



Innovation Intelligence in the Bioeconomy Sector

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Innovation within the bioeconomy needs intelligence to flourish. Through 'bioeconomy intelligence' insights, we can identify and exploit trends and market needs. This article describes the need for bioeconomy intelligence, and provides insights on developments in biogas and bioplastics, based on our innovation intelligence tools.

Why is bioeconomy intelligence important?

The identification of new bio-based applications, products, and markets is not easy. It requires the identification of societal and market needs and trends, coupled with technological possibilities and business interests of the full value chain. To establish the right connections among stakeholders, we need to identify the value chains with the relevant involvement of all levels of stakeholders, from farmers to end users. Providing knowledge on value chains for market and product innovation, and simplifying the process of aggregating stakeholders around such value chains, is an essential step of the innovation process.

A PNO bioeconomy intelligence methodology

In order to identify the market and technology trends and the most important stakeholders involved in the innovations, PNO developed its own innovation intelligence methodology. This method was based on the analysis of external technologies, innovators, end users and suppliers, by using a combined database of 5 million research projects, European, US, WIPO, Japanese and Chinese patents – overall more than 40 million – all translated in English, as well as 18 million papers and scientific articles published in Open Access.

Analysis performed by using this methodology showed very interesting insights in the bio-based field.

Insight 1: 118 projects funded on biogas

A preliminary analysis performed by PNO within the DEMETER project, funded in the frame of Horizon 2020 Public-Private Partnership Bio-Based Industries Joint Undertaking to demonstrate an efficient enzyme production to increase biogas yield, showed that from 2003 to 2017 the EC has funded 118 projects on the biogas topic (Figure 1). The analysis also revealed a sensible increase of the number from 2010 to date.



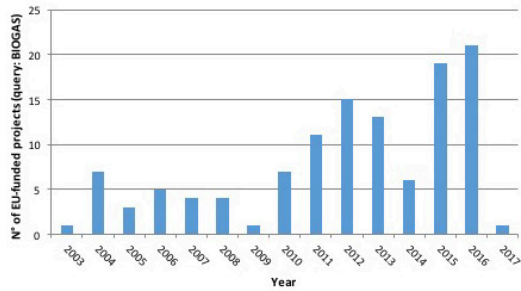


Figure 1
Number of Projects, funded by EU, on BIOMETHANE topic (From 2003 to 2017)

In addition, the research revealed that the majority of the partners of these projects come from Germany, followed by a significant participation in Spain, Italy and UK. More details about the partners' countries of the 118 BIOMETHANE projects are reported in the chart below.

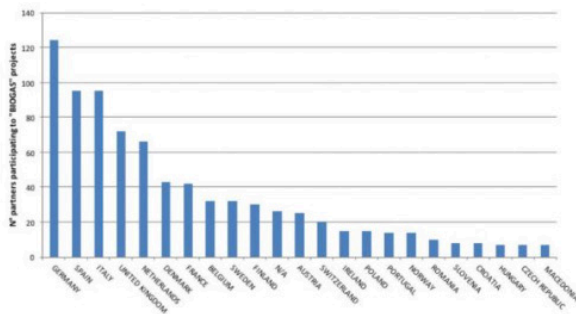


Figure 2
Distribution of the partners involved in the "BIOMETHANE" projects per Country (N° of participation >5)

Insight 2: Major players in biogas

Further a preliminary analysis of patents demonstrated that among the 698 analysed patents, 16 patents belong to Agrafarm technologies AG, 14 to DGE Dr.-Ing. Günther Engineering GmbH and 11 to Uts Biogastechnik GmbH. This data suggests that those are likely the major actors in the field of biogas technology innovation, as reported in the chart below.

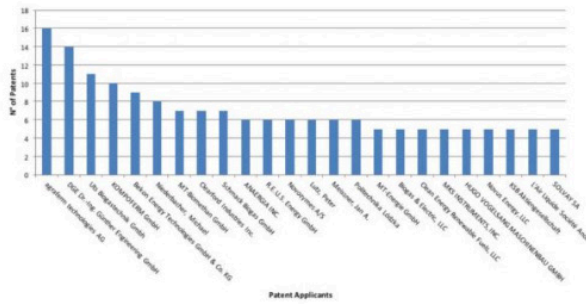


Figure 3

List of the identified entities that have more than 5 patents in the field of “biogas” from 2010 to 2017

Insight 3: 102 projects funded on bioplastics and biopolymers

Analogous researches were performed in the framework of KaRMA2020, funded by the topic SPIRE-03-2016, Industrial technologies for the valorisation of European bio-resources into high added value process streams, aimed to the industrial manufacture and exploitation of sustainable raw materials from feather waste to develop innovative green products for high impact cross-sectorial markets. Preliminary results show that from 2010 to date, the EC has funded about 102 projects on the bioplastics and biopolymers topics. The chart below (Figure 2) shows the distribution of the number of projects funded per year, revealing an increase of the number in the last couple of years.

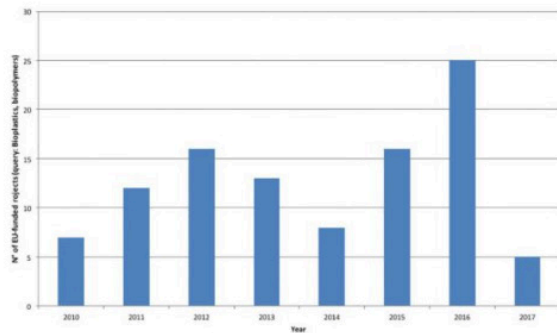


Figure 4

Number of Projects, funded by EU, on bioplastics and biopolymer topics (From 2010 to 2017)

In addition, the research revealed that the majority of the partners these projects come from Spain, followed by a significant participation in Germany, Italy and UK. More details about the partners’ countries of the 102 projects on Bioplastics projects are reported in the chart below (Figure 5).

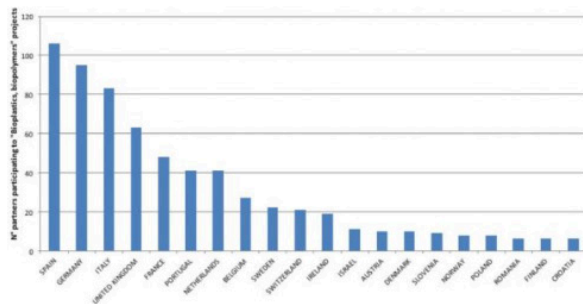


Figure 5

Distribution of the partners involved in the “Bioplastics, biopolymers” projects per Country (N° of participation >6)

Insight 4: Major players in bioplastics

The patent analysis was more focused on the topic of bioplastics for packaging, showing that from 2010 to 2017 about 232 patents were filed in. Among the 232 analysed patents, 9 patents belong to Biovation, LLC, 9 to Carnegie Mellon University, followed by HallStar Innovations Corp. and Biome Bioplastics Limited. This data suggests that those are likely the major actors in the field of bioplastic packaging. A more detailed list of the identified patent applicants is reported in the chart below.

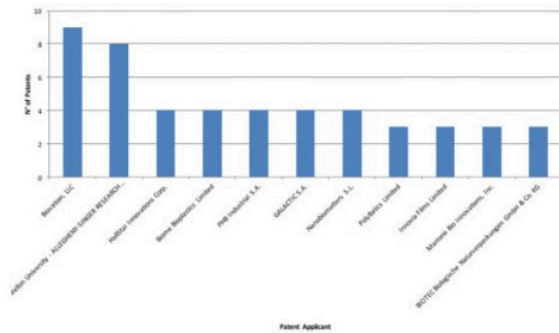


Figure 6

List of the identified entities that have more than 3 patents in the field of "bioplastics, biopolymers, packaging" from 2010 to 2017

Using bioeconomy intelligence insights

The results obtained thanks to the intelligence analysis will be further exploited in the frame of the projects to:

- develop dissemination, communication and exploitation activities within EU projects
- find potential partners for business collaborations and/or funding proposal
- identify potentially interesting innovations to integrate in their products or innovation plans (open innovation)
- spot innovation trends, incumbent or dis-investing players and competitors
- to elaborate market analysis (on the basis of surveys or direct interviews to the main identified stakeholders) and exploitation strategies