



Description of stakeholders' needs and requirements regarding the technology database

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CO Confidential, only for members of the consortium (including the Commission Services)

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Deliverable D2.1
Description of stakeholders' needs and requirements
regarding the technology database



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List of abbreviations

Abbreviation	Description
AB	Advisory Board
ABM	Advisory Board Member
BIC	Bio-based Industries Consortium
BBEPP	Bio Base Europe Pilot Plant
D	Deliverable
IP	Intellectual Property
NOVA	Nova-Institute
SG	Stakeholder Group
SME	Small and Medium Enterprise
TP	Testing Panel
TRL	Technology Readiness Level
WP	Work Package
Q	Quarter

Publishable executive summary

This document reports on the outcomes and findings of stakeholder consultation. It zooms in on stakeholders' needs and requirements regarding the technology database. It documents the confirmed interest of the targeted 'users' and the 'suppliers' of the technology database. And it validates what (technology and support) information shall be included.

One of the Tech4Biowaste project design characteristics is the high level of interaction with different types of stakeholders¹. The Tech4Biowaste partners have been made extensive use of the bilateral commitments from different types of stakeholders and have engaged with them right from the project beginning.

The process involved three different strands of stakeholder consultation.

- Online meetings with members of the project Advisory Board (AB). In the two AB meetings held in 2021, the focus of the open discussion sessions was almost exclusively on scope and content of technology database. AB members raised a wide range of issues.
- In-person meetings during the pitching and matchmaking event held in September 2021. At this occasion a series of 1-on-1 meetings was implemented with a variety of stakeholders. A main purpose of these interviews was to provide a concise overview of the current situation of database implementation and to assess the extent to which the specific stakeholder would want to be involved in the Tech4Biowaste platform or the testing panel. A high level of interest in the Tech4Biowaste platform was confirmed.
- In-depth follow-up interviews. These proved very valuable in multiple ways. They not only informed the project partners on detailed needs and interests regarding the content and use of the database. They also served to recruit and coach prospective testing panel² members and generated ideas for the database population strategy.

¹ A categorisation of relevant stakeholders is provided in Tech4Biowaste deliverable D1.1 List of stakeholders.

² The **Testing Panel** (TP) is the second external advisory body to the Tech4Biowaste project. The TP will be engaged to support the development of a key outcome of Tech4Biowaste i.e. the user-friendly technology database. The TP members will be consulted and actively engaged in the design stage of the technology platform to help guide (a) database scope, structure, and content (b) database visualisation, and in the implementation stage to help (c) test and (d) refine the database.

1 Introduction

1.1 Tech4Biowaste biowaste technology database

Bio-waste is a key waste stream in Europe with a high potential for contributing to a more circular economy. The Tech4Biowaste project will pave the way for deployment of bio-waste technologies and technology configurations by setting-up a database providing a comprehensive technology overview (Technology Readiness Levels 4-9) for the valorisation of bio-waste (food waste and garden waste) into value added applications including organic soil improvers, fertilisers, organic chemicals, fuels and energy.

The database content will be determined jointly with actors across the bio-waste value chain. Technology providers can showcase new and emerging technologies, even at lower TRL. Technology searchers can analyse and compare bio-waste valorisation technologies. Both categories of users can assess their commercialisation potential through the associated decision support tool.

In order to catalyse significant database usage and future growth, it directly builds on the BBEP-led Pilots4U network and links with the nova-led (parallel-developed) Renewable Carbon platform. A hybrid model will be used to populate the database, combining inputs from the consortium's publishers' team, a community of volunteers, and automated scripts and tools („bots”).

1.2 Tech4Biowaste stakeholder engagement

Tech4Biowaste will mobilise stakeholders (incl. intended users and contributors) for direct involvement (Co-creation, Trainings, Testing Panel, Advisory Board) e.g. in the design of the database, in the development of a continuation and expansion scenario and finally for the business plan targeting sustained growth and continuity of the open platform.

During the first months of project implementation the Tech4Biowaste team performed a mapping and categorisation of stakeholders, reported in *D1.1 List of stakeholders*, and developed an overview of stakeholder engagement mechanisms, documented in *D1.3 Stakeholder Engagement Plan*. A total of ten relevant stakeholder categories were determined, covering the entire value chain from bio-waste producers to the users of bio-waste derived products.

Building on this groundwork, a process was set-up to consult stakeholders from the bio-waste sector (identified in WP1) about their needs and desires in terms of database scope and content. Where scope not only refers to the type of the targeted biomass feedstock (bio-waste) but also to what type of (technical and support) information shall be presented. And where content refers to the data fields and data sets that should be included in the database.

The process involved three different strands of stakeholder consultation, as follows:

- Firstly, during meetings of the Advisory Board (AB) the consortium presented the progress and state of affairs of database preparation, and invited the AB members to raise questions, concerns etc. during an open discussion session.

- Secondly, the Tech4Biowaste consortium decided to become co-organiser of the Pitch Perfect event held in Brussels on 28 September 2021. During the event Tech4Biowaste was promoted in various ways. The main format of relevance for the current document was the 1-on-1 interaction with stakeholders from a variety of stakeholder categories.
- Thirdly, the Tech4Biowaste Stakeholder Manager held 1-on-1 online follow-up interviews with interested stakeholders (in particular, but not exclusively, technology providers) during Q4, 2021.

Table 1 presents an overview of the three engagement strands applied to date³. Details about the process adopted and the results achieved in each of these strands are provided in Chapter 2 and Chapter 3 respectively.

Format	Time	Targeted stakeholders	Involvement from T4B
Online meeting	17 Jun & 7 Oct	AB members (all stakeholder categories)	Full project team
Exploratory 1-on-1 interviews (in person)	28 Sep 2021	Matchmaking event attendees (representing a variety of stakeholder categories)	Full project team
In-depth 1-on-1 follow-up interviews (online)	Oct – Dec 2021	Technology providers and others	Stakeholder Manager

Table 1: Stakeholder engagement strands applied in 2021

1.3 Content of this report

This document reports on the outcomes and findings of the stakeholder consultation process. It describes stakeholders' needs and requirements regarding the technology database. It documents the confirmed interest of the targeted 'users' and the 'suppliers' of the Tech4Biowaste technology database. And it validates what (technology and support) information shall be included in the database.

³ Based on the findings presented in the current document, the Tech4Biowaste team decided to start implementing a fourth strand of stakeholder engagement in late 2021. This entails the direct engagement of a small number of selected stakeholders (in particular: technology providers) in the development of database content, before the database is formally launched publicly. See Chapter 4 for more information.

2 Stakeholder engagement process adopted

This chapter outlines the methodology adopted for each of the three strands of stakeholder consultation:

- Online meetings with AB members
- Exploratory interviews
- In-depth interviews

2.1 Strand 1: Online meetings with AB members

The AB) is composed of complementary expertise of highly qualified professionals that are closely linked to the Tech4Biowaste scientific, industrial, and societal fields. This includes experts proposed by the project partners and by the Bio-based Industries Consortium (BIC).

The process adopted to assembly a representative AB is described in Deliverable D1.3 *Stakeholder Engagement Plan*. The membership of the AB is shown in Annex 1.

During each AB meeting the Tech4Biowaste consortium presents the progress and the state of affairs of database preparation. Based on this information, the AB members (ABMs) are invited to share their views, ideas and concerns etc. during an open discussion session. In the AB meetings in 2021 the focus of these open discussion sessions was almost exclusively on scope and content of technology database. After each comment provided by an ABM, a consortium member informed how the project envisages to take the ABM's specific feedback into account.

2.2 Strand 2: Exploratory interviews

In order to involve a significant number of relevant stakeholders, and considering the available resources, several options and ideas were elaborated and discussed within the Tech4Biowaste team. During these discussions, the annual event⁴ of Pilots4U, scheduled for 28 September 2021, came into the picture. This is a pitching and matchmaking event where relevant stakeholders from all over Europe come together in Brussels. The Pilot4U community of open access pilot & demo facilities for the bioeconomy has a strong link with technology developers and feedstock owners on the one hand and industrial manufacturers and users of bio-based products on the other. It was concluded that the event would be an ideal opportunity to engage with a large number of stakeholders (target number: 30) on a single day.

The Tech4Biowaste team became actively involved in the organisation and implementation of the pitching and matchmaking event. It used the opportunity to plan and implement a series of 1-on-1 meetings with a variety of stakeholders. Results of this second strand of stakeholder engagement are discussed in Section 3.2.

For a detailed discussion of the Tech4Biowaste presence at the pitching and matchmaking event held in Brussels on 28 September 2021, please refer to D2.4 *Feasibility Study Proofing market interest, describing a realistic business model and future perspective for a technology database*.

⁴ <https://biopilots4u.eu/events/pitch-perfect-and-boost-european-bioeconomy-2021>

2.3 Strand 3: In-depth interviews

The format of the matchmaking sessions (1-on-1 meetings lasting just 15-20 minutes) did not allow for any in-depth discussions. But many interviewees indicated that they would be interested to be involved in a more in-depth interview.

In order to collect more detailed stakeholder feedback, the Tech4Biowaste stakeholder manager thus held follow-up 1-on-1 meetings with such stakeholders.

The in-depth interviews were conducted during a three-month period (Q4, 2021). Interviewees were first shown the database structure and content (max. 10 minutes) and then (max. 20 minutes) could give their initial findings and comments. The focus was not so much on the correctness of the content of the database, but rather on its ease for users and the added value it brings. Results of this third strand of stakeholder engagement are discussed in Section 3.3.

3 Results and findings of stakeholder engagement

This chapter first describes the results and findings per strand of stakeholder consultation:

- Online meetings with Advisory Board members
- Exploratory interviews
- In-depth interviews

In total more than 46 different individuals from as many organisations were consulted to date. Annex 1 provides a full overview of the consulted organisations. Table 2 shows how many stakeholders were consulted per strand.

Format	Targeted stakeholders	Level of response (until 20 Dec 2021)
AB meeting (online)	AB members (all stakeholder categories)	Consultation sessions of 20-30 minutes at each of 2 online AB meetings. Total membership of the AB is 15 persons.
Exploratory 1-on-1 interviews (in person)	Matchmaking event attendees (all stakeholder categories)	31 exploratory interviews during the 1-day Pitch Perfect event in Brussels
In-depth 1-on-1 follow-up interviews (online)	Technology providers and other	10 in-depth online interviews of 30-45 minutes each

Table 2: Number of engaged stakeholders

In the last section of this chapter stakeholder consultation findings are synthesised and discussed further according to their priority and feasibility.

3.1 Strand 1: Online meetings with AB members

The Advisory Board (AB) met twice in 2021, first on 17 June 2021 and again on 7 October 2021. At the last meeting AB members unanimously evaluated the structure and content of the database as excellent.

Many issues were raised during the open discussion sessions at each of AB meeting. A full overview of the feedback (questions, concerns, and suggestions) received and the responses given by the consortium members is presented in Annex 2.

Highlights of the feedback collected include:

- A concern widely shared by the AB members relates to the safeguarding of the content quality. The consortium has full control on the content during the project phase and takes the safeguarding of quality after the project phase as an important point of attention.
- There is a legitimate concern about how technology owners will find their way to the data platform and then massively share their information on the platform. The consortium is convinced that the hybrid database population strategy that has been developed will make it possible to speed up the filling of the database with relevant technology owners. Making a trial version available very soon after the start of the project was facilitating rapid interaction with beta users in a test environment.

- Further suggestions, that will be considered by the consortium and addressed one by one in the coming months included: a possible addition of data, such as the dates of publication of the data by the user, indications on CAPEX and OPEX, market volumes and market prices of feedstocks and products, energy needs of technologies and the collaboration readiness of technology owners or technology searchers.

3.2 Strand 2: Exploratory interviews

A total of 31 individuals from 11 European countries were interviewed during the Pitch Perfect event. This included 26 interviews during pre-scheduled matchmaking sessions and 5 unscheduled (more spontaneous) interviews held at the Tech4Biowaste exhibition booth. A main purpose of these interviews was to provide a concise overview of the current situation of database implementation and to assess the extent to which the specific stakeholder would want to be involved in the Tech4Biowaste platform (and/or the testing panel). A semi-structured questionnaire was used during the meetings. Given the 15-minute time limit of each session the questionnaire was kept short and contained not more than 7-8 questions.

The questionnaires used (one targeting technology providers and another one targeting technology users) is included as Annex 3.

Technology providers were asked about how their technology is publicly findable today and what information they are willing to share. They were also asked how much time and money they are willing to invest to get their technology on the Tech4Biowaste platform. Technology searchers got questions about how and where they search for the right technology today and what elements and details are decisive. They were also asked what a technology platform should be able to do. Finally, everyone was asked if they wanted to be involved as a member of the first Testing Panel of Tech4Biowaste in the near future.

Highlights of the feedback collected include:

- The amount of information that technology owners can make available regarding their technology properties, will depend on the extent to which their intellectual property (IP) is protected by patents.
- When asked about the willingness to pay a fee, the limited responses ranged from zero to a few thousand euros.
- With 64.5% positive responses to the last question, a high level of interest in the Tech4Biowaste platform was confirmed.

3.3 Strand 3: In-depth interviews

A total of 10 individuals were interviewed in more detail during three months after the Pitch Perfect event. These persons were invited for a half-hour team call in which they were first shown the database structure and content briefly (max. 10 minutes) and then (max. 20 minutes) could give their initial findings and comments.

Interviews often lasted (much) longer than the planned 30 minutes which is an indication of the high interest of the interviewee to contribute to the database.

These direct interviews proved very valuable in multiple ways. They not only informed the project partners on detailed needs and interests from these types of stakeholders related to the content and use of the database. They also served to recruit and coach prospective testing panel⁵ members and generated ideas for the database population strategy.

Highlights of the feedback collected include:

- The responses on the elaborated basic structure and content of the draft database were unanimously positive.
- A good insight is gained into specific needs that recur and can therefore be considered a priority to be handled by the Tech4Biowaste partners. They are integrated in the next chapter 3.4 Overall findings.

3.4 Overall findings

The possibility to present the first structure and functionalities of the database to relevant stakeholders, very early in its set-up process and also coupled with an intensive survey, has helped to obtain good insights into the needs and requirements of users regarding the technology database. Below key findings are synthesised and discussed according to their priority and feasibility.

3.4.1 Concerns raised from companies for usage of the database

Sharable technology details

The Tech4Biowaste technology platform will be publicly accessible. As a result, the amount of information that technology owners can make available regarding their technology properties will depend on the extent to which their intellectual property (IP) is protected by patents. The surveys show that the situation differs from company to company depending on the maturity of their technology. In an early phase, at a lower Technology Readiness Level (TRL), often only generic information can be made available by start-ups on their technology. For scale-ups (at higher TRL) it is mostly no problem to make detailed technical information available. Sometimes technology is developed within European-supported cooperation projects where the detailed information on the technology is already publicly available via scientific publications. Some technology owners wish to share certain information only with potential customers, but not with competitors via the platform. Indicating the capacity of the available technology is for some companies not desirable, not even a combination of other parameters that would allow competitors to deduce the capacity.

Take-away for the project team: Let the technology providers decide how much and which information they want to share. Do not make data fields in the database mandatory to be filled out, such as the ones present in each technology info-box. Figure 1 shows the data fields applicable for pyrolysis technology providers.

⁵ The **Testing Panel** (TP) is the second external advisory body to the Tech4Biowaste project. The TP will be engaged to support the development of a key outcome of Tech4Biowaste i.e. the user-friendly technology database. The TP members will be consulted and actively engaged in the design stage of the technology platform to help guide (a) database scope, structure, and content (b) database visualisation, and in the implementation stage to help (c) test and (d) refine the database.

Pyrolysis provider			
General information			
Company:	Bio-BTX B.V.	Webpage:	https://biobtx.com/
Country:	The Netherlands	Contact:	
Technology name:	Integrated Cascading Catalytic Pyrolysis (ICCP) technology	Technology category:	Catalytic Pyrolysis, two-step
TRL:	5-6	Capacity:	10 kg·h ⁻¹
Technology and process details			
Atmosphere:	Inert	Catalyst:	Zeolite
Heating:	Fluidised sand bed	Pressure:	1-4 bar
Reactor:	Fluidised sand bed, fixed bed	Temperature:	450-650 °C
		Other:	Unknown
Feedstock and product details			
Feedstock:	Biomass (liquid, solid), wood pulp lignin residues, used cooking oil	Product:	Benzene, toluene, xylene, aromatics, light gases

Figure 1: example of a completed info-box from a pyrolysis technology provider

Verification of data

As already mentioned by the AB, reflected in 3.1 Strand 1: Online meetings with AB Members, monitoring the quality and accuracy of data is important during verification by the project team. Within the individual interviews, the respondents reported on previous experiences with other databases on technologies. Their experience with these databases is, that the data provided did not turn out to be as promising as it was displayed within the database. For example, start-ups regularly try to exaggerate the maturity (TRL level) of their technology.

Take-away for the project team: Do not just take all data inputs for granted. Carrying out some spot checks on a regular basis could be a possible action, but the project team still needs to discuss this item further to determine the most appropriate solution.

Readiness to dedicate resources (time and money)

In 81% of cases an answer to this question was not given by the interviewee. The question was consequently answered with counter-questions such as the added value (features) of the platform, the anticipated reach, the type of visitors and a forecast of the volume of traffic. Many questions that the project partners could not answer immediately within the interview setting.

The limited feedback that is available indicates that the time commitment of those involved as a user is not a problem. When asked about the willingness to pay a fee, the few answers obtained ranged from zero to a few thousand euros.

Take-away for the project team: For the time being, too few clear answers are present to draw conclusions on the question about fees. This survey item should certainly be repeated at a later stage, especially during the further development of the business plan.

3.4.2 User interests, needs and priorities

Confirmation of needs for parts that are provided by default anyway

The Tech4Biowaste project team worked out a draft technology platform in a short time frame to test if its structure, content and operation are in line with the needs and requirements of the relevant stakeholders. This immediately provided positive confirmation of several elements that had already been included in the draft version. Some of these confirmed elements are:

- Interesting overview of technologies. Good structure. Easy to use and to search for specific technologies.
- Detailed content provided is more than expected. There were no comments about too much or too little information.
- Contains already some crucial elements: technology TRL level, contact details technology providers, references, link with patents, link with feedstock types and products.
- The availability to compare technologies using the comparison tool.
- The scope of the feedstock types within the database is interesting and broad enough.
- Users can add, modify and update their own information via a personal login.
- The direct link that is made from the platform to other relevant data platforms, such as the platform of open access facilities related to the Tech4Bioawaste technologies.

Take-away for the project team: The responses on the elaborated basic structure and content of the draft database are unanimously positive.

Confirmation of needs for parts that need to be further developed

The surveys also revealed interests and needs that the project team will consider elaborating further during the project. What is interesting about the feedback, is the insight gained into specific needs that recur and can therefore be considered a priority to be handled by the Tech4Biowaste partners.

For 70% of the persons involved in the in-depth interviews, being able to start a search from different angles is an absolute must. This means that it must be possible to start from feedstock types to find suitable technologies, but also that it is possible to search starting from products to find out which technologies are applicable and which feedstocks are linked to them.

Especially the technology providers show a pronounced (60%) interest in the available feedstock. For them, it would be an important added value to expand the information about the availability of certain feedstock types: quantities, geographical distribution, names & coordinates of organisations that have them, market prices. The same applies to the information that will be available in the database regarding the end use of products. This includes indications of market potential, market prices, names & coordinates of potential end-users, etc.

Being able to filter and zoom in on certain information step by step using keywords is a request made by 40% of those questioned.

The further deepening and supplementing of the bio-waste feedstock within the existing feedstock scope of Tech4Biowaste with the corresponding components - read target ingredients such as starch/sugars/proteins - would also be of great added value to the database users (40%).

Less often expressed but also pronounced are the following needs:

- providing the publication date of the available information
- being able to zoom in geographically on the availability of technologies in certain countries
- indication of yields
- indication of OPEX & CAPEX of technologies
- indication of whether technology providers are open to cooperation or not

Take-away for the project team: Adding the above-mentioned functionalities of the database will offer a great added value for the users. For some functionalities, the demand is very pronounced.

Confirmation of needs for parts that will be difficult to develop further

Finally, there are a number of observations from stakeholders that do not fall within the scope of the Tech4Biowaste project and would also be very difficult to achieve.

For example, there is a request to also provide sustainability data (footprint) on the technologies and the possibility to compare energy consumption. Or a request to provide information on the relevant legislation that applies to the use of technologies. Or financial support mechanisms available for the further upscaling of technologies.

Take-away for the project team: In principle, these issues fall outside the scope of the project. The demand for sustainability information on technologies does not come out of the blue, with the increasing awareness of climate change. These are all questions of interest that can be further taken up by the project team.

Valuable support from certain stakeholders.

During the in-depth interviews, a number of potential users of the database indicated that they would be willing to check the database and verify whether there are any missing technologies that have not been included for the time being.

Take-away for the project team: Involve these stakeholders in spring 2022 for a verification exercise.

The network organisations and industry clusters that were involved in the survey explicitly indicated that they could help in connecting with relevant technology companies, thereby acting as a multiplier and increasing the awareness of the technology platform.

3.4.3 Learnings for the platform set-up

As was anticipated, the one strand of stakeholder consultation yielded more and better feedback than the other:

- Both sessions with the AB deliberately left enough time in the agenda for feedback from the AB members. These members feel closely involved, so that the interest in giving feedback is also high.
- The feedback obtained from the surveys during the short matchmaking sessions was restricted to some key questions, due to the short time slots (15 minutes) and their tight scheduling. After all, the interviewed people wanted to introduce themselves and learn more about the Tech4Biowaste project before answering questions.
- During the database surveys, the focus was 100% on getting feedback from stakeholders on the database shown, so the feedback was comprehensive and of high quality.

In total, 46 people from 46 companies and organisations were surveyed. Of these, 15 were AB members and a total of 24 persons had the opportunity to look into the draft database in detail before providing feedback. This resulted in valuable and relevant information.

Both the basic structure and the basic content of the draft database were evaluated positively. The technology owners want to be free in choosing which information to make available and which not. Logically, the technology searchers have concerns about the quality of the available information. Certain functionalities are high on the wish list of potential users.

4 Future activities

Initial release of the technology database: The work discussed in the current document D2.1 makes up part of WP2, *Database preparation and feasibility study*. All WP2 deliverables⁶ will ultimately feed into D2.4 *Feasibility study proofing market interest and describing a realistic business model and future perspective for a technology database*. Among others, D2.4 will discuss the set-up, scope and content of the database. As soon as the database is filled sufficiently with basic information, the existing password-restriction will be lifted and any stakeholder can make changes to the content (similar to the editing protocol that applies to Wikipedia). It is planned that the Tech4Biowaste database will go live in Q1, 2022.

Continuation of stakeholder engagement: In Tech4Biowaste the engagement of stakeholders is not a one-off exercise but more of a continuous process. The interaction with stakeholders that was initiated in 2021 will be continued and deepened. To collect further stakeholder input for, and feedback on, the technology database the following engagement activities are already planned for the first half of 2022.

- Firstly, during meetings of the Advisory Board (AB). The established practice of inviting AB members to raise questions, concerns etc. during an open discussion session will be continued.
- Secondly, during the hybrid Renewable Materials Conference that is organised by project partner NOVA in Cologne (Germany) from 10-12 May 2022. Exact arrangements remain to be discussed, but it is the intention to make use of this event in similar fashion as the project did at the earlier Pitch Perfect event held in Brussels, including 1-on-1 interaction of project team members with stakeholders.
- Thirdly, to deepen the engagement with interested technology providers and to mentor them as external contributors the Tech4Biowaste database development team established a practice inviting the selected stakeholders (a) to contribute directly to the password-restricted Wiki database (for this purpose they were issued a personal login) and (b) to join the weekly online meetings (edit-a-thons⁷) during which the Tech4Biowaste database development team collaboratively works on Wiki database content. Having direct database access allows external contributors to delve deeper into the technology platform, its structure and content. Being invited to edit-a-thons allows them (a) to talk directly with the database development team and (b) to verify their data and make adjustments themselves where necessary. Beyond strengthening the collaboration with stakeholders this collaborative approach will also help ensure that when the technology database will be launched in Q1, 2022 it will already contain the first data sets of relevant technology providers. This method of collaboration with technology providers will be continued and intensified in 2022.

Table 3 presents an overview of the engagement strands that are already planned for the first half of 2022.

⁶ Meaning, beyond the current document, D2.2 Document describing technical requirements for integration into RCI online platform and D2.3 Functional design for technology database, including the structuring of information for the online platform

⁷ An edit-a-thon is an event where editors of online communities (such as Wikipedia) edit and improve a specific topic or type of content. The events typically include basic editing training for new editors and may be combined with a more general social meetup. Source: [Wikipedia](https://en.wikipedia.org/wiki/Edit-a-thon). In Tech4Biowaste, an edit-a-thon is organised weekly enabling the consortium partners to collaborate live on the development of database content.

Format	Time	Targeted stakeholders	Involvement from T4B
Online AB meetings	Quarterly (next AB meeting: 13 Jan 2022)	AB members (all stakeholder categories)	Full project team
Exploratory 1-on-1 interviews (in person)	10-12 May 2022	Conference attendees (representing various stakeholder categories)	Full project team
Edit-a-thons	Every Monday afternoon (next: 10 Jan 2022)	Invited technology providers	Database development team

Table 3: Stakeholder engagement strands to be implemented in 2022 (provisional)

In 2022 the focus of stakeholder consultation will gradually shift from database design to other tasks requiring in-depth engagement, such as the development of a continuation and expansion scenario and of a business plan targeting sustained growth and continuity of the open platform. Additional stakeholder engagement formats (still to be defined) beyond those listed in Table 3 will be applied for this latter purpose.

5 Annexes

ANNEX 1: Overview of consulted stakeholders

ANNEX 2: Q&A interaction during Advisory Board meetings in 2021

ANNEX 3: Survey documents used during the Pitch Perfect event (28 September 2021)

5.1 Annex 1: Overview of consulted stakeholders

In this annex the names of the organisations that were consulted during stakeholder interaction in 2021 are listed. To comply with data protection rules (GDPR), the names of the engaged individuals are not listed.

Names are listed in three tables, as follows:

- First table, members of the Advisory Board (AB)
- Second table, organisations interviewed during the Brussels event
- Third table, organisations interviewed in-depth during Q4, 2021

Members of the Advisory Board (AB)

Company	Country	Stakeholder type
Mondelēz International	UK	bio-waste producer
Barilla	Italy	bio-waste producer
Renewi	Belgium	bio-waste collector/processor
Twence	Netherlands	bio-waste collector/processor
Novamont	Italy	technology developer
CH Four Biogas	Canada	technology developer
TCCB Resource	Ireland	technology transfer organisation
Cosun Beet Company	Netherlands	manufacturer of bio-waste derived products
Borregaard	Norway	manufacturer of bio-waste derived products
Mi-Plast	Croatia	user of bio-waste derived products
Southern Region Waste Management Office	Ireland	network organisation/industry cluster
Dutch Association of Biowaste Processors	Netherlands	network organisation/industry cluster
European Compost Network	Germany	network organisation/industry cluster
Cluster Industrial Biotechnology	Germany	network organisation/industry cluster
FNR Agency for Renewable Resources	Germany	public authority/government agency

Stakeholders interviewed during the Pitch Perfect event in Brussels

Company	Country	Stakeholder type
Citrique Belge	Belgium	bio-waste producer
ArcelorMittal	Belgium	bio-waste producer
Renewi NV	Netherlands	bio-waste collector/processor
Renasci NV	Belgium	bio-waste collector/processor
RISE, Research Institutes of Sweden	Sweden	knowledge institute/university
Vito NV	Belgium	knowledge institute/university
Latvian State Institute of Wood Chemistry	Latvia	knowledge institute/university
ILVO	Belgium	knowledge institute/university
Alchemia-Nova	Austria	knowledge institute/university
AmphiStar	Belgium	technology developer

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Circlia Nordic aps	Denmark	technology developer
PolyPea SRL	Belgium	technology developer
CatOlyst Chemtech	Netherlands	technology developer
Anarcada Ltd	Belgium	technology developer
NovelYeast	Belgium	technology developer
Endobios Biotech	Portugal	technology developer
FineCell Sweden AB	Sweden	technology developer
Mylium B.V.	Netherlands	technology developer
Chemelot InSciTe	Netherlands	technology developer
PIVERT	France	open access scale-up facility
VTT Technical Research Centre of Finland	Finland	open access scale-up facility
Fraunhofer CBP	Germany	open access scale-up facility
DBFZ	Germany	open access scale-up facility
Dow	Netherlands	user of bio-waste derived products
Kuwait Petroleum Research and Technology	Netherlands	user of bio-waste derived products
Ecover	Belgium	user of bio-waste derived products

Organisations interviewed in-dept during Q4, 2021

Company	Country	Stakeholder type
Citrique Belge	Belgium	bio-waste producer
Renewi	Netherlands	bio-waste collector/processor
AmphiStar	Belgium	technology developer
Alchemia-Nova	Austria	knowledge institute/university
NovelYeast	Belgium	technology developer
FineCell Sweden AB	Sweden	technology developer
PolyPea	Belgium	technology developer
Polyfoods	Germany	technology developer
VTT Technical Research Centre of Finland	Finland	open access scale-up facility
Ecover	Belgium	user of bio-waste derived products

5.2 Annex 2: Q&A interaction during AB meetings in 2021

Advisory Board meeting, 17 June 2021

The following feedback (questions, concerns, and suggestions) was gathered and replied to during the open discussion held during the first Advisory Board meeting on 17 June 2021.

Questions/Concerns/Suggestions from ABM	Responses from the Tech4Biowaste partners
How will data be entered on the platform?	In a hybrid model: by the project partners, by volunteers, by pods and by artificial intelligence
Will the proportion of text be limited?	Different users have different background and knowledge, so different needs. Text parts will be limited. This implies a certain needed length of the articles. A balance is needed between enough but at the same time not too much information provided.
How to convince companies to share info with so many platforms already existing?	By offering them an interconnected network of platforms, between Tech4Biowaste and other platforms. Pilots4U, the platform of pilot facilities for example will be the first one to be connected to Tech4Biowaste.
Will the platform provide an opportunity to start connecting with people?	Yes, connection features will be added, tags on profiles.
How will we ensure that only proven technologies will be put on the platform?	A quality check for all data entries will be executed by the project partners before publishing the data.
Do you consider a small section on how the technology will/can be used? An interface for users?	Yes, examples how technology can be utilised can be added and linked to other pages, for example technologies related to spaghetti food waste, or other specific feedstocks.
Will the composition of bio-waste be part of the database?	The typical composition of different bio-waste streams will be provided once available.

Will post-treatment technologies be included?	Yes, these technologies will be integrated, for example separation technologies.
What about technology providers that have adapted a technology?	Technology developers will also be included.
Will the comparison of technologies be possible?	Yes, a comparison tool will be provided. This can even be organised in a "use case" try out.
A reality check for technologies is crucial, with internal auditors, and that's OK, but looking at the limitations of knowledge of people, perhaps using the expertise of industry associations which are technology neutral is useful.	Thanks for your suggestion
Be careful with language use, use a common language as much as possible.	Thanks for your suggestion
All types of bio-waste, will the platform cover bio-waste in full extend?	No, focus on 3 streams of bio-waste as presented. Food waste, garden waste and the food waste fraction in non-separated municipal waste.
Can I search for polymers and then for technologies?	Technologies can be listed where polymers are an output. We can use your input as a "use case"
As potential end user of bio-waste derived materials, are we considering to also include sustainability specifications?	Thanks for your suggestion

Advisory Board meeting, 7 October 2021

The following feedback (questions, concerns, and suggestions) was gathered and replied to during the open discussion held during the first Advisory Board meeting on 7 October 2021

Questions/Remarks/Suggestions from the ABM	Responses from the Tech4Biowaste partners
How do technology providers get their info on the platform?	The approach to technology owners is already going on. A lot of them were present at the pitching & matchmaking event in Brussels. Individual surveys were held during the matchmaking part of the event. Some of them get a more detailed approach as first members of the testing panel.

Who is evaluating the info that is integrated on the platform by the technology owners? Who controls the correctness of the technology readiness levels (TRL) mentioned?	The review system organises a review of each input. We cannot be 100% sure that all details are correct. Your info as technology owner is findable, you get connected and then you still must show evidence to your customer.
What about patents?	We want to have them present. A patents section is provided for each technology. We are working on automated script. It is not clear yet if we will provide only the patents from the providers owners present.
What about improvements of technologies. Is there a follow up provided?	Technology owners must update their info themselves. When it concerns two different companies, the two technology developments can be linked to each other.
Is the date of publication of information mentioned? When was info published?	The system will allow the user to add the publication date in the info-box. Each user has an account and can update the info provided, included the publication date.
Is it possible for technology owners to provide CAPEX and OPEX info?	Technology owners must decide themselves whether to add this info or not.
Will market volumes info and market prices be provided?	It is actually not foreseen but thanks for the interesting suggestion.
Is the platform intended for worldwide use or limited to European content?	It has a strong focus on Europe now, because it is a European funded project, but it is not ruled out for other continents.
Are energy requirements provided for the different technologies?	Energy use is not in the scope of the project, but thanks for the suggestion. It will be difficult to make this comparable. Some technologies include pre-processing so difficult to integrate and to compare this.
Will the database be publicly available?	Yes
Which subsections of food waste are integrated?	See feedstock descriptions on the platform.
Is info about the willingness of companies to collaborate mentioned?	Technology owners must decide themselves whether to add this info or not.

5.3 Annex 3: Survey documents used during the Pitch Perfect event



Survey Brussels technology provider

Task
T2.1

Work package
WP2

Survey data
28.09.2021

Survey place
Sheraton Brussels Airport Hotel

Company/organisation

Name

Our short intro about Tech4Biowaste

Which technologies are best suited to turn a specific biowaste stream into value?

Tech4Biowaste develops a dynamic Wiki-style database on relevant biowaste valorisation technologies. It covers technology readiness levels 4 and higher, relevant feeds (food waste & garden waste) and products. The database will contain up-to-date information, will be user-friendly, well maintained and accessible to everybody.

The database is under development. We are addressing the needs and interests of all stakeholders. Also you as a technology provider on the database.

- Show your technology
- Find the right feedstock for your technology
- Become visible for manufacturers of bio-waste derived products
- Find new business partners

This project receives funding from the Bio Based Industries Joint Undertaking under the European Union's Horizon 2020 research and innovation programme under grant agreement No 101023200.

Bio-based Industries
Consortium



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regarding the technology database



Task 2.1
Survey technology provider



Survey questions

- 1 Can you describe your technology in 1 minute in a KISS way (keep it simple straightforward)?

- 2 Can you indicate under which category your technology fits?...Use technology scope P4U.

- 3 How and where is your technology findable on the internet today?

- 4 What details about your technology would you be able/willing to share without running up against your IP limits?

- 5 What do you think a platform should be able to do?...Ask for features.

- 6 How is your technology different when compared with that of your competitors?

- 7 How much time and money would you be willing to spend to put your technology on a technology platform?

- 8 Are you interested in becoming more closely involved as a member of our first testing panel next week (yes/no)?





Survey Brussels technology searchers

Task
T2.1

Work package
WP2

Survey data
28.09.2021

Survey place
Sheraton Brussels Airport Hotel

Company/organisation

Name

[Our short intro about Tech4Biowaste](#)

Which technologies are best suited to turn a specific biowaste stream into value?

Tech4Biowaste develops a dynamic Wiki-style database on relevant biowaste valorisation technologies. It covers technology readiness levels 4 and higher, relevant feeds (food waste & garden waste) and products. The database will contain up-to-date information, will be user-friendly, well maintained and accessible to everybody.

The database is under development. We are actually addressing the needs and interests of all stakeholders. Also you as a potential user - searcher on the database.

- Search for technologies and technology suppliers
- Find the right application for your feedstock
- Find the right technology for the bio-waste derived product you are searching

This project receives funding from the Bio Based Industries Joint Undertaking under the European Union's Horizon 2020 research and innovation programme under grant agreement No 101023200.



Deliverable D2.1
Description of stakeholders' needs and requirements
regarding the technology database



Task 2.1
Survey technology searchers



Survey questions

1 Do you often organise a search for technologies?

2 Can you describe your latest search, how you proceeded your search and what you found?...

Were you satisfied about it?

3 What are your favourite places to find appropriate technologies? Give us a good example.

|

4 What kind of information are you looking for when searching for specific technologies?

5 What elements of information about technologies makes you decide to start contacting people?

6 What do you think a platform should be able to do? Ask for features.

7 Are you interested in becoming more closely involved as a member of our first testing panel next week (yes/no)?

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