



Multi-actor workshops: B-GOOD pathways for change

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B-GOOD

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Preface

This report is the second of four deliverables from work package eight (WP8) 'Multi-Actor Co-development'. This report describes the methodology, implementation and outputs from Task 8.2 'Set-up of multi-actor groups, networks and knowledge exchange'. This task was conducted in collaboration with several project partners, particularly those involved in the recruitment of local / regional beekeepers in five countries for the Field A Studies within WP1. Partners associated with WP1, WP4, WP6 and WP7 contributed to this task.

Summary

B-GOOD is a multi-disciplinary project committed to finding solutions to the diverse problems in the beekeeping sector, particularly designing innovative technologies that help keep bee colonies healthy and ensure sustainable beekeeping practices. A core component of the project is its multi-actor approach (MAA) to integrate the expertise and interests of a wide range of relevant actors to generate innovative and practical solutions.

This report details the work carried out within WP8, particularly task 8.2, which aims to establish multi-actor groups and networks for knowledge exchange particularly at local / regional levels. To engage with multiple local / regional actors, a series of facilitated national participatory workshops were held in five European countries (Finland, Germany, Italy, The Netherlands and Switzerland). These workshops, called B-GOOD Future Workshops, were held in November and December 2020. Beekeepers and people providing beekeeping advisory / supply services (e.g. veterinarians), along with scientists formed the core of these multi-actor groups within workshops. Originally planned as physical meetings, but due to disruptions caused by Covid-19 these workshops took place on-line, using video-conferencing and digital whiteboard platforms. This document details the adjusted process, format and outputs of the five national multi-actor workshops. Despite the challenges and disruption caused by Covid-19, the workshops were a success, bring together a variety of local / regional actors, who reflected on the current state of beekeeping and considered the future of beekeeping assisted by science and technology.

The B-GOOD Future Workshops have activated a process of dialog, knowledge exchange and learning with key actors at local / regional levels. They have provided qualitative insights on current state of beekeeping (concerns and issues) and the future for beekeeping in the EU, as viewed by participants. Of primary concern for workshop participants was the ability of to keep bee colonies healthy, but these concerns were linked to a number of sub-issues:

1. Ability to effectively tackle bee diseases, predators and parasites e.g. varroa mite
2. Availability / quality of floral resources
3. Use of pesticides and their impacts
4. Climate change and its impacts

Workshop participants were generally optimistic about the future for beekeeping, envisaging science and technology contributing, in number of ways, to a sustainable and healthy honey bee sector. For example, automated hive monitoring and 'problem' detection for hive management was seen as beneficial. However, these beekeepers were already attentive of technology. However, some participants expressed their desire not to rely on technology, valuing beekeeper experience and knowledge to determine hive management. An overarching theme was the need for greater dialog and knowledge exchange between the many actors associated with the EU beekeeping sector. To fulfil this request, a number of forthcoming B-GOOD activities are outlined in this document, which are designed to facilitate the engagement of multi-actor groups. These activities are learning-oriented and collaborative processes, consisting of data collection, knowledge exchange and feedback among multiple stakeholders. These activities are considered necessary to enable the B-GOOD project to develop pathways for change, steering project developments that benefit the future of beekeeping in the EU.

1. Background

1.1. Task scope and aim

The overall aim of task 8.2 was to create groups of willing collaborators, by reinforcing and/or establishing multi-actor networks to support beekeepers in selected partner countries. To achieve this aim, and engage with multiple actors, a series of facilitated national participatory workshops were to be held in five European countries. Beekeepers and beekeeping association representatives, along with researchers were to form the core of these multi-actor groups within workshops. Participation and input from other actor groups involved in national beekeeping sectors was also to be actively sought e.g. beekeeping advisors, veterinarians, policy makers, plant growers, NGO's etc. The outputs of these workshops were intended to provide a hierarchical set of objectives (bee management and research) and provide input to develop project actions to achieve these objectives, through ongoing collaboration, learning and development. However, due to Covid-19 and ensuing restrictions, the scope and outputs aim of this task had to be adapted as described below.

1.2. Adjustment of task scope and outputs

The disruption caused by Covid-19 necessitated the postponement of the five workshops originally planned to take place in late spring 2020. Restrictions on holding physical meetings, preventing participatory workshops, necessitated the postponement of deliverable D8.2 (due September 2020). The due date was requested to be moved to December 2020. This delay was necessary to enable the multi-actor workshops to be undertaken, as originally planned, as physical meetings in five selected countries: Finland, Germany, Italy, The Netherlands and Switzerland. Conducting these workshops during the beekeeping season of summer 2020 was ruled out, since this was regarded as a very busy period for beekeepers. However, due to continuing Covid-19 restrictions in the autumn of 2020 and the prohibition of physical meetings in most of the five countries selected, the workshop format was redesigned to be held on-line. Timings of workshops were also linked to the revised recruitment schedule for Field Study A beekeepers, within WP1. Originally, physical workshop were envisaged to have 20+ participants. However, when conducting workshops on-line it was necessary to reconsider how many participants could actively and effectively contribute. In addition, online workshops were likely to provide fewer opportunities for participants to collectively interact, discuss and formulate structured outputs. For these reformatted workshops it was considered best if fewer participants joined, with around 10 suggested, and a maximum of 15. The following sections of this document detail the adjusted process, format and outputs of the five national multi-actor workshops. Despite the challenges and disruption caused by Covid-19, the workshops were a success. They brought together a variety of actors to reflect on the current state of beekeeping in their countries, as well as considering the future for sustainable and healthy beekeeping, assisted by science and technology.

These workshops were successfully carried out in November and December 2020. Four were held on-line and only one, in Finland, was conducted as a physical meeting. However, as the format had to be adapted to enable these to take place on-line as virtual workshops, these changes have had number of impacts and limitations, resulting in deviations from the previously envisage workshop outputs. Since workshop were predominately held on-line, meaningful interactions could only be facilitated with a smaller number participants who were technology proficient beekeepers (see section 3.6). Deliverable 8.2 has been adapted to reflect these adjustments and adaptations, as described in the following sections.

2. B-GOOD Future Workshops

2.1. Future Workshop overview

In response to Covid-19 disruptions and to generate beneficial outputs for task 8.2 and the project, the format for the five national multi-actor workshops was adjusted and based on a well-established approach originally conceived by Robert Jungk (Jungk et al. 1987), called the 'Future Workshop'.

We adapted the format of the Future Workshop to make use of its creative working processes to enable participants to define the major problems and challenges for beekeeping today (critique phase), then help them define possible 'desirable' futures for beekeeping, aided by science and technology (future phase). Finally, participants were given an opportunity to consider how B-GOOD could help realize these envisaged future possibilities, focusing on healthy and sustainable beekeeping. Originally planned to last about three hours as a physical meeting, this was considered too long to keep participants engaged and actively contributing on-line. The structure of the workshop was shortened to two hours, including a short break. In addition, the workshops were designed to be multi-functional (dissemination and feedback) and targeted to involve actors at a local / regional levels (predominately beekeepers and beekeeping extension services) within the five selected countries. All workshops either on-line or, in the case of Finland, as a physical meeting followed the same format. These workshops provide an opportunity to:

- 1) Foster interactions between B-GOOD partners (scientists) and local / regional local actors
- 2) Facilitate recruitment of local beekeepers for WP1's Field Study A. This required the selection of 8 beekeepers who were to receive the BEEP base and app in the five selected countries (Finland, Germany, Italy, The Netherlands and Switzerland).
- 3) Introduce the B-GOOD project (goals and activities) to workshop participants.
- 4) Provide a channel for feedback for participants as local / regional actors about project activities and developments.

The expected outcomes of the workshop were to:

- 1) Identify tangible concerns and challenges of beekeeping today, from the perspective of actors (beekeepers, advisors and scientists) with local knowledge.
 - a) Generate a list of problem issues
 - b) Prioritize these issues
 - c) Determine 'why' for selected issues
- 2) Give space to participants to envisage the future. Generate and debate future ideas for beekeeping that might be assisted by science and technology.
 - a) Generate a list of future ideas in four topic areas
 - b) Prioritize plausible future ideas
- 3) Enable participants to outline how B-GOOD may be able to help them benefit from science and technology.
 - a) List a number of actions that B-GOOD can undertake to help beekeepers benefit from science and technology
- 4) Gain debriefing reports (in English), written by partners facilitating workshops in each country detailing, the outcomes of the workshops various phases (as illustrated below).
 - a) Summary debriefing reports to be shared with workshop participants, highlighting workshop outputs in national languages.

2.2. Actor recruitment and participation

The selection of people to participate in B-GOOD Future Workshops was initially intend to engage with broad range of local / regional actors, however as noted above holding workshops on-line necessitated the scaling back of participant numbers. The selection of participants of the on-line workshops focused on several key actor groups:

1. **Beekeepers:** people identified as potential beekeepers to participate in Field Study A (target 40 beekeepers), in the five study countries.
2. **Beekeeping representatives:** people representing beekeeper interests from regional / national beekeeping organizations.
3. **Beekeeping service providers:** representatives from local / regional enterprises providing services to beekeepers e.g. veterinarians, beekeeping advisors or equipment providers.
4. **Scientists:** researchers / scientists from academic institutions (including partner institutions).

Recruitment of workshop participants was coordinated with the recruitment of beekeepers for the Field Study A by WP1, which occurred in late autumn of 2020. Recruitment was undertaken by project partners: BSOUR, MLU, SML, UBERN and WR. Mixed methods were used, varying by country but mostly relying on local networks of contacts, as well as the use of social media (e.g. Facebook groups). All potential workshop participants were provided with essential information about the workshops, by email, prior to attending. These included:

- 1) Date, time, duration and joining instructions,
- 2) Information about the workshops (purpose, how information will be used and follow-up) so participants could give their informed consent.
 - a. An 'Information Sheet' for participants, translated into national languages, was sent to all participants (Appendix 1).

The selection of beekeepers for Field Study A aimed to include a board selection of beekeepers, both hobby and professional, some with considerable experience and others with limited experience (but at least 3 years). However, since all Field Study A beekeepers needed to be relatively technology proficient and since workshops were held on-line these factors are likely to have impacted workshop outcomes, (see 3.6). Details of the workshops and participants are provided in Table 1.

Table 1: workshop details and description of participants attending then them.

Country	Date	Location	Participants	Description	Organizer
Holland	05-Nov. (19:00 CET)	On-line (Zoom + Miro)	9	1 women & 8 men. A mix of beekeeping experience (4-40 years) with both professional (incl. queen breeder) and hobby beekeepers. Several beekeepers had relatively high technological proficiency and familiarity with measurement systems. Other actors also participating were scientists. All participants were local to the partner institution.	Stichting Wageningen Research (WR)
Finland	06-Nov. (15:00 CET)	Scandic City Hotel, Tampere, FI	9	2 women & 7 men. A mix of beekeeping experience (3-50 years), with both professional (incl. queen breeder) and hobby beekeepers. Other actors also participating were a veterinarian, beekeeping advisor, scientist, technology expert. Participants attend from different parts of Finland ages ranged from late thirties to early seventies.	Finnish Beekeepers Organization (SML)
Italy	26-Nov. (10:00 CET)	On-line (Zoom + Miro)	13	3 women & 10 men. 7 beekeepers with a range of beekeeping experience (4-45 years) with both professional and hobby beekeepers. Other actors also participating were a veterinarian, beekeeping advisor and inspector, honey-marketing advisor and beekeeping supplement / technology provider, bee research and extension consultants. All participants were local to the partner.	BeeSources (BSOUR)
Switzerland	07-Dec. (18:00 CET)	On-line (Zoom + Miro)	8	1 woman & 7 men, all beekeepers (6 hobby and 2 professional) with a mix of experience (3-40 years). All participants indicated an interest in new technologies used for beekeeping.	Bern University (UBERN)
Germany	17-Dec. (19:30 CET)	On-line (BigBlueButton + Miro)	8	2 women & 5 men, all beekeepers (6 hobby and 2 semi-professional), with a mix of beekeeping experience (4-40 years). Interest of most participants was the holistic, environmental dimension to beekeeping.	Martin Luther University (MLU)

3.2. Introduction phase

Short presentations were given by facilitators at the start of workshops to introduce participants to the B-GOOD project. A standard presentation was provided by WP7, which was then translated into national languages and adapted by facilitators. Facilitators explained the format of the workshop (number of exercises, expected length and planned break). Participants were given a short time to introduce themselves, as well as their interests in beekeeping and the project.

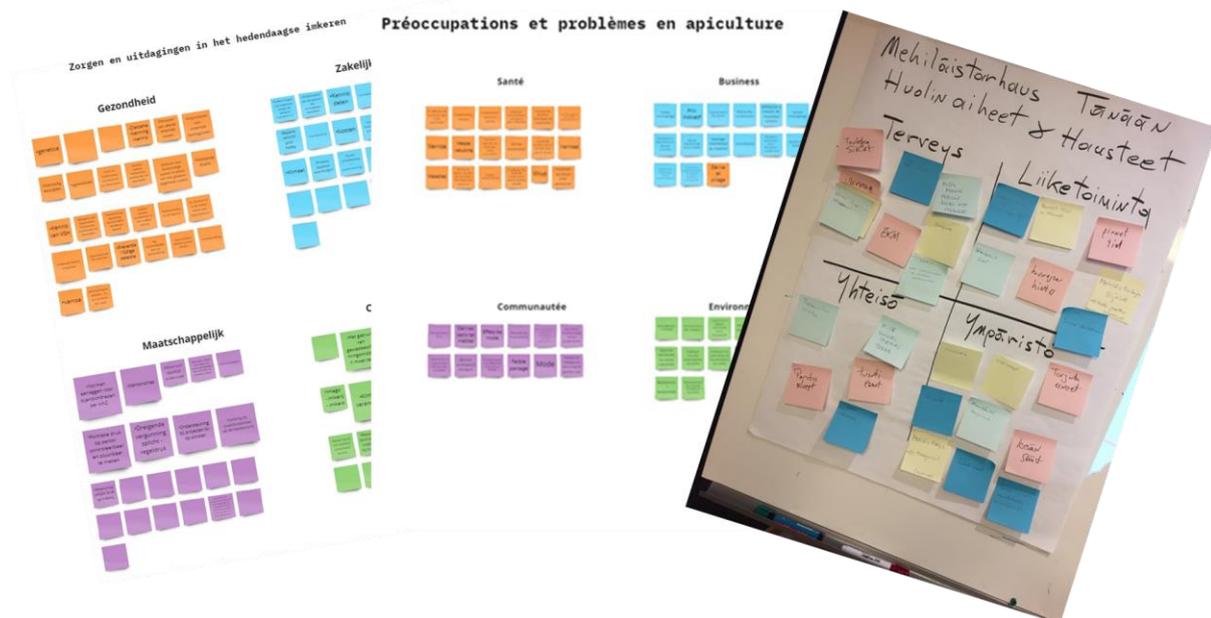
3.3. Critique phase

After the introduction phase, facilitators presented the first of three on-line whiteboards, called 'Beekeeping Today', using the Miro collaborative platform (<https://miro.com/>). Prior to workshops facilitators added participant comments and ideas (gained from pre-workshop exercises) as sticky-notes and images. These were used as a starting point for discussions and for participants to express their concerns and problems about beekeeping today. Participant comments / ideas were organized into the following themes:

1. **Health:** issues related to keeping bees and apiaries healthy.
2. **Business:** issues related to beekeeping business and/or production of bee products.
3. **Community:** issues related to people that support / assist beekeeping and related activities.
4. **Environment:** issues related to the surroundings / areas where bees are kept-

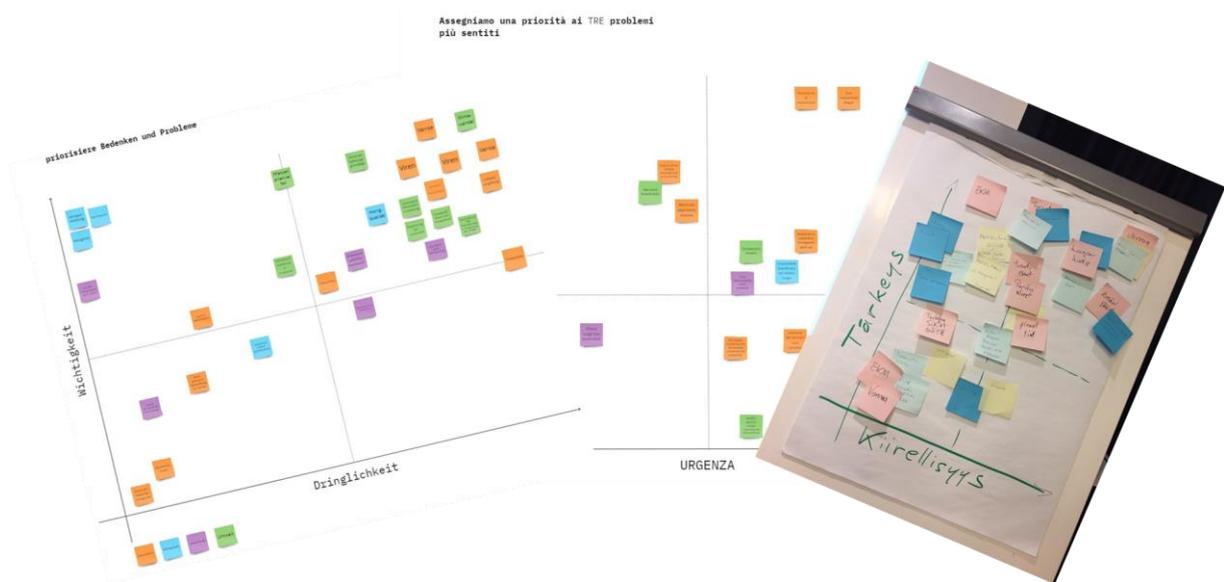
Any new suggestions / ideas, additional to those already gained from the pre-workshop exercises were added to these themes.

Figure 2: Examples of participants concerns and problems about beekeeping today, collated as both electronic and traditional sticky-notes (Netherlands, Switzerland & Finland, respectively).



After participant concerns and problems had been collated they were asked to collectively prioritize these sticky-notes on an importance / urgency chart, as well as given an opportunity to vote for three key concerns and problems (using Miro's voting tool, or in Finland a show of hands).

Figure 3: Examples of participants prioritization of concerns and problems about beekeeping today, collated as both electronic and traditional sticky-notes (Germany, Italy & Finland, respectively).



3.4. Future phase

Once participants had expressed their concerns and problems, and after a short break, facilitators introduced a second whiteboard, called 'Beekeeping futures and technology'. In this phase of the workshop participants were given time to discuss and explore how they would like to see the future of beekeeping develop towards a more 'desirable' future, building on input from the pre-workshop exercise. Participants were then asked to suggest how their desired futures could be aided by science and technology, focusing on four areas of interest.

- I. **Beekeeper knowledge:** new developments / technology to help beekeeper learning
- II. **Bee health:** vet products and protocols to improve health and sanitary conditions of hives
- III. **Bee types:** ways to strengthen / supplement bee colonies e.g. brood combs, new queens etc.
- IV. **Bee resources:** ways to provide improved foraging and feeding for bees

Figure 4: Examples of participant ideas for desirable futures for beekeeping, taken from pre-workshop exercises and discussed in the workshops (Switzerland & Germany, respectively).

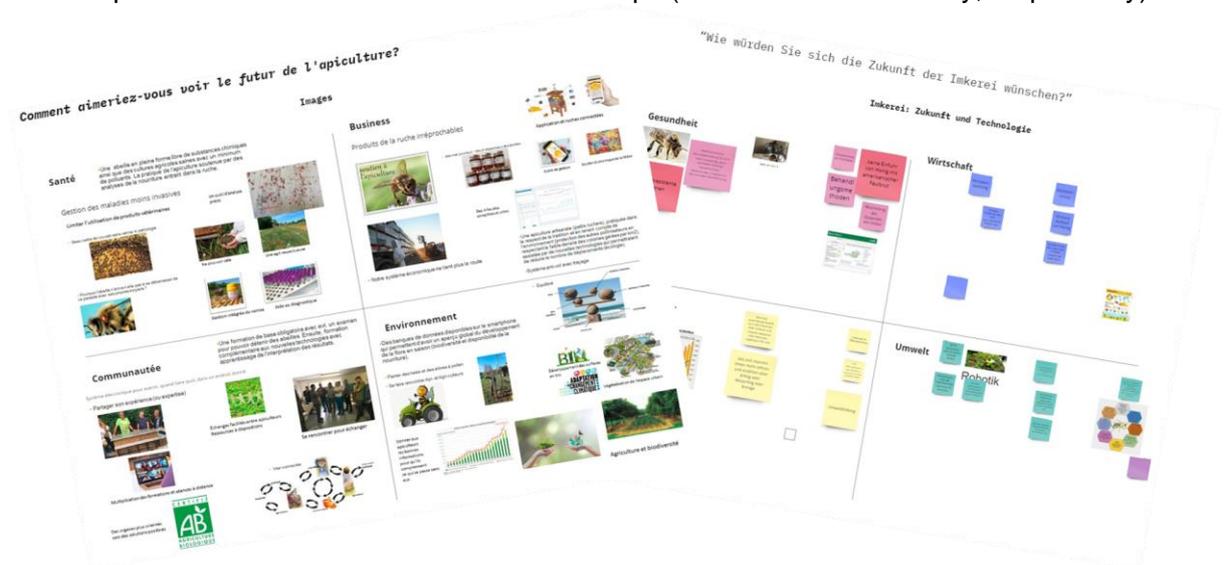


Figure 5: Examples of participant sticky-notes as to how science and technology could help the future of beekeeping (Italy & Germany, respectively).

"Pensando al futuro dell'apicoltura e delle nuove tecnologie, cosa pensi che potrebbe aiutarti a migliorare la tua apicoltura e la salute delle api?"

Idee per apicoltura del futuro e tecnologia

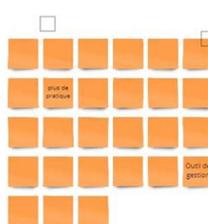
Competenza apicoltori



Salute degli alveari



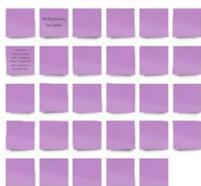
Connaissances en apiculture



Santé de l'abeille



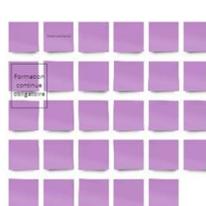
Struttura colonia



Risorse per le api



Démographie



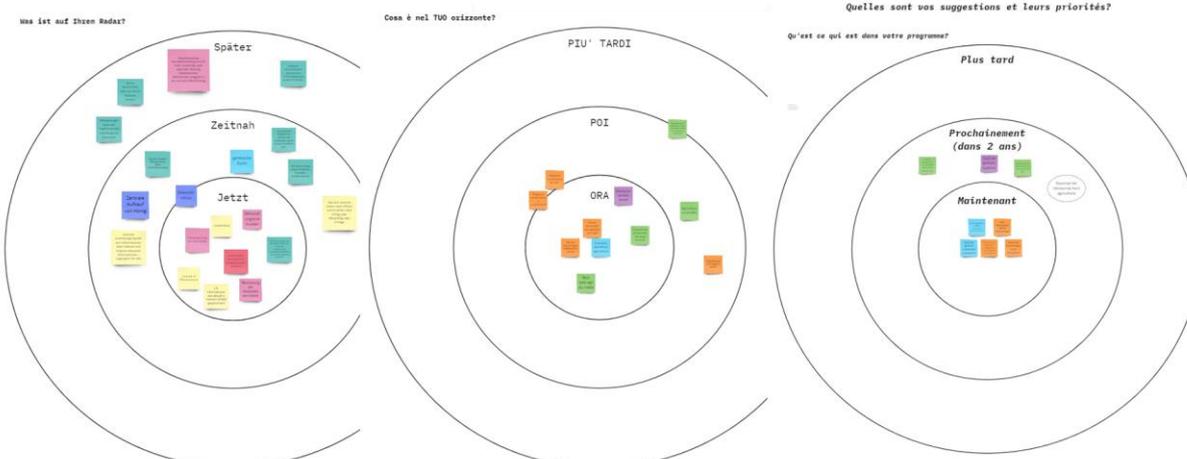
Ressources des abeilles



Once participants, in each of the four topic areas, had identified science and technology ideas they were then asked to prioritize these ideas on a radar chart indicating the following periods:

- **Now:** could help / needed right now
- **Next:** could help / needed in 1 - 2 years
- **Later:** could help / needed in longer term

Figure 6: Examples of participant prioritization as to how science and technology could help the future of beekeeping (Germany, Italy and Switzerland, respectively).



The final part of this phase was aimed at participants discussing “how might B-GOOD help you as beekeepers realise / make most of technology and science?” However, lack of time in most workshops prevented facilitators to from discussing this topic in detail.

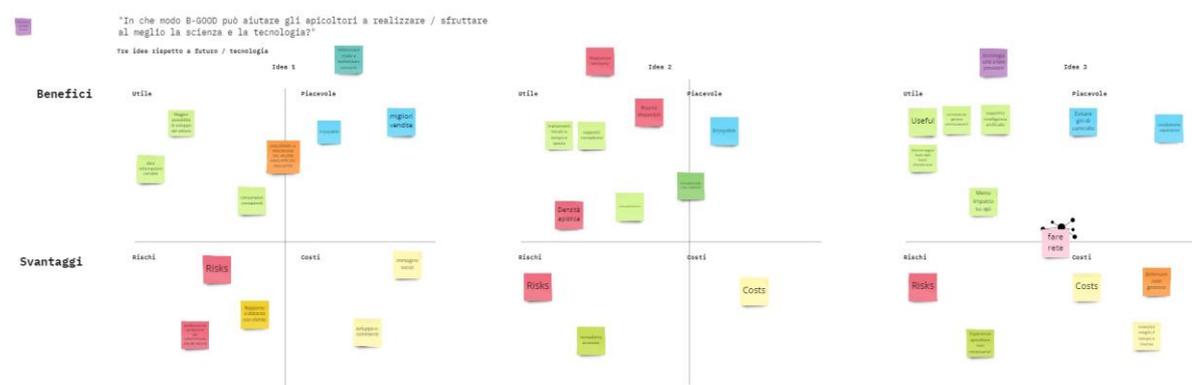
3.5. Implementation / action phase

The final phase of the workshop was intended to take three selected B-GOOD future actions; identified in the future phase, and then participants explore and discuss the perceived benefits and drawbacks of each idea by asking 4 'Whats'?

- 1) Perceived benefits
 - a) What would be **Useful** about this idea / action
 - b) What would be **Enjoyable** about this idea / action
- 2) Perceived drawbacks / sacrifices
 - a) What might be the **Risks**
 - b) What might be the **Costs** (time / money / freedom / privacy?)

However, this phase of the workshop was only completed in one country (Italy). Lack of time in the other four countries prevent starting this phase whilst still leaving time for a wrap-up and final questions. Italy completed this phase only after participants agreed to extend the workshop duration by 45 minutes.

Figure 7: Examples of 3 B_GOOD future actions from Italian workshop.



3.6. Potential limitations and benefits

The disruption caused by Covid-19 necessitated changes as how task 8.2 and its planned multi-actor national workshops were carried out, both in method and format. These changes are considered to have had number of impacts and deviations from the previously envisage workshop outputs. These are expanded upon below.

3.6.1. Selection of participants

Workshops were successfully carried out in five countries, as planned, and these provided participant perspectives from countries with a variety of geographical and climatic beekeeping conditions (North to South). However, as workshops were predominately held on-line, meaningful interactions could only be facilitated with a smaller number of participants. Workshops were primarily focused on Field Study A beekeepers but holding workshops with fewer people limited the variety of local / regional actors who attended and provided their input. The recruitment of Field Study A beekeepers had its own selection criteria for guidance:

- A minimum of 1, maximum of 2 professional beekeepers in each country.
- Beekeepers with at least 3 years of experience and at least 3 hives.
- 50/50 split between beekeepers with 3-5 years of experience (new generation) and beekeepers with 20 or more years of experience (established generation).
- Beekeepers ideally to be information and communications technology (ICT) literate.

This set of criteria provided a relatively diverse range of beekeeper involvement. However, as Field Study A beekeepers are required to use BEEP base and app (automated hive monitoring technology) this limited workshop participation to technology proficient beekeepers (a potential

bias / barrier for participation). The gender balance within workshops was considered sufficient to reflect male and female beekeeper communities.

3.6.2. Format of workshop

The on-line format of workshops not only limited the number of participants but also the duration of the workshop. Workshops were shortened to 2 hours to avoid participant fatigue. Lengthy periods of participants being on-line were considered potentially detrimental in gaining beneficial outputs. In addition, to facilitate capturing / noting of participant ideas and comments and maintain their active involvement several on-line whiteboard exercises were used, as described above. The Miro collaborative platform was a new tool for most participants, as well as facilitators. Participants in some workshops had difficulties using Miro (technical connection and usage), and relied on facilitators to note their ideas / comments. In addition, participants 'getting to grips' and 'playing' with this new tool also took time and delayed completion of exercises. Debriefings have highlighted that there were an ambitious number of exercises; hence not all exercises were fully completed given the planned length as noted above.

However, holding most of the B-GOOD Future Workshops on-line gave rise to challenges but also a number of benefits.

- Facilitators were able to connect with participants in different locations at convenient time, in the comfort of their own home.
- There was no need for participants to travel.
- Facilitators were able to digitally record and capture outputs.
- There is the possibility to repeat (easily), reach out, and engage with other actors, adapting the on-line format based on experience and requirements.

The focus of the B-GOOD project is on the use of technology to assist beekeeping. To connect and engage with technology proficient beekeepers at a local level. In this regard, these workshops have been successful, and participant input into workshops has provided insightful and useful outputs for the project.

4. B-GOOD pathways for change

The B-GOOD Future Workshops have activated a process of dialog, knowledge exchange and learning with key actors, primarily beekeepers, at local / regional levels. These workshops have provided qualitative insights on current concerns and issues for participants, as well as how they view the future of beekeeping, aided by science and technology.

4.1. Future Workshop insights

The following is a brief overview of workshop outputs. However, analysis is still on-going and as detailed in the following sections will supplement and compliment further B-GOOD activities that are engaging multiple actors.

Overall, the primary concern for workshop participants was the ability of to keep bee colonies and hives healthy, but these concerns were linked to a number of sub-issues:

5. Ability to effectively tackle bee diseases, predators and parasites e.g. varroa mite
6. Availability / quality of floral resources
7. Use of pesticides and their impacts
8. Climate change and its impacts

Regarding the future of beekeeping, workshop participants were generally optimistic, at least they did not want to give up. They envisaged a thriving and healthy honey bee sector, which would benefit from science and technology in a number of ways, for example advances in developing disease resistant bees or preventative health products. Given the selection

process for workshop participants, it was not surprising that they were willing to embrace digital technologies to assist beekeeping. Automated hive monitoring and ‘problem’ detection for hive management was seen as beneficial. However, some participants expressed their desire not to become too reliant on technology, valuing beekeeper experience and knowledge to determine hive management.

An overarching theme that participants raised in all workshops was the need for greater dialog and knowledge exchange between the many actors associated with the EU beekeeping sector. Participants highlighted example interactions between:

- Local policy makers and farmers, to understand and develop bee friendly environmental initiatives.
- Farmers and beekeepers, to understand each other’s issues and how to best provide floral resources.
- Beekeepers with each other, to share best practices and coordinate actions to tackle diseases.
- Scientists with beekeepers, to share latest scientific knowledge and to develop practical solutions for bee health issues.

The outputs of these workshops are still being analyzed but key themes raised by workshop participants have guided the development of a number of forthcoming B-GOOD activities, designed to further knowledge exchange with key actors at local and national levels, generating further insights to guide project developments. These include both research and engagement activities, as outlined below.

4.2. Beekeepers survey

The 40 Beekeepers participating in Field Study A were sent an intake questionnaire in December 2020. This survey was developed to gain quantitative data on a variety of aspects related to beekeeping (WP4 task 4.2, UGENT), and complements the Future Workshops described in this report (WP8 task 8.2, AU). This questionnaire is a precursor to a larger European wide survey of 600 beekeepers to begin in month 28 (September 2021). It was sent to all beekeepers that participated in the Future Workshops and aims to:

- 1) Identify factors that determine beekeepers’ management decisions and efficacy.
- 2) Evaluate their views on honeybee health.
- 3) Determine their intention to use Internet of Things (IoT) technology.
- 4) Determine their expectations from taking part in B-GOOD research.

This survey will be analyzed alongside insights gained from the B-GOOD Future Workshops, with results combined, providing both qualitative insights and quantitative data that indicate beekeeper preferences for the future, their likelihood to adopt IoT technologies and expectations of the B-GOOD project. These combined studies and their respective results will help further guide project actions in providing science and end-user lead technological solutions that can ensure sustainable and healthy beekeeping in the EU.

4.3. Multi-actor survey

Gaining input from multiple stakeholders is central to B-GOOD project activities. At an EU level, semi-structured in-depth interviews have already been conducted with 41 stakeholders. This was an initial problem-structuring phase, generating a set of alternative management options for sustainable beekeeping, as described in deliverable 4.1 (task 4.1, UGENT). The stakeholders interviewed were from organizations representing beekeepers, service providers, quality inspectors, NGOs, plant growers, scientists and policy makers. The results of this study have guided the development of a planned European wide survey (WP4 task 4.1, UGENT), with a questionnaire targeted to gain 200 stakeholder responses from the above groups (early 2021).

This survey will evaluate stakeholder opinions and preferences on pathways to attain sustainable and healthy beekeeping in terms of:

- 1) Bee health and environmental health (ecological sustainability)
- 2) Management feasibility in the current social and cultural context (social sustainability)
- 3) Economic viability (economic sustainability)

Outputs and insights gained from the Future Workshops will supplement the quantitative results of this survey, helping to identify a possible range of future successful beekeeping business models in a variety of contexts (environmental, cultural and economic) within the EU. Workshop outputs and survey results will provide the necessary insights and data for deliverable 4.2 (WP4, UGENT).

This survey will identify and engage key national and regional organisations operating in the EU beekeeping sector (as part of sample recruitment). Respondents contacted as part of this survey will also offer the project an opportunity to extend existing project networks and partnerships, particularly for dissemination of project results. In addition, some survey respondents are likely to be selected for more in-depth engagement, providing feedback to stimulate the co-creation of innovative solutions as part of task 8.3 (WP8, AU), as outlined below.

4.4. Multi-actor forum

The Multi-actor Forum (MAF) is a platform for B-GOOD partners to interact directly with a selected group of key actors, who represent varied interests within the EU beekeeping sector. The role of this forum is to provide a channel for B-GOOD to disseminate project progress and results to a targeted audience of key actors, selected because of their expertise and knowledge in various areas related to the bee health and beekeeping. The MAF also enables actors to give direct feedback and guide project developments, to ensure high quality research outputs, as well as user focused developments.

To date, 12 key actors, predominately representing organizations at the EU level have actively participated in this forum by attending consortium meetings. The composition of the MAF is to be expanded. Firstly, a number of Field Study A beekeepers, having participated in Future Workshops, will be asked to join the MAF representing local / regional beekeeping interests. In addition, as noted above, a several multi-actor survey respondents will be asked to join the MAF.

The MAF is a platform for dialog and knowledge exchange. It is planned that members will be invited to participate a number of events.

- i) MAF physical or on-line workshops (depending on Covid-19 restrictions). At least two facilitated workshops are planned i) mid-way, and ii) towards the end of the project.
- ii) MAF teleconference meetings are also planned to coincide with consortium meetings. These will enable MAF members to interact directly with the B-GOOD coordination team, task leaders and relevant project partners.

MAF engagement in these events will be structured and facilitated in a way to:

- i) Present project activities, results and future research activities.
- ii) Understand their expectations of the B-GOOD project
- iii) Review and gain their feedback about current and anticipated project outputs
- iv) Match project outputs with their expectations, and where necessary adjust project activities to meet expectations and desired outputs

The project activities described above, have and will continue to facilitate the engagement of multi-actor groups as well as establishing networks for knowledge exchange. These are evolving learning-oriented and collaborative processes, consisting of data collection, knowledge exchange and feedback among multiple stakeholders. These activities are considered necessary to enable the B-GOOD project to develop pathways for change, steering developments that benefit the future of beekeeping in the EU.

5. Acknowledgements

I am grateful to all the project partners who have contributed to the development, organization, facilitation and outputs of the B-GOOD Future Workshops. I am especially grateful to all the participants who willingly gave their time and valued contributions to the B-GOOD Future Workshops.

6. References

Jungk, R. and N. Müller (1987). Future Workshops: How to Create Desirable Futures. London, UK, Institute of Social Inventions.

Information sheet for the participants

Title of the study: Beekeeping Future Workshop, exploring current issues and future perspectives for sustainable beekeeping

Dear participant,

You have been invited to take part in a study being led in <country> by <provide name> on behalf of the B-GOOD consortium. Before you decide to participate in this workshop, take sufficient time to read this information sheet carefully and discuss any concerns with myself or other people. Please take time to ask questions if there are any uncertainties or if you require additional information. This process is called "informed consent". Once you have decided to participate in the workshop, you will be asked to provide your written consent *via email*, confirming you have read this information sheet and your willingness to participate in the workshop.

Read this information sheet to familiarise yourself with what you can expect by participating in this study and how the information you give during the workshop will be used.

1) Description and purpose of the study

The Department of Bioscience, Section for Biodiversity, of Aarhus University is leading this study. It involves workshops carried out in five European countries. These workshops are designed to collectively review the current state of beekeeping in Europe, and explore possible futures for beekeeping that are sustainable and aided by technology. I, <insert name>, am leading the workshop in in <country>. This study is part of the project B-GOOD that aims to pave the way towards healthy and sustainable beekeeping in the EU.

The study is conducted in accordance with [European guidelines](#) for ethical research in social science and humanities, as well as other international standards including the Helsinki Declaration, written to protect those involved in clinical studies.

2) What will I be asked to do if I agree to take part?

You will be asked to participate in an online workshop, along with several other people (approximately 10-15 people) or attend a workshop at a selected venue (if permitted by nation / local authorities). The workshop will last approximately **two hours**. During the workshop you will be asked to contribute to a number of exercises, exploring and discussing current issues, the use of technology and future possibilities for sustainable beekeeping in Europe. In addition, prior to the workshop, you will be asked to complete a short online exercise, giving your views and ideas on a number of topics related to beekeeping.

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3) Do I have to take part?

Your participation in this study is voluntary; it is up to you to decide. If you do decide to take part, you should keep a copy of this information sheet. You can withdraw from this study and participation in the workshop at any time. You do not have to give a reason why.

4) What are the possible benefits of taking part?

Your participation in this study will probably not benefit you directly. However, you may benefit in the knowledge that the insights and results obtained will enable us to identify better ways to help beekeepers, through science-based guidelines, technological developments and policies that foster healthy and sustainable beekeeping in the EU.

5) What are the possible disadvantages and risks of taking part?

The risk of taking part could be that you may feel inconvenienced by participating in this workshop. However, you will be free to leave the workshop at any time. You will not be paid for participating in the workshop, but there will be no costs for you to attend on-line.

6) How will the information provided at workshops be used?

At the end of the study, we will analyse all the discussions and information provide by you, along with other participants'. We will write about the study and its findings in a study report, and may publish findings in an academic article, newsletter or at any relevant conferences. We will send you a summary of the study report, if you wish.

7) Will my taking part in this study be kept confidential?

In accordance with the General Data Protection Regulation (or GDPR) (EU) 2016/679 on the protection of personal data (GDPR of April 27, 2016), your privacy will be respected.

If you consent to participate in this study, we will process your data in accordance with the purpose of the study. This processing of data is provided by law on the basis of Article 6, § 1, (b), (e) or (f) and Article 9, § 2 (j) of the General Data Protection Regulation.

In this study, data will collected prior to and during the workshop by means of written notes (stored digitally), digital video recordings of discussions and digital storage of exercises completed (e.g. digital post-it notes). All information collected during this study will be pseudonymised. This means data you provide can still be linked to your personal file. However, this unique code assigned to you will only be accessible to the investigators (B-GOOD researchers) or to an appointed replacements. Only pseudonymised data gain will be used for analysis and in any type of documentation, reports or publications concerning this study. Both your personal data and data concerning your views and opinions relating to beekeeping in the EU will be processed and stored for at least 20 years. All digital data will be held on a secure database on a password-protected computer and/or on password-protected secure electronic network designated for the use by the principal investigator, named below.

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The controller of the data is the principal investigator of the study, Dr James Henty Williams (jhw@bios.au.dk). His research team will have access to yours and all workshop data files.

In the context of data protection, your pseudonymised data may become publicly available after the study, therefore any interested parties can have access to, process, and/or further analyse your pseudonymised data. If you wish, the Data Protection Officer can provide you with more information about the protection of your personal data. In this case, please contact privacy@ugent.be

8) How do I agree to take part?

If you are willing to participating in this study please provide your informed consent by reading, indicating your agreement and then emailing the statements below to workshop@ugent.be.

Please complete, then copy and email the following to workshop@ugent.be

Informed consent

I have read and understood the document "Information sheet for the participants" pages 1 to page 3 and I have received and kept a copy of this document. I have been informed of the nature of the study, its purpose, its duration and what is expected of me. **Yes / No**

I have been informed that both personal data and data I provide during this study will be processed and stored for at least 20 years. I am aware that I am entitled to access and correct this information. As this data is processed for scientific purposes, I understand that access to my data may be postponed until after the end of the study. If I want access to my data, I will address the investigator who is responsible for the processing of the data. **Yes / No**

I agree to participate in the study. **Yes / No**

I agree the workshops proceedings and exercises will be digitally recorded (visual and audio). **Yes / No**

I agree that my e-mail address will be used to enable my participation in this study. **Yes / No**

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English version
November-2020

B-GOOD Future Workshop – ON-LINE Operational Schedule

Outline of workshop activities / exercises

Materials to be prepared in advance and used in the workshop:

Item no.	Description	Check
1	Teleconference set-up (Zoom or another on-line meeting platform). <i>If using AU Zoom account confirm date and time with James.</i>	<input type="checkbox"/>
2	Informed consent forms distributed and responses received. <i>Important to gain e-mail consent to participate in workshops from participants before workshop.</i>	<input type="checkbox"/>
	'How to use Zoom' guide distributed to participants	<input type="checkbox"/>
3	Introductory presentation prepared	<input type="checkbox"/>
4	PowerPoint slides distributed to all workshop participants (email link)	<input type="checkbox"/>
5	Completed participant slides reviewed prior to workshop and images, ideas and notes added to Miro boards	<input type="checkbox"/>
6	Access to Miro whiteboards (3 boards in national languages)	<input type="checkbox"/>
7	Check familiar with sharing Miro boards using links	<input type="checkbox"/>

Timing	Sequence/objectives	Content	Methods	Who is responsible / facilitator(s)
Preparation phase				
Prior to workshop	Informing participants Inform and outline workshop details to participants	<ul style="list-style-type: none"> Confirm on-line teleconference (date and time) with all participants Joining instructions and <i>informed consent</i> information provided PowerPoint slides distributed to participants and completed boards reviewed and images, ideas and notes added to Miro boards Informed consent received from all participants 	Email participants informed consents and joining instructions	<i>Insert initials e.g. JHW</i>
Joining time (e.g. 15.50)	Open Zoom meeting Participants wait in Zoom waiting room	<ul style="list-style-type: none"> 10-5 minutes before workshop participants can access Zoom meeting and kept on hold in waiting room Facilitators (Zoom meeting hosts) can admit participants when ready 	Open Zoom app. If using AU Zoom account confirm with James start time (needs to be present to start meeting)	XX / XX
Introduction Phase				
Start time (e.g. 16.00) Allow 15 mins.	Introduction to workshop Objectives: Explain what the B-GOOD project is about and why participants are here today. Frame discussions by explaining B-GOOD research objectives. Explain the participatory approach. Explain the different activities during the workshop.	<ul style="list-style-type: none"> Use presentation to introduce B-GOOD project, suggested outline given but tailor to your needs <ol style="list-style-type: none"> Outline aims of project to enhance and automate HSI. Overview of automated monitoring and brief introduction BEEP Base and BEEP App. How bee keepers will be involved in B-GOOD, e.g. Tier 2 field studies Introduce facilitators / research collaborators / observers joining the workshop. Overview of workshop method, activities and its aims, and when breaks will be taken etc. Outline rules of conduct to help on-line interaction 	<ol style="list-style-type: none"> Give B-GOOD PowerPoint presentation (ppt) (tailored to suit your needs) Show workshop agenda on slide Show rules of conduct on slide <ol style="list-style-type: none"> Keep video on but mute your mic. when not speak Use chat function to ask questions or indicate wish to speak Remember to turn on mic. when speaking Keep it brief (give other people a chance to speak) Take notes of participant initial questions around B-GOOD themes. If unable to 	XX / XX

	<p>Outline follow up activities and reasons to participate in further research.</p> <p>Outputs: Build trust between facilitators and participants. Reassure participants that any questions, issues or opportunities will be followed up.</p>	<ul style="list-style-type: none"> • Inform participants that workshop will be digitally recorded (visual and audio) • Outline how will the workshop be followed-up with planned dissemination and research activities e.g. workshop report and Tier 2 Beekeeper Intake Survey and field studies • If unable to answer questions during workshop explain how these will be followed up. 	<p>answer immediately, questions should be noted and answered during follow-up activities e.g. workshop report, newsletters, future workshops, presentations etc.</p>	
20 mins.	<p><i>Participant introductions</i></p> <p>Allow participants to introduce themselves</p>	<ul style="list-style-type: none"> • Each participant given 1-2 minutes to introduce themselves and ask initial questions about the project or workshop. • 	<p>1. Allow 15-20 minutes for introductions and ask questions about workshop or the project .</p>	XX / XX
Critique Phase				

<p>30 mins.</p>	<p>Critique phase Objective: Allow participants to express concerns and frustrations of bee keeping today - “blow off steam” phase Output: identify key concerns related to the four topic areas, and</p>	<ul style="list-style-type: none"> • Start critique phase by asking participants question highlighted below • Participants to focus on current situation in relation to beekeeping in Europe • Focus on four topics <ol style="list-style-type: none"> I. Health – issues related to keeping your bees and apiaries healthy II. Business – issues related to your beekeeping business and/or production of bee products III. Community – issues related to people that support / assist your beekeeping IV. Environment – issues related to the surroundings where you keep your bees • Identify key concerns by getting participants to prioritize and vote • Determine ‘whys’ for 3 selected issues <p><i>“Based on your daily work experience what are your main concerns, problems or challenges that you experience with beekeeping today, regarding the four topics shown on the Beekeeping Today board?”</i></p>	<ol style="list-style-type: none"> 1. Check all participants are on Beekeeping Today board 2. Facilitator to introduce pre-written ‘post-its’ based on input from PowerPoint slides, on Beekeeping Today board 3. Read out a few selected post-its 4. Ask participants to add their own post-it notes. 5. Give 5-10 minutes for participants to write individually, their problems, challenges, issues, concerns and frustrations on post-its related to 4 topic areas. 6. Allow 5-10 minutes for facilitator / participants to copy post-its to Importance / Urgency plot 7. Discuss post-it notes to understand meaning and associations 8. Allow 3-5 minutes for participants read post-it notes and then vote (3 votes per person) to prioritize concerns etc. 9. Facilitator to select three concerns / problems most voted for 10. 5-10 mins to explore root causes by asking participants ‘3 Whys’ using whiteboard. 	<p>XX / XX</p>
<p>15-20 mins. Elapsed time = 65 mins</p>	<p>Break</p>	<p>Give participants time to take break, if necessary</p>	<ol style="list-style-type: none"> 1. Get participants to switch-off video and mic. but do not end meeting (otherwise participants will have to re-join via waiting room) 2. Prepare for Future phase 1. Open Beekeeping future and technology whiteboard 	

		Future Phase 1: Future Ideas		
40 mins.	<p>Future phase 1: Envisage Objectives: Participants to explore what the future of beekeeping could be by focusing on 4 areas of interest Outputs: Future ideas clustered into themes and anticipated timeframes. Begin to identify ways B-GOOD might help beekeepers (discussed further in next phase).</p>	<ul style="list-style-type: none"> Review and discuss participant notes / visual ideas for future of beekeeping provided in Jamboards. Ask participants highlighted question (Q1) below to begin gathering ideas on following 4 topics <ul style="list-style-type: none"> Beekeeper knowledge: new developments / technology to help beekeeper learning Bee health: vet products and protocols to improve health and sanitary conditions of hives Bee types: ways to strengthen / supplement bee colonies e.g. brood combs, new queens etc. Bee resources: ways to provide improved foraging and feeding for bees Discuss ideas / comments to understand meaning and associations Participants to prioritise and vote on post-it notes identify beneficial ideas Ask participants highlighted question (Q2) about how B-GOOD might help beekeepers <p>Q1 - "Thinking about the future of bee keeping and new technologies, what do you think might help you improve your beekeeping and health of bees?"</p> <p>Q2 - "How might B-GOOD help you beekeepers realise / make most of technology and science?"</p> <p>Some ideas will be used in <i>Future phase 2</i> (Technology adoption and B-GOOD Actions) by selecting 3 ideas that relate to maintaining healthy and sustainable bee colonies, suggest excluding ideas completely alien and out of scope of B-GOOD project.</p>	<ol style="list-style-type: none"> Send link to Future Miro board Check all participants are on <i>Beekeeping future and technology</i> board Facilitator to introduce visuals and post-its based on input from google Jamboards using 'How you would like to see future of beekeeping' and 'Beekeeping future and technology ideas' sections Ask participants to add their own post-it notes to 'Beekeeping future and technology ideas' section Give 5-10 minutes for participants to write individually, their ideas for the 4 topic areas. Allow 5-10 minutes to discuss post-it notes to understand meaning and associations Allow 5-10 minutes for facilitator / participants to copy and prioritize post-its to 'What's on your radar chart' section Participants prioritize future ideas on <i>radar chart</i> <ol style="list-style-type: none"> What can help them / do they need right now, In 2 years (next) or Longer term (later). Use different colour post-its for 4 topics or group in 'pizza slices' of the radar Allow 3-5 minutes for participants to read post-it notes and vote (3 votes per person) for the three most beneficial ideas. 	XX / XX

			<ol style="list-style-type: none"> 11. Ask participants to review ideas on radar and then ask what B-GOOD can do (how might we help?) 12. Copy or add additional post-its to 'What's on B-GOOD's radar' chart 13. Allow 5-10 minutes to discuss and prioritize how B-GOOD might help using radar chart 14. Participants and facilitator to pick three agreed ideas, suggest one from each level (Now, Next, Later) that seem relevant to B-GOOD to be used in next phase. 	
		Future Phase 2: Technology adoption and B-GOOD Actions		
15 mins	<p>Future phase 2: B-GOOD actions</p> <p>Objectives: Reflect and explore how B-GOOD can help beekeepers, with three specific ideas</p> <p>Outcome: Three identified actions for B-GOOD and determine what are perceived benefits, as well as drawback</p>	<ul style="list-style-type: none"> • Three selected B-GOOD actions for future ideas introduced on B-GOOD Actions board • Participants to explore and discuss one idea at a time by asking 4 Whats <ol style="list-style-type: none"> 1) Perceived benefits <ol style="list-style-type: none"> a) What would be Useful about this idea / action b) What would be Enjoyable about this idea / action 2) Perceived drawbacks / sacrifices <ol style="list-style-type: none"> a) What might be the Risks b) What might be the Costs (time / money / freedom / privacy?) 	<ol style="list-style-type: none"> 1. Copy / write 3 ideas above each idea section 2. Ask participants to add post-it notes to 4 what question areas <ol style="list-style-type: none"> I. Useful II. Enjoyable III. Risks IV. Costs 3. Give 5 minutes for participants to write individually, their ideas for the 4 topic areas. Allow Show question and PESTEL written on a flipchart sheet 4. Allow 5-10 minutes to discuss post-it notes to understand meaning and associations 	

		Wrap-up and evaluation phase		
5 mins	<p><i>Reflection / wrap-up</i> Objectives: Gain feedback from participants on workshop and what they anticipate from B-GOOD project. Outcome: participant feedback, questions for project partners (researchers / WPs). What information, activities, or developments would they like to see coming from B-GOOD project.</p>	<ul style="list-style-type: none"> • Participants asked about outputs of the workshop and any issues raised: <ul style="list-style-type: none"> ○ How the workshop went? ○ Positive / negative aspects? ○ Suggestions to improve etc. ○ What feedback / information would participants want from B-GOOD researchers? ○ Are there uncertainties they would like address / information they would really like to have made available to them etc.? 	<ol style="list-style-type: none"> 1. Ask participants about workshop and outputs e.g. <ol style="list-style-type: none"> a. Running of the workshop? b. Balance of contributions between participants and B-GOOD researchers (facilitators) c. Suggestions for improvement? d. What feedback / additional information you would like to have from us as scientists in the B-GOOD project? 2. Take notes of questions and expectations for future relationships. 	
5 mins	<p><i>Follow-up</i> Objectives: To inform participants about what happens after the workshop Outcome: Start a dialog with participants and develop mechanisms to follow-up.</p>	<ul style="list-style-type: none"> • Explain to participants what is next and how will the workshop be followed up 	<ol style="list-style-type: none"> 1. Tell participants follow-up activities <ol style="list-style-type: none"> a. Invitation to participate in Tier 2 field trials and/or further research (Tier 2 Beekeeper Intake Survey and possible workshops etc.) b. Distribution of workshop summary report with information and results from other workshops in other countries (ensure transparency of process) c. Follow-up / respond to specific questions raised by participants d. Newsletter about workshops and results sent to other B-GOOD stakeholders 	
	Overall Elapsed time = approx. 150 mins. / 2 ½ hours including break.			
End				

To help prepare for our on-line discussions please can you spend 30-40 minutes doing the following exercises on the next 3 slides

1. Add image(s) or write short note(s) to answer 4 questions in the 4 quadrants and short caption to title your answer.
 - *You can search the web, copy and paste images or use the insert 'Online Pictures' button found in the centre of each under quadrant or under the 'Insert' tab.*
2. Write in the 'post-it cells' your concerns and problems about beekeeping today, when thinking about the following:
 - a. Health – issues related to keeping bees and apiaries healthy
 - b. Business – issues related to beekeeping enterprise and/or production of bee products
 - c. Community – issues related to people that support / assist beekeeping and related activities
 - d. Environment – issues related to the areas and surroundings where bees are kept
3. Thinking about technology and the future of beekeeping search the web for images of how you would like to see the future of beekeeping and add a caption to title it, when thinking about the following:
 - a. Health
 - b. Business
 - c. Community
 - d. Environment



Four questions to answer in pictures or words

What is the most **CHALLENGING** part of beekeeping for you now?

What is the most **EXCITING** part of beekeeping for you?

What is your **VISION** (desired outcome) for working with B-GOOD?

How can B-GOOD best **HELP** you?



Beekeeping concerns and challenges

Health

[Text]	[Text]	[Text]

Business



[Text]	[Text]	[Text]

Community

[Text]	[Text]	[Text]

Environment

[Text]	[Text]	[Text]



Beekeeping technology and the future

Health

Business

Community

Environment



Four questions to answer in pictures or words

What is the most CHALLENGING part of beekeeping for you now?



Long drive
to hives



What is the most EXCITING part of beekeeping for you?

What is your VISION (desired outcome) for working with B-GOOD ?

How can B-GOOD best HELP you?

Example



Beekeeping concerns and challenges

Health

No effective treatment for varroa

Antibiotics are expensive

Imported / new bee diseases and parasites

Business



[Text]

[Text]

[Text]

Community

[Text]

[Text]

[Text]

Environment

[Text]

[Text]

[Text]

Example



Beekeeping technology and the future

Health

Business

Community

Environment

From science to practice, with practical help on-line



Online Education

Example

