



## Deliverable D.T1.1.2 “National workshops on value chain mapping with stakeholders”

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## Location of the workshop

COUNTRY: **SLOVAKIA**

Title of the Workshop in English: **Value chain mapping in sustainable innovations of biocomposite packaging in circular economy in Central Europe - Interreg BIOCOMPACT-CE**

Location: Demänovská Dolina

Date: 11 April 2017

N° of the participants : ...46..... (including project partners- signed list attached)

### **SHORT DESCRIPTION OF THE WORKSHOP**

The workshop took place in the Hotel VIA in Demänovska Dolina. The workshop was organised with five introductory presentations pointing out some of the main issues related to paper-plastic value chain in Slovakia.

- Dušan Bakoš (STUBA)
- Ida Vašková (on behalf PANARA)
- Jozef Feranc, Dušan Bakoš (on behalf TOPSTAV)
- Mária Kadlecová (Crafting! Plastic Studio)
- Dušan Bakoš, Jozef Král (STUBA, KM System)

After that, the organized round table with participants which are recognized as stakeholders from the companies (MONDI, Chemosvit Foils, Research Institute of Paper and Cellulose, NATUR-PACK, TOPSTAV and PANARA) was carried out to discuss the main issues of the lectures. Besides of these companies which represent the stakeholders in the project, we have welcome other very important participants, members of Slovak Plastic Cluster which took part at the workshop.

### **KEY FEEDBACKS GATHERED FROM STAKEHOLDERS**

Ivan Hudec, SLOVAKIA PLASTIC CLUSTER: Following the situation in the promotion of biodegradable plastics generally, and original development of biodegradable plastics mixtures from 100% renewable resources in PANARA, which they want to direct to the production for the Slovak market, we see a chance for innovations in this area. Unfortunately, so far, **any composite product paper/biodegradable plastic is not produced in Slovakia**. From lectures, it has been shown that the orientation of this direction it is very attractive and also has a general legislative and political support.

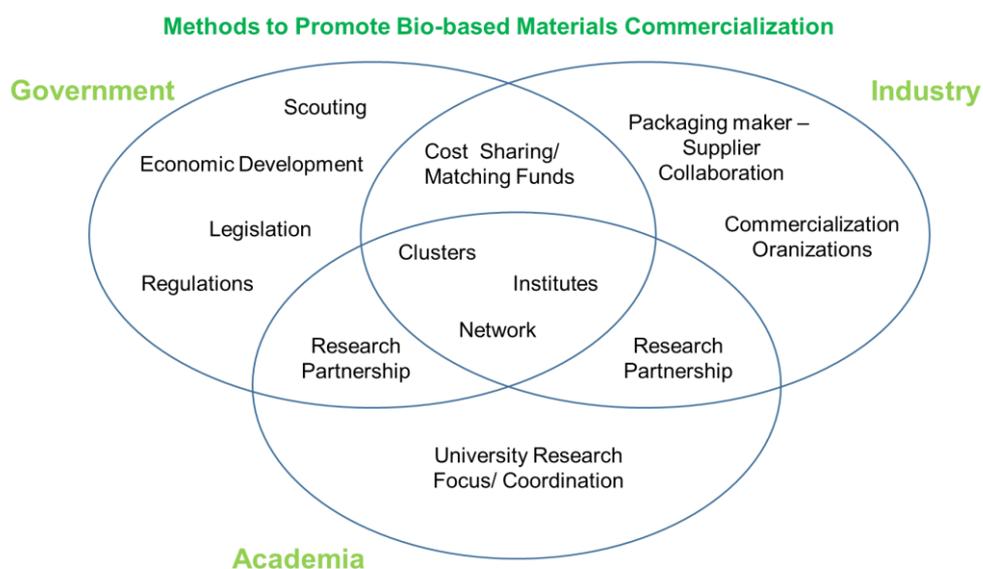
Dávid Šariský, CHEMOSVIT FOILS: Plastics and plastic products, mainly with a short life cycle based on oil cause huge environmental problems. According to the presentations, I put down several remarks, and we feel this, the development of modern packaging materials for these reasons must submit the strategy circulatory bio-economy of the EU, which favours the biodegradable compostable materials made from absolute renewable natural resources. According this strategy, biodegradable products made of renewable raw materials on biological basis should have a priority in the process of public procurement price advantages of the other, less environmentally acceptable products. **We see, as the producer of plastics films a chance for innovations and we welcome the possibility cooperate with the University in developing new biomaterials.**

Tomáš Kaprál, TOPSTAV: We will report for the innovation strategy of paper-bioplast materials for packaging. **Technically I don't see the problems, and the cost would probably handle, just how the consumers will accept this? Packaging materials in all forms (foils, bags, pouches, cups, bottles, etc.) are products that the consumer receive upon entering the cycle out of the technological control and its subsequent processing as waste is a matter of discipline of the consumer community.** This discipline is the cause of the (largely) that the plastic waste ends in landfills, in rivers and seas. From the lectures, there are no sufficiently effective logistical arrangements for labelling, collection and separation of plastic waste. In addition, the packaging for the food industry must meet additional criteria, such as the strict hygiene rules (permission to come into contact with food), but also the parameters associated with the protection of food against outside influence, ensuring properties stable quality of food (e.g. barrier packaging parameters).

Peter Medo, RESEARCH INSTITUTE OF PAPER AND CELLULOSE: The idea to combine paper with biodegradable plastics and the presented project BIOCOMPACT-CE is excellent. We follow the strategy in Slovakia in the use of lignocellulosic resources and especially for application such based materials in packaging. We already discussed the issue of research and development of packaging materials paper/biodegradable plastic with the Slovak University of Technology and I am prepared to comment shortly this during the Round Table prepared by the organizers.

## ROUND TABLE

There are numerous approaches to increase the commercialization of bio-based materials in packaging. In general, **the commercialization process could benefit from strong stakeholder involvement and the creation of partnerships and institutions to promote the research and institutional support necessary to enhance the state-of-the-art in bio-based packaging and overcome current barriers to implementation.** Advancing commercialization can be done in a number of ways. **Starting the Round Table we presented in Figure which outlines various methods which have been used to promote the penetration of bio-based materials in packaging (originally in Slovak).**



The fact must be emphasized that these schematic methods listed above do not represent independent pathways to commercialization. Instead, these initiatives demonstrate collaborative ways to enhance the commercialization environment for bio-based packaging.

Andrej Pažitný, RESEARCH INSTITUTE OF PAPER AND CELLULOSE: In recent weeks, we have prepared, together with the Slovak Technical University (Prof. Bakoš), **the concept for a new State research plan under the Ministry of Education of the Slovak Republic.** The strategic objective of the programme is the implementation of applied research and experimental development in the field of biodegradable polymer materials, including composite materials based on renewable energy sources and technologies, **through the creation of a research, development and production Consortium (groupings) comprising Universities, research organisations and the business area.** The formation of the consortium shall ensure the involvement of science and technology, on the overall development of Slovakia, on the one hand taking into account the specificities of their development in Slovakia with taking into account the aims and objectives of building a European research area

Miroslav Galamboš, PANARA: In the year 2017 has been logged another Slovak invention (PP 92-2017, PCT/SK2017/050009, currently in proceedings), which despite strong intolerance of PHB and TPS allows to prepare a mixture of PLA/PHB/TPS with very good processing and production parameters. This solution provides a similar mechanical and performance characteristics as the PLA/PHB blend with the benefits that give you more control biodegradability in the soil, allowing biodegradation of these materials in the water and in the sea water. In addition, it reduces the cost of the resulting material. **The company PANARA s.r.o. realizes in 2018 the construction of production units of these materials in the SR with an initial capacity of 1.2 kt/year and after running the production unit plans to expand production capacity to a minimum of 40 kt/year. We are interested in work and in the development of new types of composite materials, paper-bioplastic.**

Michal Sebíň, NATUR-PACK: Bringing the material **from the idea phase to a commercial product can be a very long process, and many new ideas do not make it from start to finish.** In order to be successfully implemented, **a new material must pass through each step in the process and production must scale up rapidly to meet the high volume demands of packaging industry.** Technologies are particularly vulnerable when the technology is developed enough that it is no longer basic research appropriate for university labs, but is not sufficiently developed enough for the private sector to invest in bringing it to market.

Tomáš Kaprál, TOPSTAV: Recently, biodegradable packaging has quickly become an essential part of the global packaging market, particularly in North countries, aiding to the ever-increasing consumer awareness and importance of eco-friendly substitutes. **Major manufacturers of packaging are now looking to differentiate their products from those of their competitors by providing best possible biodegradable packaging products as per consumer demands.** It is clear, that the demand for biodegradable packaging is increasing and will continue to increase as the companies utilize packaging like a medium to protect and promote the safety of the environment along with their products.

Dušan Bakoš, SLOVAK UNIVERSITY OF TECHNOLOGY: It has been announced our intention which we prepared for new State R&D program in the connection with the planned increase in production of paper packaging in Slovakia. **The competitiveness of this commodity will be possible only on the basis of research of innovative technologies in the production of paper, biopolymers, biodegradable and compostable, and recyclable packaging materials.** This means a higher appreciation of wood raw material and high value-added environmentally sound packaging materials and packaging. **Research in the field of nanosciences and nanotechnologies is a major challenge for the technology of production of new types**

**of packaging materials, using the specific features of micro-and nano-particles in the applied film and biopolymer coatings.** Nanoparticles will be used in order to improve and strengthen the inner and surface structure, which will allow to produce packaging materials with excellent mechanical, optical and surface qualities, with greater durability and resistance to aging. Research will focus on the production technology of packaging materials with high added value, high use of secondary fibres from recovered paper, in the substitution of synthetic polymers by selected biopolymers (PHA, PLA, starch etc.). Packaging materials shall be resistant to water, oil, grease, water vapour, oxygen, volatile, aromatic substances, prevent the migration of mineral oil into the packaged food and meet the requirements for surface quality required for printed electronics on RFID radio-frequency identification of goods and the quality of the paper, bioplastics and combined smart packaging. Since the price of the paper base is about six times lower in comparison with the price of films from synthetic polymers and especially bioplastics, is a great space for paper coating by water dispersions, for the production of multilayer combined materials by laminating or by extrusion laminating while maintaining paper competitive advantage. Current theoretical and practical knowledge in the field of the modification of the structure of the surface of the paper give the real prerequisites for the achievement of the proposed objectives in the field of technology of surface refinement.

Ivan Hudec, SLOVAK PLASTIC CLUSTER: **From the discussion we see that we need a strong stakeholder involvement and the creation of partnerships and institutions to promote the research and institutional support.** We need increase the rate of innovation of Slovak production in products where we have resources and paper/bioplastic packaging is such challenge. This offer designs of the production technology of recyclable and biodegradable barrier packaging materials and intelligent packaging based on paper, biodegradable plastics and their combination. And what is important, it solves environmental problems as replacement of the use of biologically non-biodegradable plastic materials, which are hazardous to the environment, the world's oceans, by new, biologically degradable, compostable and easily recyclable smart packaging. **We are also involved in the implementation of the latest knowledge in the learning process.**