innovation platform based on the diffusion and commercialisation of excellence related to natural resources and their side flows. It is based on the BRIDGES RIS3 industrial and productive base, i.e. bio-based industries. We call this initiative the BERRY+ platform. The purpose of the platform, once set up and approved, is to generate new projects and interregional innovation partnerships. ACTION 3, RIS3 REVISION: The concept of innovation platforms will be included as an eligible activity in the forthcoming RIS3 revision through Activity 3.1 Emerging industries and innovation platforms. Action 2 of the Kainuu action plan creates a framework to deal with two structural challenges of the region in terms of economic renewal: the mismatch between the research base and economic base and the small critical mass of the productive base.

- **CENTROPE transnational innovation voucher**, transferred in the framework of the pilot action. CENTROPE for the pilot action. CENTROPE is a transnational innovation voucher developed through a Central Europe Interreg B project called CENTROPE. CENTROPE GP is accepted to the Interreg Europe

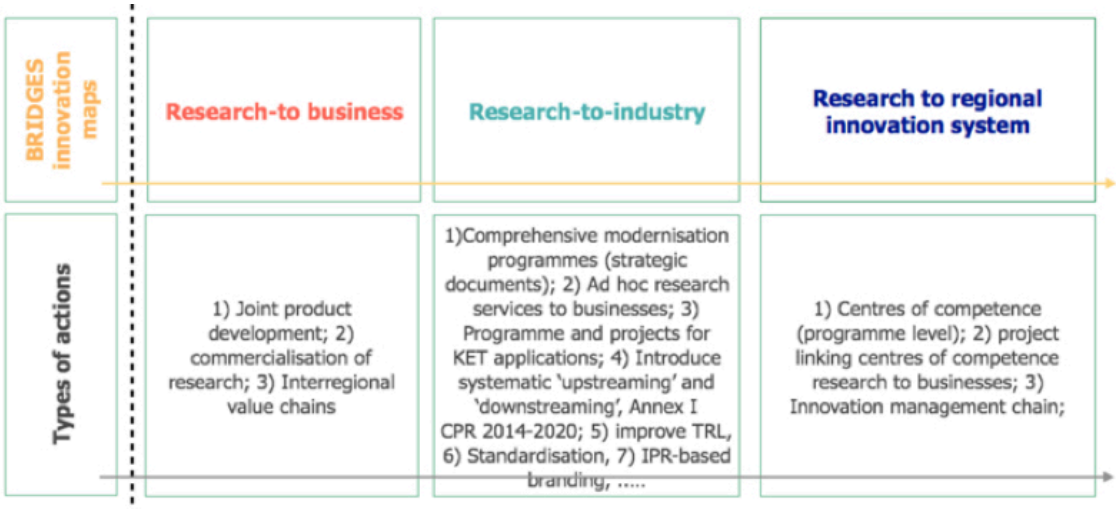
programme data base (https://www.interregeurope.eu/policylearning/good-practices/item/11/centrope-innovation-voucher/). Through the BRIDGES pilot the GP is transferred to interregional level. Nine out of the ten types of the CENTROPE supported activities are adopted by the pilot action, while a number of transferability challenges are also addressed, for example provisions for the sustainability of the effort, faster processes, and addressing marketing challenges. The pilot action stresses facilitation for research-to-business actions and associated investments, which are at the heart of RIS3 implementation. The pilot action is classified under ACTION 3, Activity 3.2: Activity 3.2 is the pilot action. Evidence-based successful aspects of the pilot action implementation will be mainstreamed into the RIS3 revision under the title *Tools facilitating transregional research-to-business partnerships*. The pilot action for Kainuu addresses one structural challenge of the region in terms of economic renewal: the mismatch between research base and economic base (small critical mass of the latter).

# V Background

## V.1 The Kainuu innovation map

The BRIDGES project innovation maps anticipated to identify connectivity opportunities and gaps related to research-to-business solutions. In addition to the initial focus area, the egional innovation maps identified two more areas that are important to the BRIDGES project partnership: research-to-industry and research-to-regional innovation systems, Figure 2, below.

*Figure 2 The types of research-to-solutions that were identified through the innovation maps.*




The innovation map of Kainuu, indicates that to enable better RIS3 delivery it is important to give emphasis to reseach-to-industy comprehensive economy renewal programmes (the middle column in Figure 2). It was the starting point for seeking good practices addressing comprehensive renewal programmes and including TRL (technology readiness level) in the action plan.

## V.2 Kainuu feasibility studies

In Kainuu there have been two feasibility studies. The reason is the RIS3 industries regional advisory groups (= regional stakeholders) according to the industry in which they are active. The bio-based economy includes the forest economy and the berry industry. Both groups of stakeholders have bene committed to the project. As aresult we asked permisison from the IE JTS to be allowed to have two instead of one feasibiltyi studies.

## V.2.1 The feasibility study on lignin

Lignin is a side product (side flow) of the chemical wood processing industry. In Kainuu, one large industry is producing lignin in considerable amounts, but not sufficient amounts to support industrial valorisation. Lignin, for the time being, is burned. Burning will be banned in the foreseeable future.The regional stakeholder group (RSK) of Kainuu proposed the development of a new industry, based on the valorisation of lignin side flows. Valorisation of side-flows is one of the spearheads of the Kainuu RIS3. A feasibility study (FS) was conducted[1] during the period January – April 2018. The terms of reference of the FS were conceived to reflect the industry development concept transferred from the Bio-Science Centre, i.e. "development of a market" rather than just "development of businesses". The concept is a demonstration of models contributing to localisation economies through (inter alia) business services (Meliciani and Savona, 2014, referenced in IX. Some useful readings).

*Table 3 Investment recommendations for lignin (prioritized order).*

| **Short term investments for lignin - investment type** | **Possible lignin suppliers** | **Size of investment – cost estimate/ maturity level** | **Competence needed** |
|---|---|---|---|
| *1. (White) pellet production -new/ extension/ modifying investment depending on the existing facilities* | St1; Local energy producing companies, e.g. Kainuun Voima; Local pellet manufacturers e.g. M-Pelletti in Kuhmo, Finnish Pellet Group Kajaani Ltd; Vapo; in the longer run: biorefinery (Kaicell Fibers) | - 5000 tpy<br>- Less than 1 million euro for capacity of 5000 tpy (1)<br>- business plan for the biorefinery needed | No special training/ education needed to adopt technology if pellet producers involved |
| Medium term investments for lignin (within 3 years)- investment type | Possible lignin suppliers | Size of investment - cost estimate/ maturity level | Competence needed |
| *2. Technical carbon, especially activated carbon production -new investment* | St1; Other lignin producers in Finland; Vapo; Activated carbon producers in Europe e.g. Jacobi Carbons, activated carbon utilizers e.g. Kemira | Lab scale testing going on, cost estimate around 10 million euro for capacity of 5 tpd (2) | Skilled labour is needed to operate actions |
| *3. Phenolic resins (adhesives) production -new investment* | St1; Adhesive manufacturing companies in Europe (e.g. Henkel) | Lab scale testing going on, no cost estimate yet | Skilled labour is needed to operate actions |

(1) http://www.biomass-energy.org/wood-pellet-plant-cost; (2) Stavropoulos & Zabaniotou 2009

[1] The lignin feasibilty study was prepared by the University of Oulu.

Development project recommendations are based on market relevance (in this study). At the moment development projects should be focused on high quality/value lignin application because majority of available lignin is of high quality.

*Table 4 Development project recommendations (prioritized order).*

| Development project recommendations-type of project | Possible partners/actors, lignin suppliers and users | Duration/cost | Expertise/Education needed |
|---|---|---|---|
| 1)High quality lignin utilization as macromolecule (especially as an adhesive)<br><br>- Research project | St1; Lignin producing companies in Finland; VTT; LUKE; relevant research units at universities, adhesive manufacturers, adhesive users (e.g. CrossLam Ltd in Kuhmo), Resin manufacturers, e.g. Momentive Specialty Chemicals Ltd in Kitee, Kaicell Fibers | 1 year,<br>100-300 k€<br>(Costs are dependent on amount of applications)<br>- business plan for the biorefinery needed | Scientific expertise needed, Several projects going on at VTT and at many universities Transfer of competences to local businesses, additional projects can be organised. |
| 2)High quality lignin based activated carbon development project<br><br>Research project | St1; Lignin producers in Finland; VAPO; Relevant research units at universities (e.g. chemical and environmental engineering unit at UO); Activated carbon manufacturers/utilizers | 1 year,around 300 k€<br>(Costs are dependent on workload and number of partners) | Scientific expertise needed, activated carbon related research is going on at many universities.<br>Introduction of the uses of high-quality lignin locally and transfer of competences to local businesses, additional projects can be organised. |
| 3)High quality lignin-based carbon fiber development project<br><br>- Research project | St1; Lignin producing companies in Finland; VTT; relevant research units at universities | 1-3 years, around million euro | Scientific expertise needed, VTT is a strong player in lignin-based carbon fiber research in Finland, involved in several projects<br>Introduction of the uses of high quality lignin locally and transfer of competences to local businesses, additional projec ts can be organised. |
| 4)Black pellet production<br><br>-Business development project | St1; Technology licensors e.g. Valmet, Arbaflame, Zilhka, Solvay; Energy producing companies, e.g. Kainuun Voima, Fortum; Local pellet manufacturers e.g. M-Pelletti in Kuhmo, Finnish Pellet Group Kajaani Ltd; Vapo | Pilot scale testing going on, costs expected to be more than in the case of white pellets | Minor training/<br>education is needed to adopt technology<br>Introduction of the uses of high quality lignin locally and transfer of competences to local businesses, additional projec ts can be organised. |

Most lignin is burned for fuel so far. The most potential applications for high quality lignin are activated carbon, carbon fibers and resins. However, for carbon fiber and activated carbon there are no commercial applications yet, and for phenol and phenolic resins, very little of the potential has yet been realized. More research & development investments are needed to confirm the viability of these applications.

There are many biorefineries in operation in Finland and several new projects have reached the design phase. However, there is not much lignin related business (besides energy use) in Finland, not to mention Kainuu area, at the moment (in the year 2018). In Kainuu, there is one bioethanol plant in operation which produces

lignin as a by-product. But in the near future the situation can be different if new investment plans are realized. In that case there will considerably more lignin available. To get maximum benefit from lignin all existing applications should be mapped and above all new applications should be found through intensive research and development.

In a short-term perspective, the most rational application for lignin is still using it as an energy source as to date. In order to increase preservability and manageability of a lignin some pelletizing should be done. For new business cases, there are three relevant alternatives in general: 1) A company from outside buys all possible lignin and convert/refine it to an end-product; 2) A lignin producer invests in lignin upgrading plant; 3) A joint enterprise is established to be active in lignin applications.

In the Kainuu action plan (Action 1) we prioritise option 3 and then option 2. The reason is that by applying the location quotient method, the concentration of lignin as raw material in Kainuu taken together with future potential, is evidence supporting further developments and investments.

## V.2.2 The feasibility study on the renewal of the berry industry

The feasibility study on the renewal of the berry industry covered the primary sector of berries including cultivaton and collection of wild berries, the secondary sector (processing) and the research base available in Kainuu and the rest of Finland. The feasibility study first of all acknowledges the wide range of possibilties for the berry industry sector scaled-up growth. This is summarised in Table 3, indicating possible fields of development actions**2**.

The feasibility study confirms the mismatch between the curent productve and reserch base of the berry industry in the region. It comments that "The fastest route to the better profitability is to produce added-value products instead of bulk[3]".

Renewal of the berry industry should include, therefore, both scaling up and specialisation themes, addressing challenges and opportunities at the same time: (a) companies located in Kainuu are small for both material streams and foreign trade. National and interregional clustering should be prioritised (Extensive industry-wide cooperation should be among the criteria for investment subsidies. The companies should be encouraged to build stronger clusters. (b) The current total production capacity of the Kainuu berry industry is oversized for raw material availability. Therefore, the replacement and production developing investments should be prioritized instead of build more capacity. (c) Global markets should be mapped for substitute and replacement products. For the same market with wild berries, new products and raw materials are continuously investigated worldwide and global survey helps to know which kind of competition is pending during the payback time of the investment. (d) Availability & competitiveness of labour in the food processing sector is one of the bottlenecks in the industry. (e) The raw material procurement in the berry industry is based on unstable foreign labour. The investments must aim to robotization both in berry picking and in

[2] Table 3 is adjusted from the feasibility study done by LUKE (2018) Berry industry renewal, pages 55-56.

[3] LUKE (2018) Berry industry renewal, page 56.

production lines for minimizing the risks in the raw material procurement and labor availability. The time span in the robotization is long, however, because of the picking robots can be tested only 2-3 months a year[4].

*Table 5 Fields of possible development actions*

| Key technologies | | | Products | Application | Key in-vestment | Promotion | Policy, 3S, industrial modernisation/ agrifood | Partnership/ Markets |
|---|---|---|---|---|---|---|---|---|
| Input /raw material | Cultivation development in field an forest (wilderness) | Facilitative: ICT and logistics | Cultivars, lines, material from specified production | Correct raw material to correct process | Plant breeding | Economic sustainability | Rural (innovation) policy | Horticulture, agriculture, forestry, |
| Harvesting | Harvesting technology | Primary supply networks | Harvester: robot or hand-held tools | Intensification of the harvesting process | Automatic, robotics | Sustainability, naturalness | (Rural) innovation policy | Robotic, censor technology markets |
| Storing | Storage manufacturing | Logistics | Optimization | Balancing of the input to processing | Renewable energy, material efficiency | Clean technology | Energy and climate policy | Energy technology |
| Cleaning | Sorting, cleaning, grading – utilization of side flows | Robotics, blockchain technologies | Fresh products | Food and food ingredients | Automatization | Naturalness, organic, freshness, cleanness, health impacts, sustainability | Nature-based innovation, clean investment, competition, health, SDG | Manufacturing |
| Processing | Extraction – utilization of side flows, deoil | Assembling critical masses, stabilizing (drying and freezing) | Berry juice concentrates, berry nfc juices and syrups. Purees with seeds. | Food, feed, end ingredients | Extraction facilities-concentration –(hot water, ethanol, supercritical l-CO2 circulation | Naturalnes, organic, freshness, cleanness, health impacts, sustainability, techn. quality | Nature-based innovation, clean investment, competition, health, SDG metrics | Food technology |
| | Dewater, dry, deoil, grinding | | Berry powders for feed, food<br>Grinded material for cosmetics compensate plastic beans | Food, feed, cosmetic ingredients | Mill/grinder, separator, drier, cocentrator SFE | Naturalness, organic, cleanness, health impacts, sustainability, techn. quality | Innovation (purity), clean investment, competition, transparency, health, SDG metrics | Food technology, cosmetics technology |
| | Functional food and cosmetic ingredient processing | Critical quality of the raw material, wide spectrum | Aromatic ingredients, functional polyphenolics, seed oil, fibre, stains | Cosmetics | Extraction facilities-concentration –(hot water, ethanol, supercritical l-CO2 circulation | Naturalness, organic, cleanness, health impacts, sustainability, techn. quality | Innovation (purity), clean investment, nature-based competition, transparency, health, SDG metrics | Cosmetics technology |
| | Consumer product processing | Encapsulation (micro, nano) fron the extract during the drying process | Consumer product for feed, for food, for cosmetic | Consumer products in combination with oat ingredients (together with Valio and Dermosil etc.) | Food technology investments | Taste, applicability, naturalness, organic, health impacts, cleanness, sustainability, image building | Health, food, Innovation (purity), clean investment, nature-based competition, transparency, SDG metrics | Food, feed, heath care, hotel services, sports, fashion and life style enterprises and NGOs |

These findings were subsequently interpreted into three major themes relating to the renewal of the berry industry of Kainuu with prioritised actions, partnerships and recommended budgets attached to them. The suggestions confirm the mismatch between the research and the productive base and they are also pathing the way for shaping interregional innovation partnerships.

*Table 6 Proposed development actions*

| Proposed products | Research themes | Business growth | Development actions |
|---|---|---|---|
| Natural food and cosmetics ingredients | Hot water extraction with high pressure<br><br>CO2 extraction for oil components | Processing and productisation of berry primary constituents into high-value ingredients for variable paths of usage | Productisation of lingonberry and bilberry powder or extract products |
| Natural food and | Hot water extraction | Processing and | Extraction of high-value ingredients |

[4] Ibid. above, pages 56-57.

| Proposed products | Research themes | Business growth | Development actions |
|---|---|---|---|
| cosmetic additives | with high pressure<br><br>CO2 extraction for oil components | productisation of berry side-flows into high-value ingredients/additives | are berry side-streams like berry pomaces, berry seeds, berry skins, berry leaves and various underutilized berries such as crowberries, chokeberries and bog whortleberry |
| High value culinary solutions merely for snack food or food component | Combination with other potential high value-added good ingredients, such as barley. Research target on healthy snack products | Processing and productisation of frozen berry, jellies and concentrates into high value (empowering) food items as snack food or component of a food portion | Product processing of berry processed components with milk or plant-based milk substitutes |
| Berry product branding (protected & high traceability related origin of production), nature/local based brand definition and marketing | | Selected products | Joint branding efforts including IPR-based solutions if this would help |

# VI Action plan

There are 3 actions: Action 1 Lignin as an emerging market in Kainuu; Action 2 Berry industry renewal, and Action 3 RIS3 revision.

## VI.1 Action 1 Lignin as emerging market in Kainuu

**Funding dedicated to Action 1: 160 000€ from national sources[5], following ERDF regulations.**

Action 1 transfers one of the essential functions of the BioSC centre of competence good practice: the methodology for develping new indistries through the implementation of multi-sided, mutually reinforcing initiatives involving inputs from all three aspects of the triple helix (policy, research, business). In Kainuu the methodology is applied to the development of lignin processing towards new applications identified through the feasibiltiy study on lignin.

A call will be issued by the Regional Council of Kainuu, PP2 for a multi-actor partnership to develop and test lignin applications as wooden construction adhesives. The partnership is planned to include research, users of the lignin applications, producers of the lignin as side flow, and producers of lignin.

Implementation preparations have been initiated already, through the last two regional stakeholder group meetings that took place on January 8th and 9th in Kajaani. They were very useful for discussing and agreeing concrete expectations among the stakeholders. The two meetings focused on: (1) market intelligence needs and concrete demand for lignin applications; (2) quality of lignin produced in Kainuu and in which part of the added-value map it suits more; (3) the gaps and opportunities in the region for valorising selected lignin applications; (4)the most promising approaches for achieving lignin valorisation; (5) investments, research/education and business services which could/should be prioritised. The conclusion was

[5] Decision EK31/2018.

that the implementation consortium should include a research unit and an end user of the lignin adhesive, and a produced that will first produce and test the lignin as adhesive for wooden construction. Should the results of the testing be positive, then (1) investments will follow to boost lignin production and (2) investments will follow to introduce process of lignin in the region. There will be an invitation to businesses to establish or expand a lignin-based adhesive production unit in Kainuu. The invitation will be based on a favourable investment package[6]. The location quotient of Kainuu for lignin production as raw material is very high and has the potential of growing further. Co-locating the lignin production and lignin processing units implies, first of all reduced transport costs, as well as enhanced exchanges on the processing of lignin towards diversified markets, impacting the amount and types of lignin production.Action 1 is implemented in seven (7) main steps: preparation of the terms of reference for issuing the call for expression of interest (with strong involvement of the regional stakeholders as this is a first-time ever approach in Kainuu); call of expression of interest; selection of consortium; implementation; monitoring; evaluation and, if evaluation results are encouraging, follow up actions (investments facilitation options, utilising also the SME investment funds). The implementation steps and timetable for Action 1 can be found in Table 9.

## VI.2 Action 2 Renewal of the berry industry

Funding dedicated to Action 2: ERDF 105 000€ for staff costs, administration and travels required for the submission of the application and coordinating it. In addition to the above amount, through the INNO BIO project (total budget 949 062€; 664 344€ ERDF), awarded to the MITY unit of the University of Oulu located in Kajaani, funding is foreseen towards the implementation of the BERRY+ platform, i.e. staff and travel costs and activation of the beneficiary institution[7]. The exact amount will be clarified once the platform application has been approved.

Action 2 of the PP2/PP1 action plan is about submitting an application to the JRC for establishing an innovation platform, activating and coordinating its implementation. The core concept of the BERRY+ platform is to benefit from the potential of natural resources, extracted substances and sideflows, for high added value applications, and in the process, to impact the industrial modenrisation of the participating regions and set up new value chains.

The BERRY+ platform concept has been formulated during Phase 1 (PP1 Kainuun Etu in cooperation with PP2, and discussions with a number of potential members of the platform). The concept is based on the

[6] For example, the investment funds, law on SME investments, relating also to the development areas Laki valtionavustuksesta yritystoiminnan kehittämiseksi, 30.12.2013 (Act on state aid on business development, article 1,§4, item 3).

[7] INNOBIO hanke tukee Interreg Europe rahoitteisen Bridges-hankkeen 2016 - 2021 toimintasuunnitelman toteutusta osallistumalla Bridges-hankkeen toimenpiteeksi kirjattuun Berry+ nimisen älykkään erikoistumisen alustan hakuun ja toteutukseen tuomalla prosesseihin mittaustekniikan osaamista. Älykkään erikoistumisen alustat ovat EU:n komission lanseeraama toimintatapa, jolla tehostetaan alueiden kv-yhteistyötä älykkääseen erikoistumiseen liittyvässä TKI-toiminnassa ja tehostetaan TKI resurssien saamista alueille. INNOBIO hankkeen toteuttajaorganisaatiot ovat mukana Kainuun alueellisina toimijoina BERRY+ alustassa, osallistuvat BERRY+ alustaan hakemiseen sekä hyväksyttyyn alustaan perustuvan kv-yhteistyökonsortion rakentamiseen ja kv TKI rahoituksen hakuun osana konsortiota vuosien 2019 ja 2020 aikana.

recommendations of the feasibilty study and on the inputs & interests of potential partners, for example there have been discussions with PP4 Uusimaa (vegetable based proteins), PP5 Western Macedonia (herbs for medical, cosmetics and functional food applications), and the Region of Peloponnesus (branding and development of new industries) through PP9 facilitation. PP2 is responsible for finalising the application and submitting it to the JRC. Once the application is submitted, there will be bilateral and multilateral partnerships towards implementing the BERRY+ objectives.

The implementation of the BERRY+ platform capitallises on the results of the the pilot action (Tools for transregional research-to-business partnerships) since the generated research-to-business mini projects & follow up projects (1) share part of the same research base prioritised by Kainuu (berry extracts and side flows) and Helsinki-Uusimaa (vegetable based proteins), and (2) address one of the prioritised industries in Action 1 of Westrern Macedonia, the acaling up of the herbs industry. Table 7 below gives an example of what innovation partnerships could be about. The final BERRY+ application will be based on a comprehensive table, reflecting the interests of all the regions that will finally join the BERRY+ initiative.

*Table 7 Kainuu priorities for the BERRY+ platform; these priorities do not exclude other natural resources*

| **Kainuu priorities** | **Offer (strengths)** | **In search of the following complementary strengths[8]** |
|---|---|---|
| Development of smart harvesting technologies aiming at Sensory technologies and harvesting robotics | Sensory technology research at good level<br>Robotics for manufacturing solutions<br>Research and innovation testing base<br>Wild berry collection testbeds | Research partners<br>Testbeds |
| Functional foods | Berry research background in Kainuu and across Finland<br>Access to EU demand related to professional sports partnerships through the ClusSport platform for example. | Development and diversification of added value production networks<br>Innovative start-ups and spin-offs seeking to develop products based on such solutions. Knowledge-based entrepreneurship models (entrepreneurial discovery process) |
| Regenerative cosmetics | Research base including IPR and prior successful commercialisation and market placement. | Large cosmetics businesses with an interest to develop and market innovative products based for regenerative solutions.<br>Innovative start-ups and spin-offs seeking to develop products based on such solutions. |
| Novel berry product piloting | Processing and productisation of berry primary constituents into high-value ingredients for variable paths of usage: productisation on lingonberry and bilberry powder or extract products.<br><br>Processing and productisation of berry side-flows into high-value ingredients/additives: Extraction of high-value ingredients are berry side-streams like berry pomaces, berry seeds, berry skins, berry leaves and various underutilized berries such as crowberries, chokeberries and bog whortleberry.<br><br>Processing and productisation of frozen | Hot water extraction with high pressure CO2 extraction for oil components<br><br>Larger, specialised markets<br><br>Innovative start-ups / spin-offs / larger businesses seeking to develop products based on such solutions.<br><br>Knowledge-based entrepreneurship models entrepreneurial discovery process) |

[8] The complementary strengths will form the base for **establishing innovation partnerships and implementing through bilateral or multilateral projects.**

| Kainuu priorities | Offer (strengths) | In search of the following complementary strengths[8] |
|---|---|---|
| | berry, jellies and concentrates into high value (empowering) food items as snack food or component of a food portion: Product processing of berry processed components with milk or plant-based milk substitutes<br><br>Marketing testbeds | |
| Berry product branding (protected & high traceability related origin of production), nature/local based brand definition and marketing | Selected products | Joint branding efforts including IPR-based solutions if this would help |

The implementation steps and timetable for implementing Action 2 are found in Table 10 Action plan implementation steps and timetable.

## VI.3 Action 3 RIS3 revision

Action 3 has two activities, 3.1 Emerging industries and innovation platforms and 3.2 Tools facilitating transregional research-to-business partnerships (pilot action).

**Activity 3.1 Emerging industries and innovation platforms as part of the RIS3.**

**Funding for Activity 3.1 is not foreseen as a separate input**. This is because Activity 3.1 is utilising the concepts, methods, and successful aspects from the good practice transfer through Action 1 and Action 2 projects. The RIS3 revision is the overall enabling framework and -, and comes from own budget of PP2[9].

Improvement of the governance of RIS3 results from the inclusion of new types of activities in the implementation of the policy instrument, including more specific criteria for project funding. Activity 3.1 is capitalising on the experiences and lessons learnt from the GP transfer and the implementation of the projects in Actions 1 and 2, i.e. it is mainstreaming the concepts that are the base for Actions 1 and 2. The on-going Kainuu RIS3 is summarised below in Figure 3. The revision of the RIS3 will help make the implementation of the policy more effective and the economic renewal more performing. Among such improvements it will include also the concept of Programmes for emerging industries and Innovation platforms. How this will be done is explained below:

- The Programmes for emerging industries: The cross-sectorial comprehensive clustering approach (transfer from the BioSc GP) and the BRIDGES – developed feasibility approach are mainstreamed into the RIS3. An operational concept has been formulated for the development & deployment of emerging / existing RIS3 industries. It includes the feasibility study stage, the 'new market development' approach (market intelligence, research, product development, skills, business services), and the investment call

[9] For Kainuu, one of the added value aspects of the IE projects is the potential to mainstream during policy revision useful lessons learnt. BRIDGES is one of these sources.

following evaluation of the results of the testing. Criteria for projects dealing partially ("just" research, "just" upgrade of business services, etc.) will be included so the additionality of activities in relation to the emerging industry is ensured. The budget allocation for this activity will be decided during the RIS3 revision process.

- The Innovation platforms: The experience from the two GPs as well as the setting up of the BERRY+ platform have convinced that innovation platforms can be a good base of economic renewal through partnerships and internationalisation. Especially, they have revealed potential channels for knowledge-based entrepreneurship and research commercialisation through internationalisation. This is a new approach for Kainuu. The RIS3 revision will include Innovation platform among the eligible activities under preconditions, for example: excellence in research results, concentration of natural resources, interregional clustering options. Such preconditions and foreseen fudning will be discussed during the RIS3 revision.

*Figure 3 Kainuu RIS3[10] concept*

**Smart Specialisation (*RIS3*) Choices of Kainuu Region 2018-2021**

| TECHNOLOGY INDUSTRY INNOVATIONS: | BIO ECONOMY & MINING INNOVATIONS: | HEALTH & WELBEING INNOVATIONS |
|---|---|---|
| 1. Measurement technology<br>2. Games & simulators<br>3. Metal industry | 1. Environment monitoring of industry processes<br>2. Forest & blue bio economy & food | 1. Activity tourism<br>2. Health, physical training and sports |

***Cross-cutting Themes and Goals on All RIS3 PRIORITIES:***

| |
|---|
| 1. Developing Key Enabling Technologies (KETs) |
| 2. Utilisation of robotics, automation, data centres and data analysis |
| 3. New solutions and applications of circular economy |
| 4. Innovations in resource efficiency, decarbonisation and climate change mitigation |

**INVESTMENTS, NEW ENTERPRISES, KNOW-HOW AND TECHNOLOGY TO THE REGION, INCREASING VOLYME AND VALUE ADDED OF PRODUCTION AND EXPORT**

The RIS3 revision occurs at a time when many lessons learnt from the overall implementation period are assessed and considered for mainstreaming and policy improvement. The BRIDGES project is one of these important sources.

The process of the RIS3 revision happens through the setting up of the RIS3 revision team, thematic regional workshops and supportive studies (if needed), formulation, discussion and final approval by the regional board of the revised RIS3. It is a lengthy procedure. Kainuu is capitalising on the IE projects to mainstream

[10] Jouni Ponnikas, Regional Development Director, Regional Council of Kainuu, presentation to ecoRIS3 project meeting, 29.11.2017.

into RIS3 important good practices that proved useful to the region, and which, also, link to projected future potential and trends.

The steps for the Activity 3.1 implementation can be found in Table 10 Action plan implementation steps and timetable.

**Activity 3.2 Tools facilitating transregional research-to-business partnerships (pilot action)**

**The funding for the implementation of Activity 3.2 is applied from the IE programme and from PP2 own budget**. The applied funding is 52 000€, out of which 16 000€ will go to mini projects (experts costs), 30 000€ to staff, 4500€ Administration, and 1500€ for travels. PP2 will also dedicate 46 500€ funding from own budget, with 12 000€ for mini projects, 30 0000€ staff and 4500 administration.

In the Kainuu region, the pilot action matches research-to-business across the BRIDGES partnership and maintains the BRIDGES project RIS3 & innovation-system reference (bio-based industries). It creates new RIS3 tools for the PP2 region. Interregional research-to-business mini-projects are organised for preparing full research-to-business projects &/or investment plans, which are called for short 'follow-up actions'. The mini-projects are based on value offers by research units willing to internationalise their research, and concern product & service development / improvement. They are aligned to the TRL[11] scale provisions (Table 8). Follow up actions are, for example, investment & financing plans, ETC projects, regional / national structural funds applications, etc., that will be implemented in the programme area of the business that benefitted from the mini-project in the first place. PP2 does not fund follow up actions.

*Table 8 Supported activities of the pilot action*

| Supported activities by the pilot action | TRL reference where relevant | Reference source |
|---|---|---|
| (1). Development of new products/prototypes | TRL 5 & 6 | CENTROPE |
| (2). Preparation of a Business Plan for innovative products | TRL 3 & 4<br>TRL 5 & 6 | CENTROPE |
| (3). Development of new concepts | TRL 5 & 6 | CENTROPE |
| (4). Pre-feasibility and feasibility studies, studies for problem solving | TRL 3 & 4<br>TRL 5 & 6 | CENTROPE |
| (5). Development of a new service | | CENTROPE |
| (6). Tailored training in new technologies | TRL 7 & 8 | BRIDGES |
| (7). Product/service testing | TRL 3 & 4 | CENTROPE |
| (8). Measurement services for product development / improvement | TRL 3 & 4<br>TRL 5 & 6 | BRIDGES |
| (9). Materials research for innovative product development | TRL 3 & 4<br>TRL 5 & 6 | BRIDGES |

[11] TRL = Technology readiness level, TRL 3: Experimental proof of concept; TRL 4: Technology validated in lab; TRL 5: Technology validated in relevant industrial environment; TRL 6: Technology demonstrated in relevant industrial environment; TRL 7: System prototype demonstration in operational environment; TRL 8: System complete and qualified; TRL 9: Actual system proven in operational environment. https://ec.europa.eu/growth/tools-databases/kets-tools/kets-tc/map.

| Supported activities by the pilot action | TRL reference where relevant | Reference source |
|---|---|---|
| (10). Economic impact assessment of new technologies | TRL 5 & 6 | CENTROPE |
| (11). Analysis of technology transfer potential | TRL 3 & 4 | CENTROPE |
| (12). Support for product development | | CENTROPE |
| (13). Facilitating SMEs' access to KETs | | BRIDGES |
| (14). Regional mapping of commercializing RDI | | BRIDGES |
| (15). Market placement of innovative products | | BRIDGES |
| (16). Standardisation and qualification of technology transfer services | | BRIDGES |

The pilot action commercialises excellence from Kainuu researrch units across the BRIDGES partnership and beyond, in the following fields:

(1). Bio-based economy research base to productise berry residuals and extracts for functional foods and regenerative cosmetics. The offer is valid not only for well- known berries, but also for less appreciated berries which however have ingredients with high potential (berry seeds, berry skins, berry leaves and various underutilized berries such as crowberries, chokeberries and bog whortleberry).

(2). Censors and on-line measurements (the excellence offer is either on developing and testing the solutions further, or on adapting and utilising them in different environments) of all kinds of materials and complements the berry-excellence.

The pilot action is important to PP2 for four important aspects of excellence-market placement requirements and economy renewal: (a) it activates and supports excellence units and TTOs to commercialise their research; (b)it facilitates access to a large pool of potential clients to research units, (b) it funds the preparation of product development / improvement plans in which follow up funding solutions are described clearly, (c) it reinforces PP2 innovation value chains across the EU.

Expected outputs:

- 1 policy instrument impacted: 2014-2020 RIS3 of PP2 (Kainuu). The policy impact will be recogniseable under a common title for all three regions: *Tools facilitating transregional research-to-business partnerships*.
- 3 research-to-business transregional mini-projects implemented and 3 development plans with funding options identified and clearly described.
- 1 ex post evaluation report for the purpose of reinforcing the mainstreaming of the strengths of the pilot action and impacting the policy instruments of the three participating regions. The recommendations of the evaluation report are required inputs to the regional board of PP2 and the implications of the report for the PP2 policy instrument will be discussed accordingly.

PP2 co-ordinates the pilot action, implements own activities and is responsible for the evaluation report.

## Implementation of Activity 3.2

The implementation of Activity 3.2 is identical to the activities of the pilot action. The activity plan of the pilot action is agreed among the partners and is re-iterated below.

*Table 9 Activity 3.2 plan*

| **PHASE 2** |
|---|
| **Semester 1** |
| There are nine (9) main activities taking place during the 1st semester, i.e. 1.4.2019 – 30.9.2019:<br><br>**I. MINI-PROJECTS**<br>1. The organisational arrangements of PP4 'Enhancement of EU services' are finalised.<br><br>2. The results of the approval (or not) of the pilot action are informed to applicants. In case the pilot action is approved, then:<br><br>3. Kick off events and information to the press in the PP2, PP4 and PP5 regions take place.<br><br>4. One interregional meeting is planned to take place in Helsinki Finland, to finalise (any) pending issues among the pilot action partners. During the interregional meeting the supportive material (mini-project concepts, methodology, criteria and evaluation approach), that have already been prepared during Phase 1 are reviewed, finalised and adopted.<br><br>5. Announcement of calls of the mini-projects and invitation to research units to participate is made by PP2, PP4 and PP5.<br><br>6. Filling in of the value offer outlines by the research units starts.<br><br>**II. POLICY IMPACT**<br>7.Mainstreaming item (i) The concept of mini projects under the heading 'Tools facilitating transregional research-to-business partnerships' is included into the RIS3 revision agendas of PP2 & PP4 (spring 2019) and integrated into the ROP for Western Macedonia (spring 2019). PP2 and PP4 issue calls for mini projects, and PP5 issues calls for mini projects and follow up actions under the present. Western Macedonia ROP.<br><br>8.Mainstreaming item (ii) (Members of the RIS3 revision teams (PP2 and PP4) & the Western Macedonia ROP join the pilot action monitoring process to be able to have -to-day experience of the mini projects.<br><br>**III. MANAGEMENT**<br>9. Coordination of the pilot action activities (coordination is done by PP2).<br>10. One online progress-assessment and trouble-shooting meeting. |
| **Semester 2** |
| Ten (10) main activities are foreseen for the 2nd semester, i.e. 1.10.2019-31.3.2020.<br><br>**I. MINI-PROJECTS**<br><br>1. Search for clients, and matching between research and businesses, starts. First partnerships are identified.<br><br>2. Applications for mini-projects, evaluation and approval of mini-projects, start.<br><br>3. Implementation of mini-projects starts. We expect that mini-projects will be implemented during approximately 3 months, i.e. a development plan of the follow up action is expected to be ready within 3 months.<br><br>4. Filling in of value offers by research units continues.<br><br>**II. POLICY IMPACT** |

**PHASE 2**

5. Mainstreaming item (iii) Recommendations are made for the concrete provisions to mainstream of the mini projects to the RIS3 teams of PP2 and PP4, following the results and effectiveness of the calls; the same process if followed by the regional board of the PP5 MA.

**III. EVALUATION**

6. The first data collection starts. The data collection is carried out by PP2, and inputs come from PP2, PP4, PP5, PP5 MA, research and any other beneficiaries.

**IV. MANAGEMENT**

7. Coordination of the pilot action activities.

8. One online progress-assessment and trouble-shooting meeting.

9. One face-to-face meeting, back to back with all other Phase 2 planned meetings. Preliminary planned to be held during the later part of Autumn 2019.

10. Phase 2 reporting.

**Semester 3**

Eight (8) main activities are foreseen for the 3rd semester, i.e. 1.4.2020 - 30.9.2020.

**I. MINI-PROJECTS**

1. Applications for the last mini-projects, evaluation and approval of mini-projects.

2. Implementation of mini-projects continues.

3. Closing of the mini-projects implementation. All follow up actions (= development plans) must be completed by the end of August 2020.

**II. POLICY IMPACT**

4. Mainstreaming item (iii) Recommendations are made for the concrete provisions to mainstream of the mini projects to the RIS3 teams of PP2 and PP4, following the results and effectiveness of the calls; the same process if followed by the regional board of the PP5 MA.

5.Revised RIS3 text and ROP actions with the mainstreamed title Tools facilitating transregional research-to-business partnerships and items included are available.

**III. EVALUATION**

6. Data collection for the evaluation report continues and the evaluation report is produced; deadline for the evaluation report is 30.9.2020.

**IV. MANAGEMENT**

7. Coordination of the pilot action activities.

8. One online progress-assessment and trouble-shooting meeting.

9. One face-to-face meeting, back to back with all other Phase 2 planned meetings and the final conference.

**Semester 4**

No content related activities should take place in this semester. The last months of the project should be entirely dedicated to the project closure.

# VII. Timetable

*Table 10 Action plan implementation steps and timetable*

| Actions | Outputs | Who | When |
|---|---|---|---|
| **Ensuring framework conditions** | | | |
| Endorsement of the Kainuu action plan by the Regional Council of Kainuu | Action plan is endorsed & dated by PP2 | PP2 | Spring 2019 |
| Endorsement of the Kainuu action plan by Kainuun Etu | Action plan is endorsed & dated by PP1 | PP1 | Spring 2019 |
| **Action 1** | | | |
| Confirmation of Action 1 by the stakeholders | Notes from meetings with stakeholders; specification of the approach, and the consortium criteria. | PP2, PP1; Kantola cluster businesses, ST1 | 8th and 9th January 2019 |
| Finalisation of the terms of reference for issuing the call for expression of interest (with strong involvement of the regional stakeholders as this is a first-time ever approach in Kainuu); | Meetings with stakeholders and national level actors.<br><br>List of criteria (aligned with the decisions of the regional stakeholders, see above) | PP2, PP1 | Spring 2019 |
| Call is announced, consortia apply, and one consortium is selected for the implementation of the Lignin testing project. | Call document<br>Winning consortium | PP2 | Summer 2019 |
| Selection of winning consortium | Selection decision | PP2 | Autumn 2019 |
| Lignin product development and testing project implementation | | | |
| Analysis of Kainuu lignin is finalised | Recommendations for product development (what types of products) are issued. | Product development, production and application testing consortium | December 2019 – September 2020 |
| Adhesive sample is produced | New product is available for testing with the wood construction industry. | | |
| Adhesive sample is applied to wood construction industry | Components of the wood construction are produced utilising the new adhesive. | | |
| Wooden construction components utilising lignin adhesive reach test-market | The final customer exists and there are two options, one business in Helsinki and one in Turku. | | |
| Evaluation of the product based on market feedback | Evaluation workshop September 2020. | The end user, the project consortium, PP2 and PP1 | |
| Decision to continue larger scale production & lignin processing (or not) | Formulation of decision and passing through meeting of the regional board, Dec 2020 | PP2 | |
| Local steering group meetings to review the implementation process | Autumn 2019; Spring 2020; Autumn 2020 | project consortium, PP2 and PP1 | |
| **Action 2** | | | |
| Preparation of the partnership and the contents | 1 application for an industrial modernisation platform | PP2, PP1 | The BERRY+ platform application is currently being drafted. |

| Actions | Outputs | Who | When |
|---|---|---|---|
| | | | Submission of the BERRY+ application by 31.8.2019. |
| Activation of the BERRY + platform: Mapping process and formulation of innovation partnerships and new projects concepts | We aim at 2-4 new projects, based on the platform's innovation partnerships to be set up and to be eventually implemented. | PP2, PP1/ consortia of the BERRY+ | December 2019 – December 2023. |
| Monitoring & Evaluation of the Action2 implementation (BRIDGES Phase 2) | Phase 2 meetings and final document | PP2, PP1 / BRIDGES partners | January-March 2021 |
| **Action 3** | | | |
| **3.1 RIS 3 revision** | | | |
| RIS3 team set up (26.4.2019) | List of persons and invitation | PP2 (supported by PP1) / regional advisory groups | Spring 2019 |
| 1st RIS3 revision meeting (May 2019) | introduction of key issues, agreement on needed inputs | | |
| Data collection and studies | Reports | | Autumn 2019 |
| 2nd RIS3 revision meeting | Assessment of the reports | | |
| First draft of the revised RIS3 | Policy document draft | | |
| 3rd RIS3 revision meeting | Evaluation of the dtaft, requests for adjustments | | |
| RIS3 draft corrections | Improved RIS3 revised draft | | |
| RIS3 document. | Approved RIS3 revision document | PP2 board | Winter – Spring 2020 |
| **3.2 Tools facilitating transregional research to business partnerships / pilot action** | | | |
| **Activities** | | **Partner involvement** | **Semester** |
| Organisational arrangements cleared (renewal of 'EU projects service') | | PP4 | 1 (1.4.2019-30.9.2019) |
| Approval of the pilot announced | | PP2, PP4, PP5 | 1 (1.4.2019-30.9.2019) |
| Kick off of the pilot, local meetings | | PP2, PP4, PP5 | 1 (1.4.2019-30.9.2019) |
| Interregional meeting (Finland & Greece) in Helsinki | | PP2, PP4, PP5 | 1 (1.4.2019-30.9.2019) |
| Mainstreaming item (i) The concept of mini projects under the heading 'Tools facilitating transregional research-to-business partnerships' is included into the RIS3 revision agendas of PP2 & PP4 (spring 2019) and integrated into the ROP for Western Macedonia (spring 2019). PP2 and PP4 issue calls for mini projects, and PP5 issues calls for mini projects and follow up actions under the present. Western Macedonia ROP.<br>Mainstreaming item (ii) (Members of the RIS3 revision teams (PP2 and PP4) & the Western Macedonia ROP join the pilot action monitoring process to be able to have -to-day experience of the mini projects. | | PP2, PP4, PP5 | 1 (1.4.2019-30.9.2019) |
| Announcement of calls for the mini-projects | | PP2, PP4, PP5 | 1 (1.4.2019-30.9.2019) |
| Filling in of value offers with research units | | PP2, PP4, PP5 | 1 (1.4.2019-30.9.2019)<br>2 (1.10.2019 -31.3.2020) |
| Search for clients | | PP5 primarily<br>PP2, PP4, PP5 | 2 (1.10.2019 -31.3.2020)<br>3 (1.4.2020 – 30.9.2020) |
| Applications for mini-projects, evaluation and approval of mini-projects | | PP2, PP4, MA of PP5 | 2 (1.10.2019 -31.3.2020)<br>3 (1.4.2020 – 30.9.2020) |
| Observation of the pilot action implementation | | PP2, PP4, PP5 | 1 (1.4.2019-30.9.2019)<br>2 (1.10.2019 -31.3.2020) |
| Mainstreaming item (iii) Recommendations are made for the concrete provisions to mainstream of the mini projects to the RIS3 teams of PP2 and PP4, following the results and effectiveness of the | | PP2, PP4, PP5 | 2 (1.10.2019 -31.3.2020)<br>3 (1.10.2019 -31.3.2020) |

| Actions | Outputs | Who | When |
|---|---|---|---|
| calls; the same process if followed by the regional board of the PP5 MA.<br><br>Revised RIS3 text and ROP actions with the mainstreamed title *Tools facilitating transregional research-to-business partnerships* and items included are available. | | | 3 (1.10.2019 - 31.3.2020) at the latest. |
| Implementation of mini-projects | | Research from PP2, PP4 and PP5 regions; clients across the BRIDGES partnership | 2 (1.10.2019 -31.3.2020)<br>3 (1.4.2020 – 30.9.2020) |
| Data collection for the evaluation | | PP2, collecting data from PP2, PP4, PP5 & PP5 MA | 2 (1.10.2019 -31.3.2020)<br>3 (1.4.2020 – 30.9.2020) |
| Evaluation report | | PP2 | 3 (1.4.2020 – 30.9.2020) |
| The results of the ex post evaluation of the pilot action, indicating the most successful aspects of the pilot are annexed to the revised RIS3 and the Western Macedonian ROP. | | PP2, PP4, PP5 | 4 (1.10.2020 – 31.3.2021) |
| Face-to-face meetings. (back to back with all other Phase 2 planned meetings) | | All BRIDGES partners | 2 (1.10.2019 -31.3.2020)<br>3 (1.4.2020 – 30.9.2020) |
| Closing conference | | All BRIDGES partners | 3 (1.4.2020 – 30.9.2020) |
| Pilot action coordination | | PP2, PP4, PP5 | 1 (1.4.2019-30.9.2019)<br>2 (1.10.2019 -31.3.2020)<br>3 (1.4.2020 – 30.9.2020)<br>4 (1.10.2020 – 31.3.2021) |
| Phase 2 reporting | | All BRIDGES partners | 2 (1.10.2019 -31.3.2020)<br>4 (1.10.2020 – 31.3.2021) |

# VIII. Impact on the region

**Self-defined indicator**: number of businesses cooperating with research institutions, total of 30 businesses.

We expect fewer businesses to benefit. However, as the tools as mainstreamed, we expect that the multiplier effect will be as per the self-defined indicator. For example, some impact is already realised: The feasibility study and the associated programme-based approaches have been taken up by the wood processing industry for further initiatives towards diversifying their activity base. One of these initiatives are investments in biocomposites towards the replacement of products based on non-renewable materials. A feasibility study has been carried out (by the industry) and a development programme, replicating Action 1 are now planned. Clearly, this effort is a strong encouragement towards the overall policy impact.

# IX. Some useful readings

Asheim B, Boschma R, Cooke P. Constructing Regional Advantage: Platform Policies Based on Related Variety and Differentiated Knowledge Bases, Regional Studies, 2011, vol. 45 (pg. 893-904.

Cooke P, Leydesdorff L., 2006. Regional development in the knowledge-based economy: the construction of advantage, Journal of Technology Transfer, 2006, vol. 31 (pg. 5-15).

Crescenzi R, Rodriguez-Pose A, Storper M., 2007. The territorial dynamics of innovation: a Europe-United States comparative analysis, Journal of Economic Geography, 2007, vol. 7 (pg. 673-709).

Friedman T., 2005. The World Is Flat: A Brief History of the Twenty-First Century, 2005 New YorkFarrar, Straus and Giroux.

Glaeser E L., 1999. Learning in cities, Journal of Urban Economics, 1999, vol. 46 (pg. 254-277).

Hirschman A O.,1958. Strategy of Economic Development, 1958 New Haven, CT and London Yale University Press.

McCann P, Van Oort F G. Capello R, Nijkamp P., 2009. Theories of agglomeration and regional economic growth: a historical review, Handbook of Regional Growth and Development Theories, 2009 London Edward Elgar (pg. 19-32).

Van Oort F G., 2007. Spatial and sectoral composition effects of agglomeration economies in the Netherlands, Papers in Regional Science, 2007, vol. 86 (pg. 5-30).

Verspagen B., 2007. The spatial hierarchy of technological change and economic development in Europe, UNU-MERIT Working Paper Series, 2007 #2007 – 012.

Wernerheim M C, Sharpe C., 2003. High order producer services in metropolitan Canada: how footloose are they? Regional Studies, 2003, vol. 37 (pg. 469-490).

# X. Endorsements

**Approval of the action plan for PP1 Kainuun Etu Oy**

Date: 8.8.2019

Name & position: ANTTI TOIVANEN, MANAGING DIRECTOR

Signature: _____

Stamp of the organisation (if available): _____

KAINUUN ETU
Kainuun Etu Oy
PL 10, 87101 KAJAANI, FINLAND

**Approval and endorsement of the action plan for PP2 Regional Council of Kainuu**

Date: 8.8.2019

Name & position: Jouni Ponnikas, Director Regional Develoment

Signature: _____

Stamp of the organisation (if available): _____

REGIONAL COUNCIL OF KAINUU

Date: 8.8.2019

Name & position: Pentti Malinen, Regional Mayor

Signature: _____

Stamp of the organisation (if available): _____

REGIONAL COUNCIL OF KAINUU