SCAR
Standing Committee
on Agricultural Research

REPORT

NATIONAL MEETING HUNGARY

Effective advocacy and knowledge based policy making in the bioeconomy

June, 2018

With support of CASA

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SCAR-CASA: **CASA-WP1 Task 1.4 Meetings for visibility**

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MEETING REPORT

SCAR-CASA National meeting in Hungary

"Effective advocacy and knowledge based policy making in the bioeconomy"

Venue: Ministry of Agriculture, BUDAPEST, 25 April 2018

Organizers:

MINISTRY OF AGRICULTURE

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1. Introduction

Since its relaunch in 2005, the Standing Committee on Agricultural Research (SCAR) at European Commission has grown to become a respected source of advice on European agricultural and wider bioeconomy research, along with being a major catalyst for the coordination of national research programmes. SCAR plays an important role in coupling research and innovation and in removing barriers to innovation, and aims to make it easier for public-public and public-private sectors to work together in delivering innovation that tackles the challenges faced in the bioeconomy area. Aiming to increase the visibility, national engagement and promote outcomes of SCAR, the Hungarian Ministry of Agriculture with the support of SCAR CASA project, organized a National SCAR Meeting focused on EU and national developments and priorities of agriculture research and bioeconomy. The meeting brought together the intermediate management level and experts of different ministries and well respected SCAR members to foster governmental cooperation between sectors of bioeconomy and enhance engagement of Hungary in the SCAR and its activities.

The meeting had the following objectives:

- Present the potential of bioeconomy for ministries' intermediate management and emphasize the importance of the role of public administration.
- Present the activities of the working groups related to the Commission and Member States.
- Presentation of the need and potential of RDI strategic thinking.
- Start a strategic dialogue on bioeconomy.

2. The future of Bioeconomy related Research and Innovation

Zsolt Feldman – *Opening presentation*

Thanks to the CASA project, we can make this meeting happen. This is hopefully the start of an intra-ministerial forum on the Bio economy. The EC launched a strategy as basis for the bio economy. We try to coordinate between the different sectors and the available instruments. This is different than in other places. We think that we can form one strategy between ministries and different EEU regions (the Bio East initiative). When there were programmes launched to create added value. We do not want to stay behind by just producing raw materials. There is a restriction in its availability. We are very much aware of sustainable production, new resources and new materials. We need to be conscious and we want to have a knowledge based biobased economy. It is also about waste management and other challenges. We already held a previous national conference. We want to develop a strategy in Eastern Europe by building the Bio East initiative. 10 countries support this inter-regional strategy. The aim is to build sustainable and knowledge based approaches for a modern bio mass economy (a.o. based on forestry). In order to have this strategy accepted by all, we need good governance on national level to be successful. Today's conference serves this purpose, so it can start on its merits. We have the knowledge and the potential to accomplish this. It is good that there are different actors present here.

Good cooperation between the ministries would help us to cooperate better with the EU. A strong bio economy strategy will help us reach secure incomes and diversity in our economies. I hope that this conference will help us build the building blocks.

Liutauras Gyobys – *Setting the scene: the EU bio economy strategy*

It is important to enhance the cooperation between the EU and Hungary. Definition of the Bioeconomy Concept according to the EU BioE Strategy (2012): The Bioeconomy encompasses the production of renewable biological resources and the conversion of these resources and waste streams into value-added products, such as food, feed, bio-based products and bio-energy. Addressing cross-cutting societal and environmental challenges: increasing global population; rapid depletion of many resources; increasing environmental pressures; climate change. Aim of the Bioeconomy Strategy is to pave the way to a more innovative, resource efficient and competitive society that reconciles food security with the sustainable use of renewable resources for industrial purposes, while ensuring environmental protection. It rrefers to innovating for sustainable growth, towards a bio economy for Europe. It enhances new developments and innovation such as the use of waste material, new sources for feed and other materials like clothes, etc. New value chains are emerging. From biomass to bio-refineries, to industrial applications to consumer goods. It is about crops that have low marginal value, industrial by-products, waste material, etc. and transform this into new products such as clothes, cosmetics, plastics. It creates opportunities in all fields. Farmers can increase their margins by 40%. There are many industries to be created, that is the goal. H2020 has supported the bio economy with a double budget in relation to FP7. There are many good examples that came forth from EU investments, such as a new t-shirt that was created and a biobased mill in Finland. In 2014 the bio economy employed 18.6 mln. people with a turnover of 2,2 trillion euro. Investments in the Bio Based Joint Undertaking (BBI JU), a public private partnership between the EC and the industry, are up to 3.7 bln €. The EU bio economy action plan (since 2012) focuses on 1) investments in R&I, 2) policy interaction & stakeholder engagement and 3) enhancement of markets and competitiveness in the bioeconomy.

Bio economy strategies have expanded significantly in the last years. The growth has doubled and many MSs have developed their own strategies. In the EU there is not one single bio economy strategy. The importance is that it is recognised by most member states. There is a need for EE countries to contribute. See the Commission's communication about updating the EU bio economy strategy. The commission acknowledged its importance and the adoption of BE strategies should be further promoted. This calls for action amongst all actors. Not only in the EU but in particular from member states, with particular focus on 8 action lines:

1. Strategic research and innovation to support this transition;
2. Education and training for a skilled workforce;
3. Strengthen the bio-based sectors;
4. Mobilising investments, including financial instruments;

5. Creation of new markets and value chains, incl. regulatory frameworks;
6. Exploiting the opportunities at local level;
7. Protecting and restoring natural resources on land and sea;
8. Monitoring and assessing progress, with indicators.

Szonja Csuzdi – *The role of Programme Committee in setting the Bioeconomy priorities in Europe*

Formulating a national strategy on bio economy requires close cooperation and likely joint action by several ministries. Our ministry of research and innovation can contribute from an international perspective. We have good contacts with the ministry of agriculture regarding H2020. In Hungary the EU plays an important role in research funds. We are also responsible for creating the Hungarian strategy on R&I, also jointly with the agrarian sector. In the international arena, first we are responsible for R&I related to our EU membership in particular regarding H2020. There are national contact points to engage actors in H2020, who provide consultation to develop good proposals. Our second responsibility related to the EU, is to support the strategy on biomass and to cooperate with member states (and other countries) related to biomass. We are about to plan the next phase of activities. It will be important to indicate the topics. We are responsible for bilateral relations on R&I with 37 countries. We develop strategies for international programmes. We have relationships with innovation agencies, OECD, etc. Our staff participates in these international networks. We are engaged in the H2020 structure on the topics in which HU can prevail best. There is a body behind it; they can give their opinion on the topics and with which country partners to cooperate. Agriculture is also involved. An important question is how to enhance HU participation in the FP programmes, which is now only a few percent. There should be more emphasis on widening participation. We should start initiatives that are important for the region and for Hungary. That is key for the future.

Barna Kovacs – *The role of the SCAR in setting the Bio economy priorities in Europe*

The share of the EU13 R&I in FP7 and H2020 SC2 topics, is less than 10%. We have not made progress and we have to do something about that. The SCAR could point us in the right direction. In 2005 the SCAR was revived during the Dutch presidency. The committee was basically set up to have dialogue on certain topics. The Commission would not interfere. Under the Dutch presidency, the SCAR was thought to give a mandate to the MSs. It was a different approach than before. A working group was created which would meet every month. They created the whole mechanism a.o. with a foresight commission on trends. In 2012 the EU bio economy strategy appeared. It started in Germany, then other countries followed. The shift was realised that the bio economy became part of the system. Then the working groups started. The SCAR currently has 37 members, mostly member states. High level policy officers are involved. Associated countries are involved as well. The

RTD is chairing and there is a gentleman agreement with DG AGRI. Hence they are also engaged. Furthermore the SCAR introduces temporary groups for ad hoc issue such as the African swine pest disease.

Over the years the SCAR's competence widened with different topics and new names such as the group on food systems and agricultural knowledge and innovation systems (AKIS). Deliverables of the working groups are: mapping and analyses of current research and innovation policies, concrete advice for countries and the COM on strategic research, possible strategic research agendas (SRA) in the chosen domain, advice on and promotion of the alignment of MSs and EU R&D policies and advice on strategic convergence of areas currently distant from each other. The groups identify priorities in research for the coming 5-10 years. That is why it is also important that Hungary engages, also with respect to JPI and ERA. Just recently we discussed the food systems initiative, important for the food structure and value chains, also with regard to the topics on the next Framework programme. Furthermore, the foresight process is very important. Different experts draw a report with the topics that will become important. The fact that the EC started thinking in the systemic approach, derived from the last foresight.

There are various types of programmes in which member states can collaborate with the EU. Next to the regular call texts, the EU seeks alignment with member states in ERA instruments (ERA-NETS, European Joint Programming, Article 185 initiatives such as PRIMA) and Joint Programming Initiatives. In the latter the member states coordinate the initiatives themselves and they decide on joint research agendas. Hungary is not involved in JPI Facce and other JPIs Healthy diet, healthy life and Oceans could be interesting also.

SCAR is not strictly oriented on agriculture only. EU programmes are inapproachable otherwise if we would stick to the old system. We have to handle the different strategies together. The SCAR is influential since it discusses the trends and topics for future agricultural R&I before documents are being discussed by the Commission. It is a credible consulting body with a catalysing role and Eastern EU should become more involved. For example, we are currently discussing the next foresight exercise which will probably be called Food and food security. What is discussed in the SCAR, is likely to be taken over by the Commission and we want to involve more Hungarians.

Barna Kovacs – *the Bio East initiative*

Certain agreements such as the Paris climate agreement push us in a certain direction, whether we like it or not. Some of the obligations and challenges can only be dealt with, with R&I. A governmental shift towards more regional cooperation is required. Why do we need regional cooperation? Hungary cannot achieve sustainability if for example Romania keeps on polluting. We need to cooperate inter-regionally. We need to explain this to society by involving them, which is a governmental task. In the EU we focus on biobased economy. How do we come to an agreement on what topics are important? When we step away from the economic market, we need to decide on what is societally important. That is why we need to discuss this inter-governmentally. Financial hurdles are an important issue as long as we do not receive any funding. However, 8 bln. euro is available for bio economy but we're complaining about a lack of funds. So something does not go right there. In H2020 we

are not doing well. That is why it was decided to start the Bio East initiative. H2020 is not the only instrument, each policy is coming up with its own strategy. And apart from the political statement, we also want relevant content. We try to coordinate among the different countries. The objective will be to formulate a macro-regional strategy. Therefore we need strategic thinking. The CEE countries have huge potential in biomass but the current problem is that we do not exploit this well. There is a need for improvement. We are in a position where we should prepare a Hungarian biobased economy. We should turn it into our benefit by strategic thinking and formulating various thematic needs. The Commission as such cannot address themes per member state. It is much easier to launch a macro-regional agenda so that the subjects in R&I can support your initiative. We need education, data collection, etc. We have to decide e.g. on which indicators we are going to use. We need to launch a programme which harmonises the data, to be able to have a complementary picture. That is indispensable (is my personal opinion). We need to end the sectoral approach and start thinking between different ministries. We need to express the bio mass amount we want to realise. It needs to be coherent with the circular and bio economy approach. Widening participation is focused on getting more and new countries involved, for example Macedonia could be joining. We need to think (smart) in system clusters such as agro, forest and water and in smaller clusters (regional, locally). A regional strategy is needed to feed into the larger strategies. Germany has had a bio economy strategy for about ten years. Hence, we are behind and we should not ignore international groups, thematic groups that we want to be part of. The Bio East initiative should be treated as an equal partner. We can influence tenders. In the next financial period, various funds will become more in synergy. If we can create a bio economy package within the Danube strategy, DG Regio and RTD can be connected as cluster partners. Thinking in public private partnerships has the future. Some countries are already preparing this. The Bio East can provide the frame. It could be an open door towards the commission through which we can collaborate with the commission.

3. SCAR bodies and the role of CASA

Rolf Stratmann – *SCAR SWGs and the role of CASA*

The SCAR has commitment from 37 EU Member States and observers from Candidate and Associated Countries. The SCAR Strategic Working Groups are: ARCH, AKIS, Bioeconomy, Fish, Food Systems, Forest. SCAR Collaborative Working Groups are: Animal Health and Welfare and Sustainable Animal Production. There is a need to better include Member States with limited or no participation. There is also a need for an effective flow of information between the increasing number of working groups. Furthermore, the SCAR wants to ensure synergies and improve alignment of national research programmes.

The H2020 CSA project CASA was introduced to:

- increase and broaden participation, interaction and collaboration of Member States and Associated Countries with each other and also with the Directorate-Generals (DG) of the European Commission;
- improve the quality of outputs and outcomes of SCAR based on an increased and broadened participation facilitated by CASA;
- strengthen the production of more strategic policy advice within the evolving landscape of the broader bio-economy based on an increased and broadened participation facilitated by CASA;
- improve the overall organisation, communication and dissemination of SCAR activities, outputs and outcomes for greater impact.

A list of CASA activities:

- the study on representation and inclusion in SCAR bodies;
- the conference „Research and innovation policy, state-of-play and the role of SCAR in the European Bioeconomy" on Representativeness and SWOT: December 4-6th, 2017 in Tallinn, Estonia;
- national SCAR Events such as the one organised in Hungary;
- mentoring Programme: to support delegates of (new) EU Member States to become effective and efficient contributors and linking-pins between SCAR and the national level through exchange of knowledge and experience;
- support for the working groups by providing facilitators, demand driven expert studies and other hands-on types of support;
- assessment of the state of play of research and innovation policy in the broader Bioeconomy area;
- A SWOT analysis of the SCAR.

Results of actions and further information on the SCAR and CASA, can be found at: https://scar-europe.org.

Marta Gergely *– SWG Bio economy*

The SWG Bio economy started in 2013. Its most important task is to review the EU bio economy strategy. It is important to plan ahead. Our interests and what we want to achieve are heard in the Commission. The synergy with circular economy is also important. They do not really touch one another but still they interact. It is significant that the working groups have a say at EU level. The reform of the CAP will happen in 2021. The Commission's communication refers to the bio economy. Our group feeds into statements like these. Another task of the group is monitoring. We are preparing a communication to measure biomass and bio economy. In the EU strategy, emphasis in on sustainable use of biomass. In the working group sessions we exchange much information. We share good practices, we look for synergies, possibilities for collaboration and R&I topics in bio economy. It is vital to remain competitive and to produce the right amount of value. It is

also important that we look at collaboration between different actors and organisations. Once we have identified the problems and how to work on solutions, we advise the SCAR through which outcomes are implemented in the framework programme. It is therefore important that we represent ourselves in a good way. The bio economy panel has produced a Joint Manifesto which explains that a shift towards a bio economy strategy will change the current regime but in a good way.

Anikó Juhasz *– SWG SCAR-AKIS*

The Commission states that through FAO regulation certain pesticides are not to be used anymore. This was discussed at an event organised by SOIL. Farmers, consultants and journalists reported on this. Topics like this are discussed by various actors ion the group and they come up with solutions together. It is therefore important that all relevant players are involved. There are direct stakeholders and there is a supporting environment that helps farmers to close the innovation gap. In different member states AKIS vary. There are different types of gaps. There are differences in culture and also in agrarian business, people and their business partners, public administration and society. It is the job of AKIS to overcome these gaps. The differences need to be overcome. Researchers need to create a dialogue with multiple actors which we have to support. What do we do? What is our procedure? We have a mandate. The results are reflected in the end papers. During the 2nd mandate we were at the right place at the right time. A lot of new good things came out among which the MAA, the multi-actor approach. This has an impact on research to foster innovation by including end-users. Our group wanted to make sure that the researchers make an effort. Regarding the operational groups under the CAP we contributed to setting up a network instead of priorities. That was revolutionary. The CAP has certain tools and measures to support EIP-AGRI. The whole idea came from this group and I am very proud of this. We need knowledge transfer. Innovation results have to reach all of Europe. We advocate for a stronger tool in the CAP. We also pay attention to digitisation, which changes our world. We (have to) look at it as a specific, separate topic. Furthermore we pay a lot of attention to the food systems group. In Rome we recently organised a collaborative workshop with the SWGs ARCH and on research and innovation for impact. The cap of 2021 will lead to a stronger foundation. A member state must make a statement how they are going to enforce their AKIS, including the supporting environment. In the group we discuss how the MSs can increase the relationship between research and practice. How can we support and enhance this? How can we support full inclusion? How can we facilitate this by organising efficient knowledge flows? We discussed this in our previous meeting in Athens. Again, in the different MSs the systems vary. We advise the Commission on how the systems work, what the differences are and how to overcome these.

Martin Greimel *– SWG Forest*

There is no common forest strategy in the EU. The aim of the SWG is to be a source of advice on European forest-based research and innovation (R&I), thus contributing to the development of a coherent

and ambitious forest-based research area. And to promote and strengthen transnational research and cooperation to meet the challenges of adaptation to and mitigation of climate changes, and of increasing sustainability and competitiveness of the EU's forest-based sector. The group does not only look at the high level H2020 area but looks much closer into the regional European Research Area between countries. The group focuses on widening the participation; they want more MSs to participate in the SWG. It is a challenge to look beyond forestry alone and to think out of the box. Forestry is an important component in the bio economy. How many cost action projects have been devoted to forestry? Only few. In the near future we will discuss the results of the external study 'Assessment of forest-related ERA-NETs and COST Actions' funded by CASA in Bulgaria. We would like to invite a representative from Hungary to join.

Proposed activities for 2018 and 2019 are the following:

- widening participation, and connecting to ongoing ERA-NETs and relevant networks (continuation);
- identification of research and innovation needs for future forests and forest-based sector in Europe (link to preparation of FP 9: Horizon Europe);
- advise on global forest R&I cooperation for contributing to the implementation of SDGs;
- interacting with other SCAR groups (SWG ARCH on role of forests for SDGs, SWG Bio economy);
- revision of the EU bio economy strategy, Foresight Group on preparation of the 5th foresight.

On a European level the SWG Forest has been crucial in setting up the ERA-NET Sumforest and ForestValue (supporting forest research projects in the range of 30 M€), designing Annual Work Programmes in FP7 and Horizon 2020 and influencing the design of FP9 Horizon Europe. On a national level the group contributes to the coordination of the many ministries dealing with forest issues (Agriculture, Environment, Industry, Infrastructure, Research,…). Furthermore the group enables national research to participate on a European level through participation in ERA-NETs and Joint Programming Initiatives. ERA instruments and JPI might get more emphasis in the next financing period. It is important on ministerial level (because positions change at national level e.g. due to elections) to have someone stable in the SCAR groups for continuation.

Andrea Gyorffy *– SWG Food Systems*

One of the current trends in EU food production and consumption, is to think in system approaches. The main rationale of the SWG on food systems, is to provide strategic advice and support to the EU R&I policy framework FOOD2030. The main vision is that food systems should deliver not only food security but also nutrition security. The group's activities consist of the following 5 priorities (in ranking order of importance):

1. Monitoring Food Systems: outcome in light of governance and future proofing;

2. Increasing diversity among food systems;
3. “Food environment” drivers and outcomes;
4. Zero waste from Food Systems;
5. Knowledge management/education –dissemination - training – awareness.

Currently the group works on quantitative and qualitative mapping of R&I funding related to Food Systems at national and regional level (2012-2016) and how it fits with key areas of FOOD 2030 (a study granted by the CASA project). Results from the quantitative mapping show that there is low input in consumption. Current R&I projects do not contribute efficiently to nutrition and health (cost of NCDs). A novel approach is needed to create a food environment contributing to health. Regarding circularity, more focus is needed on resource efficiency, collaboration and use of side-streams. Logistics and digitisation are important contributors. Regarding packaging, a challenge is food safety. Etc. In addition to the mapping exercise, CASA granted a state-of the -art synthesis (on-going) on relevant existing studies and research projects using a Food Systems approach to study Europe’s food system and certain aspects (for example nutrition, or environmental issues) as input to the formulation of knowledge needs for EC research programs. The food system SWG would like to have more members involved. Participation in the group has to be agreed by the national ministry. It is not possible to participate solely based on own interests.

Peter Lengyel *– SCAR FISH*

The group currently operates under its 4th term of reference. First, this includes forging a strong linkage between Member State ministries in charge of fisheries (including fresh water), aquaculture and the European Commission (DG Research & Innovation, DG MARE, DG Environment). Second, to further develop existing collaboration and initiate new collaborations between member states, on a long term basis, to achieve a cost-effective system of research effort in the areas of fisheries and aquaculture that support the Common Fisheries Policy. Third, to develop an agreed list of fisheries and aquaculture common research priorities that need to be addressed by SCAR-Fish and that inform the commission and the Member State administrations. Fourth, to collate existing information and, where necessary, collect new information in the areas of foresight, common research agendas and mapping EU capacities to support a European research area for fisheries and aquaculture. To realise its mandate, the group collates and analyses existing and new information in the areas of foresight, common research agendas and mapping of EU capacities. The group establishes new collaborations for research funds, for future references and key initiatives. The work plan and deliverables for 2018 focus on: 1) resource management, 2) waste management, 3) freshwater aquaculture and 4) mapping of fisheries organizations relevant for fisheries management and aquaculture development. Regarding freshwater aquaculture the group collects and prioritizes the research needs of the freshwater aquaculture sector. The SWG is relatively dominated by Western EU countries. Hungary and Slovakia are involved and try to put topics on the agenda regarding freshwater fishing but unfortunately priorities are dominated by other (sea fishing) regions. It would be good if there would be more involvement from other EEU regions. Priority topics for

fresh water fishing are: new aquaculture species and rearing technologies in ponds and RAS, prevention and treatment of fish diseases, reducing use of veterinary medicines through immune stimulants, breeding programmes for disease resistance, new efficient fish feeds based on novel ingredients, environmentally sustainable fish production technologies, sustainable intensification (RAS, IMTA, CIE systems, aquaponics), valorisation of ecosystem services of pond aquaculture, studying damages caused by protected fish-eating animals and ways of their prevention, development of improved management and decision-making tools, development of fish processing, new value-added fish products, fish meat quality and human health impacts of fish consumption and market studies.

4. Good examples of bioeconomy in Hungary

Zoltán Pásztory – *Development of insulation material made of tree bark*

The bio economy addresses a.o. the following challenges: environmental awareness, use of natural resources, energy and CO2 saving solutions, recycling and creating value from previously treated materials such as bark. In Hungary, forestry amounts 5.600 thousand m3 per year, compared to 30 million m3 / year in Russia. Our production is of small use for special purposes, the rest we burn! The bark ratio of the tree varies from 10 to 24%. It forms the protection of the cortex against freezing, insect pests, mechanical effects, etc. Therefore it is interesting material. The crusts from the acacia, summer, larch, spruce and forest pine trees were analysed to develop insolation material. Production wise, by using lumpy bark chips, the ratio of the chains is much larger, the density of the bark is smaller, longer fibres come from the bark and because of these longer fibres, the material has a better feel to it. Good quality competitive insulating boards can be made from acacia and poplar (oak) bark. Instead of combustion, a higher added value can be formed from waste material in this way. The technology and man power are available. Therefore our next step is to create an investment or applicant producer range. Then we want to enter the market. We would like to have a HU or EU partner to collaborate with. We need access to the raw materials derived from production areas. We hope to convince the ministries here; it has such potential. There are 10.000s tons of wood produced here in Hungary. Our product forms a good solution towards utilising waste products.

Adrienn Somosné Nagy – *Agricultural side-stream utilization in the mushroom-biogas production system*

In Hungary most arable land consists of cereal production. 18,5 mln. tons of by-products are derived from producing cereals. Today, burning is seen as unsustainable. We have to use smart solutions to make the bio mass economy worth our while and valuable. There are better ways of utilization. Furthermore, Hungary has produced large amount of mushrooms since the 80s which does not rely on soil. The sector produces

28,000-30,000 tons of fresh mushrooms (cider and mushroom). Its raw material demands are: straw, corn stalk, poultry and horse manure. The amount of raw material demand is 40,000-50,000 tons of straw (0,5%). Pilze-Nagy produces renewable energy from the organic waste material (fertilized compost) in the biogas plant. In this production system, the cooperation of cultivation, renewable energy production and cereal production takes place. In this complex agri-system about 4.000 tons of wheat straw, as an agricultural by-product is utilized in five levels. With waste utilization, biogas production is part of the circular economy, utilizing organic matter (by-products) to complete the material circulation. Biogas technology is capable of being the next step in any production process in which organic matter is used (livestock production, crop production, food industry, chemical industry: ethanol production, cellulose production). It is a good example of a circular bioeconomy with the straw as the original raw material, renewable energy can be produced. While fresh mushrooms are part of the healthy human diet. Hereby value generation occurs in all parts of the value chain. Biogas in a biomass-based economy is environmentally friendly. It takes care of climate protection because of an advantageous waste management process. It benefits sustainable bio-waste and recovers manure problems. It causes diversification of agricultural products and decentralizes the generation of power. Finally, it ensures the sustainability of our rural areas.

Béla Halasi-Kovács – *Wise use of natural resources in aquaculture*

In EU fisheries fresh water fishery is mostly artificially created. In EEU countries the total production of fish amounts 71.210 tons. Carp is the 4th fish after trout, salmon and seabream in terms of volume, a highly polluting fish. Pond fishery is a stable but stagnating production sector with 350.000 ha fish pond area and 8.000 employees. There are 27.000 ha ponds in Hungary, managed by fishermen. The main challenge in the development of pond fish production is to increase production without a negative impact on the environment and preserving service functions of fish ponds. The idea is to develop a combined intensive-extensive pond (cat) fish production which optimises both economic and environmental benefits. Therefore we developed the pond-in-pond system which produces high value species and provides ecological services, nutrient recycling and fish production at the same time. In aquaculture, fish ponds have added value. It takes care of climate, gas and waste regulation. It also provides tourism. We have lots of natural nice open waters until carp is set out in the water and that destroys the water quality. Fish ponds are water created habitats. That is why the primary focus is that the fish ponds are able to storage a large amount of water. In fish pond fishery, every single part of the food chain level is present. It attracts more birds for example. The produced fish are suitable for feed and medicines.

Akos Kiss – *Circular Economy, Waste & by-product management in the brew industry*

Heineken produces a large amount of bio-waste. We are trying to grow a better world. Akos Kiss represents the strategy in Hungary. HU does

quite well. Heineken HU used to have 2 breweries, now 1 which is raising its intensity. Most important topics on our bio-waste programme are the use of raw material, purification, biogas plants and attention to the purchase of raw material. We set the objective to create a detailed programme: zero waste. In Hungary there is a relatively small stream of waste. We have 3 important waste streams derived from the beer produced. The most valuable are the minerals. Brewers grain and yeast are transported to other sectors which produce feed. Another stream is silica, which is used for strengthening the beer. This is a Hungarian specialty; we utilise the organic content to create soil for pot plants. Our waste programme provides a substantial business in which all partners have separate motivations. <A video of Heineken's Waste programme was shown>.

Akos Koos *– Innovative, bio-based technology developments in agriculture*

Bay is a research centre in bio technology with nearly 200 industrial partners, nearly 25 years of experience in R&D, 8 fields of expertise, 120 employees / research staff and 6 million euros turnover / year (1.6 billion HUF approximately). Bay considers the biobased economy to be an important field of work. They work on the development of algae-based animal feed (pigs, fish) and the development and optimization of fermentation methods. They work with businesses on research but furthermore they also provide administrative support, education and training, mentoring, perform Life Cycle Analysis and innovation sustainability analysis and provide expert support. One exemplary project is the development of a nontraditional production process for the restoration of the short feed chain and to reduce soy dependence in pig production at Kurucz Farm Kft. The second example is the EU co-funded project: VegaAlga, a research and development project, which is aimed at establishing a sustainable farming system by using locally grown algae. It is an innovative technological solution for environmentally conscious and economical farming. With the range of pesticides being more restricted, how can we create added nutritious value? The protein of algae is of good quality. They use ponds to grow the algae. Lidl and Tesco supply the algae products and the waste-biomass is being composted. VegaAlga is looking for partners to expand. What opportunities does Bay provide in general? They have experience in fundraising, project generation and tender writing. They are looking for additional partners. They want to share their knowledge and experience. Their projects, memberships and relationships allow them to represent research and businesses of the region, at EU level.