Open-BIO
Opening bio-based markets via standards, labelling and procurement

Work package 2

Dissemination

Deliverable N° 2.5:
Halfway stakeholder workshop report

Public

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NEN

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1 Introduction

The objective of the Open-BIO project is to create better opportunities for the market uptake of bio-based products via standards, labelling and procurement. By means of inter-laboratory testing and socio-economic investigations, the desirability of certain labels and information for consumers and industry, regarding bio-based products, will be determined.

Part of Work Package 2 (Dissemination) was to organize a series of workshops. The following presents the main goals of the Mid Term Advisory Workshop organized within the Open-BIO project:

1. to inform stakeholders of on-going research, intermediate results and plans for the future,
2. while enabling the project team to take on advice from stakeholders of the industry, policy makers, standardization experts and other interested parties

In this report the background of the workshop, its content and the main conclusions following the discussions are presented. These conclusions are t be used I the second part of the Open-BIO project.

2 List of participants

Name	Company / Organisation	City	Country
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De Wilde , Bruno	Organic Waste Systems (OWS)	9000 Gent	Belgium
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List of participants (continued)

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3 Workshop agenda

10:30		Welcome Goal of the workshop	Ortwin Costenoble, NEN
10:35	10:45	Project introduction and link to standardization	Ortwin Costenoble, NEN
10:45	11:00	The project and its links to EU policies	Tomasz Calikowski, EC - DG Research & Innovation
		Bio-based content and sustainability	
11:00	11:20	WP3: Definition of renewable elements and molecules	James Sherwood, University of York
11:20	11:40	WP3: Bio-based content methods and sustainability impacts	Jaap Hooijmans, ECN
11:40	12:00	Questions, feedback, discussion about future research	*All*
12:00	12:15	Coffee break	
		Bio-based product functionality	
12:15	12:35	WP4: Product functionality testing – selection of products and intermediate results	Karin Molenveld, Wageningen UR
12:35	12:55	Questions, feedback, discussion about future research	*All*
12:55	13:45	Lunch break	
		End-of-life options	
13:45	14:05	WP5: Marine biodegradation testing – intermediate results	Antonis Mistriotis, AUA / Miriam Weber, HYDRA
14:05	14:25	WP6: Industrial/ home compostability, biodegradation in biogasification plants and recyclability– intermediate results	Nike Mortier, OWS
14:25	14:55	Questions, feedback, discussion about future research	*All*
14:55	15:10	Coffee break	
		Communicating bio-based products	
15:10	15:30	WP7: Labelling of bio-based products – intermediate results and plans	Lara Dammer, nova-Institut
15:30	15:50	WP8: Product information list – status quo of the tool	Martin Behrens, FNR
15:50	16:10	WP9: Social acceptance – intermediate results	Marieke Meeusen, Wageningen UR
16:10	16:55	Questions, feedback, discussion about future research	*All*
16:55	17:00	Wrap-up and outlook	Ortwin Costenoble, NEN
17:00		End of the workshop	

4 Results

4.1 General organization

The Mid Term Advisory Workshop took place on 26 May 2015 10.30 h - 17.00 h at CEN-CENELEC Management Centre, Avenue Marnix 17 in Brussels (BE). As more intense discussions than during the first advisory workshop were required, this workshop was organised not in conjunction with the KBBPPS project. To allow representatives of the European Commission and of European industry associations to join and to underline the relationship with standardization, the choice was made to host it at CEN in Brussels.

General information about the workshop, together with the agenda, the participant list and the given presentations was made available to the participants at http://www.biobasedeconomy.eu/research/open-bio/publications/. Invitations were sent to contacts of all partners and also advisory partners were invited to market the event. Participation was free of charge and was kept to a maximum of 40 people (organisation team not included) in order to allow sufficient discussion. In the end, all seats were occupied.

4.2 Presentations and findings

Presentation – European Commission (EC); developments

Mr Calikowski (EC DG Research and Innovation) gave insight about the following EC developments:

1. Bio-based industry nowadays.
2. Political context (horizon 2020).
3. Public-private partnerships: (bbi-europe.eu, EC and Bio-based Industries Consortium (BIC)). A call for 2015 is in preparation worth 200 million euro in total.
4. Links to EU policies are:
    - Mandate and relation to KBBPPS
    - Eco-label, labeling of bio-based products.
    - Green Public Procurement.

It was concluded by the participants that the Open-Bio project has been helpful so far on the development of bio-lubricants and oils, and also the workshop has been very helpful for the laboratories (for the customs authorities). It was also noticed and praised that there have been discussions and exchange with the ASTM colleagues in the US. ASTM has established an own group working on this. Further dissemination would be welcome in the collaboration with the US.

Presentation – WP 3: Bio based content and sustainability impacts

Jaap Hooijmans (ECN) explained and compared different methods (AMS and LSC). There has been an LSC-workshop held for customs labs. LSC means the use of expensive machines, and education of people is of importance. Depending on how many tests needs to be done whether it is attractive to invest in LSC.

With regard to the elemental analysis and bio-based carbon determination, Jaap Hooijmans explained the work and Round Robin and calculation method/rules. It seemed that the validation part of the standard was not always well understood; more text explanation was required. There had also been a limited amount of labs able to measure the oxygen-content., so for high oxygen containing products more work would be required.
Jaap Hooijmans also explained the differences in the mass and material balance and the claim that can (or cannot) be made.

After this presentation, the question was raised if discussion on certification took place with working group 5 of CEN/TC 411 and ISCC so that certifying bodies can profit from this information. It was confirmed that these discussions took place, and knowledge and experience has been exchanged.

It was also mentioned that the EC will come forward with more activities on bio-economy/circular economy. Bio-based will be integrated in circular economy. The work done right now is not going far enough. A roadmap for circular economy has already been published, first information will be brought to parliament in the end of this year. There will also be a public consultation coming up and a conference in Brussels.

Furthermore it was advised to get in contact with certifying bodies about bio-based content and sustainability impacts. They might have valuable input. Whether such would be the role of Open-BIO or CEN was left open for discussion. A last remark regarding this topic was made that product is renewable does not mean it will be renewed.

Presentation – WP 4: Product functionality
Karin Molenveld (DLO) gave an overview of the tests done and touched upon the first results (NPK Fertilizers were no longer included, as the equipment is not available within the partnership). She explained that for packaging films, the breathability of PHA/PLA might be preferred over PET, so this can be researched further in this work package. For disposable cups and plates, the coating are interesting (they have to withstand water for a certain time). For WPC decking, she mentioned the function durability (in Europe < 5 year, ASTM/ US lifetime because of thicker PE-layer).

After the presentation a participant mentioned that there might be restrictions coming up for mulching films in September. PE-film might have to be thicker (three times thicker) to be able to recycle it more easily, otherwise it has to be bio-based. Also future changes for NPK Fertilizers were mentioned. The remark was made that Bio-polymers used as fillers in cars cannot reach 100% because of thermal stability. They have to withstand 200 degrees. So now mixtures are used. As an example, it was mentioned that thermal stability is not only a bio-based plastics problem, but that this is also the case for conventional plastics.

Presentation – WP 5: In-situ biodegradability (marine)
Antonis Mistriotis (AUA) presented the task on marine biodegradation, and the approach; lab, mesocosm and field scale. He gave an overview on the test methods used in the different test situations for the 3 different zones (eulittoral, pelagic, sublittoral). The sublittoral test

showed more instability. As the first study results were not satisfying, the test protocol will be revised for the second round of tests. It was hoped that sufficient project time would still be available to draw conclusions.

The question was asked whether there was a significant difference in fragmentation and degradation in ocean. The final determination methodology will also include lab test to determine the degradation. Validation of the lab test was identified as the most important deliverable in order for the suppliers to be able to determinate the degradation of their products.

Presentation – WP 6: Managed end-of-life options
Bruno de Wilde (OWS) presented each of the studied anthropogenic degradation processes. He presented the challenges for the actual centralized composting standard and the standards' reviews. The need for a standardized compost-inoculum was underlined. The first disintegration tests for the bio-gasification work had been initiated and the first results were presented. He mentioned that the regarding recyclates, the differences in national systems might have a huge impact on the test method to be developed.

After the presentation one of the participants introduced to the audience the concept of chemical and feedstock recycling. This participant mentioned that he had studied lactate recycling as a first conceptual idea. This would in the future be extended to testing methods for PET, PBAT, PBS and blends.

Another participant mentioned that sorting is not optimal (especially in the Netherlands). It was mentioned that there are a lot of opinions on plastic in recycling, but that there is not much proven on the content. Participants mentioned that large differences exist between countries, and that there is little factual data on sorting and recycling. Such might impact the final effectiveness of the results concerning a recyclability test during the remaining time of the project.

Presentation – WP 7: Labelling
Lara Dammer (nova Institute) gave a presentation and offered some insights/findings regarding the labeling research. She showed the dedicated group of bio-based products that has been created to look further into in consideration with the EU Ecolabel. One insight was that 'disposal' is difficult to describe, as policies are different in EU-countries. On the product groups, Antonis Mitriotis (AUA) added that farmers use mulching films that claim (or even don’t claim) to be biodegradable in soil.

One of the participants suggested not including all-purpose cleaners and dishwashers. Members of the Open-BIO team reacted that these products are not left out by purpose, and they can be included if found important. It was underlined by another participant that the Ecolabel is a voluntary label. Requirements per product category are very different; sometimes it is biodegradability, sometimes bio-based, and so forth.

Presentation – WP 8: Product Information List
Martin Behrens (FNR) presentation the mid-term results for the development of optimal product information presentation. This was developed into a database of bio-based products

for different stakeholders (Business to business (B2B), Business to Consumers (B2C)). He showed the structure with three layers on how product information will be build up in the database (required information, preferred information and optional information).

Regarding product information requirements the kind of information on a product stakeholder needs was discussed. One important result was that there are already databases on EU-level of high quality. For public procurers, there are some national-level databases, but not on EU-level. It was advised to combine these databases, or to extend existing ones. The existence of the new project InnProBio, which focusses on public procurers, was highlighted. That project contained several Open-Bio partners so the exchanges should go without issues

On participant mentioned that working group 5 of CEN/TC 411 is not only developing a standard for B2B communication, but also for B2C. It was asked whether if there was a follow-up on the procurement issues and product information list. It was answered that the 'new' project InnProBio will be the first follow-up on the database.

Presentation – WP 9: Social Acceptance
Marieke Meeusen (DLO-LEI) presented the results of the research executed on the acceptance of bio-based products by stakeholders. This was done via three steps, namely: (1) What is relevant for you to buy bio-based products, (2) What do you want to know before you want to buy bio-based products and (3) What information do you need on a label or in a data base? She explained that these last two questions helped to improved the work done in WP 7 and WP 8 of the Open-Bio project. Furthermore she showed the different studies done between different stakeholder groups, namely consumers, NGO's, government and businesses and elaborated on the perceptions, awareness and trustworthiness of information.

After the presentation, the results from the consumers were debated, as some countries seemed to have a much higher understanding of the bio-based terminology while on the other hand the associations with bio-based are very different. The question was asked if it could it be that the language has played a role in the research, and if a check on the use of terminology and common understanding was done? This was not the case.

It was mentioned that differences are also seen within businesses. It was concluded that there is not a clear clarification for the big differences between the knowledge in countries at this moment. It was mentioned that an additional advantage, of having selected multiple countries within the EU, is that the research was set out broadly, and that a broad and diverse outcome was the result.

Pricing of bio-based products was also discussed. It was mentioned as a possible barrier for the introduction/application of bio-based products, and that only a superior performance of a bio-based product (over a fossil-based product) would persuade consumers. Participants mentioned that the motivation to step back from fossil-based products is not strong enough. A critical question from the public was that it is expected that lower prices of bio-based products will consumers let decide to buy bio-based or not. The answer on this question is not clear yet.

4.3 Main results

Following the discussions during the workshop, the most significant (intermediate) results and conclusions of the Open-BIO project are:

- The Open-BIO project has been helpful so far on the development of bio-lubricants and oils.
- It was also noticed and praised that there have been discussions and exchange with the ASTM colleagues in the US.
- An LSC-workshop has been held for customs lab, with regard to the elemental analysis and bio-based carbon determination. Apparently, the validation part of the standard was not always well understood, and more text explanation was required. The LSC workshop has been very helpful for the customs laboratories.
- The project and the workshop underlined that there are differences between the mass balance and material balance (and the claim that can (or cannot) be made).
- Certification bodies should be involved in the discussions around the project conclusions' about bio-based content (measurement) and sustainability impacts.
- Several tests were done, and first results were that the breathability of PHA/PLA is maybe preferable over PET, so this can be researched further in this work package. For disposable cups and plates, the coating are interesting (they have to withstand water for a certain time). For WPC decking the function durability is of importance (in Europe < 5 year, ASTM/ US lifetime because of thicker PE-layer).
- Regarding biodegradability in marine environment, tests for the 3 different zones (eulittoral, pelagic, sublittoral) were done. The sublittoral test showed more instability. As the first study results were not satisfying, the test protocol will be revised for the second round of tests. The final test should also include lab test to determine the degradation, as validation of the lab test was advised by the participants as being users best possibility to determinate the degradation.
- Several anthropogenic degradation processes were studied. The need for a standardized compost-inoculum was underlined. Regarding recyclates, the differences in national systems has a huge impact on the test method to be developed. Further research on that to come to advices is required.
- 'Disposal' is difficult to describe, as policies are different in EU-countries.
- The absence of factual data on sorting and recycling might impact the final effectiveness of the project's results concerning a recyclability test.
- The EC will come forward with more activities on bio-economy/circular economy. Bio-based will be integrated in circular economy.
- A dedicated group of bio-based products that has been created to look further into in consideration with the EU Ecolabel. The Eco-label is a voluntary label. Requirements per product category are very different: sometimes it is biodegradability, sometimes for bio-based.
- A database of bio-based products for different stakeholders (Business to business (B2B), Business to Consumers (B2C) was developed, with the structure of three layers (required information, preferred information and optional information). That idea was supported by the participants in the workshop, but should be optimized by filling the database.

- One important result was that there are already databases on EU-level of high quality. For public procurers, there are some national-level databases, but not on EU-level. It was advised to combine these databases, or to extend existing ones.
- Users in some countries seemed to have a much higher understanding of the bio-based terminology while on the other hand the associations with bio-based are very different. Differences might be explained by the fact that consumers do connect bio-based with other properties such as ecological or healthy.
- Bio-based as such is no discriminator for consumers or public procurers. Additional properties promote these products better. Also, producers shall explain clearly what they mean with bio-based.
- Pricing, although not investigated by Open-BIO, remains a critical decision maker for buying bio-based products.

4.4 Overall conclusions

At the end of the workshop it seemed that the work so far on bio-based content and stakeholder perception had already given quite good results. The second part of the project on these topics should therefore be devoted to presenting the conclusions to CEN, the EC and the market. The further development of an optimal product database and a labelling scheme need to build on the conclusions around the claims on bio-based content and mass balance, plus clarify what bio-based actually means. For the database strong coordination with the new project InnProBio, that focusses on public procurement, is required to avoid overlap and present best practices.

The work regarding functionality needs to actually take off in the second part of the project now that feedback has been received on the provisional choices of product and test methodologies. Also more work on standards' preparation with regards gasification, recycling and composting is to be executed. The biodegradation work shall be homed in to a CEN or ISO group as the first results on standardized test methodologies are promising. The test time might conflict with the actual 18 months left of the project so also a back-up dissemination plan is needed. The definition work on the product life cycle shall also be discussed in a more public environment in order to check if it can become common principles.