



## **Exploitation Plan**

### **Deliverable D7.3**

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### **B-GOOD**

### **Giving Beekeeping Guidance by cOmputatiOnal-assisted Decision making**



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## **Preface**

B-GOOD is a multi-disciplinary project aiming at providing practical scientific solutions to help developing a more sustainable apiculture in Europe. More specifically, the project aims at creating innovative technologies that will facilitate the care and management of bee hives, i.e. keeping healthy colonies in a safe and well-supplied environment and implementing sustainable business models and strategies. In this context, a pertinent exploitation plan is key to maximize the adoption and use of the diverse results during and after the project by different target groups.

This deliverable describes the different strategies designed by the members of the B-GOOD Work Package 7 to ensure an efficient exploitation of the project results.

## **Summary**

The B-GOOD Exploitation Plan describes how the project outputs will be exploited during and after the project, with special emphasis on how to ensure sustainable benefits for various stakeholder groups during and after the end of B-GOOD. Starting with setting the aims of the B-GOOD Exploitation strategy, this document further defines the terminology of the different results and target group categories. Moreover, the results from the different B-GOOD Work Packages are listed and the methodology to enhance the adoption and use of these results by different target groups is detailed. Finally, the foreseen evaluation methods, including incentives for and barriers to the adoption of these results as well as mitigation strategies, are detailed.

## 1. General considerations

B-GOOD stands for 'Giving Beekeeping Guidance by cOmputatiOnal-assisted Decision making'. This project aims at promoting sustainable and healthy beekeeping in Europe by following a scientific multidisciplinary approach to develop and test innovative technologies in order to guide beekeepers in their management practices.

As a Horizon 2020 Research and Innovation Programme project, B-GOOD aims at creating novel technologies to promote sustainable beekeeping across Europe. This project was prepared in response to the SFS-07-2018 Making European beekeeping healthy and sustainable call. This call states five expected impacts, and we hereby demonstrate how B-GOOD meets and exceeds these below. As such, B-GOOD contributes to the understanding of bee colony health and the identification of important socio-economic characteristics of sustainable beekeeping (see **section 3** for a description of the goals).

This deliverable report was created by consortium members of different institutes (UGENT, PENSOFT, WR, AU, BEEP) under the coordination of UBERN within Work Package 7 'Communication and Exploitation' of B-GOOD. It aims at exposing the exploitation strategy of B-GOOD's results and providing a clear methodology to be followed by the project's consortium members during and after the project.

### 1.1. The needs for exploitation

As a H2020 research and innovation programme, B-GOOD has a user-oriented approach. Moreover, what B-GOOD develops has potential for wide-spread exploitation to contribute to improved honeybee health. The beekeeping sector involves a wide diversity of actors, ranging from suppliers and service provisioners, beekeepers, other actors in agri- and horticulture, food processors, policy makers, consumers and citizens, all of whom may benefit from insights and results gathered during the B-GOOD project.

### 1.2. Aim of this document

Given the needs exposed above, this document aims at providing the methodology and planning for the different exploitation activities of B-GOOD in order to ensure an optimal impact of the project and its results on the different stakeholder groups. The strategy exposed within this deliverable will help homogenizing the different activities conducted by the project's consortium members, resulting in a unified approach.

The information contained in the exploitation plan will be used to create a concrete, consortium-wide exploitation strategy that ensures that project results are transferred to the relevant stakeholder community, and the necessary capacity is built to secure their uptake and further development beyond the project lifetime.

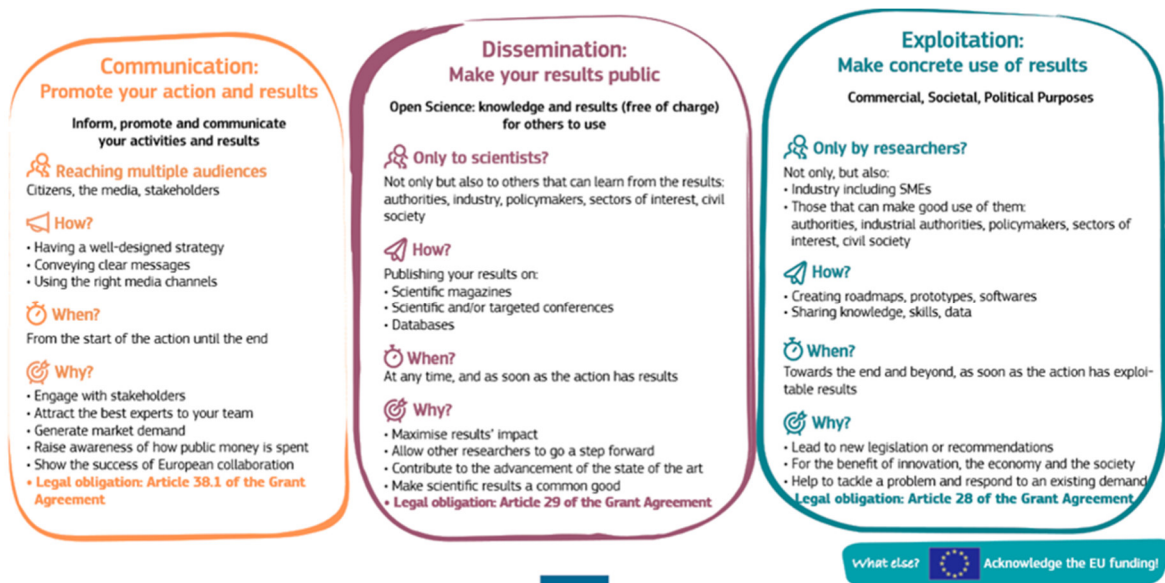
### 1.3. Links with other B-GOOD Deliverables and Milestones

Given that the exploitation plan of B-GOOD is tightly linked to other activities of the project, we hereby describe the most relevant milestone and deliverable reports that have been published prior to this deliverable report.

### 1.3.1. Communication and Dissemination Strategy

To maximize B-GOOD's output and impact as well as to ensure the adoption of the different results by diverse stakeholder groups, coordinated and efficient communication and dissemination activities are needed. The detailed organization of these activities is explained in the '**Communication and Dissemination Strategy**' **Deliverable 7.2** of the project, available on the B-GOOD [website](#).

The links between these three components are evident, since exploitation simply cannot be achieved without efficient communication and dissemination. Within B-GOOD, we follow the definitions provided by the European Commission (Figure 1).



**Figure 1 – Definitions of Communication, Dissemination and Exploitation**

This figure can be found here: [https://ec.europa.eu/research/participants/docs/h2020-funding-guide/imgs/quick-guide\\_diss-expl\\_en.pdf](https://ec.europa.eu/research/participants/docs/h2020-funding-guide/imgs/quick-guide_diss-expl_en.pdf) (last accessed on the 9<sup>th</sup> of March 2021).

### 1.3.2. Data management Plan

The different data categories and strategies used to gather and analyse these data are listed in the Data Management Plan (see '**Data Management Plan**' **Deliverable 9.2** and associated updates). Because most results described here will emerge from the data gathered by the B-GOOD consortium members, we advise readers who want to better understand our data management strategy to refer to that document (see B-GOOD [website](#)).

## 2. Definitions and terminology

Before going to the core of the plan, in this section we define the different terms used for the Exploitation of B-GOOD. Whenever possible, we used the terminology provided in the [IPR glossary](#) of the European IP Helpdesk to ensure harmonization with the European Commission's terminology.

Notably, the two following terms are of the utmost importance in the current report:

- **'Exploitation'** = *'in the context of Horizon 2020, Exploitation means the use of results in further research activities other than those covered by the action concerned, or in developing, creating and marketing a product or process, or in creating and providing a service, or in standardisation activities'*
- **'Results'** = *'in the context of Horizon 2020, means any tangible or intangible output of the project, such as data, knowledge or information, that is generated in the project, whatever its form or nature, whether or not it can be protected, as well as any rights attached to it, including intellectual property rights'*

As defined in the '**Communication and Dissemination Strategy**' **Deliverable 7.2** of B-GOOD, six main target groups are relevant to the project (Table 1). We also used some information provided on the **Milestone 20** by Work Package 4 to form the groups. These add up to eight groups in total.

**Table 1: Main target groups for the B-GOOD exploitation activities**

The different target groups are defined.

Groups	Definition
<i>B-GOOD consortium</i>	<i>'B-GOOD consortium'</i> are members of B-GOOD project. They are the principal actors who must ensure the exploitation of the results.
<i>Beekeepers</i>	<i>'Beekeepers'</i> are here defined as individuals who possess (and care for) honey bee colonies.
<i>Scientists</i>	<i>'Scientists'</i> refer here not only to experts in honey bee science, but also in other related topics.
<i>Policy makers</i>	<i>'Policy makers'</i> are defined as government agencies that regulate policy / laws that affect honeybees (agriculture, food safety, and environment).
<i>Industries and companies</i>	<i>'Industries and companies'</i> are considered as legal entities representing an association of people, whether natural, legal or a mixture of both, with a specific objective.
<i>Service providers</i>	<i>'Service providers'</i> are those individuals or organisations that provide services to beekeepers, such as veterinarians, and extension institutes (training and advice).
<i>Quality inspectors</i>	<i>'Quality inspectors'</i> are defined as individuals or institutions that ensure the quality of bee products and guarantee bee health, e.g., through controlling.
<i>Agriculture / Horticulture</i>	Members of the ' <i>Agriculture / Horticulture</i> ' category include farmers, plant growers, seed producers, and other related individuals or institutions.
<i>NGOs</i>	The ' <i>NGOs</i> ' category includes all non-governmental individuals or organizations (e.g., <a href="#">COLOSS</a> ), as well as the general public.



### 3. Case study: overview of current B-GOOD exploitable results

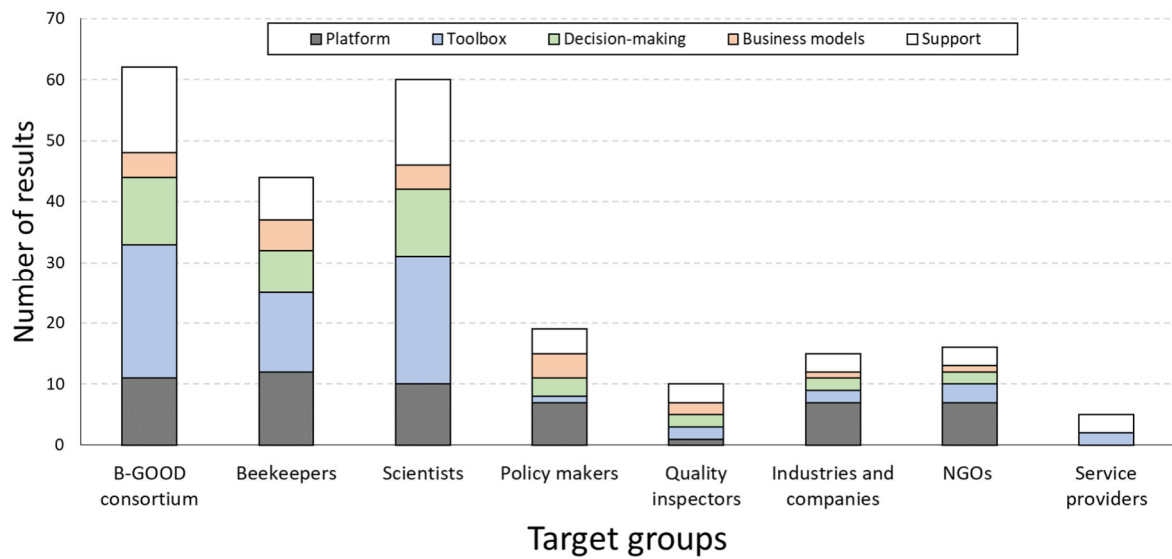
B-GOOD will produce a range of outputs and deliverables with exploitation potential. The B-GOOD Exploitation plan aims to identify the exploitable results and deliverables and put them in their relevant context of use. As a project prepared in response to the SFS-07-2018 *Making European beekeeping healthy and sustainable* call, B-GOOD was designed around five distinct objectives:

- **Platform:** Developing an EU platform on science and practice in relation to honeybees, their environment and agricultural and beekeeping practices;
- **Toolbox:** Providing a pilot toolbox to improve monitoring of honeybee colonies and assessment of the multiple stressors that affect colony health;
- **Decision-making:** Contributing to a better understanding of the management decisions made by beekeepers;
- **Business models:** Providing potential and viable business models for EU beekeeping, with and without public interventions;
- **Support:** Giving support to scientists, risk assessors and policy makers in assessing and managing multiple stressors that affect the sustainability of the EU's apiculture.

In this section, an overview of the current exploitable results of B-GOOD is provided, together with information about how these results aim at different target groups and respond to the different SFS-07-2018 call objectives. To build this overview, a questionnaire was sent to all B-GOOD work package leaders in order to gather information about currently available exploitable results (**Annex 1**). The outcome of this survey provides information about the different results available to date.

Notably, the aim of this survey was to provide examples for the exploitation of B-GOOD, not to give an exhaustive list of the results of the project. A complete overview of the planned results per work package can be found in the **Description of Action** of B-GOOD. However, it is to be noted that additional exploitable project results may emerge during the course of the project. Updated lists of exploited results will therefore be provided in periodic reports to provide overviews of B-GOOD's exploitation activity.

Currently, the results generated by the project focus mostly on three target groups: B-GOOD consortium members, beekeepers and scientists (**Figure 1**). Within these three dominant target groups (but also in the other target groups) the different objectives of the call are well represented.



**Figure 1 – Overview of the exploitable results per goal and target group**  
 Data from the survey sent to the B-GOOD consortium members. The graph represents the number of result (Y-axis) for each the target groups (X-axis) and objectives of the SFS-07-2018 call (colour coding).

## 4. B-GOOD Exploitation strategy

This section describes the methodology used to ensure an optimal exploitation of the B-GOOD results.

### 4.1. B-GOOD results

Given the multi-disciplinary approach of the project; a great diversity of results is being generated by the B-GOOD consortium members. These results can be divided into the following categories:

- Technologies
- Products and services
- Scientific publications
- Standardisation efforts
- Policy implications and recommendations
- Communication guidelines
- Toolkits, models
- Knowledge
- Networks

Acquisition of data and using this data for research plays a very large role in B-GOOD. A complete list of the data that is being generated by B-GOOD can be seen in the '**Data Management Plan**' **Deliverable 9.2 (Table 1)** of that document). Once these data are analyzed and turned into results, guidelines will be provided by members of the B-GOOD consortium in order to ensure their adoption and usage by target groups.

### 4.2. Exploitation actors:

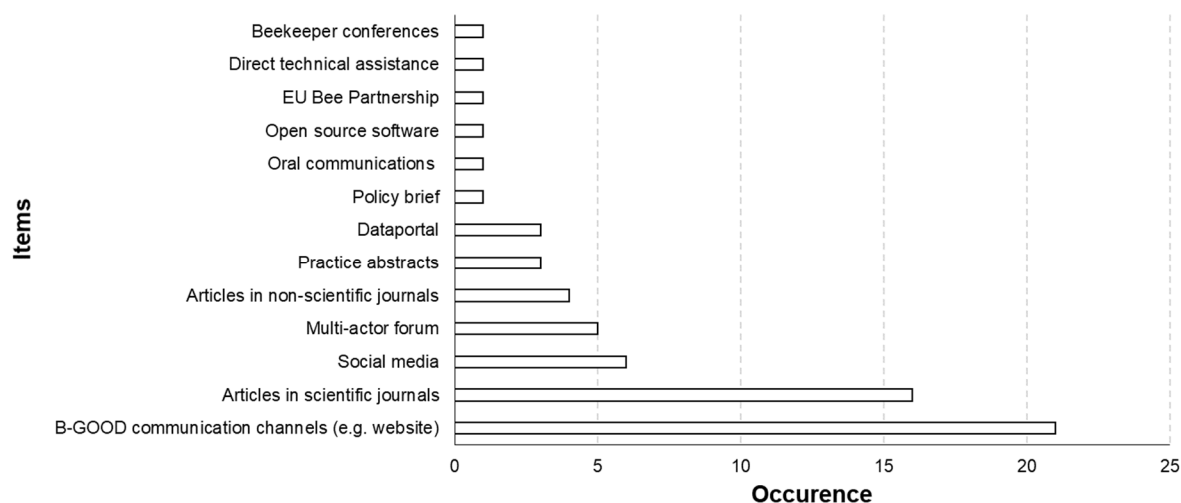
With the support of Work Package 7 and the exploitation team (i.e., the partners involved in the creation of this document), B-GOOD consortium members are therefore in charge of ensuring the successful long-term exploitation of the results they generate.

In relation to the exploitation of B-GOOD, the involved actors can be divided in two categories:

- i. **Members of the B-GOOD consortium:** they are the principal initiators and implementers of the exploitation of the project's results. They are in charge of the results' dissemination to ensure their successful adoption and usage.
- ii. **Target groups:** they are the beneficiaries of B-GOOD results. They are composed of various groups of stakeholders (see **Table 1**) that will benefit from the project's outputs. Notably, this category also includes members of the B-GOOD consortium.

### 4.3. Pathways:

Given the wide diversity of results generated by B-GOOD, specific channels should be used by the members of the consortium to optimize the adoption and usage of the project's outcomes by the different targeted groups. **Figure 2** shows how the different channels of the project are being used to disseminate and/or exploit B-GOOD results between the start of the project and Month 24.



**Figure 2 – Channels envisaged by the B-GOOD consortium members**

Data from the survey sent to the B-GOOD consortium members. The graph represents the diversity of dissemination and exploitation channels that, throughout and after the project period, will bring the results to target groups.

Several B-GOOD results are already being exploited. **Table 2** provides examples of project results that have been successfully exploited, together with the main pathways envisaged for their exploitation.

**Table 2: Results and exploitation pathways**

Table providing examples of B-GOOD results that are currently being exploited for each of the objectives of the SFS-07-2018 call, as well as main pathways used to foster successful exploitation.

Objective	Result	Description	Main pathway
Platform	Stakeholder network	Multi-actor forums are being organized to interact with members of the beekeeping sector and initiate networking activity (see <b>Deliverable 8.3</b> ).	Workshops and forum
Toolbox	BEEP app	The BEEP app allows users to track the evolution and health status of their colonies in real time ( <a href="https://beep.nl/beep-app">https://beep.nl/beep-app</a> )	Website
Decision-making	Machine learning approach	Machine learning is being used to build models for predicting honey bee health (see <b>Milestone 27</b> )	Various (e.g., BEEP platform, models, data portal)

Business models	SWOT analyses	Interviews of beekeepers resulted in the creation of a report on strength and weaknesses of the EU beekeeping sectors (see <b>Deliverable 4.1</b> ).	Article in Scientific journal
Support	BEEP bases	The BEEP website offers an online shop describing the tools and offering the possibility to order the bases ( <a href="https://www.bEEP-shop.nl/">https://www.bEEP-shop.nl/</a> ).	Website

In addition to the pathways exposed above, B-GOOD members will use different supplementary channels offered by the European Commission. These include the [Horizon Result Platform](#), [Open Research Europe](#) and [Horizon Result Booster](#).

#### 4.4. Schedule:

As B-GOOD started in June 2019, by the time of this report (Month 24 of the project), some of the project results are available and their exploitation started. An overview of the exploitation activity conducted before the first B-GOOD reporting period (Month 1-18) can be found in **Annex 2**.

As the project continues, many results are expected to be generated. For their successful exploitation, different measures will be taken at different time scales:

- **Short term:** in the next months (M24-M30), efforts will be concentrated on the dissemination of the first results of the project to initiate their adoption and exploitation, as well as the testing and validation of the results through diverse activities such as publications and stakeholder workshops. For instance, information about the creation of the Lateral Flow Devices (LFDs) prepared by members of the Work Package 2 need to be disseminated in the near future in order to guarantee that end-users are informed about the existence of the tool.
- **Medium term:** in the coming years (2021-2023), efforts will be gradually placed on targeted exploitation of the results. Building of appropriate supply chains by the B-GOOD members responsible for the results and for the project's exploitation is key for the distribution of the different technologies. For example, this involves depositing patents for the LFDs and finding suitable companies that will produce as well as intermediaries that can distribute these tools. These actors play a key role to ensure their availability for a wide range of end users.
- **Long term:** finding appropriate result storage and distribution channels will guarantee their availability after the project has ended (>2023). Long lasting partnerships will be organized to ensure the distribution of the B-GOOD technologies after the project has ended. For example, the LFDs will be continuously produced and available, even when the project has stopped. The same will happen for the BEEP bases and the BEEP App.

#### 4.5. Opportunities, challenges and mitigation actions

Adoption and usage of results by target group can be influenced by multiple factors such as accessibility, promotion, user friendliness, cost and by relevance to the groups targeted. There also may be challenges. **Table 3** describes the different opportunities and challenges for each target groups, providing a basis for mitigation actions.

**Table 3: Opportunities and Challenges associated with different target groups**

The different target groups, their relationship with exploitation and the opportunities and challenges are listed.

Groups	Relationships towards exploitation	Opportunities	Potential challenges
<i>B-GOOD consortium</i>	Principal actors who must ensure the exploitation of the results of the project, but who will also first benefit from it.	<ul style="list-style-type: none"> <li>- diverse skills and expertise</li> <li>- wide network at different scales</li> <li>- strong network with close collaboration</li> </ul>	<ul style="list-style-type: none"> <li>- difficulties to find coherent information for all</li> <li>- diversity in expertise areas</li> </ul>
<i>Beekeepers</i>	The main testers and end-users for the technologies developed during the project, and therefore the main target group for the project's exploitation.	<ul style="list-style-type: none"> <li>- interest in better beekeeping practices, bee health and technologies</li> <li>- directly concerned by enhancement of sustainable beekeeping</li> </ul>	<ul style="list-style-type: none"> <li>- high diversity of profiles</li> <li>- use of different information channels might complicate communication and dissemination</li> </ul>
<i>Scientists</i>	B-GOOD members are working in close collaboration with members from other national and international projects, and some results might be co-exploited by different projects.	<ul style="list-style-type: none"> <li>- similar interests as B-GOOD consortium members</li> <li>- critical and constructive scientific feedback</li> <li>- overlap and redundancy avoidance</li> </ul>	<ul style="list-style-type: none"> <li>- may see B-GOOD members as competitors</li> <li>- data privacy and sharing of sensitive information</li> </ul>
<i>Policy makers</i>	Supervise the well-functioning of the project and implementation of its findings and may help with the dissemination of results.	<ul style="list-style-type: none"> <li>- well connected through different channels and networks</li> <li>- evaluation and feedback about the project</li> </ul>	<ul style="list-style-type: none"> <li>- usage of different communication channels</li> <li>- difficulty to reach</li> <li>- very large and diverse target group</li> </ul>
<i>Industries and companies</i>	They will play a central role in the supply chain (production and distribution) for the technologies of B-GOOD.	<ul style="list-style-type: none"> <li>- interest in developing innovative technologies</li> <li>- sustainable and healthy beekeeping may bring a good image</li> <li>- improved production (honey, pollination, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>- sharing of sensible or protected information may be complicated</li> <li>- use of different communication channels and means as scientists</li> <li>- very large target group</li> </ul>
<i>Service providers</i>	These actors work in close contact with many beekeepers, they can facilitate the dissemination and adoption of B-GOOD results and establish connections between B-GOOD consortium members and end-users.	<ul style="list-style-type: none"> <li>- existing awareness about bee health</li> <li>- existing awareness about local production and better quality food consumption</li> <li>- networking</li> </ul>	<ul style="list-style-type: none"> <li>- information means differ from scientists</li> <li>- need to provide applicable actions at their level</li> </ul>
<i>Quality inspectors</i>	As some of the technologies developed by B-GOOD can facilitate their activity (e.g. Lateral Flow Device to detect pesticides), they should be targeted by the exploitation of these results.	<ul style="list-style-type: none"> <li>- expertise and know-how regarding bee health</li> <li>- central nodes of beekeeper and stakeholder networks</li> <li>- direct interest for some of the new tools technologies to improve their work (e.g. LFDs)</li> </ul>	<ul style="list-style-type: none"> <li>- hard to reach</li> <li>- reluctance to work with</li> </ul>

<i>Agriculture / Horticulture</i>	Their products have direct links to honey bee health, and they might therefore show interest in using some of the technologies developed by B-GOOD to guarantee a safe and optimal bee-friendly activity.	- dependence on honey bees for ecosystem services (e.g. pollination)	- hard to reach - not necessarily interested in honey bees - very large and diverse target group
NGOs	NGOs and general public will benefit from the results and knowledge generated by B-GOOD.	- general interest for sustainability - can amplify the B-GOOD messages	- hard to reach - difficult to determine relevance of NGOs for the project

### Mitigation actions:

The identified challenges displayed in Table 3 highlight that the most important barrier to exploitation is the dissemination of the results to the multiple target groups. Figure 2 also reveals that some channels are predominantly used, although these channels may not allow reaching all target groups.

To guarantee an appropriate dissemination of B-GOOD's results, the Communication and Dissemination Strategy document has been produced and released at Month 12 (**'Communication and Dissemination Strategy' Deliverable 7.2**). Notably, different activities conducted during the project will enhance the dissemination of B-GOOD and allow reaching target groups, such as:

- Stakeholder workshops
- Multi-actor forums
- Beekeeping meetings and events (e.g. conferences, fairs, markets)
- EU meetings
- Practice Abstracts

These different events are key to reach the target groups, which is the first step towards successful exploitation. Moreover, frequent interactions with stakeholders (i.e., dissemination and feedback) will allow developing tailored results, thereby enhancing their adoption by end users.

## 4.6. Evaluation criteria

To evaluate the success of the exploitation of B-GOOD results, different criteria can be used. These criteria mostly depend on the category of results (see **section 4.1**).

**Table 4** displays how certain evaluation criteria can be used for each result category.

**Table 4: Overview of indicators used to evaluate B-GOOD**

Table outlining examples of the quantitative and qualitative indicators that will be used to measure impact for the different result categories.

<b>Result category</b>	<b>Quantitative</b>	<b>Qualitative</b>
Technologies	Usage statistics and sales figures	Feedback from users
Products and services	Usage statistics	Feedback from users
Scientific publications	Number of citations	Discussions at conferences
Standardization efforts	Number of times cited	Feedback from users
Policy implications and recommendations	Adoption by European states	Absence of transgressions
Communication guidelines	Number of downloads, number of times applied	Feedback from users
Toolkits, models	Usage statistics	Discussions at meetings
Knowledge	Number of citations	Feedback from users
Networks	Growth of network (number of members)	Popularity of network



## 5. Conclusions

By providing guidelines for the exploitation activities of B-GOOD and summarizing the different activities performed, this document will ensure the optimal adoption and usage of the project's results. As time goes and the project evolves, different results will gradually emerge. Updates of the exploitation activity of B-GOOD will therefore be provided in the following periodic reports.

Altogether, the information detailed in this deliverable report will guarantee a functional and pertinent exploitation activity of B-GOOD during and at least four years after the end of the project.

## **Acknowledgements**

The authors want to thank all B-GOOD members who contributed to this work by reporting on their exploitation activity and/or contributing to the creation of this document during the meetings and draft creation steps. The authors also want to acknowledge the B-GOOD internal reviewers for their constructive comments and fruitful suggestions that helped improving this report.

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## **Annexes**

**Annex 1 - B-GOOD consortium view of exploitable results**

**Annex 2 - Exploitation activities done during the first phase of the project (Months 1 – 18)**

## Annex 1 – B-GOOD consortium view of exploitable results

Results of the survey sent to B-GOOD consortium members in 2021

Result Name	Work Package(s)	Target group(s)
Protocol Nr 1	WP1	B-GOOD consortium, Beekeepers, Scientists
Protocols nr 2	WP1	B-GOOD consortium, Beekeepers, Scientists
Protocols nr3	WP1	B-GOOD consortium, Beekeepers, Scientists
dataset no1, publicly available after the project	WP1	B-GOOD consortium, Scientists
Dataset no2, publicly available after the project ends	WP1	B-GOOD consortium, Scientists
Dataset no3, publicly available after the end of the project	WP1	B-GOOD consortium, Scientists
Manuscript on health components to show what healthy colonies look like across the EU	WP1	Scientists, Policy makers, Quality inspectors
Expertise build up Tier 1	WP1	B-GOOD consortium, Scientists
Expertise build up	WP1	B-GOOD consortium, Beekeepers
Expertise build up	WP1	Beekeepers, Policy makers, Quality inspectors
BEEP helpdesk	WP1	B-GOOD consortium, Beekeepers, Scientists
Taqman assay screening	WP1, WP2	B-GOOD consortium
EU wide bee health data web portal	WP1, WP2, WP3, WP4, WP5, WP6, WP7, WP8	B-GOOD consortium, Scientists
Stakeholder networks	WP1, WP4, WP6, WP7, WP8	B-GOOD consortium, Beekeepers, Scientists, Policy makers, Industries and companies, NGOs
Multi-actor Forum	WP1, WP4, WP6, WP7, WP8	B-GOOD consortium, Beekeepers, Scientists, Policy makers, Industries and companies, NGOs
Links with Tier 2 + Tier 3 beekeepers	WP1, WP4, WP6, WP7, WP8	B-GOOD consortium, Beekeepers, Scientists, Policy makers, Industries and companies, NGOs
Knowledge base and learning platforms	WP1, WP4, WP6, WP7, WP8	B-GOOD consortium, Beekeepers, Scientists, Policy makers, Industries and companies, NGOs
MS Teams for Multi-actor Forum but eventually publicly available knowledge base via B-GOOD website	WP1, WP4, WP6, WP7, WP8	B-GOOD consortium, Beekeepers, Scientists, Policy makers, Industries and companies, NGOs
BEEP base - bee colony measurement system	WP1, WP5, WP6	B-GOOD consortium, Beekeepers, Scientists
Helpdesk	WP1, WP6	B-GOOD consortium, Beekeepers, Scientists
Upgrades BEEP Digital bee data logbook	WP1, WP6	B-GOOD consortium, Beekeepers, Scientists
LFD tests for paralysis virus detection	WP2	Beekeepers, Scientists, Service providers, Quality inspectors
Bee counters for recording daily mortality rate	WP2	B-GOOD consortium, Scientists, Industries and companies, NGOs , Service providers

use of accelerometers to detect instances of worker pipes.	WP2	B-GOOD consortium, Scientists
Hardware Gas Measurements	WP2	B-GOOD consortium, Scientists
spatially resolved temperature measurements	WP2, WP5	B-GOOD consortium, Scientists
gas measurements for honeybee colony monitoring	WP2, WP5	B-GOOD consortium, Scientists
Protocols	WP2, WP5, WP6	Beekeepers
HSI	WP2, WP5, WP6	Beekeepers
BEEP	WP2, WP5, WP6	Beekeepers
Protocol to quantify flower resources (simplified version)	WP3	B-GOOD consortium, Beekeepers, Scientists, Industries and companies, NGOs
Habitat suitability maps for honeybees	WP3	B-GOOD consortium, Beekeepers, Scientists, Policy makers, Industries and companies, NGOs
Phenological models	WP3, WP5	B-GOOD consortium, Scientists, Policy makers
Pollen and Nectar database	WP3, WP5	B-GOOD consortium, Scientists, Quality inspectors, Governmental agencies responsible for authorizing apiaries
Model for predicting bee colony size based on temperature sensor	WP5	B-GOOD consortium, Beekeepers, Scientists, Service providers
Software of colony health status	WP5	B-GOOD consortium, Beekeepers, Scientists, NGOs

## **Annex 3 - Exploitation activities done during the first phase of the project (Months 1 – 18)**

Information collected from each B-GOOD work package during the creation of the first B-GOOD periodic report.

### Significant exploitation activities of WP1

- All apiary beekeepers (research institute beekeepers included) are also end-users. In that sense, the workshop held in July 2020 to evaluate the first months of working with the work plan, BEEP bases, and protocols, can be considered a first exploitation of the WP1 results.
- The questions and answers related to the helpdesk, provide continuous feedback to partner BEEP and hence help to improve the future functionality of the BEEP app and BEEP bases.
- The Braga et al. (2020) paper addressing the bee health indicators was used to produce the 'Healthy Colony Checklist'. This inspection list is used to annotate the data for WP5.
- The BEEP bases developed for Tier 1 have been offered to a wider public via a Kickstarter crowdfunding campaign. A total of 350 systems were funded, produced and delivered in 2020. For more information: <https://www.kickstarter.com/projects/beepnl/beep-base-a-measurement-system-to-assist-beekeepers>
- The knowledge base of the BEEP helpdesk is online. Articles which are added based on B-GOOD feedback are immediately visible to all users and vice versa. The helpdesk is online at <https://beepsupport.freshdesk.com/en/support/solutions>

### Significant exploitation results of WP2

- We pre-validated the dual-LFD in bee relevant matrices. Sensitive LFD prototypes for screening fipronil (fipronil sulfon), chlorpyrifos, avermectins and pyrethroids were developed.

### Significant exploitation results of WP3

- A data paper is being prepared with the results from the pollen and nectar database
- Potential use of the nectar and pollen database by EFSA

### Significant exploitation activities of WP4

- 28 stakeholders involved in the EU beekeeping sector received feedback on the identified SWOT-elements as an initiation to the SWOT/SOR-scoring task.
- A draft paper on SWOT/SOR-analysis of the EU beekeeping sector has been prepared for submission to a scientific journal.
- Initial results from the SWOT/SOR-analysis have been presented to the B-GOOD Multi-Actor Forum (MAF) at the occasion of Consortium Meeting 3 (6-8 July 2020).
- A B-GOOD poster has been presented at the Belgian Ecosystems and Society (BEES) Christmas market on 20 December 2019 in Brussels. A B-GOOD WP4 representative attended a workshop to draft a scoping report for the IPBES thematic assessment regarding the interlinkages among biodiversity, water, food, and health in the context of climate change.

- During November 2020, a B-GOOD WP4 representative actively contributed to the series of workshops organised by FAO as part of its 'Expert Consultation on mainstreaming sustainable beekeeping into FAO animal production and health programme at One-Health Approach'. These workshops allowed for interacting and exchanging views on future priorities for healthy and sustainable beekeeping with additional stakeholders active at a global level.

#### Significant exploitation activities of WP5

- None reported at this stage

#### Significant exploitation results of WP6

- The BEEP app is an online and free to use digital logbook for beekeepers. Extensions and improvements made for use in B-GOOD are immediately available for other users too. A new version is immediately available, a download is not required.
- The BEEP base apps on Android and iOS are accessible for BEEP base users via the Android Play store and iOS app store. New versions are available for download there. See links and more information under T6.1

#### Significant exploitation activities of WP7

- Not applicable

#### Significant exploitation activities of WP8

- Scoping Study highlights (D8.1) presented at consortium meeting (July 2020) to MAF members.
- A paper is in preparation for scientific publication on actor and network analysis conducted as part of the Scoping Study and interviews conducted as part of Task 4.1

#### Significant exploitation activities of WP9

- Not applicable

#### Significant exploitation results of WP10

- Presentation and plenary discussion on Ethics issues raised by the B-GOOD research and innovation activities have been on the agenda of CM1 (Kick-off consortium meeting in Ghent) and CM2 (consortium meeting in Coimbra at month 6).