BIOEAST: CENTRAL AND EASTERN EUROPEAN INITIATIVE FOR KNOWLEDGE-BASED AGRICULTURE, AQUACULTURE AND FORESTRY IN THE BIOECONOMY

Draft position paper

based on the Budapest Workshop, 21-22 February 2017

1. WHY BIOEAST?

The Central-Eastern European Initiative for Knowledge-based Agriculture, Aquaculture and Forestry in the Bioeconomy – BIOEAST – offers a shared strategic research and innovation framework for working towards sustainable bioeconomies in the Central and Eastern European (CEE) countries.

Owing to the global challenges, sustainability is only achievable at the macro-regional level. To build sustainable national bioeconomies, the specific challenges arising from climate change in the Continental Biogeographical Region, and the common societal and governance issues of the CEE countries should be taken into consideration. The research and innovation capacities of the macro-region are facing significant internal disparities in terms of effectively joining the European Research Area and this is a challenge to be tackled.

The macro-region's economic, societal, geopolitical, cultural and historical homogeneity and complexity may help to bring about the framework conditions favourable to bioeconomic growth. Joint efforts are required to address present and future challenges successfully. A macro-regional perspective, along with more vigorous European Union (EU) wide cooperation, is necessary for implementing in an effective and efficient way tailored actions that are conducive to safe, secure and sustainable development for all. The sustainability criteria for a circular economy add an additional challenging feature.

The Ministers of Agriculture of the Visegrad 4 countries (V4: Czech Republic, Hungary, Poland and Slovakia) together with Bulgaria, Romania and Slovenia signed a Common Declaration (Warsaw, 26/10/2016) recognizing that in order to achieve progress in in development of bioeconomies including the sustainable increase of the biomass potential of agriculture, aquaculture and forestry, the emphasis must shift to research, innovation and transnational cooperation for knowledge-based development.

The BIOEAST initiative aims to join research and innovation efforts and is open to other EU Member States.

2. OBJECTIVES OF BIOEAST

The *Visegrad4+3 Common Declaration* was presented at the EU AGRIFiSH and Competitiveness Councils' meetings in November 2016. It underlined a need to find effective solutions to ensure a stronger recognition of the research needs and potential of the CEE countries in the co-creating and functioning of the European Research Area (ERA) in the field of sustainable biomass production and processing. The common gap in the CEE macro-region is the research and innovation divide in Europe, which hinders both the unlocking of excellence in low-performing research, development and innovation (RDI) regions, and the appearance of specific research topics relevant to the CEE macro-region in Horizon 2020 work programmes. The low performance and topic representation of the CEE macro-region also block the realisation of the ERA and the promotion of synergies with the European Agricultural Fund for Rural Development (EAFRD), the European Maritime and Fisheries Fund (EMFF) and the European Structural and Investment Funds (ESIF) (see Annex 1 of Regulation (EU) No 1291/2013). The identification and implementation of specific research areas for the CEE macro-region in Horizon 2020 would not threaten the main principle of excellence in research; on the contrary it would enhance it. Moreover, it would not mean the exclusion of other countries or macro-regions from the topics or consortia, as their experiences and active involvement in knowledge sharing would be crucial for generating relevant results.

BIOEAST pursues the objectives listed below. The achievement of these objectives would bridge the above-mentioned gap in the CEE macro-region and could serve as the thematic framework of a Coordination Support Action (CSA):

1. Initiate cooperation and the development of knowledge-based policies: establish a multi-stakeholder network and cluster at European level to facilitate joint actions, backed up by a renewed commitment to closer cooperation at both the political and operational levels through close personal contacts and communication between the countries concerned at the operational level;
2. Identify common challenges and validate common research topics: map specific challenges for a Strategic Research and Innovation Agenda and foster innovative multidisciplinary research and cooperation activities. These should address the relevant common CEE challenges by means of common work carried out by experts as a follow up to the *Visegrad4+3 Common Declaration* as a starting point for the discussion (see Annex 1);
3. Initiate strategies: create a cross-sectorial approach for the development of a national circular and bioeconomy strategy;
4. Provide an evidence base: establish data-driven support for implementation of policies through the creation of an interoperable, fully integrated observing and forecasting system. This would promote continuous, long-term observation based on open data structures to guarantee easy access;
5. Improve skills: train a new generation of dedicated multi-stakeholder actors;
6. Initiate development of synergies: promote regional, national, EU and international funding opportunities to develop innovative technologies, methodologies and approaches. The purpose would be to boost the sustainable and circular economic growth of the European bioeconomy sectors and the conservation and upgrading of the regional environment, resources and cultural heritage;
7. Increase visibility: draw attention to specific challenges and research potential of the macro-region, through involving society and promoting public awareness.

3. FOCUS AREAS OF BIOEAST

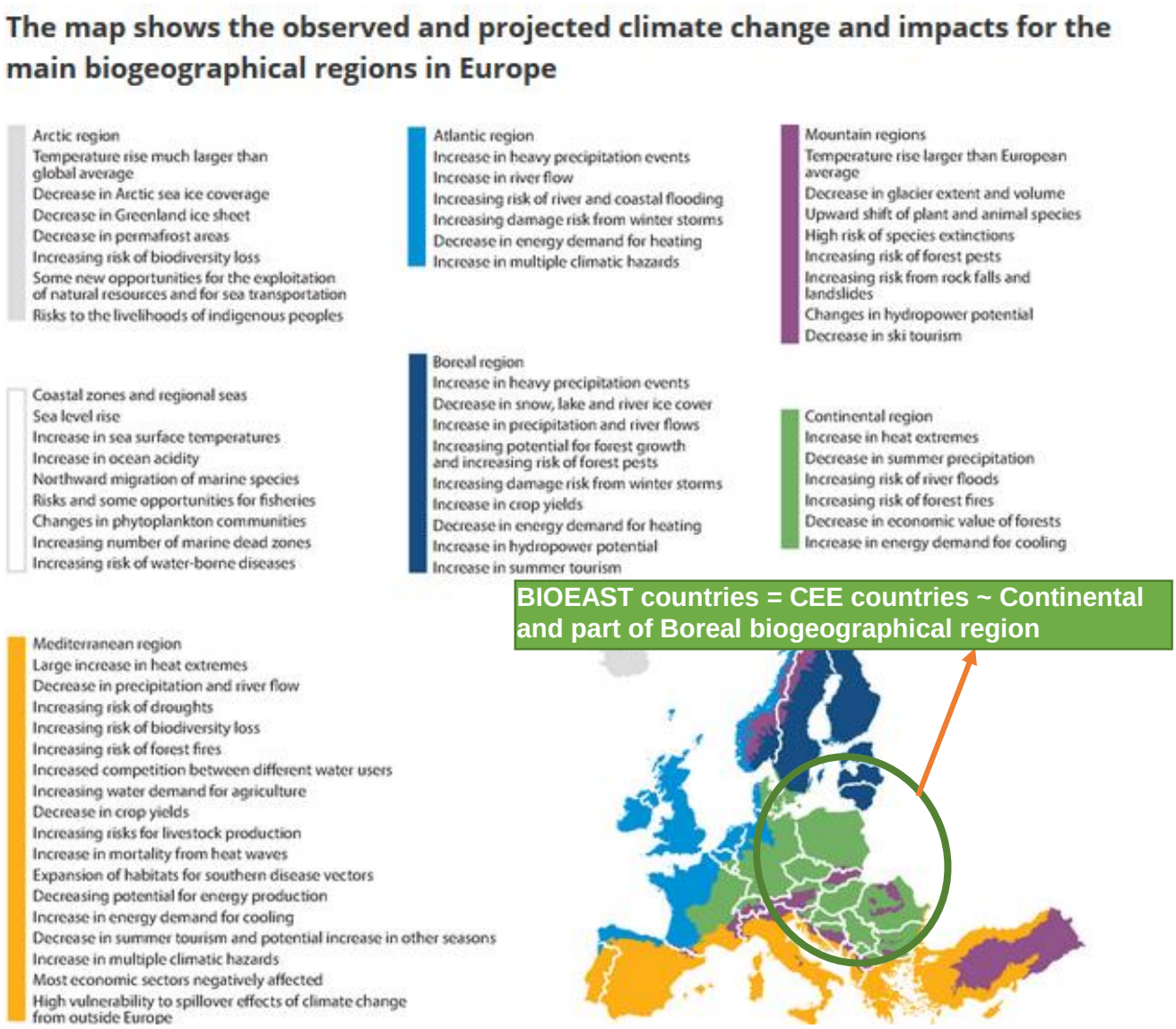
BIOEAST has already developed and validated two common focus areas for the CEE macro-region. These two focus areas can incorporate all the present and future research topics of the macro-region and could serve as the thematic framework of an ERA-NET Cofund.

3.1. Specific climatic challenges faced by the bioeconomies of the CEE countries

It responds to challenges arising from the climatic and climate change specificities of the Continental Bio-geographical Region.

The territory of the CEE countries mostly belongs to the Continental Bio-geographical Regions. A game changer would be to have region-specific research topics and coordination and support actions – such as is the case for the Mediterranean Region – which reflect the climate specificities of Continental Bio-geographical Region. Owing to these specificities, distinctive and extreme changes in the weather can be expected in the near future. Therefore, adaptation is a challenge to agriculture and the bioeconomy (crop production, animal husbandry, forestry, aquaculture, food processing and

other bioeconomy activities) in terms of, for example, cooling and heating, pest and disease control, risk management, and knowledge sharing.



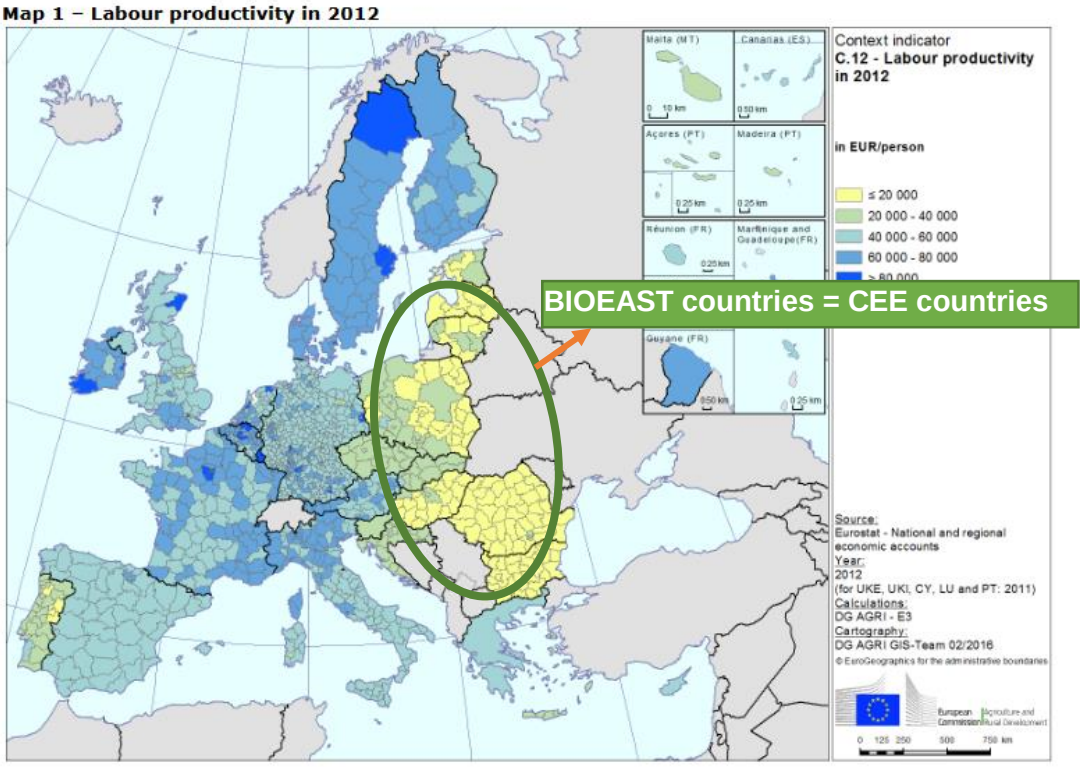
Source: http://www.eea.europa.eu/data-and-maps/figures/key-past-and-projected-impacts-and-effects-on-sectors-for-the-main-biogeographic-regions-of-europe-5

3.2. Specific societal and economic challenges faced by the bioeconomies of the CEE countries

It responds to the policy and governance challenges arising from the socio-economic characteristics of the CEE macro-region.

The countries of the CEE macro-region have quite a few societal and governance challenges in common which influence directly the development of rural areas, and the primary production sectors of the bioeconomy. A game changer would be to conduct research on how to involve CEE society in solving the big societal challenges, and to overcome such common economic and societal challenges for bioeconomy in the urban and rural areas as the low uptake of innovation and modern

technologies, the low level of cooperation, the low level of labour productivity, the implications of population ageing, the difference between the employment rate in predominantly rural regions and predominantly urban regions, or the extremely low level of consumer awareness.



Source:https://ec.europa.eu/agriculture/sites/agriculture/files/cap-indicators/context/2016/c12_en.pdf

4. CEE COUNTRIES' ACTIONS SO FAR

The countries concerned are committed to working together and to contributing to the further development of the ERA by organising joint programming exercises. A long-term process was initiated in 2015. The macro-regional research and innovation needs of the CEE countries have thus been communicated at the political and expert levels several times. Support from all the EU Member States and the European Commission is now crucial to maintaining the commitment of the supporting countries and organisations. Among the numerous CEE actions are the following milestones:

- The *EU Bioeconomy Strategy – How to develop the Hungarian Research and Innovation Agenda* conference held during the National Agriculture and Food Exhibition (OMÉK in Hungarian) in Budapest. This was jointly organised by the Hungarian Ministry of Agriculture and the Research Institute of Agricultural Economics and took place on 25 September 2015;
- AGRIFISH COUNCIL – policy discussion concerning (a) the Fourth SCAR Foresight and (b) EU strategy in the field of agricultural research and innovation, presenting the position for more effective use of the research potential of the EU-13 in the field of agriculture within Horizon 2020. Events were held on 15 December 2015 (a) and 15 February 2016 (b);
- Presentation and repetition position during SCAR works since the end of 2015;

- Active participation in the consultation process on long-term EU strategy in the field of research and innovation in agriculture – consultation conducted by the European Commission from December 2015 to January 2016;
- Priority of the Polish Presidency of the Visegrad Group (2016-2017): More effective use of the research potential of the V4 countries in the field of agriculture within Horizon 2020;
- *Policy Guidelines for Agricultural Research* workshops (I, II, III) organised by jointly by the Hungarian Ministry of Agriculture, the Research Institute of Agricultural Economics and the Hungarian Chamber of Agriculture on 10 November 2015, 14 January 2016, 27 and 31 May 2016, and 3 June 2016 in Budapest, Pápa, Kecskemét and Debrecen, Hungary (with Hungarian participants – researchers, farmers, advisors and other stakeholders);
- Robert-Jan Smits meeting with the Hungarian Ambassador on 15 February 2016 and Jerzy Bogdan Plewa meeting with the Hungarian Ambassador on 16 February 2016;
- Workshop on the bioeconomy on 18 April 2016 in Bratislava, participants came from the Czech Republic, Hungary, Poland, Slovakia and the European Commission;
- BIOEAST-CEE Cooperation between research institutes organised by the Research Institute of Agricultural Economics, Hungary on 8 June 2016 in Budapest; participants came from the Czech Republic, Hungary, Poland and Slovakia and Romania;
- Budapest Innovation Week (comprising the annual conference of the European Rural Development Network, a meeting of the Standing Committee of Agricultural Research (SCAR) Strategic Working Group on Agricultural Knowledge and Innovation Systems (AKIS), and a workshop in the frame of the DANUBIONET project), organised in Budapest by the Hungarian Ministry of Agriculture, the Research Institute of Agricultural Economics and the Hungarian Chamber of Agriculture from 3 to 7 October 2016;
- Lodz Declaration signed on 6 October 2016;
- Bratislava Bioeconomy Conference organised by the Slovak Presidency together with European Commission under the auspices of SCAR held on 17 October 2016;
- Common efforts under the Polish Presidency of the Visegrad Group – Meeting of the Ministers of Agriculture of the V4+3, adoption of the *Visegrad4+3 Common Declaration* for the stronger inclusion of the research potential of the EU-13 Member States in the implementation of projects within Horizon 2020 in the field of agriculture and the bioeconomy, with common proposals of topics – part of the *Visegrad4+3 Common Declaration* signed on 26 October 2016 in Warsaw;
- AGRIFISH Council held on 15 November 2016 – official presentation of the *Visegrad4+3 Common Declaration* broadly supported by the Member States and the European Commission prior to the Council meeting, a letter addressing the European Commissioners (Moedas and Hogan);
- COMPET Council AOB point on 29 November 2016;
- The BIOEAST initiative was presented to and welcomed by Visegrad4 Agriculture Chambers on 1-2 December 2016 in Balatonfüred, Hungary;
- SCAR Plenary meeting including 'Bioeconomy developments' in Brussels on 6 December 2016, where the *Visegrad4+3 Common Declaration* and the BIOEAST Initiative were presented;
- SC2 Programme Committee meeting - Presentation of the *Visegrad4+3 Common Declaration* on 18 January 2017;
- The BIOEAST initiative was presented and discussed at a COPA-COGECA Working Party on Research in Brussels on 15 February 2017;
- BIOEAST workshop in Budapest organised by the Hungarian Ministry of Agriculture in cooperation with the Research Institute of Agricultural Economics and the Hungarian Chamber of Agriculture on 21-22 February 2017. The aim was to deepen cooperation in the field of

agricultural research in the bioeconomy. During the workshop some common research topics were further developed by research experts representing these countries.

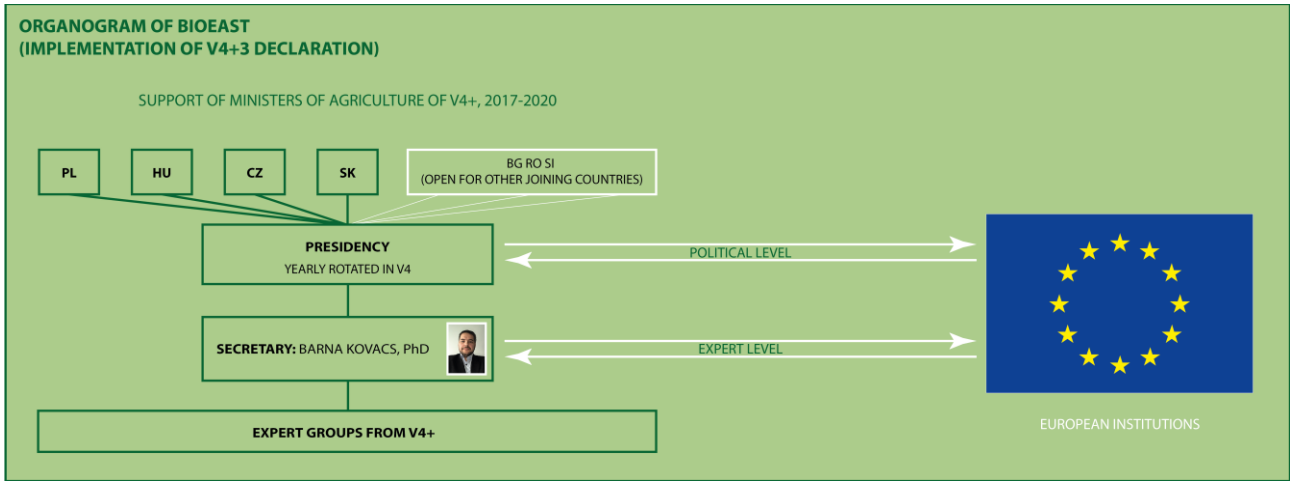
(For more information on the above BIOEAST Initiative topics see: http://eip.fm.gov.hu/index.php?page=pages&page_name=bioeast-Initiative).

5. INSTITUTIONAL SET-UP OF BIOEAST

After two years of enthusiastic actions it was evident that, to be able to operate effectively via a truly multi-stakeholder approach and at the macro-regional level, a more formal cooperation mechanism (contributing to the first objective) was needed.

Despite the common aims of the CEE countries, the actions carried out so far have been fragmented and uncoordinated, and thus less efficient than they might have been. Several actions were launched and different organisations were working in parallel until the *Visegrad4+3 Common Declaration* created a political base to act uniformly and represent the various interests imperiously both within and outside the borders. The *Visegrad4+3 Common Declaration* contains our goals and the BIOEAST Initiative is considered to be the necessary tool capable of formalising the operation and facilitating the achievement of those goals. During the strategic planning meeting held on 21 February 2017 was proposed the elaboration of this tool.

The countries of the CEE macro-region are expected to communicate with the European Commission at both the expert and political levels. The former includes representatives of ministries, research institutes, academies of sciences, universities, and chamber organisations involving the industry. The political-level discussions will happen in the Visegrad Four working groups in the constellation of the different ministries, the communication will involve the Programme Committee and SCAR. Both levels will be governed by the Secretary. Barna Kovács (who used to work for the European Commission) is proposed as the Secretary, to give a face to the Initiative and furthermore to communicate with the Visegrad 4 Presidency. The V4 Presidency rotates yearly among the V4 countries. (The Polish Presidency runs from July 2016 to July 2017, and will be followed by the Hungarian Presidency).



6. CONCLUSIONS FROM THE BIOEAST WORKSHOP HELD ON 21-22 FEBRUARY 2017

After developing a more stable operational structure, it is also crucially important to harmonise and prioritise the most important common research topics of the CEE countries (contributing to second objective).

Since the *Visegrad4+3 Common Declaration* was signed, several expert meetings and especially the workshop held in Budapest on 21-22 February have confirmed that the proposed topics listed in the annex of the Declaration are of extremely high importance for the CEE macro-region. At the same time, the European Commission's suggestions and the outputs of the BIOEAST workshops highlighted that the CEE countries are required to demonstrate profoundly their specific challenges and own resources while sharing their proposed research topics. That is why the experiences gained during the BIOEAST workshop justify the revision of the annex attached to the *Visegrad4+3 Common Declaration*.

This proposal does not intend to rewrite or constrict the common situational analysis that is currently at our disposal. It is only expected to focus and group the topics from the point of view of the CEE specificities. In this way our research needs will be better represented and built in the adequate policy tools and funding programmes. Two changes are therefore proposed.

Firstly, the two focus areas of the CEE countries have so far proved to be relevant throughout our work, thus we believe that the two focus areas of BIOEAST form the organising principle of the *Visegrad4+3 Common Declaration* annex.

Secondly, certain topics proved to be more clearly defined and more relevant for the CEE participants than others, and are found to be missing from the Horizon 2020 SC2 2018-2020 work programme. Thus **two topics** are proposed to be incorporated and ranked as top priorities in the first table of the *Visegrad4+3 Common Declaration* annex that contains the topics that are of particularly importance for the CEE region (The detailed topic descriptions are given in the WP2018-2020 recommendations). Both topics have the support of already operational CEE networks (Eurotransfop and NACEE).

1. **Strengthen the CEE countries as a buffer zone for emerging and changing pathogens caused by globalisation and climate change in the Continental Bio-geographical Regions. This topic could be a modification of the sixth topic in the second table of the present Annex.**
2. **Sustainable, efficient and competitive freshwater fish production in the changing climate of the Continental Bio-geographical Regions. This topic could be a modification of the eight topic in the second table of the present Annex.**

Apart from the formalising the network and harmonising the research topics, the following common and immediate BIOEAST actions are proposed:

- Active involvement in the development of the Horizon 2020 SC2 2018-2020 work programme (contributing to objectives 6 and 7);
- More workshops to be organised, the first in Poland to cover the remaining CEE-relevant research topics (contributing to objective 2);
- Building a website for the BIOEAST Initiative (contributing to objectives 1 and 7);
- Starting the dissemination of a regular newsletter (contributing to objectives 1 and 7);
- Starting to discuss and lobby for the setting-up of a common Coordination and Support Action and a common ERA-NET instrument with the thematic content previously defined in this paper (contributing to all objectives).

7. BIOEAST'S RECOMMENDATIONS FOR HORIZON 2020 SC2 WP 2018-2020

7.1. General comments

We welcome the general outline of this first draft (March 2017) of the Horizon 2020 SC2 2018-2020 Work Programme. It offers a wide range of relevant and useful topics from climate to supply chain related issues. We believe that this Work Programme could truly help CEE countries to find knowledge-based solutions for our challenges. However, we would like to contribute to making it more specific, especially from the perspective of the CEE macro-region.

We especially welcome the reference to bio-geographical region in the scope of call SFS-21; we acknowledge it as a huge step forward and support it fully.

We also welcome the inclusion of the new digital focus in the Work Programme as it can be a crucial element in decreasing the development and innovation divide between the different macro-regions of Europe. However digital topics are only useful for CEE countries if they are also strongly focused on human capital and the differences in the AKIS between the different macro-regions, shortly if the uptake of technology is provided for among different societal and governance circumstances.

We welcome the geographical focus of some topics prioritising China, Africa, Mediterranean and the countries of the Atlantic region. We believe that such focusing of some of the topics will help to implement the different actions and flagship initiatives and would have mutual benefits for societies in both Europe and other regions. Building on the experiences of past years, BIOEAST would initiate an additional view and scope of the WP 2018-2020 proposed topics. This is to make it compulsory in some specific bioeconomy-related topics for the future consortia (chosen based on excellence) to fully take into account the Continental and Boreal biogeographical region focus. The aim is not to impose an exclusive approach but rather to introduce a compulsory aspect to the specific topic without introducing any particular criteria for the provenience of the excellence. The scope is to solve some specific regional needs based on worldwide excellence without placing burdens on research.

7.2. Specific comments

- Welcoming the topics SFS 5, 8, 17, 18, 20, 21, 34 and BG 4 with the following remark to be added to each topic description: "Proposals addressing challenges arising from the specific nature of the Continental and Boreal biogeographical regions of Europe as defined by the European Environment Agency will be highly recommended."
- Welcoming the topic SFS 21 with the following remark to be added: "Preference will be given to consortia focusing on Continental and Boreal biogeographical regions of Europe as defined by the European Environment Agency."
- Welcoming topics RUR 2, 4, 15 and 17-20 with the following remark to be added: "Proposals addressing the different challenges arising from policy and governance differences in the macro-regions of Europe as defined by the DG REGIO will be highly recommended."
- Welcoming topic RUR 9 with the following remark to be added: "Networking of key stakeholders should be assured to allow for the sharing of knowledge and best practices."

7.3. New topics for the WP 2018-2020

Other Actions

Supporting the cohesion of EU Member States via cross-sectorial policy implementation based on research and innovation

Specific challenge:
In the 2014-2020 budgetary period, coordination and coherence between cohesion policy and the other EU policies contributing to regional development, namely rural development, agriculture, fisheries and maritime policies, has been strengthened by laying down common provisions for the ERDF, the ESF, the Cohesion Fund, the European Agricultural Fund for Rural Development (EAFRD), and the European Maritime and Fisheries Fund (EMFF). All five funds together are known as the European Structural and Investment (ESI) Funds. Currently in the most affected cohesion countries the funds are spent via the 'traditional channels', following sectorial approaches investing in sector-specific projects without considering the interlinkages. The 'economic, societal and territorial cohesion' is achieved less and less. There is a need for national-level strategic thinking, specific cross-sectorial policy development, which requires research and innovation, and knowledge-based policy development. The EC promotes policies such as the food or bioeconomy or circular economy policies which could help to solve the big societal challenges; however these require cross-sectorial approaches. Today it is clearly visible that the most developed countries were able to face the challenge involving research and innovation excellence as an overarching principle and the governments developed cross-sectorial national strategies. The EU cohesion countries are facing problems over how to tackle the cross-sectorial policy approach. The missing strategic thinking at national level might allow economic development and economic growth in some of the countries but clearly misses the sustainability principle considering the environmental and societal approaches.

The solutions for the 'sustainability' challenge of the national economies are only possible to achieve at the macro-regional level. The sustainability of the renewable resources including water is very much a macro-regional challenge, indeed a global challenge. The support actions should target the macro-regions. In the EU, most of the territory of the cohesion countries is located in the Continental Biogeographical Regions, i.e. the CEE countries.

Scope:
Most of the less developed EU Member States and regions, those in need of Cohesion Funds, are still building their national policies on primary sectors such as agriculture, forestry, fisheries and aquaculture, without thinking in broader terms such as sustainable food systems, or circular economies including the waste streams, or the job opportunities in the materials and chemical sectors for the advanced use of the available biomass. Most of the job opportunities in rural and remote areas are linked with the primary sectors, and one objective is to stop the shrinking. The bioeconomy offers a sustainable use of the available biomass by creating new value chains and added value to the products. The CEE countries have the potential to produce biomass in a cost-effective way; however, the missing government-level strategic thinking hinders the development of sustainable circular bioeconomies. The scope of this action should help to recognise the need for strategic thinking at the national and regional level. A multi-sector specific approach such as a national bioeconomy strategy could help to build up sustainable national economies embedding the primary production sectors together with processing sectors including the food-feed, materials-chemicals and energy sectors. Framing the objectives of a sustainable bioeconomy would help to govern the ESI funds and also to involve other investments.

SFS/RUR [2018]: Support to the BIOEAST Initiative: Coordination of bioeconomy related research and innovation activities

Specific challenge:
Addressing relevant challenges of the Continental and Boreal biogeographical region's countries towards its economic, environmental and societal sustainability, calls for a stronger knowledge basis that requires the coordination of bioeconomy research and innovation activities leveraging on past and ongoing regional, national and EU initiatives.

Scope:
Proposals should deliver a long-term strategic R&D plan towards a sustainable prosperous Central and Eastern European area integrating policy, industry (including aquaculture), research and education, society, taking into consideration experiences from the developed EU countries and existing initiatives. Actions should support the BIOEAST Initiative which aims at coordinating the research and innovation activities to support a new sustainable approach to manage and exploit the potential of the Continental and Boreal biogeographical region in agriculture, forestry, aquaculture, for sustainable food processing, material and chemical use and energy industries. The ultimate aim to build sustainable national and regional level food, bioeconomy and circular economy policies.

Expected impact:
The implementation of the support action will help to have impact at macro-regional, national and micro-regional levels:

1. Setting-up national and international cooperation and policy development
2. Supporting macro-regional, national and regional bioeconomy strategies building
3. SRIA development
4. Data and monitoring provision
5. Skill improvement
6. Initiating synergies development
7. Cross–sectoral cooperation fostering, engaging industrial stakeholders for development of the existing and new value chains
8. Increasing visibility and social awareness

Type of action: CSA

SFS/RUR [2020]: Response to challenges arising from the climate change and socio-economic characteristics taking into account the Continental and Boreal macro-region

Specific challenge:
Agriculture, forestry, aquaculture and the agri-food sector are integral parts of the European economy and society. They are subject to multiple pressures from external drivers, which include rising food, feed, fuel and fibre demand, globalisation, environmental changes and public health aspects, and are constrained by planetary boundaries such as land and water limits. In the context of the sustainable biomass production the Continental and Boreal biogeographical region has a specific role in Europe and in the future of the sustainable European processing sector developments. With the expected increase in global population, demand for animal food products and competition for natural resources, agriculture, forestry and aquaculture will need to become more efficient, and sustainable. The sustainability criteria will be the game changer in bringing back the biomass production of the biomass in Europe for European society, as close as possible to the processing and consumption but being sustainable. The sustainable bioeconomy as part of a

European circular economy would require macro-regional approach, specific macro-regional climate, ecosystem and societal pillars. The Continental and Boreal biogeographical region by its biomass production potential will play a key role in developing the European circular economy and common food policy.

Scope:
Supporting the development of the Common European Food Policy, Central and Eastern European national level bioeconomy and circular economy strategies and policies, to enhance knowledge transfer from the best European knowledge hubs, to build up and enforce a cross European research network based on the priorities.

Expected impact:
It is foreseen one call in 2020 to cover three areas from the perspective of the Continental and Boreal macro-region:

1. Sustainable food production in the context of the European Food and Nutrition policy, considering the food system approach
2. Sustainable biomass production for material and chemical uses in the context of the Bioeconomy policy, considering the cascading use of the bioresources
3. Societal acceptance in the context of Circular economy policy, considering the innovative solutions and their acceptance by the society, developing models and methodologies on how to involve the Central and Eastern European society into policy making and acceptance.

Type of action: ERA-NET Cofund

SFS-[2018]: Strengthen CEE countries as a buffer zone for emerging and changing pathogens caused by globalisation and climate change

Specific challenge:
The gap is the thorough understanding of the synergetic effects of climate change, European integration and globalization. Trade liberalisation offers easier trade of living and processed animal and plant products (and their packaging material). The economically advantageous trade liberalisation increases our vulnerability from the animal health and phytosanitary point of view (e.g. African swine fever, bovine besnoitiosis). Moreover, the impact of climate change increases the possibility of modified disease behaviour making spreading easier and causing a European level problem (e.g. grape and apricot phytoplasma).

Scope:
The game changer would be to understand the synergetic effects of these two trends (increased trade and climate change) on animal and plant health with the help of forming a "buffer zone scientific network" to support monitoring and stopping these transboundary pathogens in the CEE countries and where possible save the rest of Europe from the economic losses. Preference will be given to targeted proposals addressing challenges arising from the specific nature of the different biogeographical regions (e.g. Continental and Boreal) of Europe as defined by the European Environment Agency.

Expected impact:
Owing to the advances in molecular diagnostics in microbiology, specific and sensitive technics are becoming available for the detection and rapid identification of significant pathogens. Improved methods of sample collection from wild animals and invertebrate vectors, with the combination of

remote sensing techniques, epidemiological modelling and risk assessment; as well as reasonable and state of the art combination of target pathogens, could lead to the the development of an internationally standardised, comprehensive, cost-effective and real-time monitoring system for the early detection of significant, emerging animal pathogens. The well-planned and harmonised application of the monitoring system could reduce significantly the risk of the insidious spread of these pathogens in the EU. Preventing the introduction or immediately blocking the spread of such diseases is a key element of cost-effective animal and food production.

Type of action: RIA

BG-[2018]: BIOEAST priority topic: Sustainable, efficient and competitive freshwater fish production in the changing climatic situation

Specific challenge:
The challenge is related to the fact that, while freshwater aquaculture is known to provide 21 per cent of the total EU aquaculture production, it is still a largely unexplored (and, on an EU-wide policy level, somewhat neglected) area, which is also affected by the changing climate. The freshwater fish farming sector and, whose European core area lies mainly within the Continental Bio-geographical Regions, is facing the challenge of maintaining sustainable and efficient production using limited resources, one that will become even more pressing in the future because of increasing water scarcity and the growing incidence of climatic and hydrological extremes. The largely unacknowledged and uncompensated provision of multiple ecosystem services, which also includes feeding of certain protected wild animals (e.g. the great cormorant, *Phalacrocorax carbo* L., or otter, *Lutra lutra* L.) represents an increasing challenge for fish farmers struggling to maintain their competitive position. Research on how to unlock the potential of freshwater aquaculture to promote the rural economy and to provide ecosystems services would be a game changer. Thus, it is important to gain knowledge on how to improve the economic viability of freshwater aquaculture practices with increasing environmental sustainability, together with scientific work aimed at securing an existing gene pool of valuable populations fish species which are susceptible to climate changes.

Scope:
The objectives of the project should include, firstly, building detailed, standardised databases by collecting missing and additional supplementary data and, secondly, analysing production performance by evaluating potential fish production and efficiency under various aquaculture conditions, taking into account the expected effects of different climate scenarios and sustainability. Another important objective is to ensure the genetic diversity of farmed finfish and their related wild species (UN SDG 15) by creation of genome banks (crucial populations/individuals stored in sperm banks and maintained in living bank). Preference will be given to targeted proposals addressing challenges arising from the specific nature of the different biogeographical regions (e.g. Continental and Boreal) of Europe as defined by the European Environment Agency

Expected impact:
The results of the comprehensive analysis will support farmers and farmers' associations in making decisions on implementing improved management practices to facilitate adaptation to climate change and market conditions in a sustainable manner and to improve resource use efficiency. This will contribute to sustainable intensification, i.e. a form of production where yields are increased without affecting the environment (an example being the use of combined intensive-extensive fish production systems and Integrated Multitrophic Aquaculture, IMTA or Recirculating aquaculture system (RAS)). The results are also expected to contribute to a more rational development and

expansion of multi-functional fish production systems (i.e. those diversifying their income through angling, tourism and ecosystem services). Creation of genome banks will permit the maintenance of the genetic diversity of crucial fish populations by storing individuals (and their sperm) with desired genotypes. Such material and can be used for the 'revitalisation' of endangered populations ensuring optimum proportions of particular genotypes.

Type of action: RIA/IA

RUR-[2018]: Integrated biomass production for the multi-directional use taking into account management of land with the fragmented agrarian structure and marginal areas.

Specific challenge:
Undertaking the research in this area is very important as the global demand for biomass used for food and non-food purposes is constantly growing. On the other hand, the area of land available for production is decreasing, especially in the developed and developing countries. Therefore, it is necessary to break structural barriers that reduce the effectiveness of biomass production. An important issue on a European scale is to restore marginal land to production and to improve the effectiveness of its management and help to develop the value chain approach of production and usage of biomass within the regions. Proposal should help to create innovative approaches and help to create new products and services in the regions. Multi – actors approach should be implemented in order to achieve these goals.

Scope:
Proposals should specify the conditions for producing and using biomass in a closed cycle as well as the conditions for developing the non-food uses of agricultural products. It should allow the development of a selection of relevant species and agricultural technology for biomass production and processing in certain regions of Europe, depending on the local soil and climate conditions. It should also indicate the directions of the biomass production, depending on the local and regional market conditions and the agrarian structure.

Expected impact:
The impacts of the work will include: (a) to develop region specific complex value chain approach for biomass production and processing; (b) diversification of the agricultural production; (c) increase in the effectiveness of production; (d) improvement in and stabilisation of farmers' income, and (e) a reduction in negative pressures on the environment; (f) to create conditions for new products and services in the regions.

Type of action: RIA

Annex

Annex 1: ***COMMON DECLARATION OF THE MINISTERS OF AGRICULTURE OF THE VISEGRAD GROUP AND BULGARIA, ROMANIA AND SLOVENIA***

COMMON DECLARATION OF THE MINISTERS OF AGRICULTURE OF THE VISEGRAD GROUP AND BULGARIA, ROMANIA AND SLOVENIA

for the stronger inclusion of the research potential of the Central and Eastern European (EU-13) countries into the implementation of projects within the Horizon 2020 in the field of agriculture, including the bioeconomy.

The European Commission is currently preparing the Work Programme 2018 -2020 under the Horizon 2020 Societal Challenge 2 (*Food security, sustainable agriculture and forestry, marine, maritime and inland water research and the bioeconomy*). At the same time, the European Commission completed the work related to the *Long-term EU strategy in the field of agricultural research and innovation* that, in accordance with the European Commission information, should provide the guidelines and the contribution to the programming of the Horizon 2020 for the years 2018-2020.

An analysis of the existing participation of the EU-13 countries in the Horizon 2020 still indicates, that the widening participation principle of the present programming period has not been reached yet. The EU-13 countries account for less than 5% of the total budget spent under the Horizon 2020 until now.

The Ministers of Agriculture of the Visegrad Group and of Bulgaria, Romania and Slovenia:

APPRECIATE the efforts undertaken by the European Commission. However UNDERLINE that, despite the increasing budget for the programme and structural changes implemented so far (widening package, simplification of measures, actions towards synergies with ESIF instruments), low participation of the EU-13 countries is still persistent.

BELIEVE that in case of many research areas the EU-13 countries perspective is part of the scientific excellence and without EU-13 countries knowledge and involvement the basic principle of scientific excellence is seriously constraint.

UNDERLINE a need to find effective solutions to ensure a stronger involvement of the research needs and potential of the Central and Eastern European countries in co-creating and functioning of the European Research Area (ERA) in the field of agriculture, bioeconomy and rural areas.

COMMITED to work together and to contribute to the further development of the European Research Area by organizing joint programming exercises. The support from all the member states and the European Commission is crucial. In the frame of the already existing tools, like research and innovation actions, collaborative and support actions, pilot and flagship initiatives, joint programming initiatives should be found solutions to focus the common efforts for a successful co-construction.

REQUEST the European Commission to take urgent measures aimed at the stronger use of the research potential of all Member countries in the process of building the single European Research Area (ERA).

CALL ON the European Commission to introduce instruments reducing disproportions in participation of the EU-13 countries in the Horizon 2020 Programme, *inter alia*, by:

- considering the needs and possibilities of the EU-13 countries, related to the climatic and social specificity of the agri-food, bioeconomy and rural areas of the EU-13 countries;
- flagging certain topics as requiring research scope from across all the macro-regions of the EU;
- supporting the macro-regional cooperation actions, e.g. the BIOEAST Initiative;
- enhancing incentives for new participants;
- introducing research and innovation actions, coordination and support actions and joint programme initiatives for the EU-13 countries in the order to increase their activity in creating and functioning of the European Research Area (ERA);
- strengthening the efforts foreseen in the Horizon 2020 regulations i.e. balance between small and large projects and geographical balance of evaluators;
- considering further simplification of rules within the Horizon 2020, including remuneration schemes for participants.

PROPOSE to introduce into the Work Programme 2018-2020 under the Horizon 2020 Societal Challenge 2 the common developed proposals of the topics in order to increase the use of the research potential of the Central and Eastern European countries. Joint proposals of the topics (attached) have been formulated in the following thematic areas:
(i) development of regional, national and European Bioeconomy in the Central and Eastern European countries,
(ii) sustainable agri-food sector,
(iii) rural renaissance.

Warsaw, 26.10.2016

On behalf of

- Poland: .....
  Krzysztof Jurgiel, Minister of Agriculture and Rural Development
- Czech Republic: .....
  Jiří Šír, Deputy Minister of Agriculture
- Hungary: .....
  Sándor Fazekas, Minister of Agriculture
- Slovakia: .....
  Gabriela Matečná, Minister of Agriculture and Rural Development
- Bulgaria: .....
  Vassil Groudev, Deputy Minister of Agriculture and Food
- Romania: .....
  Teodor Mihalcea, State Secretary in the Ministry of Agriculture and Rural Development
- Slovenia: .....
  Tanja Strniša, State Secretary in the Ministry of Agriculture, Forestry and Food

Annex to the COMMON DECLARATION OF THE MINISTERS OF AGRICULTURE OF THE VISEGRAD GROUP AND BULGARIA, ROMANIA AND SLOVENIA for the stronger inclusion of the research potential of the Central and Eastern European (EU-13) countries into the implementation of projects within the Horizon 2020 in the field of agriculture, including the bioeconomy.

The Ministers of Agriculture of the Visegrad Group and Bulgaria, Romania and Slovenia proposals of topics for the Work Programme 2018-2020 under the Horizon 2020 of the Societal Challenge 2 (Food security, sustainable agriculture and forestry, marine, maritime and inland water research and the bioeconomy), in the following thematic areas: (i) Development of regional, national and European Bioeconomy in the Central and Eastern European countries, (ii) Sustainable agri-food sector, (iii) Rural Renaissance.

Table No 1. ***Proposals of topics particularly important to the development of regional, national and European Bioeconomy in the Central and Eastern European countries.***

Proposals of topics particularly important to the development of regional, national and European Bioeconomy in the Central and Eastern European countries				
	Proposed topic	**Specific challenge (problem, justification)**	**Scope (definition of the objective, of the scope of measures within the project)**	**Expected impact (expected, key results of the project to be achieved; recipients)**
1.	Use of waste and by-products of the agri-food industry as raw materials in the subsequent production cycles according to the standards of the circular economy.	The content of the document on the circular economy indicates that the research related to using waste and by-products of the agri-food industry and reducing the amount of food waste has been taken. These projects relate mainly to technological issues, while the „zero waste" issue requires the reference also to the economic or social factors. Given the complexity of this issue, we need a measure consisting in an integrated approach to the entire food chain, which would give a possibility of reducing losses of raw materials and food throughout the life cycle of food. One of the purposes of the circular economy is to include the product life cycle into the sequence „production-use-use of waste in the next production cycle". This approach aims at reducing food losses and food waste throughout the supply chain.	Proposals should enable the development of new, modified or improved products, processes and services. In this regard, an analysis could also cover the social aspects (e.g. cultural or behavioral) and conditions related to the organisation of supply chains and market structures. An additional benefit would be to introduce a possibility of comparing the effectiveness (including benefits for buyers) of various solutions in this regard and to introduce the standards to assess the effectiveness at the various stages of the supply chain. The proposals should enable the identification of microbiological and chemical hazards in waste and by-products resulting from the food production process and intended for the subsequent production cycles.	Bearing in mind support for the circular economy, the expected results are: - wider and faster application of innovative, low-waste and energy-efficient technologies in the food chain; - identification and determination of possibilities of applying the innovative low-waste and energy-efficient technologies in the food chain; - support for the transition from the linear to circular economy; - support for the process of communication and acceptance on the part of the industry and consumers for the „zero waste" policy; - reducing the negative externalities related to food waste; - strengthening the EU position in the agri-food industry, diversification of production and

		The essence of this approach is to reduce the consumption of raw materials, reduce the amount of landfilled waste and increase the stream of waste used as part of recovery and recycling.	The proposals will be aimed at identifying, evaluating the use and developing the technologies reducing food waste as well as supply chain monitoring systems.	employment growth in the food sector, especially in the SME sector; - development of standards and norms determining sanitary safety of waste and by-products of the agri-food industry determining the implementation of the United Nations development goals for the years 2015-2030 - as part of seeking to provide sustainable consumption and production patterns (Objective 12), it is assumed to reduce, by 2030, food waste by 50% at the stage of sale and consumption and to reduce losses at the stage of agriculture and processing.
2.	Integrated biomass production for the multi-directional use taking into account management of land with the fragmented agrarian structure and marginal areas.	Undertaking the research in this area is very important as the global demand for biomass used for food and non-food purposes is constantly growing. On the other hand, the area of used land is decreasing, especially in the developed and developing countries. Therefore, it is necessary to break structural barriers reducing the effectiveness of the biomass production. An important issue on an European scale is also to restore to the production and to improve the effectiveness of management in marginal land.	Proposals should specify the conditions for producing and using biomass in a closed cycle as well as the conditions for developing the non-food use of agricultural products. It should allow to develop the selection of relevant species and agricultural technology for the biomass production in certain regions of Europe, depending on the local soil and climate conditions. It should also indicate the directions of the biomass production depending on the local market conditions and the agrarian structure.	The effect of the work will be: - diversification of the agricultural production, - increase in the production effectiveness, - improvement in and stabilisation of farmers' income, - reduction in negative pressures on the environment, e.g. by reducing the consumption of fossil fuels.
3.	Development of modern research methods, modelling and receiving the high-efficient and functional components from biomass as a source of a new generation of dietary	Due to the promotion of the sustainable production of the agri-food sector, it is important to put into practice the latest solutions as regards the new forms of the use of biomass in human nutrition. Better cooperation between researchers, advisors, farmers and food industry operators in the entire supply chain in order to stimulate the exchange of technological innovation and knowledge, so as to optimise the use of	Development of technologies aimed at producing new generation food, including functional food and nutraceuticals for health prevention and supporting the therapy of lifestyle diseases, especially senior diseases. Implementation of the widely understood health prevention through the modern nutrition system using innovative food products of natural origin.	The measures within the framework of the projects should contribute to the effective implementation of the latest scientific knowledge and to the dissemination of the best practices on this subject, including: - implementation of new solutions into the economic practice, - improvement in the knowledge sharing process to the economic practice,

	supplements and nutraceuticals meeting the modern expectations of consumers and combating lifestyle diseases.	resources and move to the knowledge-based economy in the field of nutrition and the use of functional food components.	Preparing pilot solutions and scalable/ replicable implementation solutions.	- use of collected solutions and the intensity of their dissemination among the end users.
4.	Research, analysis of the potential and structural conditions of agriculture as a source of biomass in the eastern and central part of the EU, and determining the strategic directions of development in the bioeconomy.	Agriculture in Eastern and Central Europe still does not use its full production potential. The importance of this region as a source of biomass for the economy may, however, increase in the following years, thanks to the use of new technologies and research achievements. In relation to the EU-15, the use of the potential with regard to the bioeconomy of the EU-13 countries affects adversely the achievement of the objective of the Europe 2020 strategy. The EU activities in this area should lead to developing models of action to strengthen the economic and social effectiveness of the bioeconomy in the countries of the Central and Eastern part of the EU.	Proposals should specify the production potential of agriculture in Central and Eastern Europe and define its constraints as well as opportunities and directions of development of the agricultural production in the region. It should allow to indicate the possibilities of management of produced biomass. These measures should focus on knowledge and transformation of conventional products and industrial processes into resource- and energy-efficient bioproducts and bioprocesses, development of integrated second and subsequent generation biorefineries, optimisation of the use of biomass from the primary production, including residues, biowaste and by-products of the bioindustry. By supporting the standardisation and certification systems for bioproducts, new outlet markets should be opened for both the primary production and products derived from it. It is also necessary to implement the measures with regard to regulation and demonstration/field tests, taking into account the impact of the bioeconomy on land use and changes in the way of land use. These measures should affect opinions and knowledge of the civil society about the bioeconomy .	Determining the objective factors underlying the economic and social effectiveness of the development of the bioeconomy in the countries of the eastern and central part of the EU, using the projection methodology, allowing to make international comparisons. This will enable the practical application of the indicators in defining the policy objectives and tools in this regard. The objective of the implementation of the projects will also be to develop and promote low carbon, resource-efficient and sustainable technologies and the bioindustry sectors competitive for the Euroregion. The research results should indicate the more rational directions of the development of the agricultural production in the region and the solutions improving the effectiveness of the biomass production in Central and Eastern Europe. Consequently, this should lead to reducing the development disproportions in Europe, as aimed at by the EC.

5.	Analysis of the Environmental Life Cycle Assessment (LCA) of key products of the agri-food industry.	The Environmental Life Cycle Assessment (LCA) is a methodological basis for so-called Product Environmental Footprints (PEF). It is aimed at standardising the market of organic products and developing common methods for measuring environmental performance in the life cycle of products and companies. Currently, for the calculation of the impact of the agricultural production in the EU, we use the pan-European databases (e.g. AGRIFOOTPRINT). Unfortunately, the accuracy of this database recommended by the EC for some Member States (particularly the Central and Eastern European countries) is low - due to the fact that the proposed indicators/converters/suggested values have been obtained by means of rather general applications of the Western European conditions to this group of countries. One should adjust the available methodology study to unify it for the countries of the EU Therefore, for the actual calculation of the environmental impact of the agricultural production (agricultural processes) throughout the life cycle, it is necessary to acquire data representative of the most important unit processes and to update them on a permanent basis.	Proposals should allow to develop new, or to modify the existing, methodologies for measuring environmental performance. The proposals should be based on in-depth research and process analysis so as to implement the concept of the life cycle in environmental terms, including the development, adjustment of the methodologies of the adequate for EU countries, including Central and Eastern European countries to acquire data representative of the most important unit processes, which will enable the comparability at the EU level.	Bearing in mind support for the concept of the life cycle in environmental terms (LCA), the applications should: - clearly determine the most important unit processes, - identify the existing methodologies and possibilities of using them, - aim at developing the European standard with regard to determining and communicating the environmental information.
6.	Increasing the value added use of agricultural- and forestry biomass.	The gap is that there are several critical points to improve use of agricultural and forestry biomass in less developed EU regions. Economically viability often conflict with ethical and sustainability aspects. A game changer would be to perform research on how to unlock the great and mostly unutilized	The first objective of the project is building a detailed knowledge base on biomass volume can be sustainable collected under different Central European conditions. The second objective of the project is to rank different technologies, different utilization pathways concerning there environmental and	A comprehensive analysis of biomass pathways will be given. Results of the research and the ranking will provide decision makers with the knowledge, how to regulate and support efficiently biomass utilisation without disrespecting sustainability aspects.

		potential for biomass production and added value utilization in the less developed EU regions and especially CEE countries with respecting the sustainability requirements and increasing the economic advantages in the production regions. Since biobased industries and especially non-traditional higher value added biomass utilisation will depend on support at least in mid-term, policies must find solution for the conflicting aspects. Some sort of hierarchy of use must be developed for particular biomass forms, and for various conversion platforms adaptable to different conditions.	economical performances. Circularity, farm structural and regional aspects should also be clarified.	

Table No 2

Proposals of topics particularly important to the sustainable agri-food sector (Sustainable development of the agri-food sector).

Proposals of topics particularly important to the sustainable agri-food sector (Sustainable development of the agri-food sector).				
	Proposed topic	**Specific challenge (problem, justification)**	**Scope (definition of the objective, of the scope of measures within the project)**	**Expected impact (expected, key results of the project to be achieved; recipients)**
1.	Development of new products – functional food products with the high nutritional and health value.	Improvement in the quality of raw materials of plant and animal origin creates possibilities of obtaining food products with the enhanced dietary and health values. This is a response to the increasing interest of the society in the value of food products.	Development of new methods to assess the technological value of plant raw materials and farm animals taking into account new characteristics, including the occurrence and quality of health components present in raw materials of agricultural production. It is also advisable to conduct the research aimed at determining the optimal processing technology to guarantee maintaining the consumer and health values of substances present in food products made using raw materials of plant and animal origin.	The better use of new varieties and crops of plants and of the genetic potential of animals. Conducting the selection towards the development of new functional features, obtaining the information about new properties of raw materials of plant and animal origin. The results of the project will be addressed to breeders and producers of agricultural crops and farm animals and further to processing plants.
2.	Possibilities of shortening supply chains while meeting the safe food requirements, including technologies extending the durability of products at all stages of the supply chain as well as supply chain monitoring systems as	Local food solutions may support the key elements of the sustainable rural economy. This phenomenon is still poorly recognised in the EU dimension, in particular regarding the safe food requirements. Development of short chains entails economic, environmental, cultural-ethical and social benefits. Shortening the supply chains enables an increase in added value of the producer by, *inter alia*, eliminating certain intermediaries, enabling direct sales to consumers or reducing the production-related	The objective will be to seek solutions in terms of the possibility of developing short food chains. The scope of the project should include proposals to standardise the regulatory criteria and make them more flexible. The projects will aim at the identification, assessment of the application and development of technologies to extend the durability of food products and supply chain monitoring systems.	The expected result will be the indicated economic, environmental, cultural-ethical and social benefits for rural producers as well as rural and urban consumers. The research conducted should ensure the introduction of beneficial regulatory systems for shortened supply chains while meeting the safe food requirements. Bearing in mind support for the circular economy, the expected results should: - identify the existing technologies and their potential for use in the food sector, bring them

	part of the circular economy.	risk. Environmental benefits of shortening the supply chain result from the reduced costs of transport, storage and distribution. Also taking into account the measures for the circular economy, which in the food production and marketing is a key issue for its rational use. With regard to cultural-ethical benefits, they include, first of all: help in preserving cultural heritage or increased involvement of the community, but also the implementation of high standards regarding animal welfare. In turn, social benefits of shorter supply chains may be, on the one hand, increased access to healthy and fresh food for urban residents and, on the other, rural development.	Proposals should focus on extending „product shelf life" so as to reduce food losses and waste in the light of resource-efficient management of raw materials. They should look for methods to increase the use of new technologies in the food industry, including production-related biodegradable food packaging, processes affecting „product shelf life", collection of data, information and monitoring the process of the compliance with the rules. These proposals should be based on the state-of-the-art research findings contained in the EU and other projects financed in this area. Participation of SMEs which will benefit from intellectual property and from the commercial use of the project results is desirable.	to the level of readiness which means that they can be used by the food sector across the EU, and promote their use by end users (SMEs); - develop the standards and norms for products, packaging towards extending „product shelf life"; - include SMEs from the UE into active cooperation so as to acquire data, knowledge and generate solutions for their implementation.
3.	Innovative, sustainable solutions for reducing environmental pollutants resulting from production cycles of the agri-food sector.	The sources of emissions of pollutants for environment occur virtually in all types of business. Hence, the sources of its emissions should also include the agricultural production, including, in particular, the animal production. In the animal production, the major sources of emissions are animal farms where these emissions occur as a result of the digestive processes of breeding animals, their excrements, application of feedstuffs and the operation of equipment and technological processes, storage of excrements in solid or liquid form and their application as fertilisers. Agricultural holdings involved in the animal production are currently facing a difficult challenge. Given the perspective of increasing	Advisable is to assess the possibility of reducing emissions of pollutants for environment (i.e. waters, air, soil) from the agricultural production, in particular from the animal production. The currently proposed reduction methods are, in fact, beneficial from the point of view of the environmental protection, however, they may often have a negative impact on the competitiveness of agricultural holdings. The majority of commonly proposed reduction methods may increase their production costs, with the absence of a positive impact on the individual performance of farm animals. These methods may generate not only	The effect of the work will be: - identification of emissions of pollutants at the individual stages of the agricultural production, including the animal production, taking into account the organic production; - assessment of the economic situation of agricultural holdings reducing emissions of pollutants for environment, taking into account organic holdings. The research results will be used in making decisions on indicating the possibilities for the agricultural sector, including, in particular, the animal production, to participate in the efforts to reduce emissions of environmental pollutants by 2030 and 2050.

		the level of ambition as regards reducing greenhouse gas and air pollution compounds emissions in the EU by of 2030 or even 2050, there is therefore a need for them to look for modern solutions, which, on one hand, would allow them to maintain their competitive capacity, and on the other hand – would reduce environmental costs of production.	additional operating costs (*inter alia*, the costs of preparing feedstuffs and applying feed additives) but also investment costs. In addition, it is advisable to introduce solutions/ measures which will contribute to reducing the negative impact of the agricultural production on the widely understood environment, while minimising the costs which must be incurred for this reason by the agricultural sector. These solutions must take into account the need to maintain the competitiveness of national agriculture in the European market.	
4.	Development of system technological and technical solutions addressed, in particular, to small and medium-sized production enterprises and processing of agricultural products in the holding.	The economy of the EU countries depends on the operating conditions, first of all, of micro, small and medium-sized enterprises. The need to support these entities in terms of energy self-sufficiency as part of the so-called prosumer model should guarantee their further development. In micro and small holdings, there is a need to intensify the (specialised) production or to take environment-oriented measures. In medium-sized holdings, it is required to increase the intensification of the production with respect for the environment in the regions with a high production potential. Also, the logistics of trade in mass goods should be improved.	The objective of the project is to develop dedicated technological and organisational solutions. Development and calibration of simulation models should allow to: - assess the changes in the production system, land use and diversification of production (food – energy) in small and medium-sized holdings; - assess the environmental effects, including greenhouse gas emissions and carbon sequestration in the soil (LULUCF); - analyse the implementation of systemic technological and technical solutions into potential socio-economic benefits in the global and regional terms.	The expected result will be testing dedicated technological and organisational solutions within the framework of case studies. The direct implementation by the deliberate commercialisation of results, which should guarantee: - creation of new opportunities (technical, economic, specific support, etc.) in implementing the processing technologies for agricultural products and RES in small and medium-sized holdings; - dissemination of knowledge as regards new technologies; - creation of support centres for the administration at various levels.
5.	Technologies to improve the structure, sorption properties	Agriculture is this branch of the economy that is severely affected by the effects of progressive climate change. An increase in its	The objective is to assess the development of methods regarding agricultural science, production	The key results of the project should be:

	and resources of organic carbon in the soil (organic matter management, rational management of resources, including water).	frequency and intensity of occurrence increases the risk of conducting the agricultural production and adversely affects the economic situation and development possibilities of agricultural holdings. A specific risk to the effectiveness of the functioning of agricultural holdings are the more and more frequent periods of water scarcity and , consequently – drought. Therefore, an important determinant of obtaining, by holdings, the beneficial production and economic effects is to use practices resulting in the accumulation of organic matter in the soil profile. The increase in the content of organic matter improves the soil structure, increases the content of water, nutrients available for plants, resistance to erosion and physical and chemical degradation of the soil. In addition, the climate zone of Central Europe is characterised by frequent weather anomalies causing droughts or inundations, even intensified by climate change. This situation requires system solutions, with particular consideration given to non-technical solutions. Allowing to keep the good hydromorphological condition of waters, in accordance with the decisions of the Water Framework Directive. Therefore, the research is necessary to identify the most effective methods to counteract the negative effects of excessive soil mineralisation and rational water resources management in agricultural holdings.	technology and organisation of crops so as to reduce the degradation of soils used for agricultural purposes. The above-defined main objective will be achieved in the project through the following specific objectives: evaluation of the effectiveness of using the selected way of mulching of fertilisers and soil improvers; development of methods to protect soils against surface erosion and drought using treatments restoring their biological activity, development of crop rotation methods to optimise the process of soil protection against erosion and to preserve the effectiveness of the production in diversified environmental conditions and economic environment. In addition, improving the state of knowledge about the impact of water resources on the condition of soils will help to improve soil conditions and water management rules in agricultural catchments based on „in situ” water resources in agricultural holdings.	- development of designs of equipment and functional models to cultivate soil so as to reduce the surface load; - determination of opportunities as regards introducing into the soil the products improving the sorption properties (types of products for specific types of soils and crops); - development of crop rotation systems to reduce the degeneration of organic matter in the soil. In addition, the assessment of the real needs of holdings as regards rational water resources management should affect: - ecologisation of water management, - creation of foundations for supporting farmers managing water in a proper manner, - mitigation of the effects of drought. - reduction in the size of flood and inundations.

6.	Emerging diseases of farm animals and methods to reduce microbiological and chemical threats in food of animal origin.	Climate change, liberalisation of trade in animals and migration situation in Europe, create new opportunities and threats of diseases of farm animals, so far unprecedented in the EU, e.g. ASF, PEDV, LSD. The transmission paths of these pathogens are unknown, there are no available diagnostic methods and possibilities of prevention. The food production in conditions of sustainable agriculture requires research on the occurrence of new threats in food, risk analysis of the occurrence of these threats and introduction of systems to reduce or eliminate their occurrence.	Proposals should be aimed at learning the biology of new pathogens, methods of their spreading, potential biological vectors, risk analysis and development of diagnostic methods. It is advisable to take into account cooperation of various communities – scientists, representatives of agribusiness, breeders, decision-making centres. The measure should be holistic, taking into account many factors and various communities involved in the food chain. It should take into account the monitoring studies identifying new microbiological and chemical threats in food, studying the mechanisms of antimicrobial resistance and its monitoring.	Learning the mechanisms of spreading of these diseases. Development of effective diagnostic tools. Reducing economic losses in animal breeding. Increasing food safety and food security of the EU countries. Learning new threats in food of animal origin. Reducing the occurrence of these threats.
7.	Analysis of the water footprint and improvement in water management in rural areas and in the agri-food sector with particular consideration given to the potential of so-called small retention.	The Environmental Life Cycle Assessment (LCA) is a methodological basis for so-called Product Environmental Footprints (PEF). An important element of the circular economy, including the environmental footprint, is the analysis of water consumption of the agricultural production. The climate zone of Central Europe is characterised by frequent weather anomalies causing droughts or inundations, even intensified by climate change. This situation requires system solutions, allowing to keep the good hydromorphological condition of waters, in accordance with the decisions of the Water Framework Directive. There is a particular need for proper water management at the level of the agricultural holding. It is necessary	Improvement in knowledge allowing to enhance water management in agricultural catchments based on „in situ" water resources in agricultural holdings and in food industry plants. The final assessment of the amount of water necessary to produce one unit of a product of both the agricultural holding and products necessary for its operation (e.g., animal feed, fertilisers, etc.) and the processing-related activity in the food industry is of key importance for the balance of process water for the agri-food sector.	Assessment of the real needs of the agri-food sector in the conditions of structural transformations taking place in the Central European countries. Rationalisation of the measures to manage water resources for the agri-food sector. Creation of foundations for supporting farmers and food industry operators managing water resources in a proper manner. Determining the method of calculating the amount of water necessary to produce one unit of a product in the individual agri-food sectors. Mitigation of the effects of drought. Reduction in the size of flood and inundations. Ecologisation of water management.

		to assess properly water needs of the agri-food sector in the light of dynamic changes in its structure and organisation.		Recipients: agricultural holdings, food processing plants.
8.	Sustainable, efficient and competitive freshwater fish production in the changing climate of the Continental and Pannonian Bio-geographical Region.	The gap is the EU wide acknowledgement of the fact that freshwater aquaculture represents 21% of total EU aquaculture production and is still an unexplored opportunity while on the other hand struggles with the consequence of the changing climate. The freshwater fishing sector mainly located in the Continental and Pannonian Bio-geographical Region is facing the problem of how to maintain a sustainable and efficient production. Limited resources such as water scarcity and ecosystem services of feeding certain wild animals (e.g. bird Phalacrocorax carbo or otter Lutra lutra) represents an increasing challenge of maintaining competitive position for fish farmers. A game changer would be to perform research on how to unlock the potential in freshwater aquaculture to promote rural economy and to provide ecosystems services. Thus it is important to gain knowledge on how to improve the economic viability of the freshwater fisheries with increasing environmental sustainability.	The objectives of the project are building detailed standardized databases by collecting missing and additional supplementary data and analysing production performance by evaluating potential fish production and efficiency under various pond conditions taking into account the expected effects of different climate scenarios and sustainability.	The results of the comprehensive analysis will support farmers in making decisions on implementing improved management practices to adapt to climate change and market conditions in a sustainable manner. Which will result in sustainable intensification: a form of production where yields are increased without affecting the environment. Also will help the creation of multi-functional systems (i.e. including angling, tourism).

Table No 3 .

Proposals of topics for the area of Rural Renaissance .

Proposals of topics for the area of Rural Renaissance				
	Proposed topic	**Specific challenge (problem, justification)**	**Scope (definition of the objective, of the scope of measures within the project)**	**Expected impact (expected, key results of the project to be achieved; recipients)**
1.	Development of model concepts for development of peripheral and problem rural areas in the EU using the existing endogenous potential.	In the EU, and particularly in the new Member States, there are still development disparities between urban and rural areas, in such categories as, e.g.: GDP, employment/ unemployment level, development of social and technical infrastructure, access to public services, as well as, to a large extent, they are affected by the process of depopulation, in particular due to definitive migration of the younger generation. At the same time, the issues of rural development refer to the society as a whole, as sustainable urban development is, in functional terms, closely dependent on the viability of rural areas. Rural areas may offer cities many public goods unavailable in cities and may become their rightful partner in building the prosperity of the society as a whole.	The project is interdisciplinary. Its main objective is to develop innovative solutions aimed at improving the quality of life in rural areas and making the non-agricultural economic development of peripheral and problem rural areas more dynamic. Within the framework of the project, the model solutions will be developed for peripheral and problem rural areas using the existing and unique endogenous resources, which may become the flywheels of the local economy. Good practices/examples of solutions already existing in various EU countries and in third countries will be used.	The expected key results are: a) Sustaining and then strengthening the viability and vitality of rural areas; b) Economic strengthening by means of the activation of local communities and more efficient use of endogenous resources, resulting in the increased level of prosperity of the population; c) Implementing the principles of good governance, based on knowledge and innovative solutions, resulting in improved management of rural development; d) Promoting and initiating the creation of pilot partnerships of the city: rural areas (rurban), for the purpose of joint problem solving and overcoming development challenges , using an integrated approach taking account of and respecting the environment. Main recipients are: policy-makers/decision makers from the EU level, through the national, regional and EU levels, who may

				use the proposed solutions in the programming and planning work.
2.	Developing a participative foresight method for rural areas.	The assessment of future challenges in the regions resulting from the globalisation, demographic change, climate change, change in ecosystems, rate of economic development in the regions (type: rural, semi urban, urban), etc. The wider perspective will be obtained by conducting parallel studies in the regions of other Member States. Conducting the first foresight study in rural areas in various regions of the EU. Participation of stakeholders is essential. They will properly define the upcoming challenges on a regional scale. They will join the formulation of the challenges and solutions, will participate in the development of regional strategies.	Creation of a methodology for the interdisciplinary foresight study so as to conclude on future phenomena. Identification of challenges in the regions. Development of the relevant policy mix for the regions. The studies based on, inter alia, interviews, focus groups.	A tool for the administration and policy-makers supporting the development policy of the regions. For the specific challenges, the solutions will be developed within the framework of various scientific disciplines (economic and social sciences, geography, ecology, climatology, etc.). After the completion of the project, the models and recommendations based on the developed assumptions in the analysed regions will remain available to local researchers, administration, policymakers. Improvement in spatial planning in rural areas. Creation of a group of stakeholders which, in a participative manner, will take part in the process of defining the challenges and creating recommendations for the development policy. They will possess the knowledge.
3.	Motivating knowledge-based modern farming and cooperation among farmers.	The gap is that the contribution of family, small and young farmers in less developed EU regions to agricultural output represents a much lower level of production value than that of their western European counterparts. One of the reasons is the limited flow of information, lack of knowledge and cooperation. A game changer would be to perform research on how to involve young farmers in the adaptation of good practices,	There is a need for research to understand the mechanisms of knowledge sharing and innovation among farmers in less developed EU regions. Proposals should include different fields of research regarding the barriers and the stimulating factors for farmers in these countries toward changing their patterns of behaviour in the areas of knowledge sharing,	The results will give important input to improve the current agricultural knowledge and innovation systems in the less developed region, especially CEE countries.

		boost innovation and cooperation, create possibilities for expanding farming and support knowledge sharing so that a complex and transparent AKIS could be established. The same shall apply to both data usage and adequate machine service. Also the deepening of cooperation would be crucial and the understanding and overcoming trust barriers would be important.	cooperation and innovation. It is also important to know how to handle these factors in order to encourage the development of knowledge-based modern farming and the more effective cooperation between relevant stakeholders of the research, public, business and civil spheres.	
4.	Supporting the generation change of the first enterpreneurs in the agri-food sector.	The gap is that in the less developed EU regions workplaces in the agricultural sector are not attractive for potential employees due to physical work, low wages and seasonality. A game changer would be to perform research on how to support successfully the generation change of the entrepreneurs in the agri-food sector which is made extremely difficult by the fact that there are no family or social patterns to follow as this is the first significant generation change since the regime change.	The age structure of the farm managers is characterized by the high and increasing share of older generation, while the proportion of young is decreasing in the CEECs. One driving force of the growth of enterprises is the long-term opportunity to hand over and operate accumulated resources. If the issues of generational renewal in an enterprise and the labour reinforcement are solved, the probability of longer term profitable and large-scale investments is increasing. Therefore, researches inspiring the effective generational change in the agri-food enterprises have key role in the future of the whole agri-food sector.	Comprehensive analysis of the subject area can help in the long run by the generational renewal in the agriculture and the food industry, thus the number of farms operated by young entrepreneurs opened to innovative solutions and sustainable use of natural resources can increase.

Annex 2: **BIOEAST conference and workshop, Budapest, 21-22 February 2017**

Summary

The Hungarian Ministry of Agriculture organised, in cooperation with the Research Institute of Agricultural Economics and the Hungarian Chamber of Agriculture, a BIOEAST conference and workshop in Budapest on 21-22 February 2017 for the Visegrad Four countries, Bulgaria, Romania and Slovenia (the so-called V4+3). The aim was to deepen cooperation in the field of agricultural research in the bioeconomy and during the workshop some common research topics were further developed by research experts representing these countries. (For more information about Bioeast Initiative topics see http://eip.fm.gov.hu/index.php?page=pages&page_name=bioeast-Initiative).

The conference and workshop is considered a milestone in a long-lasting process, previous steps of which include the Lodz Declaration signed on 6 October 2016, the Bratislava Conference held on 17 October 2016, the Polish V4+3 Common Declaration signed on 26 October 2016, the AGRI Council held on 15 November 2016 and a letter addressing the European Commissioners (Moedas and Hogan), and the COMPET Council AOB point on 29 November 2016). The macro-regional needs of the CEEs have thus been communicated at a political level several times.

The workshop addressed six priority topics to be further developed and validated. The participants consisted of experts relevant to the subject – at an operational level – from ministries, research institutes, academies of sciences, universities, chamber organisations and PC and SCAR members – about 100 participants.

The six topics selected for the workshop were:

- Sustainable intensification of plant production (by maintaining soil conditions and improving water management) and livestock production (by reducing the harmful impact of emissions, gases);
- Sustainable, efficient and competitive freshwater fish production;
- Motivating knowledge-based modern farming (economic optimisation of production systems) and cooperation among farmers;
- Improving supply chain efficiency and increasing its added value;
- Increasing the value added use of agricultural and forestry biomass;
- Sustainable extensification by maintaining biodiversity and ecosystem services (including the role of pollinators and the sustainable use of genetic resources).

Outputs of the event were as follows:

- Renewed commitment for closer cooperation at both the political and operational levels;
- Further networking at international level – personal contacts and communication between the countries at the operational level;
- Common work carried out by experts as a follow up to the V4+3 Common Declaration;
- validation of the common research topics.

Plans for the near future:

- A workshop to be organised in Poland to cover the other seven topics of the Bioeast Initiative;
- Building a new website for the Bioeast Initiative;

- Dissemination of a regular newsletter;
- Giving a face to the Initiative in the person of Barna Kovács (who used to work for the European Commission).

Additional information:

At the beginning of the conference a new booklet with the title 'Compass to the agricultural research institutes of Visegrad 4 – Focus on the bioeconomy' was introduced and distributed among the participants. Its aim is to promote the establishment of a well-functioning network among scientists, public actors and farmers in the V4 countries.