

CHAIN REACTIONS

THEMATIC BRIEF BIOECONOMY

Joint efforts towards digital transformation of bioeconomy

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ABOUT INNOVATION BRIEFS

CHAIN REACTIONS addresses the challenge for industrial regions to increase regional capacity to absorb new knowledge and turn it into competitiveness edge and business value. There is a strong need to help SMEs to overcome capacity shortages for innovation and integration into transnational value chains.

The project aims at empowering regional ecosystems with the knowledge and tools to help businesses overcome those barriers and generate sustained growth through value chain innovation.

CHAIN REACTIONS focuses thereby on modern approaches considering value chains and their complex developments rather than linear technology transfer approaches. The framework of value chain innovation builds on Porter's 5 forces framework (new entrants, substitutes, customers, suppliers and rivalry) and transversal innovation drivers: key enabling technologies, resource efficiency, digital transformation and service innovation.

During the project lifetime CHAIN REACTIONS published about every third month an INNOVATION BRIEF presenting the rationale behind specific innovation drivers and illustrate them with practical examples.

This thematic brief focuses on the pilot activities performed by the project partners in the area of bioeconomy.

Transnational pilot - Bioeconomy sector

Executive summary

Transnational pilot on bioeconomy integrates the work of two partners: Wroclaw Technology Park (Poland) and Bioeconomy Cluster (Slovakia). Pilots enabled these project partners and their key regional stakeholders to deepen their knowledge of value chain innovation processes in general and provided a deep understanding on how they apply these processes in regional businesses and value chains. Cross-cutting and transnational synergies among the two project partners were achieved through the mutual involvement in selected activities.

The focus of both pilots was very similar: creation of a virtual innovation observatory / platform of constant dialogue between companies in the agri-food sector with relevant entities providing innovation support services and/or innovative solutions in Industry 4.0, in digitization of production, management and sales processes.

Conclusions and lessons learned

During the implementation of the pilot on bioeconomy, the following conclusions were reached by close cooperation of Wroclaw Technology Park and Bioeconomy Cluster and other involved stakeholders:

- Agri-food industry requires continuous implementation of innovative solutions, especially from the scope of Industry 4.0.



- The agri-food market is a consumer market that requires continuous improvement of the quality of products and raw materials. The best way to improve quality is to digitize the industry and to follow the modern trends to maintain the competitiveness.
- The agri-food sector requires considerable financial outlays and a large group of competent specialists to carry out an efficient and purposeful digital transformation.
- Digital transformation and implementation of innovations require constant cooperation and coordination along the whole value chains.

Following these conclusions, Wrocław Technology Park decided to introduce permanent and periodic activities in the field of promoting and supporting the implementation of innovations in the field of Industry 4.0 and digital technologies among agri-food companies. At the same time, Bioeconomy Cluster will dedicate efforts to continuous support of innovations in agri-food companies and will create conditions for efficient transfer of knowledge and technologies from R&D to practice.

In addition, Wrocław Technology Park together with Bioeconomy Cluster decided to mutually support activities in the field of digital transformation, including Wrocław Technology Park's help to Bioeconomy Cluster in establishing Digital Innovation Hub in agri-food in Slovakia, as well as Bioeconomy Cluster's involvement in the implementation of European Digital Innovation Hub Wrocław, the leader of which is Wrocław Technology Park. This includes mutual exchange of knowledge and involvement in relevant activities that will be identified along the way after the lifetime of Chain Reactions.

Transnational pilot - Bioeconomy sector - Wrocław Technology Park, Poland

Executive summary

The pilot action conducted by WPT was aimed at creating a platform in the form of a showroom that would enable ongoing dialogue between companies from the food processing industry and entities offering advanced technological solutions. The platform was designed to identify entities from the food industry sector that are looking for innovative Industry 4.0 solutions and the digitization of production, management and sales processes.

In order to create an interproject synergy, Wrocław Technology Park invited to participate in project CHAIN REACTIONS partners of the project Level 4.0 Digital Innovation Hub Wrocław. In addition, WPT engaged the members of the NUTRIBIOMED cluster, which it coordinates, in the pilot action.

During the implementation of the WPT pilot action, we focused on organizing meetings at which industry 4.0 solutions for the LifeScience industry were presented. We also focused on organizing visits to SmartFactory, which is part of the actual production process. SmartFactory's goal is to produce complete products in the shortest possible time, while maintaining the maxim value of OEE and zero downtime.

During pilot action we were fill the numerical indicators such as:

- study visits and trainings for pilot action partners;
- identification food industry entities and technology providers
- identification technological solutions for industry 4.0
- webinars, training sessions and presentations carried out on the online platform



Activities implemented by WPT

Activities from 09.2020 to 12.2020

WTP organized several bilateral discussions with partners from the region, especially with those grouped within DIH project. WTP involved to realize project the local partners - IGA members. We organized IGA meeting, where action plans for the implementation of the pilot action were presented. We have initiated discussions on the possibility of reaching potential target groups of services offered as part of the pilot as well as the tools developed in the Chain Reactions project as widely as possible.

Activities from 01.2021 to 07.2021

The following companies were invited to implement the pilot action: Balluff & Solid Solution, which have provided knowledge and support in terms of innovation tools used in industry 4.0. WTP organised a meeting with regional IGA members who took part in the WP4 workshop.

We formed a closer contact with Wroclaw Agglomeration Development Agency S.A. Presentation on the Chain Reactions project and the possibilities offered by the implementation of modern solutions was sent to local government officials. The result of these activities was the response of companies focused on cooperation.

WTP organized (09.06.2021) meeting of NUTRIBIOMED Cluster members where was creating a showroom with innovative solutions in the Industry 4.0 field dedicated to the food industries. Balluff's presenter, cooperating in realization of the pilot program, presented the opportunities provided by Industry 4.0 in the food industry, using the dairy industry as an example.

Activities from 07.2021 to 09.2021

WTP organized visits to SmartFactory that were meant to be raising awareness on Industry 4.0 solutions. Demonstration production line (SmartFactory) is a result of the Digital Innovation Hub Wroclaw project (where WTP is one of the partners). The SmartFactory presents possibilities of manufacturing products in the shortest time, taking into account the maximum value of OEE and zero downtime. On September 17, a stationary visit to SmartFactory took place. An online visit took place a week later (24.09.2021).

During a given WPT period organized another meeting of the NUTRIBIOMED cluster. As part of the pilot action, during the meeting of the cluster members, a representative of the foundation Platforma Przemysłu Przyszłości presented the benefits of implementing Industry 4.0 solutions and the digitization of enterprises.

Activities from 09.21 to 01.22

In this period, WTP participated in series of conferences devoted to digital transformation devoted to food industry companies. The knowledge acquired was used during the cooperation and involvement of the NUTRIBIOMED cluster in the implementation of the pilot action. We organized another meeting (06.12.2021) were was presented the possibilities resulting from the implementation of Cloud Computing and Advance Manufacturing technologies by Endress and Hauser. The meeting was attended by representatives of SMEs, universities and research centres as well as BSO related to the food and Life Science sector. WTP also organized online visit w SmartFactory (30.11.2021) for members of the Bioeconomy Cluster.

Key results



All activities of the Wrocław Technology Park focused on creating a platform for the exchange of experiences and information on industry 4.0 solutions created for the Life Science industry, in particular the food industry sector. For this purpose, we have established cooperation with technology providers and SME's organizations, such as Cluster NUTRIBIOMED.

In order to ensure the durability of the developed solutions and models of cooperation as part of the implementation of modern solutions to the food sector, we tried to recruit partners from the academic community and public administration for cooperation within the IGA.

An equally important aspect of the pilot project implementation was the possibility of establishing close cross-border cooperation with project partners from the CE area, especially with the Bioeconomy Cluster from Nitra, Slovakia. The pilot project resulted in cooperation involving the exchange of experiences taking the first steps towards the establishment of Digital Innovation Hub in agri-food in Slovakia and EDIH Wrocław in Lower Silesia. We plan to maintain the cooperation established with our partners during the implementation of the pilot.

During the implementation of the pilot action:

- Training in business models was completed and the acquired knowledge will be passed on to regional stakeholders,
- Numerous stakeholders were involved in pilot actions (Solid Solutions, Balluff, Future Industry Platform, Endress and Hauser),
- Numerous meetings were organized, to which food industry entities and technology suppliers from Industry 4.0 were invited,
- Constant contact with companies that presented their technological solutions for Industry 4.0 was established, e. g.: Balluff, Endress + Hauser Polska, Future Industry Platform,
- Permanent and periodic activities in the field of promoting and supporting the implementation of innovations in the field of Industry 4.0 and digital technologies among the members of the NUTRIBIOMED cluster was introduced and coordinated by WTP,
- Thanks to participation in the project, WTP employees gained new competences in the promotion and implementation of digital technologies and Industry 4.0,
- Enterprises residing in the Wrocław Technology Park had the opportunity to raise their awareness and knowledge related to the benefits and methods of implementing digital technologies and Industry 4.0.



Transnational pilot - Bioeconomy sector - Bioeconomy Cluster, Slovakia

Executive summary

The main objective of pilot activity of Bioeconomy Cluster was to set up a virtual innovation observatory, which will provide innovation support services to target groups in bioeconomy through a multi-partner cooperation. Innovations were introduced to adopt new efficient business models and to avoid value chain disruptions in the agri-food sector. The specific sub-objectives are: (i) to identify the needs of agri-food (dairy) sector and particular SMEs in respect to innovative business practices, (ii) to stimulate the exchange of knowledge between project partners and between SMEs and R&D actors, (iii) to turn new ideas into practice by using the models and tools developed within Chain Reactions.

To ensure transnational and cross-sectoral character of its pilot, Bioeconomy Cluster involved other project partners in concrete activities. The aim was to exchange information on practical application of innovative business models in other regions and to identify future collaboration opportunities.

The activities of this pilot include: (i) training on business models, (ii) organization of two study visits to project partners (physical or online), (iii) identification of SMEs' needs via innovation audits, (iv) testing of business models through preparation of joint projects, (v) creation of voucher scheme to support the uptake of innovations.

During the implementation of pilot, stronger emphasis was placed to the digital transition and to the establishment of Digital Innovation Hub in agri-food sector in the Nitra region. In this respect, several activities were implemented, aimed at transfer of knowledge on the successful operation of Digital Innovation Hubs in other partner countries.

Activities implemented

The following activities were implemented by Bioeconomy Cluster in its pilot:

Trainings on business models

To deepen the knowledge on value chain innovation processes, representatives of Bioeconomy Cluster participated in individual training on models and instruments for business models and value chain innovations. Furthermore, Bioeconomy Cluster took part in a mentoring session on the business models' innovations and on different methods and tools that are used in this respect. The knowledge on models and instruments gained throughout the implementation of Chain Reactions project was transferred to stakeholders at regional/national level during various events and it is planned that Bioeconomy Cluster will use them in its further activities, mainly in relation to the assessment of innovation capacity of new members, providing tailored cluster services to the needs of its members, establishment of Digital Innovation Hub in agri-food in Slovakia.

Organisation of study visits

Two study visits were organised. The first one to project coordinator Pannon Business Network and its am-LAB, where the representatives of Bioeconomy Cluster learned about digital business models and planned future cooperation opportunities. As the pandemic situation did not allow for physical meeting during the whole period of the implementation of pilot, the



second study visit was organised as an online transnational knowledge exchange workshop with the representatives of Styrian Technology Park. The aim was to discuss the setting up of Styrian Technology Park's Digital Innovation Hub Smart Solutions, their positioning, offer of services, practical lessons learned and suggestions for the potential future Digital Innovation Hub in agri-food in Slovakia, which is to be established by the Bioeconomy Cluster in cooperation with other regional partners.

Identification of the needs of SMEs in agri-food industry

The innovation needs of Slovak SMEs were identified in the course of 10 innovation audits, which were conducted within the pilot. Following this in-depth analysis of innovation management knowledge and skills, Bioeconomy Cluster will be able to provide tailored advisory services to farmers through certified advisors in the near future, as well as to broaden its portfolio of members and partners in different bio-based sectors. In addition, this activity contributes to the involvement of primary producers into the creation of added-value through bioeconomy.

Testing of business models

Bioeconomy Cluster supported farmers in submitting proposals for the establishment of operational groups within the European Innovation Partnership in Agricultural Productivity and Sustainability (EIP-AGRI). The proposals are focused on digital aspects in production as well as on exploiting the potential of bioeconomy in traditional sectors of production, while producing products with higher added value. If the proposals will be approved, the proposed innovations will be tested under real conditions and will contribute to the adoption of new business-models by farmers (linking agri-food/bioeconomy with digitalization).

Creation of own grant scheme

As part of continuous efforts of Bioeconomy Cluster in supporting innovations in agri-food and bioeconomy, Bioeconomy Cluster launched its pilot grant call focused on innovative solutions in bioeconomy and cooperation of SMEs with R&D and academia. Bioeconomy Cluster received 22 applications from different stakeholders and bio-based sectors. The selection of “winners” and subsequent implementation of successful projects will go beyond the implementation of Chain Reactions as this is a cross-cutting activity within other projects of Bioeconomy Cluster. However, this activity contributed to the extension of portfolio of activities and services of Bioeconomy Cluster and the cluster will search for further resources that could be used to finance similar efforts.

Key results

All activities implemented by the Bioeconomy Cluster within its pilot have resulted in the creation of virtual innovation observatory, which will provide innovation support services to target groups through a multi-partner cooperation and will support the adoption of new efficient business models and strategies. It will be an integral part of future Digital Innovation Hub in agri-food in Slovakia, thus providing services also in the area of digital transformation of SMEs.

The main impacts on Bioeconomy Cluster can be seen in strengthening its capacity in working with SMEs and in responding to their needs as well as in enhancing transnational cooperation with partners with the same sectoral focus. The cross-sectoral linkages created within the project opened further cooperation opportunities with partners, who are not directly focused on bioeconomy.

The key results can be summarized as follows:



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- Fostering of transnational cooperation and exchange of knowledge,
- Improving the knowledge on the innovation environment in the region,
- Supporting the innovation actors in the region,
- Taking the first steps towards the establishment of Digital Innovation Hub in agri-food in Slovakia.

All of the activities within Bioeconomy Cluster's pilot were planned in a way to be sustainable since they represent the developments Bioeconomy Cluster would like to achieve in a medium- to long-term. Bioeconomy Cluster will continue performing innovation audits as it was adopted as the main method to assess the innovation capacity of potential new members and partners as well as to assess their expertise in different areas, also in respect to their contribution to cluster's activities.

Bioeconomy Cluster will also maintain contact with international partners for the preparation of future projects focused on agri-food, bioeconomy and potentially also on digitalization. The continuous exchange of knowledge and information is envisaged whenever needed by these partners, as this will be rooted also in the memorandum of agreement signed within the Chain Reactions.