



Deliverable 5.5 Report on 2nd Workshop and Focus Group – Case Study 2
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D5.5: Report on 2nd Workshop and Focus Group – Case Study 2

WP 5

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¹ PU = Public

PP = Restricted to other programme participants (including the Commission Services)

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Executive Summary

The BioCannDo project was born out of the increased need for the development of a more sustainable economy in the European Union. There is a need to switch towards a bioeconomy which would emancipate from the current reliance on fossil fuels. This move towards a more sustainable economy has been on its way for many years, notably in the form of bio-based products. Products such as bioplastic or detergent can now be fabricated using material from biological origins and are available on the European market. While these products are present on the market, there is a lack of public awareness about them – a gap BioCannDo intends to address. The project is built around three main objectives:

- Develop multi-stakeholder proven key messages for communicating functionality and sustainability aspects of bio-based products with the broader public
- Engage a European stakeholder network dealing with communication issues regarding the bioeconomy in a joint communication undertaking geared towards the broader public
- Create synergies for existing materials and develop missing communication formats and educational material to communicate topics of the bioeconomy and bio-based products to the European citizens

Helping to achieve these objectives the BioCannDo project organises a number of stakeholder engagement activities in three case studies. These case studies centre around a) bio-based household cleaning products, b) bio-based insulation materials, and c) bio-based food packaging materials. In each case study an engagement with experts (in product expert workshops) and consumers (in focus groups) was organised to get relevant feedback from these different stakeholder groups.

In the second case study on bio-based insulation materials the product expert workshop took place on 13 April 2018 in Vlissingen, the Netherlands. It engaged 15 stakeholders, who have a professional interest in bio-based products, particularly bio-based insulation materials. A majority of them represented (small) businesses, others work in the field of bio-based education or research. In the workshop the experts were asked to identify the issues buyers and planners of houses face in relation to bio-based insulation materials. Secondly, the draft key messages developed to communicate functionality and sustainability aspect of bio-based insulation materials to the broad public were discussed with the experts to give them the opportunity to improve these.

After a fine-tuning of the key messages by the project team based on the input from workshop, four consumer focus groups with in total 26 participants were organised. They discussed the concepts behind the key messages on bio-based insulation materials and ranked them according to their personal views. They also identified their expectations towards those materials and experience they have with them already.

The workshop and focus groups conducted for the second BioCannDo case study highlighted that there is a considerable lack of knowledge and information about the added value and technical possibilities with regard to bio-based insulation materials, as well as uncertainty about the market potential and the warranty of bio-based materials. Also the price was seen as decisive and

questions about the availability of materials, health and well-being, social responsibility and emotion were raised.

When comparing the collected issues with the pre-identified key messages shows a large overlap, only the question of availability was raised as an additional topic. In addition to a number of comments regarding language and wording of the individual key messages, it was noted in particular to work with simpler language and more examples, e.g. by mentioning specific raw materials.

In conclusion, and using the rating and ranking of the key messages, the following topic clusters can be identified which should be emphasised when communicating bio-based insulation materials: health (key messages #10, 11), performance (key messages #2,3,5,4,6), sustainability (key messages #12,9,13), price (key message # 14) and quality (key messages #8,7). According to these clusters and taking into account the workshop results, the key messages are revised including the background information. Two additional messages are drafted. The first one addresses the issue of availability of bio-based insulation materials and the second one gives an explanation of what bio-based insulation materials are.

A detailed report of the above mentioned, as well as transcripts of the stakeholder engagement activities conducted are presented in the current document and related annexes.

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PREFACE

This document was produced as a practical guide for consortium members and collaborators to the stakeholder engagement activities conducted in the second case study of the BioCannDo project. It provides site notes and references to existing documents which serve as additional sources of support. The document is providing a detailed account of the stakeholder engagement activities and the major outcomes.

The Deliverable is structured as follows:

Chapter 1 provides an overview of the stakeholder awareness and dialogue in BioCannDo
Chapter 2 describes the project's developments and results regarding the workshop
Chapter 3 outlines objectives, design, and results of the focus groups conducted
Chapter 4 provides information on lessons learned from second case study and next steps

1 Stakeholder awareness and dialogue in BioCannDo

In BioCannDo, Work Package 5 (“Stakeholder Discourse”) makes use of advanced and innovative techniques for stakeholder engagement, inspired by a wide array of participatory methodologies (Gramberger 2001). Over the course of the project, and in each case study setting, Prospex together with the project partners organises and facilitates two sets of participatory engagement activities, termed Product Expert Workshops¹ and Consumer Focus Groups.

Three exemplary product and country specific Product Expert Workshops were planned to be carried out at national level (DE, NL, IT) and specifically concentrate on the further development and refining of communicating consumer-friendly key messages as regards bio-based products. They will be followed by a series of Consumer Focus Groups, which will serve as an effective testing ground for the developed key messages.

An ambitious project such as BioCannDo can only achieve genuine impact among stakeholders and citizens, if their involvement becomes an intrinsic part of the project implementation. Through stakeholder dialogue, BioCannDo aspires to create useful outputs that can be readily applied by not only the scientific community, but also the wide array of communicators that work on the advancement of the bioeconomy in Europe.

The feedback and inputs gathered from stakeholders need to be embedded in a reciprocal iterative process of dialogue and co-creation of knowledge (see Gramberger et al. 2015). This approach is reflected in the numerous internal discussions and the decision-making on methodologies to be used within the project. Prospex and WP5-partners (FNR, BTG, Avans) heavily invest in developing a tailor-made process for each of the engagement activities (workshops and focus groups), in co-creation with the other work packages. The participatory integration of stakeholders and consumers is turned into a focus point for the process and the project, intensifying not only the inclusion of stakeholders’ perspectives but also, by extension, their engagement with the results.

1.1 Engaging stakeholders and consumers

In BioCannDo, the engagement process is articulated in two sets of participatory activities, each centred on a case study. Hereby, the Product Expert Workshops will be held either in English or the national language (depending on the preference of the stakeholders), and the Consumer Focus Groups will take place in the national language. The results of these live engagement processes are checked through qualitative market surveys, analysing consumer perception of the bio-based products.

¹ In the project’s DOA the workshops were called “Value Chain Constellation Workshops”.

This mixed, iterative and highly interactive process ultimately develops the key messages and most appropriate formats for the communication of the bioeconomy and its end-product applications, as well as related societal and economic issues.

Product Expert Workshops

Within the BioCannDo project, a set Product Expert Workshops will engage stakeholders in focused discussions dealing with specific bio-based product. Each one of them will focus on representative examples, of the selected product groups choices² including aspects of societal and economic sustainability. These workshops will offer participants opportunities for exchange to identify salient issues related to the communication to the broader public including a common language, misperceptions and sustainability.

Consumer Focus Groups

Following each of the three Product Expert Workshops, case study specific Consumer Focus Groups will provide opportunities for direct interaction between the project team and end-consumers, serving as a testing ground for the concepts behind key messages. By involving actual end-consumers in the development of communication messages, the relevance and applicability of the developed material will be ensured. Thereby, Focus Group participants will be offered the opportunity for strongly engaging with topics of the bioeconomy related to specific bio-based product groups relevant for their daily life. They will assess the concepts behind the key messages as a main tool for communicating issues of the bioeconomy and bio-based products to the broader public.

1.2 Target groups

The key messages to be developed by the BioCannDo project will apply to two target audiences – a primary target audience being stakeholders, multipliers and opinion-makers including communicators, suppliers of bio-based products, educational institutions, mass media, politicians and policy-makers, consumer organisations, industry trade associations, research institutions; as well as a secondary target audience being the broader public including end-consumers and young people.

² See DoA WP 5 Task 5.1: bio-based products in construction, bio-based packaging and disposables related to food, bio-based cleaning and hygiene products. The selection was further fine-tuned in the run-up to each workshop in the relating concepts (Deliverable 5.1, 5.2 and 5.3).

2 Product Expert Workshop

As outlined in 1.1, the product expert workshop as the first of the two engagement activities in each case study aimed at collecting feedback from a wide range of professionals actively involved in the respective product field. This specific approach to the workshop (and focus group) in the second case study was detailed in Deliverable 5.2 “Concept on second workshop and focus group” that was issued in November 2017 and further refined in the run-up to the workshop in April 2018. In the following section we will explain the specific design of the workshop, present the characteristics of the participating stakeholders and give an overview of the results. The detailed materials produced in the workshop can be found in Annex 1.

2.1 Workshop design and set-up

Based on the lessons learned from the first case study and what was described in Deliverable 5.2 it was deemed essential a) link the workshop to an existing network of experts that can assist in generating more interest among stakeholders; b) link the workshop to an existing larger event, which attracts the relevant stakeholders, who would not need to spend additional money on travelling for the BioCannDo workshop; and c) reduce the length from the originally foreseen one-day workshop to a session of a few hours.

In this light the project team has searched for relevant larger events happening in the Netherlands in the first months of 2018 to which the BioCannDo workshop could be linked to. Relatively quickly it became clear that an inauguration event for two lecturers organized by the project partner Avans on 13 April 2018 in Vlissingen would be ideal as it brings together experts in bio-based insulation materials from all over the Netherlands. Additionally, on the same day a Dutch project organized a small workshop on bio-based insulation with Dutch SMEs. The pairing of all three events consecutively on one day, in the same location, has given the expert stakeholders the opportunity to look at the subject from a variety of angles, evidently making the participation more attractive.

Trying to make the combination of three events possible, meant that the BioCannDo workshop had to be limited to a total of two hours. After a short introduction into the project and the workshop, the participants were asked to identify the main issues that people planning, building and buying houses in the Netherlands have with regard to bio-based insulation materials. The participants were encouraged to bring any issues forward, which were then collectively clustered into major themes. The second part of the workshop was then dedicated to the discussion of the developed key messages for bio-based insulation materials. The participants got the opportunity to read and assess the messages, discuss them and give their detailed feedback on wording, content and perception. In the end they were also asked to rate all 16 key messages with regard to their comparative relevance.

The agenda of the workshop can be found in Annex 1.

2.2 Workshop participants

As mentioned above the workshop aims at bringing together stakeholders that work with and communicate about bio-based insulation materials in their professional capacity. In this regard Prospex with the help of Avans and BTG mapped about 50 key stakeholders from all over the Netherlands. Invitations were sent out to all stakeholders from the list and the invitation process was complemented by an open invitation to all participants of the inauguration event.

Overall, 16 stakeholders registered for the workshop, of which ten participated. These were complemented by five stakeholders, who joined without prior registration, based on the open invitation described above. All stakeholders have a professional interest in bio-based products and the majority works with bio-based insulation materials on a daily basis. They therefore fulfil the requirements set by the project team. With regard to gender, the workshop participants were less balanced with only three women, compared to twelve men. However, looking at the topic area of insulation materials this imbalance was predictable.

2.3 Workshop results

As per the design described in section 2.1, the workshop consisted of two distinct sections. The first section dealt with the general issues participants relate to bio-based insulation materials, the second section with the specific key communication messages developed by the project.

The following two sub-sections present the results of the two exercises in turn, more detailed results can be found in Annex 2 including the key messages.

2.3.1 Issues for bio-based insulation materials

Considering that the Dutch housing market has very specific characteristic in the way that very few individuals are building their own houses, but rather require planners and professional builders to do so, the project team has decided to look at planners/builders and buyers separately in order to see if the identified issues are comparable or not.

Table 1 presents the clusters identified by the product experts for each of the two groups. Looking at these clusters it becomes obvious that certain issues are relevant for both planners/builders as well as buyers. These are warranty, price, availability of the materials, regulations around them and Corporate Social Responsibility (CSR). It is not surprising that these points come back among both groups as they relate to the overall quality of the product.

Table 1 – Issues for bio-based insulation materials identified by product experts

Issues for building planners and builders	Issues for building buyers
Warranty	Product and warranty
Price and costs	Price
Availability (where and when)	Offer
Technical characteristics (laws and regulations)	Regulation
Corporate Social Responsibility	Corporate Social Responsibility
Inertia	Well-being
Market forces	Added value
Processing	Emotion
Information and knowledge	Choices
Definition	-

The other clusters show significant differences between both groups with more technical issues (processing, definition, information and knowledge, market forces) on the side of the planners and builders, and more personal concerns (well-being, emotion, choices) on the side of the buyers. This reflects the nature of the engagement of these groups with the insulation materials. Planners and builders have a more direct contact with the products and are more concerned with how they can find appropriate information and communicate best with clients and providers. Buyers of houses on the other hand have less direct contact with the product, as most often the insulation materials will have already been installed before they move into the house. Therefore, one of their main concerns is the liveability of the house and potentially any added value, when reselling the house.

2.3.2 Key messages around bio-based insulation materials

The exercises around the key messages was split into two parts, of which the first dealt with each of the 16 key messages and the comments participants have about each of them. The second part evaluated the relevance the participants associate with each of the messages and was carried out as a rating exercise.

In relation to the individual key message the participants expressed an overall satisfaction with the approach and highlighted the importance of having messages of this nature. The participants furthermore expressed that in some of the messages the language is too complicated and a “conversion” into more simple language would be highly appreciated.

In order to identify those messages that have the highest relevance for the communication to consumers, stakeholders were asked to rate all of them on a scale from 1 (least relevant) to 5 (most relevant). Summing up the ratings of all stakeholders shows that the following six topics are the most relevant:

- Healthy indoor climates
- Same technical performance
- Contribution to climate protection
- Price
- Heat insulation performance

- Durability

Comparing the rating results with those of the first exercise shows that there seems to be correlation with the issues identified for buyers of houses, which also highlight the importance of technical performance, price and well-being (health). The issue of climate protection was not mentioned at all in the first exercise, but the high rating implies that the issue is nevertheless of high importance in the communication with end consumers. Furthermore, some participants mentioned that an additional message from the consumer's perspective would be (highly) relevant.

2.4 Workshop evaluation

An official evaluation was conducted with respondents of the workshop participants. Respondents appreciated the format (85% "good" or "very good") and the process of the workshop (100% "good"). The majority of the stakeholders develop new insights (71%) and some even explicitly mentioned that they learned a lot. Similarly 86% of the participants expressed their confidence that their input will be adequately taken up by the project. Again some participants mentioned the need to convert the messages and the overall communication into a simple, layman language.

A comprehensive overview of the evaluations received can be taken from Annex 3.

3 Focus Groups

In accordance with the BioCannDo Description of Action, the focus group discussions in the second case study took place in Brussels and Mechelen, Belgium (Flanders), on 12 June and 27 June 2018 respectively. Accommodating for participants' varying availability and integrating the exercise into participants' daily activities, the focus group discussion was split in four groups, with three afternoon and one morning session each lasting for 1-hour respectively. A small reimbursement for participation has been provided as an incentive to enable consumers to participate in the groups. Further, the venues were selected to create a comfortable atmosphere enabling open discussions and broad participation. While the first focus group discussion took place at Prospex's EU office in Brussels, the following three focus groups were organized at different community centres across Mechelen.

The Focus Groups have brought together potential and previous end-consumers of bio-based insulation materials and:

- Served as a testing ground for outcomes of the workshop in Vlissingen (i.e. key messages);
- Checked the relevance of the identified key concepts underlying the developed messages;
- Checked the perception of the key concepts by end-consumers.

Following a highly interactive format enabling maximum participation by all participants, the Focus Group discussions have employed tools and methods that allow for easy and quick interactions. This aspect has been assessed as highly relevant, considering the participants' diverse backgrounds with regard to education, knowledge of bio-based products, age, and gender. The discussion format was therefore conscious of utilizing easy language and as little methodological introduction as possible.

3.1 Participants of the Focus Groups

Aiming to arrive at a balanced and pluralistic set of perspectives, demonstrated by a variety of potential end-consumers from different ages, gender, and working backgrounds, limits potential biases and strengthens the research outcomes.

Against this background, the BioCannDo consumer focus groups have predominantly focused on arriving at both a representative sample and at the relevance of the identified product line to the individual. Prospex has thus approached potential end-consumers through 1) strategically placed advertisements on social media directly targeted towards and addressing the identified target group (Facebook criteria: 'living in Flanders' and being 'above 18 years of age'); 2) through direct contacts with experts in the field; as well as 3) through community centres in Mechelen, Flanders.

The resulting four focus groups have brought together groups of people from diverse backgrounds and experiences with the building sector and insulation materials in particular. The four focus groups combined displayed an evident bias towards the higher end of the age spectrum. Yet, this was perceived to be characteristic adding value to the discussions given participants' great

combined wealth of experiences, specifically in regard to building and renovating houses and apartments.

A detailed overview of the focus group participants is displayed in table 2 below.

Table 2 – Overview of focus group participants

Age		Gender		Profession
30 and below	50 and higher	Female	Male	
1	0	0	1	Lecturer
1	0	1	0	Lecturer
0	1	1	0	Seamstress
0	1	1	0	Retired
0	1	1	0	Retired
0	1	0	1	Retired
0	1	1	0	Retired
0	1	1	0	Retired
0	1	0	1	Retired
0	1	1	0	Retired
0	1	0	1	Retired
0	1	0	1	Retired
0	1	1	0	Retired
0	1	0	1	Retired
0	1	0	1	Retired
0	1	1	0	Retired
0	1	0	1	Retired
0	1	1	0	Retired
0	1	0	1	Retired
0	1	1	0	Volunteer
0	1	0	1	Retired
0	1	0	1	Retired
0	1	1	0	Retired
0	1	0	1	Retired
0	1	1	0	Head of community centre
0	1	1	0	Retired
0	1	1	0	Bus driver

3.2 Structure of the Focus Group

The Focus Groups have hereby been designed and structured following the below elements:

- Introduction and Exercise 1 – Consumer Choices:** At this point no details on the project or the focus on bio-based insulation materials were given. Enabling an unbiased discussion and exploration of factors influencing consumer choices, participants were asked to explain their preferences/ previous choices in insulation materials and provide reasons for their choice.
- Introduction to the bioeconomy and bio-based insulation materials** - Short description of the bioeconomy and bio-based insulation materials and clarification of language issues

- c) **Exercise 2: Expectations towards bio-based insulation materials** - Exploring participants' expectations regarding bio-based insulation materials and clustering answers around bigger themes.
- d) **Introduction of BioCannDo key concepts** - Short introduction of the 17 key concepts developed by the project and matching, if applicable, of these concepts with participants' corresponding concepts identified in exercise 2.
- e) **Exercise 3: Voting on clusters** - Interactive session to rank the key clusters according to their relevance and importance for participants.
- f) **Closing and next steps** - Short presentation of how the outcomes of the Focus Group will be used in the next steps of the BioCannDo project.

3.3 Summary of the Focus Group

The format of the Focus Group has been largely successful, achieving all set objectives and providing valuable and crucial input to the further advancement of the study.

When exploring participants' consumer choices, a few patterns could be examined in the focus groups. These are listed below together with an overview of the voting exercises' outcomes and consumers' priority influences.

- 1) **Price and the financial situation of the buyer** – Across all groups, participants indicated that the price of the insulation material and their own financial situation is a decisive factor determining their consumer choice. A majority of participants expected bio-based insulation materials to be more expensive, some adding that higher short-term costs might be balanced by decreased cost in the long-term. Yet, participants agreed that often short-term thinking would prevail in buyers as the long-term benefits in the investment are not always immediately obvious. The perception that 'natural' products are more expensive than conventional alternatives was voiced in all groups.
- 2) **Quality and value-for-money** – All groups clearly identified the quality and value-for-money of insulation material to be a strong influence determining their consumer choice. While some participants expected bio-based products to be of better quality compared to conventional alternatives, the need for more information was highlighted across all groups. Participants hereby indicated their intention to first consult with architects, sales employees or research quality aspects on the internet.
- 3) **Insulation performance** – Closely linked to the previous point, participants discussed their experiences in regard to the insulation performance of different materials. While some participants questioned whether bio-based insulation materials are more efficient than conventional products, others were able to share first-hand experience using materials such as hemp or cork. The latter were generally perceived to perform well. Expectations towards insulation material in general included the protection against noise, heat and extreme weather in general, as well as the resistance of the materials to pests, time and external damage. All of the mentioned would strongly influence participants' choices.
- 4) **Availability** – Another crucial factor that emerged from the debates can be found in the availability of the insulation material. Some participants argued that their choice for respective products had been limited in the past by architects' offers or the mandatory decision of the apartment block they were living in. Participants argued that they would

purchase insulation material that is easily available in order to not suffer from any delays in their construction time.

- 5) **Consumer-friendly installation** – While some participants indicated that they had not installed the insulation material themselves, thus not regarding the installation itself to be an important factor, others stressed this point. Polystyrol/Styrofoam was hereby highlighted as a material that is easy to use as opposed to a participant's experiences with wool insulation stinging the skin.
- 6) **Sustainability and impact on the environment** – The aspect of sustainability and the wider impact of insulation materials on the environment appeared to impact some participants' choices in regard to insulation material. Especially in the first and fourth focus group the topic was raised with participants arguing that the use of ecologically-friendly substances and materials would be important to them. This would not only refer to the production and use of the material but also to the end of its life and its disposal/ recycling. Others questioned whether the production of bio-based insulation materials is more sustainable than those of conventional alternatives.
- 7) **Health** - Insulation materials' immediate and long-term impact on health was discussed among participants to impact their choices. Several respondents indicated that they had doubts in regard to some conventional insulation materials such as Polystyrol/Styrofoam or reported that the installation 'stung' their skin and would thus, if given the choice, rather choose 'natural' products in order to avoid the negative effects. The health aspect was also broadened to participants' animals.
- 8) **(Fire) safety** – All groups identified the aspect of safety to be an important one guiding their choice of insulation materials. While some participants took especially fire safety as a given characteristic of insulation materials, others doubted whether more natural alternatives can compete with conventional insulation materials.
- 9) **Certification** - Another interesting debate took place in the second focus group regarding the topic of **certification**. One participant noted that Energy Performance Certificates (EPC) are increasingly important when considering to sell the house/ apartment at a later time as they increase the property's value. Further, fines would be awarded in case of non-compliance. Participants were not sure whether bio-based insulation materials are currently adhering to the standards of the EPC-certification and identified this to be an important point guiding their choice.
- 10) When introduced to the concept of bio-based insulation materials and asked for their expectations regarding bio-based insulation material, respondents surveyed had largely not been previously aware of the concept of the bioeconomy.

Respondents indicated the following **expectations regarding bio-based insulation materials**:

- Protection against all kinds of threats such as inside/outside heat/noise, humidity, etc.
- Capacity to insulate
- Value (quality) for money – not cheaper per say, but to be worth the quality
- Better quality
- Durability
- Better for the environment
- Safety regarding health problems – do not think about it at first, but later on realise it is essential (wool, for example, with all the fibres, and we wore masks but also had itches while installing it)

- Insulation - both ways inside-out and outside-in
- Quality product
- Value for money must be good
- Expect a higher price
- As the standards are higher, I expect a higher price
- Fire safety
- Is it readily available? Being able to start is important
- Is it effective?
- Expect the same insulation capacity as conventional products
- Is it sustainable? Trees have to be cut.
- No toxins
- Expertise needed to understand if it is good

Table 2 Overview of respondents' priorities (measured through votes). Only clusters that received votes are listed below. For a full overview of all identified clusters, please see Annex xx.

Cluster	Focus Group 1 (N=2)	Focus Group 2 (N=9)	Focus Group 3 (N=7)	Focus Group 4 (N=8)	Overall votes
Price	0	0	3	4	7
Price/ Quality	0	3	3	1	7
Durability	0	4	3	0	7
Health	1	0	0	5	6
Quality	0	2	0	3	5
Availability	0	1	3	1	5
Safety	0	2	2	1	5
Sound insulation	0	2	2	1	5
Moisture insulation	0	1	2	1	4
Energy saving	0	3	0	1	4
General insulation performance	2	1	0	0	3
Durability	1	1	0	0	2
Heat insulation performance	0	1	0	1	2
Value for money	1	1	0	0	2
Summer heat protection	0	1	1	0	2
Healthy environment inside	0	0	2	0	2
Customer-friendly installation	0	1	0	1	2
Disposal at end of life offers more options	0	1	0	0	1
Renewable resources	0	1	0	0	1
Not tested characteristics	0	1	0	0	1
Protection against heat, noise, humidity	1	0	0	0	1

Summing up the votes of all stakeholders shows that the following four topics are the most relevant:

- Price
- Quality
- Durability

- Health

In general, it can be observed that the consumer choice of insulation materials appeared to not be guided by emotional responses but rather by rational arguments and research, as well as by professional advice. Against this background, participants of the focus groups largely indicated an interest in more information and learning about the materials' characteristics as opposed to the impulsive decisions and reliance on 'gut-feeling' observed in the first case study of this project.

Annex 4 presents a record of the discussions and accounts provided in the four focus groups.

3.4 Evaluations of the Focus Groups

An official evaluation was conducted with respondents of all four focus group discussions. Respondents appreciated the format and implementation of the small focus groups and highlighted the learning aspect of the event. Many reported that they would now be more aware of the existence of bio-based insulation products and would appreciate to be informed of the results.

A comprehensive overview of the evaluations received can be taken from Annex 5.

4 Conclusions

4.1 General conclusions and next steps

The findings of the presented case study 2 – ‘Study on bio-based insulations materials’ will be taken up by the BioCannDo consortium and will be fundamental in informing the development of both case study-specific, as well as broader and widely applicable communication messages about the bioeconomy and bio-based products (see also section 4.2).

Lessons learned from the stakeholder engagement formats employed in this case study will provide vital guidance for the design and implementation of the third and final case study of the project (see D5.3 Concept on the workshop and focus group of the 3rd case study).

Lessons learned regarding stakeholder engagement formats employed in case study 2:

Building on the experiences from the first and including the lessons learned from the second case study proves that the high degree of flexibility with regard to timing, format and type of engagement proved to be very helpful and essential in addressing the specificities of this product group.

The engagement of product experts in a shorter workshop linked to another relevant event has proven highly successful and will as such be repeated for the third case study on bio-based food packaging materials. The workshop will be a side-event of a major conference (International Forum on Industrial Biotechnology - IFIB) and will again last about 2-3 hours. The stakeholder mapping for the event will be adjusted to the fact that it is a side-event, focusing the attention towards actual participants of IFIB, adding relevant key stakeholders to the list.

Since the focus group discussions in the first and second case study worked really well, achieved all set objectives, and gathered the appropriated number of consumers, there is in principle no need to change the envisioned set-up for the third case study. Again drawing lessons from the targeting of participants, the approach will be diversified: Facebook campaigns, contact via strategic gate keepers, personal contacts and relevant internet portals.

The strategic decision to organise several instead of one central focus group accommodated for participants’ varying availability and enabling greater participation by different consumer groups. Further, feedback received by focus group participants highlighted the suitability and appropriateness of 1-hour long sessions. Participants confirmed the effectiveness of a small reimbursement for participation as an incentive to attending the focus group.

4.2 Conclusion for further key message development

From the workshop and focus group results a number of conclusions can be drawn. Among the issues for planners and builders workshop participants mentioned a lack of knowledge and information about added values and technical possibilities, uncertainty about the market potential and the warranty of bio-based materials. Also the price was seen as decisive and questions about the availability of materials were raised.

Among the issues for buyers workshop participants mentioned also warranty and quality, price, availability and added value. In addition, issues of health and well-being, social responsibility and emotion were raised. The focus group results showed that also consumers have an increased interest in thorough background information about bio-based insulation materials. Available information seems either not to be found or it is not easily accessible for consumers.

Comparing the collected issues with the pre-identified key messages shows that almost all of these issues are included in the key messages. Only the question of availability was raised as an additional topic. All issues identified by the participants are rather generic. Some topics were not mentioned in the workshops such as fire safety, mould, humidity or quality labels.

In addition to a number of comments regarding language and wording of the individual key messages, it was noted in particular to work more with examples, e.g. by mentioning specific raw materials. In addition, a concrete definition (percentage) of a bio-based insulating material was requested. However, a strict definition cannot be given due to the many different materials. The wording “made wholly of bio-based raw materials” has been considered difficult because additives are often used.

It was pointed out that bio-based materials have the described advantages, but the use must be taken into account in planning and architecture with adapted concepts (e.g. such as possibly thicker walls). In some cases messages were considered overlapping and the wording was seen as too technical. A number of participants expressed the need to provide additional information and sources for the key messages (proof). Some participants raised concerns with the use of the term “sustainability” if it cannot be clearly explained and proven.

The question posed by the organizers as to whether a message on the consumer perspective would be meaningful was considered as being of particular relevance. For this, however, reliable sources are missing, so that a corresponding message cannot be developed.

In conclusion, and using the rating and ranking of the key messages, the following topic clusters can be identified which should be emphasised when communicating bio-based insulation materials: **health** (key messages #10, 11), **performance** (key messages #2,3,5,4,6), **sustainability** (key messages #12,9,13), **price** (key message # 14) and **quality** (key messages #8,7). According to these clusters and taking into account the workshop results, the key messages are revised including the background information. Two additional messages are drafted. The first one

addresses the issue **of availability** of bio-based insulation materials and the second one gives an **explanation of what bio-based insulation materials are**.

In addition, the structure of the key message is adjusted to better suit different information needs:

- 1st level: key message (topic cluster)
- 2nd level: specifying messages
- 3rd level: Background information with explanation and further sources

This way information can be displayed in different depths of detail. This also takes into account different target groups, as in the Netherlands project developers are more likely to be approached, while in countries with higher self-construction rates (e.g. Germany) private individuals can also be a target group. The latter group rather needs more general information and less technical details.



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Annex 1 – Agenda of the Product Expert Workshop

European BioCannDo Project Workshop on bio-based insulation material

HZ University of Applied Sciences, Room L031
Edisonweg 4, 4382 NW Vlissingen, Netherlands

AGENDA

Friday, 13 April 2018

- | | |
|-------|--|
| 11:30 | Registration of participants (including light lunch) |
| 12:00 | Welcome to BioCannDo |
| 12:20 | Bio-based insulation materials – Overview of issues |
| 13:00 | Communication messages around bio-based insulation materials in review |
| 13:50 | Closing and Coffee |
| 14:00 | End of the workshop |

Lead Facilitation: Katharina Faradsch, Prospex

Please note that this is a participatory workshop and that timings and content of individual sessions are subject to change.

Annex 2 – Notes of Product Expert Workshop

1. Issues for bio-based insulation materials

Participants were asked to answer to individually answer two questions. Their answers were clustered and are presented below.

4.3 Issues for building planners and builders

***** ENGLISH******

DEBATE - question 1

What are the most important issues that concern project developers and contractors with regard to the application of bio-based insulation materials in buildings?

Price

Project developers and contractors always compare with traditional measures whilst trying to maximize profit - price is important.

When you talk about sustainable and renewable materials, they serve a sense of social responsibility, but it is not known what additional features these materials offer for the living environment. This is strange. Ever since we have been constructing as humanity, we have always built with renewable materials. Now we see problems arising in the construction sector, for example condensation, because the project developer benefits from fast and economic construction, whereas users become more and more demanding.

There must be an economic benefit for using bio-based types of materials. Otherwise it will not become mainstream. I know one project developer who makes these choices from the heart, but the rest thinks in economic terms.

Guarantee/Warranty

Warranty: we have to provide guarantees about the quality and performance of bio-based materials.

Risk and reliability

People are not familiar enough with bio-based materials, you must allow a certain time to pass before you can draw conclusions about how it works, its performance and quality.

Initiative

Project developers, builders and contractors do not take any initiative, the choice for bio-based materials has to be initiated by the end-user.

Lack of knowledge

There is a lack of knowledge about the final effects of this material. Whilst a high number courses are offered to contractors who work on projects that are circular or bio-based, they do not know how this can be written out in a tender.

Construction is a world of repetition, little innovation is built in.

The constructor does not want to wait until his sector is adapted to these new materials, it has to be there within the month, ready to be used.

Familiarity

If you ask for a new roof, you will receive the existing type. The contractor will never ask you "do you want something bio-based?".

Too little knowledge of what the added value of these materials is.

Market potential

Lack of potential, lack of demand.

Quality and performance

Added value is not known enough.

Ease of implementation: my street is being fully rebuilt with polystyrene, because it is much easier to apply. Bio-based material on the hand must be kept dry on site, so this creates constraints.

Lifespan: contractors have difficulty to assess how long it will remain "sustainable", and to establish whether there is any risk after ten years.

Health: Health conditions are currently not included in building decision-making. The involved parties know that some materials are healthier, but they do not always take this route. They privilege their own return-on-investement over the wider benefit of the house.

Regulations are not focused on these types of materials and do not require them to be used. Within the current regulations, bio-based materials do not fit, they might even lead to penalty points.

Co2 emissions are reduced thanks to bio-based materials, but this is long-term thinking. Building a house is short-term thinking. The project developer may develop projects close to the coast without mentioning rising sea levels. If they mention the risks over 50 years, they will not sell the property. It is only up to the user/buyer to address the long-term perspective.

Project developers are starting to manage more and more themselves in a first phase, so they have to plan for the coming 50-60 years and think of the cost of use, not only the construction costs, and then the bio-based option is much cheaper.

Sense of urgency

A lot of CO2 in the air, global warming, sea level rising. Why do we need to go bio-based? To lower and store CO2 emissions. I read that in 2100 the sea level rises by 1 meter, while other papers have claimed it is 7 meters if we continue what we're doing now. All scientists drum the "sense of urgency", but outside of the scientific community we do not have that sense of urgency. I do not know a project developer who lies awake at night thinking about these issues.

Price

Someone else pays the involved parties. For most projects, contractors are selected on the basis of predicted construction costs. If such a party wants to present added value with a higher price tag,

it cannot compete. How can governments change the procurement specification so that bio-based alternatives become competitive?

Advice and application

Knowledge of the products and their application.

Benefits unknown.

Definition bio-based - circular - sustainability

Unknown in society

Dogmatic approach dominates: builders stick to the familiar recipes, technical knowledge required. Performance is requested in the building decree - a contractor must demonstrate that he is compliant, so the use of bio-based can be enforced through building decisions and therefore through regulations.

We may have to work with contractors on the basis of performance, but so far it is based on price.

In summary, participants identified the following issues around bio-based insulation materials for people building and planning houses in the Netherlands:

Cluster	Individual contributions	Original language (Dutch)
Inertia (Inertie)	Lack of sense of urgency	Sense of urgency (gebrek)
	No own initiative	Geen eigen initiatief
	Habits/inertia	Gewoonte/inertie
“Market forces” (Marktwerving)	Market potential	Markt potentieel
	How do I incorporate this into my specification and conditions?	Hoe verwerk ik dat in mijn bestek?
	Competition	Concurrentie
Processing (Verwerking)	Ease of execution	Uitvoeringsgemak
	Processing	Verwerking
Warranty (Garantie)	Warranty	Garantie
	Warranty	Garantie
	Warranty & Risk	Garantie & Risico
	Proven applicability (warranty)	Bewezen toepasbaarheid (Garantie)
Information & Knowledge (Informatie & Kennis)	Reliability	Betrouwbaarheid
	Unfamiliarity	Onbekendheid
	Unfamiliarity with regard to understanding & possibilities	Onbekendheid v.h. begrip & mogelijkheden
	Advice on application	Advies over toepassing
	(Un)familiarity	(On)bekendheid
	Unfamiliarity	Onbekendheid
	Unfamiliarity	Gebrek kennis
	Advantages unknown	Voordelen onbekend
	Is it known which isolation materials are bio-based? & the percentage of bio-basedness	Is bekend welke isolatiematerialen biobased zijn? + % biobased
	Which bio-based isolation	Welke isolatie materialen er

	materials are available	beschikbaar zijn in biobase
Price & costs (Prijs & Kosten)	Price	Prijs
	Price	Prijs
	Price vs performance	Prijs vs prestatie
	Cheapest price	Goedkoopste prijs
	Costs	Kosten
	Price (no comparison on quality)	Prijs (geen vergelijk op kwaliteit)
	Must have economic advantage	Moet economisch voordeel hebben
	More expensive	Duurder
	Price/Quality	Prijs/Kwaliteit
	Price conventions	Prijsconventies
Definition (definitie)	Definition? For bio-based, circular, sustainability	Definitie? Voor biobased, circulair, duurzaamheid
CSR (MVO)	Short term vs long term	Short term vs long term
Availability – where and when (Beschikbaarheid – waar & wanneer)	Availability	Beschikbaarheid
	Available, swiftness, storage	Leverbaar, snelheid, voorraad
	Where can I get it?	Waar kan ik dat krijgen?
	Know the contractors where bio-based materials can be purchased?	Weten de aannemers waar biobased materialen verkrijgbaar zijn?
Technical characteristics – laws and regulations (Technische eigenschappen – wet en regelgeving)	Quality	Kwaliteit
	Performance	Prestaties
	What is the added value of biobased insulation materials with respect to regular insulation materials	Is bekend wat de meerwaarde is van biobased isolatie materialen t.a.v. reguliere isolatie materialen
	Insulation values	Isolatie waarden
	Technical possibilities	Technische mogelijkheden
	Lifespan	Levensduur
	Lifespan	Levensduur
	Health no Building Code requirement	Gezondheid geen bouwbesluiten

4.4 Issues for buyers

QUESTION 2 - What are the most important issues for house-buyers regarding the use of bio-based insulation materials (in buildings)?

- **Indoor health:** this is the main reason for choosing bio-based insulation material, while a second reason is social responsibility. With buyers you see more willingness to read up and gain knowledge.
- **The combination of materials is important for insulation:** it is not about the solitary products.
- **Feeling:** individuals may rather develop feelings for a certain material than be convinced by the specifications mentioned in the brochure. This is how they can be convinced.

- **Effect:** in relation to feeling. If you apply the material in the right way, this has a positive effect on the indoor climate. The effect on me as a person is more important than the effect on the energy bills.
- **Green construction**
- **Enjoyment of life** (health and wellbeing)
- Am I going to notice the **difference**?
- **Money**
- When people have to **choose** between good materials or a nice kitchen, they choose a nice kitchen.
- **Its outlook:** what it looks like. People like to show the materials (exposure), can show pride that they are bio-based.
- When people want to make the **choice**, they do it out of their own convictions.
- **Incentives** for the consumer to invest extra.
- **Quality and reliability**
- **Insulation values**
- **Processability:** that it is pleasant to work with the bio-based materials.
- **Maintenance**
- **If it has a natural look:** visibility and feeling. (Risk of greenwashing)
- How much **influence** does the consumer have? Not everyone builds a house themselves, often an existing house is bought that was built with conventional means.
- **Value of home** over X number of years
- **Government standardization**
- Advertising for **energy savings** – is a motive, just like solar panels.
- Which contractor/supplier is suitable for me? **Where can I find it?** Who can organize it for me? Where do I start?
- The **market** where bio-based materials can take off is mainly a professional market, there are few do-it-yourselfers and private individuals.

In summary, participants identified the following issues around bio-based insulation materials for people buying houses in the Netherlands:

Cluster	Individual contributions	Original language (Dutch)
Well-being (Welzijn)	Health	Gezondheid
	Health	Gezondheid
	Health (Indoor environment)	Gezondheid (binnenmilieu)
	Green building	Groen bouwen
	Characteristics: Do I feel a difference	Eigenschappen: ga ik het verschil merken
	Comfort (indoor climate)	Comfort binnenklimaat
	Life convenience (Health)	Levens gemak (Gezondheid)
	Inner city climate? (indoor climate, "the" climate)	Binnenstedelijk klimaat? (Binnenklimaat, "het" klimaat)
Product warranty (Product Garantie)	Reliability	Betrouwbaarheid
	Reliability	Betrouwbaarheid
	Lifespan	Levensduur
	Lifespan	Levensduur

	Quality	Kwaliteit
	Quality	Kwaliteit
	Sustainability	Duurzaamheid
	Sustainability	Duurzaamheid
	Insulation values	Isolatiewaarden
	Trust in performance	Vertrouwen in prestaties
	Maintenance	Onderhoud
	Maintenance	Onderhoud
	Processability	Verwerkbaarheid
	Reliability	Betrouwbaarheid
Added value (meerwaarde)	Effect	Effect
	Added value?	Meerwaarde?
	Performance vs Price	Prestaties vs prijs
CSR (MVO)	Social responsibility	Maatschappelijk verantwoordelijkheid
	Social responsibility	Maatschappelijk verantwoordelijkheid
Emotion (Emotie)	Prevent (image)	Voorkomen (Beeld)
	Exposure	Exposure
	If it has a natural look it is also okay	Als het een natuurlijk look heeft ook okay
	Feeling	Gevoel
	Visibility of the application	Zichtbaarheid van de toepassing
	Driven by advertisement, energy saving	Gedreven door reclame, energiebesparing
	When choice, then not own conviction	Wanneer keuze, dan niet eigen overtuiging
Regulation (Regulering)	Government standardisation	Normering overheid
	Subsidies/stimulant	Subsidie/stimulans
Choices (Keuzes)	Choices	Keuzes
	No choice if you do not build yourself	Geen keuze als je niet zelf bouwt
	Government procurement (internal consideration: CSR vs Price)	Overheidsinkoop (interne afweging: MVO vs prijs)
Price (Prijs)	Price	Prijs
	€	€
	Price	Prijs
	Price?	Prijs
	Surcharge	(meer)price
	Price	Prijs
	Long-term thinking, not on costs	Lang termijn denken, niet aan kosten
	Costs (initial and consumption)	Kosten (initieel, verbruik)
	Value of the apartment over X years?	Waarde woning binnen X jaar?
Offer (aanbod)	Availability	Beschikbaarheid
	Which contractor/supplier is suitable for me	Welke aannemer/leverancier is voor mij geschikt
	Government procurement:	Overheidsinkoop: Verwoording in

	Wording in procurement	uitvraag
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2. Key messages around bio-based insulation materials

The exercises around the key messages was split into two parts, of which the first dealt with each of the 16 key messages and the comments participants would have about each of them. The second part evaluated the relevance the participants associate with each of the messages and was carried out as a rating exercise.

Key Message Number 1: Bio-based insulation materials are wholly or mainly made from natural and renewable resources. (Dutch: Bio-based isolatiematerialen worden geheel of voornamelijk gemaakt van natuurlijke en hernieuwbare grondstoffen.)

Comments by participants:

English	Original (Dutch)
Natural and renewable resources with any doubt	Natuurlijke, hernieuwbare grondstoffen zonder twijfel
New term for circular. Not made from oil?	Nieuwe term in circulair. Niet uit olie?
Like wool, flax fibers, shells. Giving examples makes it more concrete. Not renewable, but “regrowable”.	Zoals wol, vlasvezels, schelpen. Voorbeelden noemen maakt het concreter. Niet hernieuwbaar, maar hergroeibaar.
Yes and when completely it is 100% biobased. So it is desirable to express the degree of bio-basedness.	Ja en wanneer geheel dan is het 100% bio-based. Dus wenselijk om de mate van bio-based uit te drukken.
Agree (cellulose - newsprint) wood fiber insulation and sheets for exterior finishing.	Mee eens (cellulose – krantenpapier) houtvezel isolatie en platen voor buitenafwerking.
Very good! Now it needs to be affordable!	Heel goed! Nu nog betaalbaar!
Wholly is indeed dangerous, because usually other additions.	Geheel is inderdaad gevaarlijk, want meestal andere toevoegingen.
Correct	Klopt
What is renewable: Regrowable? Watch out, for example hempcrete (hemplime): lime is mineral. Shell insulation: Shells are often fossils. Be honest!	Wat is hernieuwbaar: Hergroeibaar? Pas op bijvoorbeeld kalkhennep: Kalk is mineraal. Schelpenisolatie: Schelpen zijn toch vaak fossielen. Eerlijk zijn!
No comment	Geen commentaar
2 thoughts	2 gedachten
True. Not mainly, but principally. Not renewable, but recyclable.	Waar. Nier voornamelijk, maar hoofdzakelijk, Niet hernieuwbaar, maar herwinbaar.
Is 40% the target? Bio-based in itself no goal. Sustainability is the goal !!	Is 40% het doel? Bio-based is middel geen doel. Duurzaamheid is doel!!
True. Not renewable, but recyclable.	Waar. Niet hernieuwbaar, maar herwinbaar.

Key Message Number 2: Bio-based insulation materials could replace traditional materials without loss of performance. (Dutch: Biobased isolatiematerialen kunnen conventionele materialen vervangen zonder prestatieverlies.)

English	Original (Dutch)
Yes and no, depending on which criteria play a role	Ja en nee, afhankelijk welke criteria laat meespelen
Lifespan?	Levensduur?
I doubt that	Dat betwijfel ik
No, a different approach is often required. Different way of thinking & design. Vaporous materials are advantageous in vapor-open construction method.	Nee er is vaak een andere benadering nodig. Anders denken & ontwerpen. Dampopen materialen halen het voordeel bij een dampopen bouwmethoden.
Agree. They are also healthier. Only these will have to be put into a different concept.	Mee eens. Ze zijn ook nog gezonder. Alleen zullen deze in een ander concept gemaakt moeten worden.
Yes, but I do have thicker walls and/or smaller rooms.	Ja maar ik zit wel met dikkere wanden en/of kleinere ruimten.
Important message but formulated in a negative way.	Belangrijke boodschap, maar negatief geformuleerd.
Test? Proof?	Test? Bewijs?
This one is clear. What is the performance in this case?	Die is duidelijk. Wat is de prestatie in dit geval?
Do you have proof of this?	Heb je hier bewijzen van?
“Could” is formulated very carefully. But for example you do you need more thickness? For the same insulation value?	Kunnen is heel voorzichtig. Maar heb jij bijvoorbeeld meer dikte nodig? Voor dezelfde isolatie waarde?
If well applied	Mits goed toegepast
100% bio-based does not mean the best quality. Conventional materials are also very durable. Quality label!	100% bio-based betekent niet de beste kwaliteit. Conventionele materialen zijn ook heel duurzaam. Kwaliteitslabel!
Partly. For example, application under ground level	Deels. Bijvoorbeeld toepassing onder maaiveld

Key Message Number 3: The heat insulation performance of bio-based insulation materials can compete with mineral or fossil-based materials, such as rock wool, glass wool and polystyrene. (Dutch: De warmte-isolatie prestatie van biobased isolatiemateriaal kan concurreren met die van minerale of fossiele isolatiematerialen, zoals steenwol, glaswol en polystyreen.)

English	Original (Dutch)
On the basis of λ (insulation) value, possibly a little lower, but there are more arguments than those that play a role. For example phenomenon phase shift	Op basis van λ (isolatie)-waarde eventueel iets lager, maar er zijn meer argumenten dan dat die een rol spelen. Bijvoorbeeld fenomeen faseverschuiving.
Compete = Just as good.	Concurreren = Net zo goed.
"Can compete" is too vague. Replace by "is just	"Kan concurreren" is te vaag. Vervangen door

as good or better"	"is even goed of beter"
Thermal insulation yes slightly thicker package.	Thermische isolatie ja iets dikkerpakket.
Usually have a greater insulation value.	Hebben meestal een grotere isolatiewaarde.
Provided you pay more and do not mind space loss.	Mits je meer betaalt en ruimteverlies niet erg vindt.
Important message but formulated in a negative way.	Belangrijke boodschap, maar negatief geformuleerd.
Yes	Ja
Same as previous one?	Zelfde als vorige?
If point 2 is correct, then point 3 is self-evident.	Als punt 2 klopt, dan is punt 3 vanzelfsprekend.
"Can" is not very concrete	"Kan" is niet concreet
Yes, and moreover delivers added value	Ja, en levert bovendien meerwaarde
Polystyrene = not easy language	Polystyreen = not jip-janneke taal
Yes, except for Pur (Polyurethane foam)	Ja, behalve van Pur

Key Message Number 4: Bio-based insulation materials provide excellent summer heat protection. (Dutch: Biobased isolatiematerialen zorgen voor een uitstekende bescherming tegen zomerhitte.)

English	Original (Dutch)
Definitely.	Zeer zeker.
Unlike other non-bio-based materials? Keep your house cool in the summer.	Anders dan andere niet bio-based materialen? Houden uw huis koel in de zomer.
No comment	Geen commentaar
Yes, it can withstand heat stress in buildings	Ja kan tegen hittestress in gebouwen
Also against cold.	Ook tegen koude.
And against winter cold!	En tegen winterkoude!
Nice plus point = added value.	Mooi pluspunt = meerwaarde.
Correct. Can be used when selling the house.	Klopt. Gebruikt tijdens verkopen.
Addition to previous?	Toevoeging op vorige?
No comment	Geen commentaar
How do I measure that?	Hoe meet ik dat?
If the vapor-open applications are used.	Mits dampopen toegepast.
No comment	Geen commentaar
Only in a completely vapor-permeable construction.	Uitsluitend in een volledig dampdoorlatende constructie.

Key Message Number 5: Bio-based insulation materials are vapour active. They have better moisture regulating properties compared to conventional materials. (Dutch: Biobased isolatiematerialen zijn dampactief. Ze hebben in vergelijking met conventionele materialen betere vochtregulerende eigenschappen.)

English	Original (Dutch)
Moisture 'what are you thinking of? We talk about water vapor. Insulation value goes down for all materials when they get wet, but not with animal fibers. Big challenge, simple language. Give many lectures (W. Kroon). Materials interact with their environment (provided no vapor inhibitors are used).	‘Vocht’ waar denk je aan? Wij praten over waterdamp. Isolatie waarde gaat naar beneden bij alle materialen als zij nat worden, maar niet bij dierlijke vezels. Grote uitdaging, Jip-Janneke taal. Materialen gaan een interactie aan met hun omgeving (mits er geen dampremmers worden gebruikt).
Vapor active? Dynamic under conditions. Make distinction between technical language and Jip-Janneke (simple, layman’s) language.	Dampactief? Dynamisch onder voorwaarden. Onderscheid technische taal en Jip-Janneke taal.
Vapor active = dynamic performance.	Dampactief = dynamische prestatie.
Yes! Very good moisture regulation.	Ja! Zeer goed vochtregulerend.
Write” Bio-based insulation materials have better moisture regulating properties compared to conventional materials”.	Beter “biobased isolatiematerialen hebben in vergelijking met conventionele materialen betere vochtregulerende eigenschappen”.
Not "vapor-active", but "moisture regulating". It means they absorb moisture and release moisture again	Niet “dampactief”, maar “vochtregulerend”. Betekent zij nemen vocht op en staan vocht weer af
Pretty technical	Wel technisch
I work with Gulex wood fiber board. This is vapor permeable. A vapor-open foil is also used for conventional materials. But whether bio-based is better?	Ik werk met houtvezelplaat van Gulex. Deze is dampdoorlatend. Voor conventionele materialen word ook een dampopen folie verwerkt. Maar of bio-based beter is?
Yes, vapor open...	Ja, dampopen...
Yes, where are the academic studies that support this?	Ja, waar zijn de academische studies die dit ondersteunen?
How do I notice that? What are conventional materials? What do you compare with what?	Hoe merk ik dat? Wat zijn conventionele materialen? Wat vergelijk je met wat?
Well formulated. Only vapor-active is somewhat more difficult.	Goed geformuleerd. Alleen dampactief is wat moeilijker.
Are they all vapor active?	Zijn ze dat allemaal?
All of them?	Allemaal?

Key Message Number 6: Bio-based insulation materials have good sound insulation properties that are comparable to those of standard materials. (Dutch: Biobased isolatiematerialen hebben goede geluidswerende eigenschappen, die vergelijkbaar zijn met die van standaardmaterialen.)

English	Original (Dutch)
Not sound-proofing, but sound-absorbing properties. Rather "conventional" than "standard".	Niet geluidswerende, maar geluidsabsorberende eigenschappen. Liever "conventioneel" dan "standard".
Not sound-proofing, but sound-absorbing properties. Not standard materials, but conventional materials. Heat absorption.	Niet geluidswerende, maar geluidsabsorberende eigenschappen. Niet standard materialen, maar conventionele materialen. Warmteabsorptie.
Not sound-proofing, but sound-absorbing properties. Add "with equal isolation".	Niet geluidswerende, maar geluidsabsorberende eigenschappen. Voeg "bij gelijke isolatie" toe.
A lot better	Veel beter
Leave out "good"	"Goed" weglaten
No comment	Geen commentaar
Or better?	Of beter?
Depends on the concept.	Ligt aan het concept.
No, it is always used combinations of materials and thicknesses and hardnesses. So combinations can certainly be made bio-based.	Nee, zit in gebruik altijd in combinaties van materialen en dikten en hardheden. Dus combinaties zijn zeker bio-based te maken.
Straw certainly, but delivers a thick wall.	Stro zeker, maar levert een dikke wand.
Why should I opt for bio-based, it should be better. Then a selling point.	Waarom zou ik dan voor bio-based kiezen, het zou beter moeten zijn. Dan Selling point.
They are better, or not?	Die zijn toch beter?
Are they comparable? Or better or the same?	Zijn ze vergelijkbaar? Of beter of zelfde?
Or better?	Of Beter?

Key Message Number 7: Bio-based insulation materials do not pose an increased risk of fire if properly installed and used in accordance with fire protection regulation. (Dutch: Biobased isolatiematerialen vormen geen verhoogd risico op brand als ze op de juiste manier worden geïnstalleerd en gebruikt in overeenstemming met de brandveiligheidsvoorschriften.)

English	Original (Dutch)
Negatively formulated? Many bio-based materials do not burn at ambient temperature.	Negatief geformuleerd? Veel bio-based materialen branden niet bij omgevingstemperatuur.
Negatively formulated. Limited oxygen index.	Negatief geformuleerd. Limited oxygen index.
Are safe.	Zijn veilig.
Even safe	Zelfs veiligen
Costs?	Kosten?
No comment	Geen commentaar
Important point, many benefits	Belangrijke punt, veel voordelen

Correct.	Klopt.
Know that for the cork this is the case, but do not know in general whether this applies to all.	Weet voor de kurk dat dit zo is maar weet het niet over het algemeen of dit voor alle geldt.
So more care is needed in the execution.	Er is dus meer zorg nodig bij de uitvoering.
These are quite a number of disclaimers.	Zijn wel veel disclaimers.
With respect to glass and rock wool.	T.o.v. glas en steenwol.
No comment	Geen commentaar
This sounds like an open door: where's the catch with phrases like "properly installed" and "in accordance with"? Is it difficult? Is it expensive?	Dit klinkt als een open deur: waar zit de adder onder het gras in "de juiste manier" en "in overeenstemming met"? Is dat moeilijk? Kost dat veel?

Key Message Number 8: Bio-based insulation materials are as durable as conventional ones.

(Dutch: Biobased isolatiematerialen kunnen net zo lang meegaan als conventionele isolatiematerialen.)

Comments here must be assessed under the consideration that the Dutch translation said "can be as durable as conventional ones".

English	Original (Dutch)
No comment	Geen commentaar
No comment	Geen commentaar
Yes.	Ja.
Lifespan. Much longer.	Levensduur. Veel langer.
How long?	Hoelang?
Give examples to make it more concrete, to connect better with the consumer's experience and say something about life span (how long, 10 or 20 years).	Noem voorbeelden dan maak je het concreter, sluit je beter aan bij belevingswereld van de consument en zeg iets over levensduur (hoe lang, 10 of 20 jaar).
Certainly correct. Good examples include cellulose with old buildings.	Zeker juist. Goede voorbeelden o.a. cellulose met uit oude panden.
?	?
Certainly much longer because of re-use and recycling and upcycling possibilities and potential for the future.	Zeker veel langer vanwege herbestemming en recycle en upcycle mogelijkheden en potentieel voor de toekomst.
If applied correctly (applies to both types). There are waterproof conventional materials, are they also available bio-based?	Indien juist toegepast (geldt voor beide soorten). Er zijn watervaste conventionele materialen, zijn die er ook bij bio-based?
Consciously formulated carefully? Better "Bio-based insulation materials last as long as conventional insulation materials".	Bewust voorzichtig geformuleerd? Beter "Bio-based isolatiematerialen gaan net zo lang mee als conventionele isolatiematerialen".
I don't know that.	Weet ik eigenlijk niet.
No comment	Geen commentaar
In comparable circumstances they last as long as ... (not "can be")	Bij vergelijkbare omstandigheden gaan ze gemiddeld net zolang mee als... (niet "kunnen")

Key Message Number 9: At the end of life bio-based insulation causes less pollution and can be disposed of easier. (Dutch: Aan het einde van de levensduur leidt biobased isolatiemateriaal tot minder vervuiling en kan gemakkelijker worden verwerkt.)

English	Original (Dutch)
End of life?	Einde van de levensduur?
I think this is correct	Klopt wel denk ik
"Lifespan" is when I demolish? Or end of life of the material? How should I understand "end of life"?	"Levensduur" is als ik sloop? Of einde levensduur van het materiaal? Hoe moet ik "einde levensduur" zien?
In most cases they do	Meeste gevallen wel
Not "disposed" but "degraded" than conventional insulation"	Niet "verwerkt" maar "afgebroken" dan conventionele isolatie"
No comment	Geen commentaar
No comment	Geen commentaar
How? Reuse, what is the lifespan	Hoe? Hergebruik, wat is de levensduur
Yes	Ja
Recycling and upcycle possibilities and potential: here, this level of biobased is important. 100% make it easier than when it is only 80% because then you have to start wondering what the other 20% consists of and whether you want to keep that in the circle.	Recycle en upcycle mogelijkheden en potentieel: van belang is hier die mate van biobased. 100% meer mogelijk dan wanneer het 80% is want dan moet je gaan afvragen waar de andere 20% uit bestaat en of je dit in de cirkel wilt houden.
You also have to agree on the non-biobased additions.	Hierbij moet je ook akkoord hebben op de niet biobased toevoegingen.
Of course!	Natuurlijk!
Yes. (Reuse?)	Ja. (Hergebruiken?)

Key Message Number 10: Bio-based insulation materials contribute to a pleasant and healthy indoor climate. (Dutch: Biobased isolatiematerialen dragen bij aan een aangenaam en gezond binnenklimaat.)

English	Original (Dutch)
Better "ensure" not "contribute". How do I measure that?	Beter "zorgen voor" niet "dragen bij". How meet ik dat?
Just hygrothermic etc.	Juist hygrothermisch etc.
Should be more specific (pleasant, healthy)	Kan specifieker (aangenaam, gezond)
In most cases they do	Meeste gevallen wel
"Can contribute" and "in combination with ventilation"	"kunnen bijdragen" en "in combinatie met ventilatie"
No comment	Geen commentaar
Better write "Biobased insulating materials are better than regular insulation materials" or "Biobased insulating materials contribute	Beter "Biobased isolatiematerialen zijn beter dan reguliere isolatiematerialen" of "Biobased isolatiematerialen dragen in vergelijking met

more to a pleasant and healthy indoor climate compared to regular insulation materials".	reguliere isolatiematerialen beter bij aan een aangenaam en gezond binnenklimaat".
Bio-based?	Biobased?
Yes, moisture regulating	Jawel vochtregulerend.
Yes, but the case study is important	Ja maar case studie is van belang.
Good message.	Goede boodschap.
Naturally!	Vanzelfsprekend!
Agreed, what after 20 years?	Mee eens, wat na 20 jaar?

Key Message Number 11: Bio-based insulation materials are much more user friendly than conventional insulation materials because the materials are non-irritating to the skin. (Dutch: Biobased isolatiematerialen zijn veel gebruiksvriendelijker (dan conventionele isolatiematerialen) omdat de materialen niet irriterend voor de huid zijn.)

English	Original (Dutch)
No comment	Geen commentaar
Most do. Hempcrete (hemplime) for example not, but still ecological.	De meeste wel. Kalkhennep bijvoorbeeld niet, maar wel ecologisch.
Is not relevant to me because I do not even see the stuff. Only for the do-it-yourselfer?	Is voor mij niet relevant want ik zie het spul niet eens. Alleen voor de doe-het-zelver?
In most cases they do	Meeste gevallen wel
No comment	Geen commentaar
No comment	Geen commentaar
Also healthier	Ook gezonder
For those installing the materials	Voor de installateur
Yes	Ja
Yes, applies to many materials and this is most important to mention to the contractor	Ja, geldt voor veel materialen en dit is het belangrijkste om de aannemer te vermelden
Make it clear, by letting people feel it	Duidelijk te maken, door te laten voelen
There are people who are allergic to e.g. straw!	Er zijn mensen die allergisch zijn aan b.v. stro!
This is not always the case. During the blowing in of cellulose a lot of dust is occurring.	Is niet altijd. Tijdens inblazen cellulose veel stof.

Key Message Number 12: Bio-based insulation materials contribute to climate protection in three ways: by storing CO₂, by saving energy in the production and by reducing CO₂ emissions through thermal insulation during the lifetime of buildings. (Dutch: Biobased isolatie draagt op drie manieren bij aan klimaatbescherming: door CO₂ op te slaan tijdens de groei, door energie te besparen bij de productie, en door CO₂-uitstoot te vermijden door thermische isolatie tijdens de levensduur van gebouwen.)

English	Original (Dutch)
Does my house get a bio-based quality label? Does this increase the value of my house?	Krijgt mijn woning hierdoor een bio-based keurmerk? Is dit waarde vermeerderend voor mijn woning?

No comment	Geen commentaar
Isolation: Nice, the first time I see it in this workshop. NB does it contribute or does it contribute (on balance) <u>more</u>	Isolatie: Leuk, de eerste keer dat ik dit zie deze workshop. NB draagt het bij of draagt het (per saldo) <u>meer</u> bij
In most cases they do	Meeste gevallen wel
If the lifespan is the same	Mits de levensduur gelijk zijn
No comment	Geen commentaar
No comment	Geen commentaar
The last one is also valid for conventional materials	Laatste geldt ook voor conventionele materialen
Yes	Ja
Yes, and recycle and upcycle CO ₂ is important for biobased.	Ja en recycle en upcycle CO ₂ is van belang voor biobased.
Especially first and second point are distinctive	Vooral eerste en tweede punt onderscheidend
Not all bio-based insulation (wool -> sheep -> greenhouse gas!) (Methane ≠ CO ₂)	Niet alle biobased isolatie (wol -> schaap -> boeikasgas!) (methaan ≠ CO ₂)
?	?

Key Message Number 13: Many bio-based insulation materials can be sourced from regional agriculture and forestry. (Dutch: Veel biobased isolatiematerialen kunnen uit regionale land- en bosbouw worden betrokken.)

English	Original (Dutch)
Right, often appeals.	Juist, spreekt vaak aan.
Is the supply enough for the question? If the transport sector is biobased, this is not an issue.	Is het aanbod dan genoeg voor de vraag? Indien de transportsector biobased wordt is dit geen issue.
This is possible. Cellulose from newspapers, Wood fiber insulation, sheep wool	Dit is mogelijk. Cellulose van krantenpapier, Houtvezelisolatie, schapenwol
Yes, can be a goal; but is cork less biobased for Australia? No. Origin and route of the material to the product does not matter for biobased, more LCA related ...	Ja, kan een streven zijn; maar kurk is daarmee voor Australië minder biobased? Nee. Herkomst en route materiaal tot product maakt dus niet uit voor biobased, meer LCA gerelateerd...
Location?	Locatie?
For example ... Make it concrete, experience. Is it at the expense of something else? Food production?	Bijvoorbeeld... Maak het concreet, beleving. Gaat het ten koste van iets anders? Voedselproductie?
Is also a risk: is an implicit disqualification of biomass raw material from elsewhere. Where does the processing take place?	Is ook een risico: is impliciete diskwalificatie van biomassa grondstof van elders. Waar zit verwerking?
No comment	Geen commentaar
Partly	Deels
Buzzword, field, biomass. Biobased or sustainable materials always contain biomass	Buzz, akker, biomassa. Biobased of duurzame materialen bevatten altijd biomassa

No comment	Geen commentaar
Would be good to make that visible with regard to a label	Lijkt me goed om dat zichtbaar te maken met betrekking voor een kenmerk
Yes	Ja
Competition for food	Voedsel competitie

Key Message Number 14: In a price comparison additional benefits such as building physics, health and sustainability should be taken into account. (Dutch: In een prijsvergelijking zou rekening gehouden moeten worden met extra voordelen zoals bouwfysica, gezondheid en duurzaamheid.)

English	Original (Dutch)
Sure, how easy is it to make that clear?	Zeker, hoe makkelijk duidelijk te maken?
Totally agree. But define "sustainability" (include CO2 emissions)	Helemaal mee eens. Maar definieer "duurzaamheid" (betrek CO ₂ -emissie erbij)
One must think long term. By investing in organic insulation in the building industry, recover money over the years in heating costs.	Men moet lang termijn denken. Door in de bouw te investeren in biologische isolatie verdienen je dit terug in de loop der jaren aan stookkosten.
Yes, but "sustainability" cannot be used that way. In other words, what is meant by sustainability.	Ja maar "duurzaamheid" kan niet zo worden gebruikt. M.a.w. wat wordt bedoeld met duurzaamheid.
Absolutely	Absoluut.
How do you express that in price? Depends on what you find important.	Hoe druk je dat in prijs uit? Is maar net wat je belangrijk vindt.
Who is taking that into account? Price comparison of what? The idea is therefore: added value and total cost of ownership must be included by ... in price comparisons of the offer.	Door wie wordt rekening gehouden? Prijsvergelijking van wat? Idee is dus: meerwaarde en total cost of ownership moeten door Meegenomen worden in prijsvergelijkingen van het aanbod.
More clarity about the benefits -> why that price	Meer duidelijkheid over voordelen -> waarom die prijs
True	Waar
Social Business Case instead of money	Maatschappelijke Business Case in plaats van geld
Insulation against cold & heat	Isolatie tegen kou & warmte
& lifespan / maintenance (= total cost of ownership)	& levensduur/onderhoud (=total cost of ownership)
Price, quality, comfort, health, lifespan, recycling, environmental impact	Prijs, kwaliteit, comfort, gezondheid, levensduur, recyclage, milieubelasting
Building physics? Too abstract, principle is ok	Bouwfysica? Te abstract, principe ok

Key Message Number 15: Quality labels can help you to find a product that is healthier to you and the environment. (Dutch: Met kwaliteitslabels kunt u een product vinden dat gezonder is voor u en voor het milieu.)

English	Original (Dutch)
Tricky, but good to do	Lastig, maar wel goed om te doen
Is the quality label reliable?	Is het kwaliteitslabel betrouwbaar?
Is the information available?	Is de informatie voorhanden?
I do not know; labels are also often paid / bought in my opinion. Better certification by EU?	Weet ik niet; labels zijn naar mijn mening ook vaak betaald/gekocht. Beter certificering door EU?
? - > Where can I find them	? -> Waar te vinden
If the quality labels are objective / reliable / clear	Als de kwaliteitslabels objectief/betrouwbaar/duidelijk zijn
Which quality labels? No, I cannot do with those labels. According to me, the proposition is: if you would use the quality labels x, y, z you can buy the products ... And that is true: most innovative products do not yet have the right labels.	Welke kwaliteitslabels? Nee, met de labels kan ik me niet. Stelling is volgens mij: als u de kwaliteitslabels x, y, z zou gebruiken kunt u de producten... En klopt dat wel: de meeste innovatieve producten hebben nog niet de juiste labels.
No comment	Geen commentaar
Does not seem to work	Lijkt niet te werken
No comment	Geen commentaar
Gladly	Graag!
Is that right? I think a database would be more convenient, a database with products & technical specification & possibly a benchmark with regular insulation products	Is dat zo? Een database zou denk ik handiger zijn, een database met producten & technische specificatie & eventueel benchmark met reguliere isolatieproducten
[not legible]	[niet leesbaar]
Correct. Too many labels.	Helemaal waar. Te veel labels.

Key Message Number 16: Standard functionality tests do not take additional and beneficial properties of bio-based insulation materials into account. (Dutch: Gestandaardiseerde functionaliteitstesten houden geen rekening met de additionele en heilzame eigenschappen van biobased isolatiematerialen.)

English	Original (Dutch)
Communication too technical?	In communicatie al te technisch?
That's true? Look at hempcrete.	Dat is zo? Kijk naar hempcrete.
No comment	Geen commentaar
Yes, for the processor during processing. Add: " <u>possible</u> additional and beneficial properties of biobased insulation materials"	Ja, voor de verwerker tijdens de verwerking. Toevoegen: " <u>mogelijke</u> additionele en heilzame eigenschappen van biobased isolatiematerialen"

Much can be improved here	Hier is veel in te verbeteren
Cannot judge that. Make properties transparent with scoring list	Kan ik niet beoordelen. Maak eigenschappen inzichtelijk met scorelijst
Is this a general/perpetual statement? Or is the statement: they do not take it into account <u>yet</u> (but should do so ...)	Is dit een algemene/eeuwigdurende statement? Of is het statement: ze houden <u>nog geen</u> rekening (maar zouden dat wel moeten doen...)
No comment	Geen commentaar
Not "beneficial" but "well-being". True.	Niet "heilzame", maar "welzijn". Waar.
Not "beneficial" but "well-being". Standardized = conventional? Barriers	Niet "heilzame", maar "welzijn". Gestandaardiseerde = conventionele? Belemmeringen
Building Code ('Bouwbesluit') does not take added value into account, standards are insufficiently focused on performance (added value)	Eisen (bouwbesluit) houden geen rekening met meerwaarde, normen zijn onvoldoende gericht op de prestaties (meerwaarde).
Correct, these needs to be mentioned separately in the database	Klopt, die moeten apart worden benoemd in de database
Unfortunately this is the case. Lobbying by conventional insulation industry is responsible for that.	Helaas is dat zo. Lobbywerk door klassieke isolatie industrie stelt daar verantwoordelijk voor
I don't know!	Weet ik niet!

3. Rating of all messages

Overview table of all ratings combined:

No*	Key message	Rating (1= least, 5 = most relevant), total number**					Overall score***
		1	2	3	4	5	
10	Bio-based insulation materials contribute to a pleasant and healthy indoor climate.	-	-	2	6	5	55
2	Bio-based insulation materials could replace traditional materials without loss of performance.	-	1	3	3	6	53
12	Bio-based insulation materials contribute to climate protection in three ways: by storing CO ₂ , by saving energy in the production and by reducing CO ₂ emissions through thermal insulation during the lifetime of buildings.	-	1	2	2	7	51
14	In a price comparison additional benefits such as building physics, health and sustainability should be taken into account.	-	1	1	4	6	51

3	The heat insulation performance of bio-based insulation materials can compete with mineral or fossil-based materials, such as rock wool, glass wool and polystyrene.	-	1	2	6	3	47
8	Bio-based insulation materials are as durable as conventional ones.	-	1	2	6	3	47
1	Bio-based insulation materials are wholly or mainly made from natural and renewable resources.	-	2	3	2	5	46
5	Bio-based insulation materials are vapour active. They have better moisture regulating properties compared to conventional materials.	-	4	-	3	5	45
11	Bio-based insulation materials are much more user friendly than conventional insulation materials because the materials are non-irritating to the skin.	2	-	3	6	2	45
9	At the end of life bio-based insulation causes less pollution and can be disposed of easier.	2	1	1	4	4	43
4	Bio-based insulation materials provide excellent summer heat protection.	1	2	1	4	5	42
7	Bio-based insulation materials do not pose an increased risk of fire if properly installed and used in accordance with fire protection regulation.	-	3	2	5	2	42
6	Bio-based insulation materials have good sound insulation properties that are comparable to those of standard materials.	-	2	4	5	1	41
15	Quality labels can help you to find a product that is healthier to you and the environment.	2	3	3	2	3	40
13	Many bio-based insulation materials can be sourced from regional agriculture and forestry.	2	3	3	1	3	36
16	Standard functionality tests do not take additional and beneficial properties of bio-based insulation materials into account.	2	2	5	1	2	35

* The number corresponds to the original order in which the messages were presented, the order in the table reflects the overall score. The message with the highest score (message number 10) is therefore presented first.

** Not all participants filled in the sheet and not all participants filled in an answer for each message.

*** The overall score is calculated by summing up all individual scores per message, e.g. for message number 1: 0 votes * score 1 + 2*2 + 3*3 + 2*4 + 5*5 = 46.

Although not encouraged, some participants left a short comment to the messages:

- Message 1: Skip “mainly” and only leave “wholly”
- Message 3: Skip polystyrene
- Message 4: If the construction is vapor permeable
- Message 6: Could even be better; sound absorbing and not just sound insulation

- Message 8: Could even live longer
- Message 9: End of life is not keeping anybody awake at night (therefore score 1)

Additionally some participants mentioned that a potential message (number 17) from the consumer's perspective would be (highly) relevant.

Annex 3 – Evaluation of the Product Expert Workshop

BioCannDo Stakeholder Workshop on Bio-Based Insulation Materials

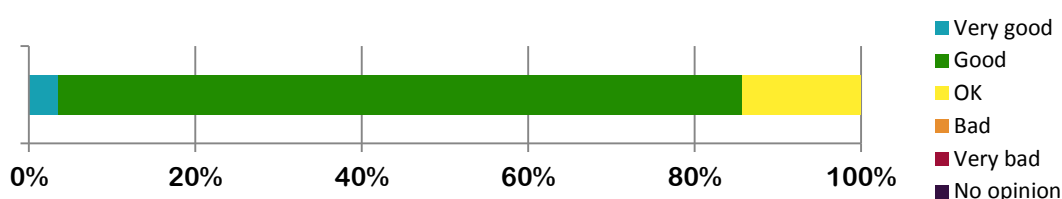
13 April 2018, Vlissingen

Total number of participants: 15

Total number of feedback forms received: 14

Question 1) How do you rate the workshop in general? (n= 14)

Very good	0,5	Good	11,5	OK	2	Bad	0	Very bad	0	No opinion	0
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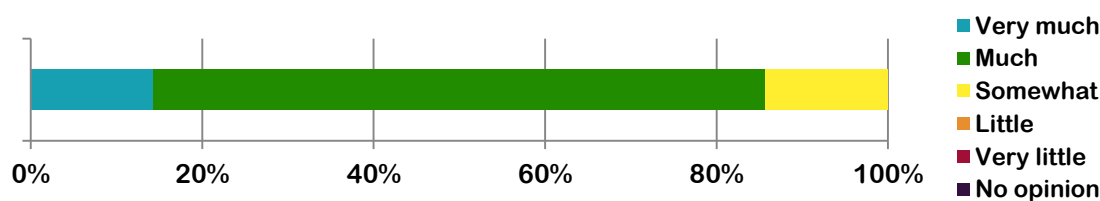


Comments:

- *I learned a lot and also nice that it is embedded in a bigger process with a clear follow-up (original: Shak gelerd en ook mooi dat het ingebed is in grotere process met duidelijke follow-up).*
- A bit searching (original: beetje zoekend).

Question 2) Were you able to contribute to and participate in the discussion? (n = 14)

Very much: 2	Much: 10	Somewhat: 2	Little: 0	Never: 0	No opinion: 0
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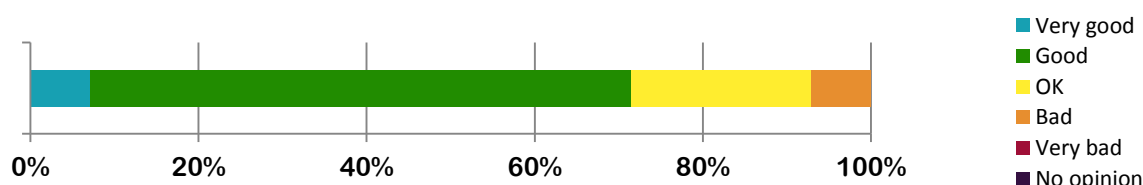


Comments:

None.

Question 3) Do you think we have a good breadth of perspectives in the workshop? (n = 14)

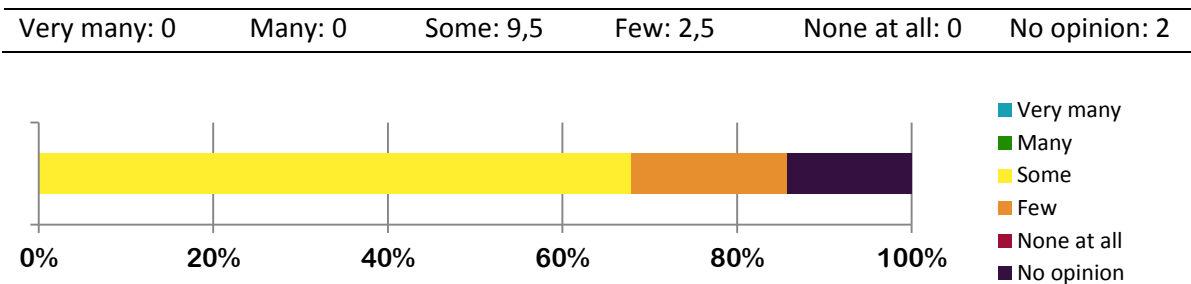
Very good: 1	Good: 9	OK: 3	Bad: 1	Very bad: 0	No opinion: 1
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Comments:

- *No “opponents” makes it easy and this was also not the goal, I think. (original: Geen “tegenstanders” maakt het wel makkelijk en was ook niet het doel denk ik).*
- *Maybe too little experts, too many non-experts. (original: Misschien te weinig experts, te veel niet-experts).*

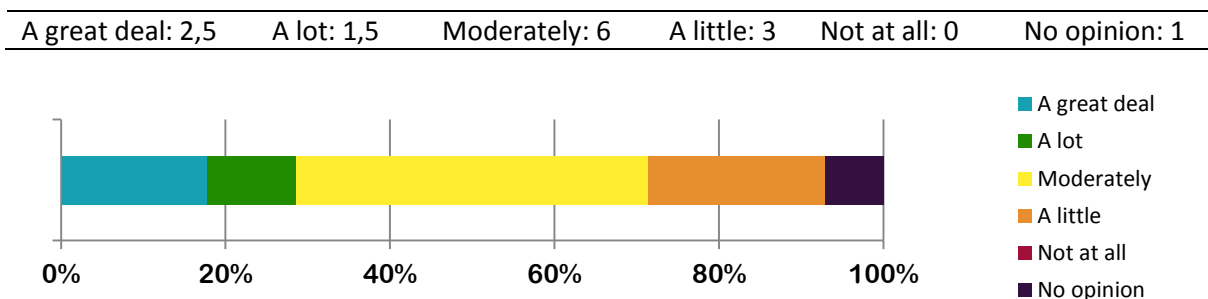
Question 4) Did you make any new contacts during the workshop that are useful for your work? (n = 14)



Comments:

- *Was also not my intention. (original: Was ook niet mijn intentie).*

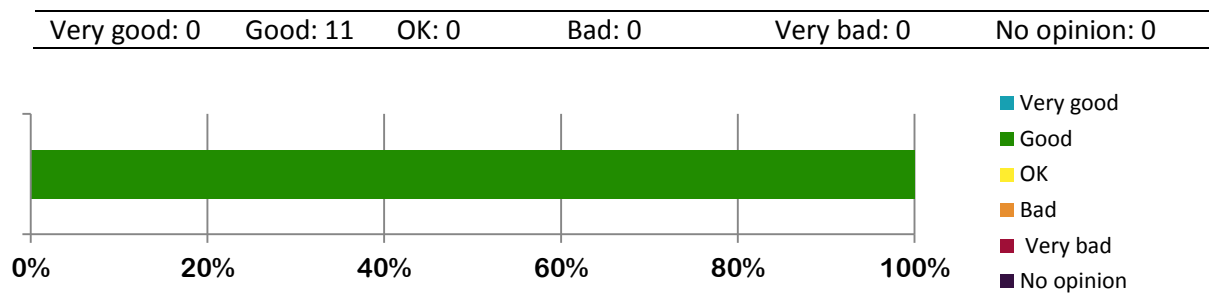
Question 5) Did you develop new insights or gain new knowledge relevant for you and your work? (n = 14)



Comments:

- *I am in the bio-based insulation materials sector myself and it is nice to learn so much in little time. Builders and planners were part of the subject, but architects not.... (original: Zit zelf in de biobased isolatiematerialen en het is leuk en fijn om in een korte tijd zoveel inzichten te krijgen. Vastgoed and aannemers waren onderwerp maar architect is niet benoemd...).*

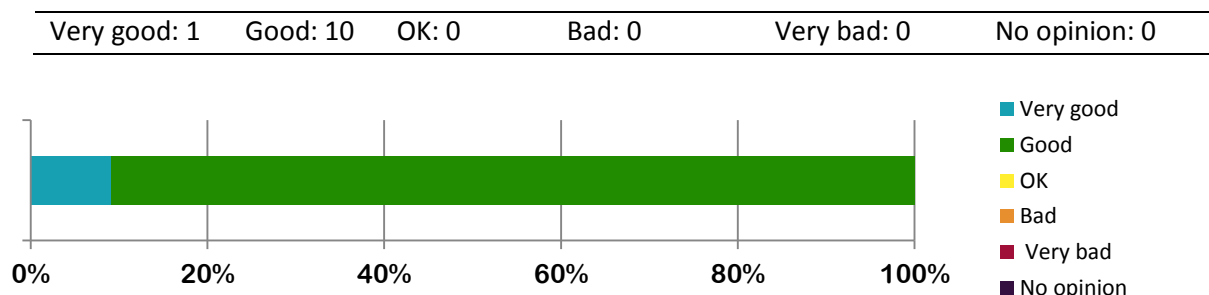
Question 6) How do you rate the process of the workshop? (n = 11)



Comments:

None.

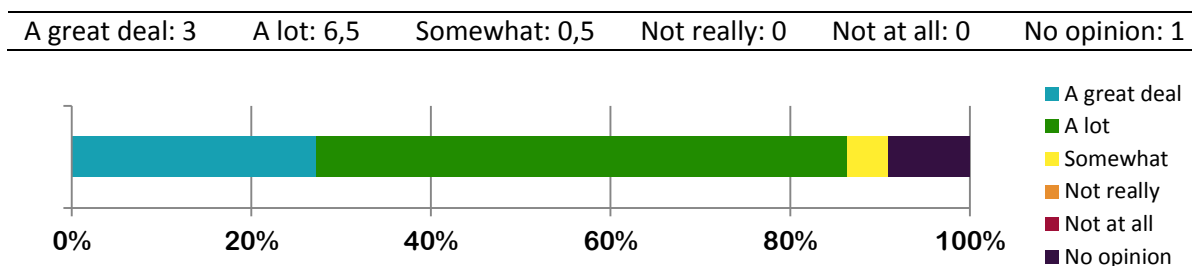
Question 7) How do you rate the work of the facilitators? (n = 11)



Comments:

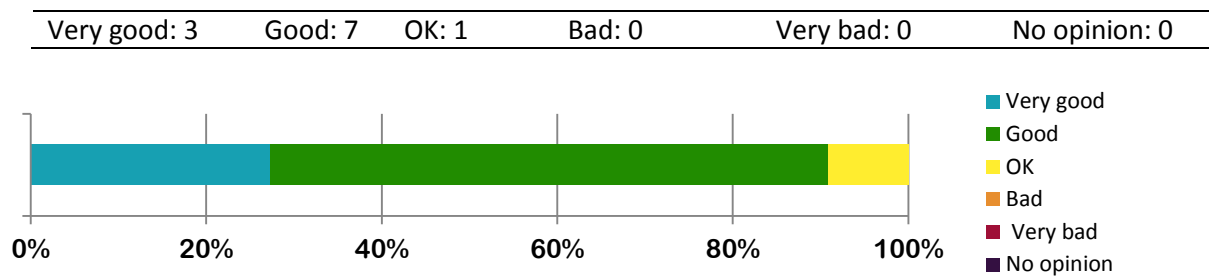
None.

Question 8) How confident are you that your contributions and suggestions will be adequately taken up by the BioCannDo project? (n = 11)



Comments:

None.

Question 9) How do you rate the practical arrangement (invitation, venue, catering)? (n= 11)

Comments:

None.

Question 10) Any further comments?

Please write:

- *Look at product-market combinations. What works and what does not. (original: Kijk naar product markt combinaties. Wat kan wel en wat niet.)*
- *Good luck with the project (original: Success met het project)*
- *Test the message with children (original: Toets boodschappen bij kinderen (VO-leeftijd)).*

Annex 4 - Notes of the Focus Groups

Focus Group 1, Brussels, 2 participants

Looking at the papers with examples of insulation materials, which ones have you used before and/ or which ones would you buy in the future? Even if you don't find the exact material, please indicate the closest one from the ones below.

- We bought the rock-wool, something similar to styrofoam and in some parts straw bales. Basically we used several different insulation materials. Rock wool needs space and when it was limited we used a non-environmental friendly similar-to styrofoam thing. The driving motivation was the space limits and therefore, we chose what can fit in it. Also, money-wise we still need time to invest in roof and garage isolation. For us insulation is the easiest way to fill holes. Stone wool wall insulation in the form of pearls – the only one we asked for professional help because we did not have the special tools.

Was it your decision to put insulation yourself or it was a coincidence of events?

- We did not have to do it but thinking in the long term and energy-wise we ended up wanting to do it ourselves. The insulation had to take place only on the ground floor but we did the first floor and the roof anyway. If we could go back and had more money and space we would insulate but using more eco-friendly materials. We used, for example, PUR foam only when we had no other option – for the door frame, for instance and later found out some people are allergic to it. But on the general, using ecology-friendly substances would be important for us.
- Those were the ones we have heard (also, the cork board or the straw-based insulation does not seem to be very reliable) after the research we made mainly through media and not so much through events where they focus not on providing information but selling goods and where asking questions is limited.

The moderator explains the project.

What would you expect of a bio-based insulation product?

- We would like to know the advantages and disadvantages, how these products are different from the traditional ones, what is the process of removing and replacing it if it is eventually necessary.
- Removal is not really the issue, because in insulation terms – you cannot get it out once it is in between walls, etc. The most important part is viability, space – how you can achieve the same measurements and heat permeability – letting heat out/in.

If you did not have the time for research and find out it is a bio-based product what would your preconceptions be?

- I would not be biased but rather be interested in the price-quality ratio in comparison to the easy-to-find market materials.

The moderator distributes the bio-based materials and asks for the participants' expectations.

- Not easy to install
- More expensive
- Hippy image – some people could see it negatively when it is environmental friendly
- *Capacity/thermal connectivity less than other materials*
- Not easy to remove
- **Maybe will rot after a certain period of time**
- **In case of water damage – what about the smell, resistance to environment itself**

Clusters:

Volume/ Performance (incl. keeping the heat inside or outside)/How much we need for the aimed insulation value and in comparison to other products

The problem of insects/ resistance to pests/time and external damage

Price/ Value for money (Environmental friendliness justifies a higher price but limitedly and I don't know where my limits are)

The moderator distributes the papers with the different concepts and re-visit all the already discussed topics.

Which three of these concepts do you value the most?

- Protection against all kinds of threats such as inside/outside heat/noise, humidity, etc.
- Capacity to insulate
- Value (quality) for money – not cheaper per say, but to be worth the quality
- Durability
- Safety regarding health problems – don't think about it at first, but later on realise it is essential (wool, for example, with all the fibres, and we wore masks but also had itches while installing it)
- Insulation - both ways inside-out and outside-in
- What is also important is the things people point out to sell a product which in addition to the ones I am interested in would also be quite useful to know more about.
- It would be useful to point out the uniqueness of each product, because a lot can do the same, i.e. the additional features even if not the essential could be decisive.
- People invest a lot of efforts to gather all this information and make comparisons in order to make an informed choice, in which they are not really sure – it would be helpful to have one reliable spot for all this.
- Certification is also important – you can feel cheated after buying something labelled as eco-friendly and is not in reality.

Focus Group 2, Mechelen, 9 participants

Have you ever built / rebuilt a house, where?

- No
- I bought a house in 2002; electricity, gas and water pipes renewed. New bathroom installed. That lasted 6 months. I worked at the same time. I could only work on weekends (Mechelen).
- Apartment bought and renovated in 1999 (Mechelen).
- House bought in 1990. Completely stripped and completely renovated, veranda in aluminum. Later (2016), the veranda has been replaced by an extension (Mechelen).
- 7 times build / renovated: Housing units in Mechelen, 2 houses in Portugal, factory house renovated (Mechelen)
- Built in Tremelo and Spain - sold - now renting in Mechelen
- House in Mechelen - workman's house from 1800 - renovate every 5 years
- House - New electrics, new bathroom accessible to the disabled. Mechelen.

Did you use anything from the materials on the photos?

- Cork board: if I can choose - you can use it indoors, many applications.
- I have wool. Not practical to install (pricks). Styrofoam already used in certain parts, very good as insulation.
- I would like to insulate against noise.
- Glass wool: I do not know why - the contractor made the choice.
- Cork, cellulose, glass wool, polystyrene used. Now use natural cork outside. Cork insulates well.
- Glass wool is there. Dirty and unhealthy. Pricks.
- Would now like to use blue-gray (cellulose) or air (cavity walls).
- Wood: love natural things.
- Find nothing in the available photos: I'm looking for something with 3 layers (concrete plex, water-resistant).

The moderator explains the aim of the BioCannDo project and Focus Group.

Comment:

Natural products expensive - not always good for fire safety

People have a limited budget. Budget considerations are rather short-term. In the long term, the insulation might outweigh the costs, but you do not feel that when you have to pay the money. Subsidy would help.

Duration: not always true, also sometimes wrong perception

Thickness is also relevant - lasts longer

When you hear the name 'natural materials / bio-based materials' - what comes to you immediately?

- Quality
- Price quality
- Price - expensive
- Equal insulation

- Standards: many standards (eg the EPC certificates) - fines are possible. Sometimes you can not sell your house if it is not okay.
- Long-term thinking - investment-oriented thinking to gain greater market value.
- People start looking at the EPC values.
- For real? Sustainable, organic, ... everything has happened: cutting down trees, ... is that more sustainable?
- Could it rot?

The moderator lays out the key concepts previously developed by the project.

Which 3 characteristics are most important for you when choosing insulation (3 votes per person)?

- Insulate well, air circulation given
 - If you are young and starting, you often do not have a budget. If you are older and maybe build for the second time, you start to think differently. Financial situation is very important.
 - Apartments: opinion of the majority counts, so you cannot always get the materials you want.
 - Architects have a commission - like to have more expensive products, so choosing eco products may be easier.
 - Protected facade: you do not do what you want. 3 building requests (4500 EUR) refused.
-

Focus Group 3, Mechelen, 7 participants

Have you ever built / rebuilt a house, where?

- Apartment since 2002. Roof renewed in 2017.
- House: combined two houses 40 years ago.
- Old house renovated and insulated (polystyrene). Combined two houses. Double glazing in the windows. Between 1975 and 2015.
- House. Insulation works 2015 to meet standards.
- 1987. Insulated with styrofoam. Bathroom and kitchen installed.
- House - All kinds of works (new kitchen, doors), e.g. Asbestos removed. Moved to an apartment: new toilet, lavatories, bath tub. Insulation was not necessary. Electricity.
- Apartment 2000: new kitchen and painting.

Did you use anything from the materials on the photos?

- Styrofoam for ceiling, roof. Styrofoam was cheap.
- Cork: floor (nice and warm) and walls in bathroom
- Stone wool: correct size (width of the roll), easy to process
- Flax mats: rooms above (40 years ago)

If you can choose, which material would you choose?

- Depends on the price
- Something that can easily be processed e.g. styrofoam
- The purpose is important, e.g. cork for the heat
- Crepe (plastic, new) not practical, panels in which you are not allowed to drill

The moderator explains the aim of the BioCannDo project and Focus Group.

When you hear 'bio-based materials' - what comes to your mind?

- Price: more expensive
- Price quality
- Durability
- Requirements / standards always higher, because of that the price rises
- (Fire) safety
- Availability: starting can be important
- Effectiveness: does it help? Is it efficient?

Which 3 characteristics are most important for you when choosing insulation (3 votes per person)?

- Healthy environment indoors
- Sustainability
- Price
- Price / quality
- Safety
- Availability
- Sound insulation
- Protection against moisture
- Protection against summer heat

Comments

- We are all old - is that still relevant?
- Insulation may no longer be necessary due to climate warming.
- Other countries means different answers. Eg Italy will give different answers than a northern country.

Focus Group 4, Mechelen, 8 participants

Have you ever built / rebuilt a house?

- I have been growing with others for 25 years. Never for myself.
- 5 years ago: rebuilt and isolated
- 10 years ago: idem
- 1998: bought and renovate everything. 2017 new roof, also for insulation
- Built, rebuilt
- Parental house renovated in 1994, also built on (bedroom, bathroom, ...), recently isolated.
- House 40 years ago: renovating, remodeling, building
- In 1962: without insulation, at most some cardboard

Did you use any of the materials from the photos?

- Cellulose plates, Styrofoam, Hemp mats: used because it was on the market.
- Styrofoam (brings nothing up, attic remains cold), glass wool (kitchen, clear difference), cork plates (does not store anything, stays cold), hemp (attic, very big difference, chosen because of durability)
- Styrofoam (non-toxic), we did not find Styrofoam good for our health.
- Also cork (difficult to apply, granules to process in ceiling), also stone wool in the ceilings.
- Styrofoam for the attic (spraying is very easy), Glass wool, Wood fiber at the bottom of the attic.
- Styrofoam, glass wool, fibreboard (contractor chosen)
- Glass wool (contractor chosen)
- Hemp in the attic, fiber boards for false walls
- Styrofoam and silver paper in the attic

If you can choose which material would you choose?

Plates with foil

The moderator explains the aim of the BioCannDo project and Focus Group.

When you hear 'bio-based materials' - what comes to your mind?

- No toxins (healthier)
- Higher quality
- Sustainable, better for the environment
- Investigate whether it is good (expertise)
- Expertise of the architect
- Must be affordable

Comment:

Untested additional properties -> probably was / is there no money for research / testing

Which 3 characteristics are most important for you when choosing insulation (3 votes per person)?**Comment:**

Health: it must be safe for health during processing

Health: we should not exaggerate, in the past it worked as well

Availability: depends on the price (can be manipulated)

Safety: must not be flammable

Results:

- User-friendly installation
- Health
- Quality
- Price
- Price/ quality

- Protection against moisture
- Safety
- Saving energy
- Sound system
- Heat insulation
- Availability

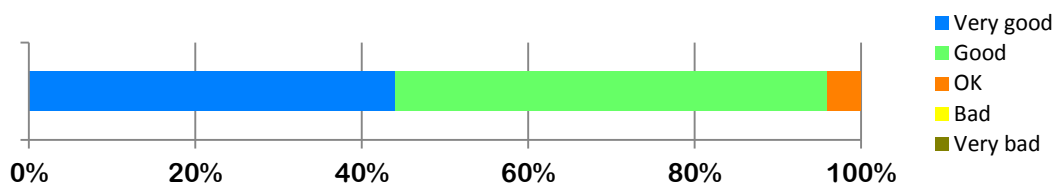
Question: How can we get more information?

5 Annex 5 – Evaluation of the Focus Groups

Evaluation BioCannDo consumer focus group organised by Prospex.

Question 1) How do you rate the consumer focus group? (n= 25)

Very good	11	Good	13	OK	1	Bad	0	Very bad	0	No opinion	0
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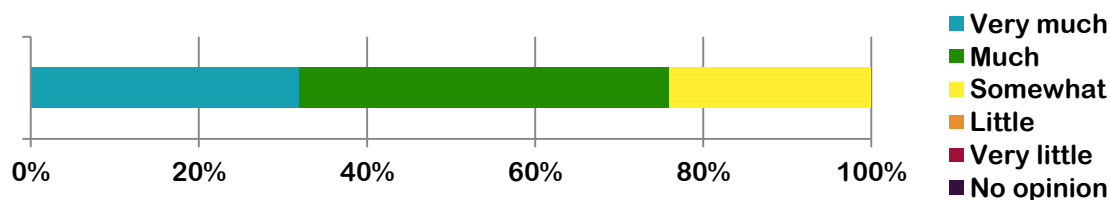


Comments:

- Rather short.
- First workshop I participated in.

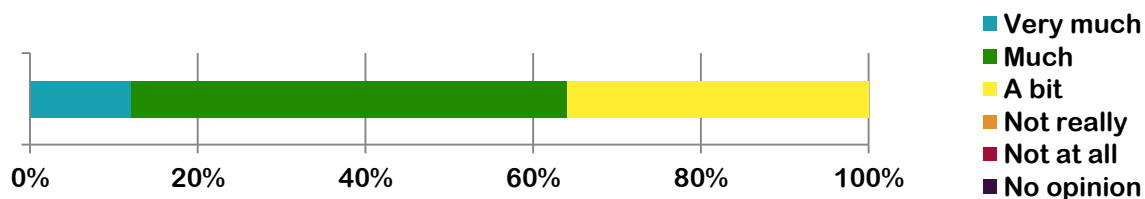
Question 2) Were you able to contribute to and participate in the discussion? (n = 25)

Very much: 8	Much: 11	Somewhat: 6	Little: 0	Never: 0	No opinion: 0
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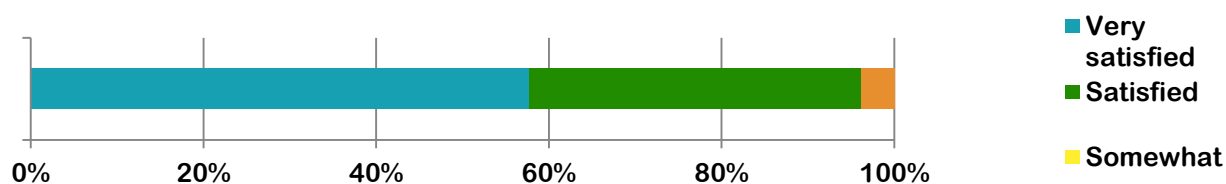
Question 3) Did you learn something new during the focus group? (n = 25)

Very much: 3	Much: 13	A bit :9	Not really: 0	Not at all: 0	No opinion: 0
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Question 4) Are you satisfied with the organization and communication? (n = 25)

Very satisfied: 15	Satisfied: 10	Somewhat: 0	Not satisfied: 1	Very unsatisfied: 0	No opinion: 0
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Question 5) Any other comments?

- Think about other aspects than the ones mentioned by the groups as well. Some people might have questions or interests about other products/ specifics/ aspects.
- If possible, let us know what the outcomes are.
- Not directly but I will surely follow the project.
- Very interesting experience!
- Too short. There was more information I could have shared.
- Very good explanation. Learned a lot. Thank you to the three collaborators.



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