



DELIVERABLE D.T2.2.2 REPORT BASED ON THE OUTCOMES OF THE BUSINESS SUPPORT SERVICE

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1. TRENDS IN EUROPE

1.1. BIOPLASTICS

According to the forecasts, there is an increasing demand for the use of bioplastics, so the market certainly could use a TPS or PLA production plant with a capacity of 100 to 130 tons per year. The production of TPS in any other Western European country exceeds this amount. During the production, TPS in itself is used rarely, usually mixed with other types of plastics, so the amount of produced raw material can be multiplied and be able to supply the local market. It is important to emphasize that there is no similar initiative in this region - for setting up PLA or TPS factory - and it cannot be expected in the catching-up countries, so the establishment of the factory is justified from several point of view.

1.2. PACKAGING MARKET

Consumer applications such as food, beverages and cosmetics account for the bulk of the global packaging market. In 2018, the consumer sector was worth almost \$511 billion, or 56.4% of the overall packaging market. Since 2013, the consumer sector has grown by a rather modest 1.4%, owing to factors such as the maturity of the packaging market and many leading end-user sectors across much of the developed world. The share taken by the consumer sector is expected to decrease slightly within the next decade at the expense of its industrial counterpart, shrinking to just under 56% by 2023 and 55.5% by 2028.

1.3. NEW POTENTIAL MARKETS OF PLA (HELPS TO SPREAD PAPER AND PLA COMBINED MARKET)

Method of processing: polylactide, in addition to its advantageous characteristics, still has a beneficial feature that can be processed with existing polymer processing technologies and equipment.

- extrusion,
- blow molding,
- injection molding,
- injection blow molding,
- thermoforming.

It can be used for producing extruded products with different profiles, injection molded parts, decomposable foils, biaxially oriented films, hollow objects, thermoformed trays, anti-cracking foams, fibers, textiles. Packaging and medicine industries are the main users of PLA. Syringes, sachets for blood storage, catheters, surgical catguts, implants, prosthesis, tissue engineering products for patients with burn injures, and also can be used in pharmacy, e.g. by controlled release drug delivery.

1.4. REGULATORY ENVIRONMENT

Sustainability issues are having a profound effect on regulatory activity within the packaging industry at present, driven by the growing desire for a truly circular economy. Europe and the EU appear to be at the forefront of much of the regulatory activity currently taking place as far as sustainability is concerned, via legislation such as the Packaging Waste Directive and the new law banning single-use plastic items such as plates, cutlery, straws and cotton buds stick by 2021.

An important driving force would be the propagation and impact of the EPR system at EU level. Extended Producer Responsibility (EPR) involves the extension of a producers' financial and/or physical responsibility for its product to the post-consumer stage of the product's life cycle.

2. COUNTRY SPECIFIC DATA – SLOVENIA

2.1. SLOVENIAN MARKET

Slovenia is a small country with a highly diversified economy, which is dominated by small and medium companies and a smaller number of large companies. Due to the small domestic market even medium companies, especially if operating in niches, export a significant part of their production. Slovenia's export is mainly oriented towards other EU countries, mainly Germany, Austria, Italy and France but also further afield. A consequence of high exports even in smaller enterprises are very active contacts with players in other economies, integration in international value chains and an understanding of sectoral trends. Exports of goods and services (% of GDP) in Slovenia was reported at 77.65 % in 2016.

2.2. MULTIMATERIAL PRODUCTS AND PAPER INDUSTRY

Multimaterial papers and products are the production domain of the paper value chain. Plastics converters do not produce such products. So the more important industry for this sector is the paper industry. Multimaterial products are mainly used in packaging, especially in retail (e.g. large quantities of windowed paper bags) and for food stuffs where they serve to display, protect and preserve the product. Other less specific and very varied products are also packaged in combined materials (pharmaceuticals, batteries ...). Products mainly consist of laminated papers for print, packaging or other products and of packaging and other products with added barriers, windows, plastic envelopes etc.

Packaging market trends are focusing on sustainable packaging solutions, growing popularity of flexible and lightweight packaging, consolidation of the packaging market, improving product recyclability, optimizing packs for ecommerce and on smart packaging solutions.

There is no actual existing raw material producers of bioplastics (this is the only missing actor in value chain in our country but it does not pose any problem due to possible imports) and just a small number of bioplastics packaging producers (no paper-bioplastics packaging producers) in Slovenia. There is no market developed for the paper-bioplastic packaging products yet, nevertheless, it has a good potential to develop as demand for such products is rising.

The paper industry has a long tradition and is organized through The Paper and paper converting Industry Association (PPCIA) which serves as a joint meeting point and is also part of labour negotiations and an industry representative in dealing with government and policymakers. It is associated with the Chamber of commerce and industry of Slovenia (CCIS) which provides essential services for enterprises operating in Slovenia, and it is the ideal local partner for foreign investor.

2.3. BIODEGRADABLE PLASTIC PRODUCTION

A share of 27% of the world production of bioplastics is produced in Europe, mostly from starch, and experimentally from whey and other renewable sources. The EkoPlastik d.o.o. is the only Slovenian company,

distributing biodegradable polymers within the European Union. There is no manufacture of biopolymers in Slovenia, because there is no market for such products in our country yet. Some companies just process bioplastics, making a few packaging products as biodegradable bags are. The latter is meaningful for us, knowing, there is available biodegradable foil in our country. There is also a company producing PLA (polylactic acid) bottles, but only for the purpose of export. Large retailers have expressed interest in using more sustainable packaging however the (higher) cost is normally a limiting factor. Producers that use combined paper/plastic packaging are a group with high potential for use of paper/bioplastic products. Especially in product lines for bio- eco- food products where they wish to complement the environmental product with sustainable packaging. Several attempts at finding such packaging have been mentioned however at the moment none are used commercially.

Bioplastics and packaging made of it have no specific regulations in Slovenia. Bioplastics undoubtedly brings a change in the market both for consumers and producers. The market is turbulent and the supply/demand system uncoordinated. Recently in European Union the biopolymer products in the rise are thermoplastic foil products. Slovenia has a potential for a development of bioplastics and paper-bioplastics products market

3. ASSESSMENT REPORT

3.1. COMPANY PROFILE

Municipality of Bled established Infrastruktura Bled d.o.o., a Slovenian medium size company in domestic public ownership, for the management of municipal-owned tourism infrastructure and for the implementation of communal activities. The business of the company is divided into two programs, the Tourism Infrastructure program and the Municipal Infrastructure program. The company manages the management and maintenance of the facilities such as Castle bathing area, Sports Hall, Ski Resort Straža and summer toboggan run on Straža, drinking and fire water supply, waste management, landscaping and cemetery and funeral activity.

Company revenue growth in the last three years is under 10 %. Their profit doesn't grow, cause they are part of a Public Sector and they are not profitable. Their total assets in the last three years are estimated at 2,2 million EUR. They employed 64 employees three years ago, 68 two years ago and 76 last year, so their company is expanding.

The innovation is important for the company, but they don't have any plan for it jet. They invested less than 10 % of annual investment budget on average in the last three years in innovation. Innovation predominantly happens within the group, in-house. Decision makers are middle management, their support towards it is high. Also the staff attitude toward change is high. Their sources of knowledge are customers, suppliers, social networks and world wide web. It is important for them to have a possibility of public funding for research in order to develop their innovations.

3.2. SUSTAINABILITY, USING OF BIOMATERIALS

Sustainable development is important for them, they already published some about sustainability in their annual report. Activities on sustainability are caused mostly by internal factors. They are aware of the importance of bio-based content in their materials, packaging. For their customers' sustainability is important as well as price.

As from the point of their environmental sustainability strategy, paper, bioplastics, plastic and bio-composites are very important. They are very familiar with legislation for sustainable products as it is recycling, composting, biocontent etc. They already provide all households in the municipality with bioplastic bags for biodegradable waste and they are thinking to integrate the use of bioplastic also for other areas. Key limitations of biomaterials are at first price, followed by knowledge and customer awareness.

3.3. PRODUCTION SPECIALITIES

They have already begun with implementing the use of biodegradable disposable products for single use in such way that they allow the events to be organized in municipality of Bled under condition that organisers of events provide that all drinks and meals that are served in a catering manner are provided in biodegradable packaging for single use. Already two events with this concept took place, "Nočna desetka" in June 2019 and "Blejski dnevi" in July 2019. They set up islands with containers together with the staff who taught passing users which waste goes into which container.

In the field of waste management, all biodegradable and bio-waste is shipped to Koto d.o.o. who takes care for further disposal in accordance with the legislation. They are taking over and treat various organic waste in an environmentally friendly manner.

3.4. SUMMARY AND SOLUTIONS

Infrastruktura Bled d.o.o. would like to receive more information about country-specific data in the field of biocomposite packaging technology and biomaterials. They see an opportunity of getting competitive advantages in participating in pilot action as in a form of knowledge of biocomposite materials and networking. All the new information and gained knowledge will be incorporated in their strategy and they are aware that they will gain competitive advantages by elaborated solution. And they have the power to raise awareness among residents, visitors and producers with support for projects that are completely sustainable.