An Ecosystem of Citizen Observatories for Environmental Monitoring

D2.8 WeObserve Cookbook: Guidelines for creating successful and sustainable Citizens Observatories

Document details

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0.3	23/03/2021	Ane Bilbao	Add additional content in sections 2 and 3
0.4	31/03/2021	Uta Wehn	Final updates

Abbreviations and acronyms

Abbreviation	Description
CO	Citizen Observatories
CMS	Content Management System
COPs	Communities of Practice
CS	Citizen Science
DOA	Description of the Action
DOI	Digital Object Identifier
DIY	Development Impact & You
FP7	The Seventh Framework Program
ICCS	Institute of Communications and Computer Systems
MOOC	Massive Open Online Course
SDGs	Sustainable Development Goals
WP	Work Package
WO	WeObserve

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Executive Summary

Citizen Science (CS) is on the rise worldwide. In the EU, efforts in the area of CS have been channelled into developing the concept of Citizen Observatories (COs). COs are the means by which communities can monitor and report on their environment and access information that is easily understandable for decision making. To capitalise upon and consolidate these ongoing efforts, the WeObserve consortium aims to bring together the current set of European Horizon 2020 (H2020) COs, enabling improved coordination between these COs and promoting related activities at the regional, European and international level. WeObserve will coordinate and deliver a much-needed CO knowledge framework to avoid duplication, share best practices as well as identify barriers and synergies. Ultimately, WeObserve seeks to move citizen science into the mainstream by building a sustainable ecosystem of citizen observatories and related activities.

One of the key elements needed to facilitate access to consolidated knowledge about citizen science and Citizen Observatories is a 'one-stop-shop' or a 'cookbook' that synthesises the science of Citizen Observatories. Task T2.3 *Synthesise the 'Science of Citizen Observatories' in a cookbook* serves to capture lessons on best practices as well as the insights on the barriers for COs and how these can be addressed in a coherent online 'Cookbook of Citizen Observatories. This Cookbook details strategies for stakeholder engagement and co-design of COs, capturing the impacts of COs, interoperability and standards, and incorporates emerging results from all the WeObserve Communities of Practices. In a dedicated part of the WeObserve online platform (weobserve.eu), the cookbook serves to guides users through available resources (e.g. methods, tools, papers) that provide insights and guidelines for creating successful and sustainable Citizens Observatories.

This report describes the steps taken to develop the online WeObserve Cookbook:

- Analysis of Cookbook target audience and requirements
- Development of a strategy for the online Cookbook
- Ddesign and development of the Cookbook
- Launch the WeObserve Cookbook online

This document also considers the next steps for maintenance and further enhancement of the WeObserve Cookbook.

1. Introduction

1.1Background

The last decade has witnessed a rise in the fields of citizen science and crowdsourcing. Citizen science can be described as a collaborative undertaking between citizens and scientists to help gather data and create new scientific knowledge, while crowdsourcing is the outsourcing of tasks to the crowd that are often too voluminous or costly to be carried out using traditional means. Both ways of engaging citizens have value for environmental monitoring, where there has been a proliferation of projects and initiatives at local to global scales tackling many different environmental problems. This trend is likely to continue given the continuing diffusion of smart technologies and mobile devices to rising numbers of citizens, enabling increased digital and field-based participation.

In the USA, the Crowdsourcing and Citizen Science Act, which came into force in January 2017, gives federal agencies clear authorisation to use citizen science and crowdsourcing. This recognition paves the way for the development of truly integrated environmental monitoring systems involving citizens as a key factor. In the EU, efforts have been channelled into developing the concept of Citizen Observatories (COs), which have been supported via the Seventh Framework Program (FP7) and continue to be funded in Horizon 2020 (H2020). COs, which are supported by innovative technologies including Earth Observation (EO) and mobile devices, are the means by which communities can monitor and report on their environment and access information that is easily understandable for decision making.

To capitalise upon and consolidate these ongoing efforts, while leveraging the outcomes from the FP7 legacy COs, the WeObserve consortium aims to bring together the current set of European H2020 COs, enabling improved coordination between these COs and to promote related activities at the regional, European and international level. WeObserve will coordinate and deliver a crucially needed CO knowledge framework to avoid duplication, share best practices as well as identify barriers and synergies. This framework will also promote standards to ensure interoperability, maximise impact and facilitate uptake by environmental authorities to ensure the sustainability of CO initiatives. Raising awareness and sharing this knowledge framework will not only foster the development of a sustainable ecosystem of citizen observatories, but also extend the geographical coverage of citizen science-powered science to new communities. The anticipated knowledge framework will span across sectors, national boundaries and language barriers as well as the public and private sectors.

The aim of WeObserve is to create the conditions for a sustainable ecosystem of COs that can tackle the identified challenges of awareness, acceptability and sustainability. A coordinated and coherent approach is therefore needed among existing COs and relevant communities, with inclusion of past, present and future projects at national, regional, European and potentially international scales. This approach underpins the action-oriented mission of WeObserve, which is to: *Move citizen science into the mainstream by building a sustainable ecosystem of citizen observatories and related activities.*

1.2 Purpose and scope of the report

Within the WeObserve project activities, one of the key elements needed to facilitate access to consolidated knowledge about citizen science and Citizen Observatories is a ‘one-stop-shop’ or a ‘cookbook’ that synthesises the science of Citizen Observatories. Task T2.3 *Synthesise the ‘Science of Citizen Observatories’ in a cookbook* serves to capture lessons on best practices as well as the insights on the barriers for COs and how these can be addressed in a coherent online ‘Cookbook of Citizen Observatories. This Cookbook details strategies for stakeholder engagement and co-design of COs, capturing the impacts of COs, interoperability and standards, and incorporates emerging results from all the WeObserve Communities of Practices. In a dedicated part of the WeObserve online platform (weobserve.eu), the cookbook serves to guides users through available resources (e.g. methods, tools, papers) that provide insights and guidelines for creating successful and sustainable Citizen Observatories.

The purpose of this document is to describe the process and outcome of developing the WeObserve Cookbook. Chapter 2 describes the steps taken to develop the Cookbook, while chapter 3 provides a 'walk through' of the online Cookbook. Finally, Chapter 4 presents the next steps for further enhancement and maintenance of the WeObserve Cookbook.

2. Development of the WeObserve Cookbook

2.1 Introduction

The development of the WeObserve Cookbook interactive platform consisted of the following steps and are described in detail in the following sub-sections below:

- Analysis of WeObserve Cookbook target audience and requirements
- Development of a strategy for the WeObserve Cookbook
- Design and development of the WeObserve Cookbook
- Launch of the WeObserve Cookbook

2.2 Analysis of WeObserve Cookbook target audience and requirements

According to the DOA, the main purpose of the WeObserve Cookbook is to 'synthesise the science of Citizen Observatories' and guide the users through several resources such as tools, scientific papers that exist as well as capture and include lessons on best practice and insights on barriers for COs and how to address them, detailing strategies for interoperability and standards, engagement strategies and co-design of COs, capture the impacts of COs, and include the lessons from SDG (and other) CoP(s). Therefore, the target audience of the Cookbook are groups or individuals that are leading or will lead Citizen Observatories projects.

Interactive components are crucial for making the content of the WeObserve Cookbook visually attractive for end-users and easy to navigate. Diverse outputs were available from the WeObserve project such as materials generated by the CoPs (e.g. impact stories and methods, co-design approaches, lessons learned on thematic aspects, developed strategies for interoperability & standards), content from the MOOCs, the Toolkit deliverables and the toolkit survey results, diverse Citizen Observatories project experiences, the WeObserve policy briefs and several scientific papers.

Regarding the technical requirements for content maintenance, the majority of the content of the Cookbook has been set up and uploaded before launching the WeObserve Cookbook. It is hosted on the WeObserve website, and it requires little maintenance. WeObserve project partners ICCS and IHE Delft will be able to upload additional content. Also, upon expiry of the WeObserve web-hosting in 2024, the full Cookbook content will be uploaded to Zenodo as a PDF, so that it will be accessible in a permanent repository (including a DOI), securing its long-term sustainability. Similarly, once the WeObserve web-hosting ends, the Cookbook along with other content on the WeObserve website may be integrated within other platforms such as EU-citizen.science.

2.3 Development of a strategy for the WeObserve Cookbook

The process of producing the WeObserve Cookbook started during the WeObserve Plenary Meeting in Vienna (January 2020) and was continued via a dedicated online session to distil the main parameters, including content, target group, design, hosting and maintenance, and acknowledgements of contributors.

Then, several online co-design sessions took place with WeObserve project partners to gain a common understanding of the Cookbook in terms of online visualisation and content (avoiding overlaps with other WeObserve outputs such as the Toolkit and the Roadmap). In a dedicated session on the WeObserve Cookbook on 17 November 2020, the following parameters were discussed: authorship of the Cookbook (joint project effort), hosting and maintenance (focusing on the exploitability, sustainability, wide

accessibility), digital design (interactive, to jump from the ToC to chapters /sub-sections) and the Cookbook outline based on the co-design activity.

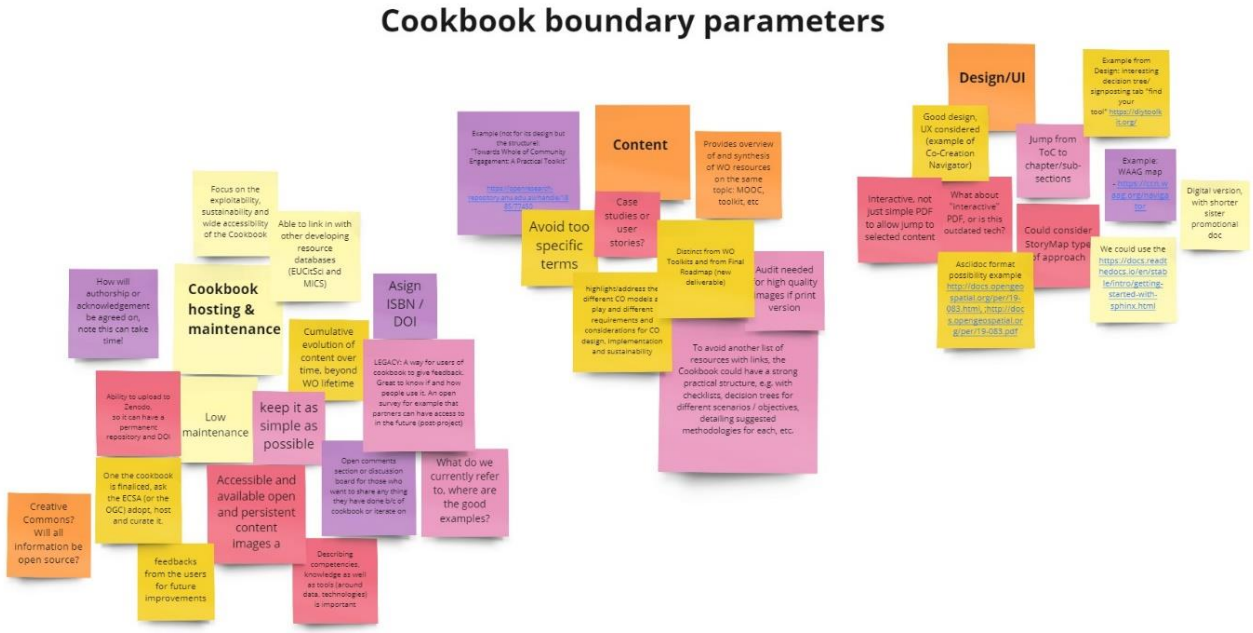


Figure 1. Notes from the Co-design session between WeObserve partners.

After drafting the high-level Cookbook structure based on a user journey approach structure based on the users' journey approach, in the WeObserve Plenary session on 26 November 2020, an initial mapping of relevant and available resources and tools was undertaken per topic. Also, on 10 December 2020, members of the Co-design and Engage CoP were invited to comment and provide feedback on the draft structure and layout of the Cookbook during their regular monthly meeting.

Figure 2. Feedback received from the Co-design & Engage CoP participants during the monthly telco (December 2020).

The WO partners teamed up to co-produce pages closely linked to their expertise. Each page was designed to present the rationale for its thematic focus; how the specific aspect can be addressed using relevant tools or approaches; examples or lessons learned from the four CO projects and beyond; links to relevant resources; and navigation details to other related pages in the Cookbook.

Via the above process, the following strategic element were agreed upon.

WeObserve Starting Points

- Landing page: Overview of the WeObserve Cookbook
- Getting to know and understand Citizen Observatories
- Creating and running a Citizen Observatory
- Achieving impact with citizen observatories
- Ensuring sustainability of citizen observatories
- Search option

Functionalities

A dedicated site where users can visualise the 'Starting Point' statements (see list above) in a drop-down menu. The drop-down menu for each Starting Point then contains a drop-down menu listing dedicated pages with relevant content per sub-topic.

Design principles
Visually attractive, well designed, with interactive components, and intuitive for the user. Simplicity is the key design principle.

- From user perspective: user-friendly, wide accessibility and easy to navigate through.
- From developer perspective: Low maintenance.
- From cost perspective: Low cost. Embedded in the WeObserve website.

Other principles

- Search functionality
- No accounts (log in) for individual users
- No (account structure for) individual content managers, all content will be uploaded by ICCS.
- Language: English
- Mobile and desktop interaction are very similar

The WeObserve Cookbook target users are diverse in terms of geographical location (across the globe) but the main target audience of the Cookbook are groups or individuals that are leading or starting Citizen Observatories projects. Therefore, the Cookbook considers the users' context and seeks to best guide them to what they are looking for by means of the user journey: this journey is not linear, and the user can jump to the specific content they are interested in.

2.4 Design of the WeObserve Cookbook

Based on the discussions with the WeObserve partners, ICCS is responsible for hosting the WeObserve Cookbook at the WeObserve website (online).

The WeObserve Cookbook contains the WeObserve house style, and it is set up following a decision tree model. At present, it contains four main levels of division with respective sub-sections. The inspiration for the online design of the Cookbook came from the DIY Toolkit page. See Annex II.

Following the DIY Toolkit page example, the WeObserve Cookbook is divided into four different hierarchical levels, and includes more than 30 dedicated web pages. The four levels are as follows:

- Level 0 (Starting point). Presentation of the information in the Cookbook in four main clusters.
- Level 1 (Aim). *I want to…*
- Level 2 (Means). *By <doing something>…*
- Level 3 (Resources). *Detailed pages*

Table 1 summarises the hierarchy of content in the WeObserve Cookbook across Levels 0-2, while Table 2 presents the generic structure of content at Level 3.

Table 1. Hierarchy of Cookbook of Levels O-2

Starting point	Level 1 (Aim)	Level 2 (Means)
Getting to know and understand Citizen Observatories	I want to understand what Citizen Observatories are…	…by learning about their characteristics
		...by learning about their history
Creating and running a Citizen Observatory	I want to set up a Citizen Observatory…	…by building a community
		…by identifying a shared issue
		…through a suitable co-design process

Starting point	Level 1 (Aim)	Level 2 (Means)
		…and need to secure funding
		…and comply with ethics
	I want to engage stakeholders…	…by understanding the context and identifying key stakeholders
		…by learning how to work with various stakeholders
		…in ways that keep them motivated over time
	I want to know what data & knowledge we need…	…by finding out what exists already
		…by deciding what data to collect
	I want to work with data…	…by collecting data
		…by managing the data
		…by ensuring data quality
		…by sharing our Citizen Observatory data
		…by integrating data from several Citizen Observatories or other sources
	I want to generate insights & results from our data & knowledge…	…by visualising and interpreting the data
		…by analysing the data
Achieving impact with citizen observatories	I want to achieve impact with the Citizen Observatory results…	…by communicating the Citizen Observatory results effectively
		…by triggering change
		…by linking the Citizen Observatory to the SDGs
		…by adopting open data policies & data standards
	I want to measure impacts of the Citizen Observatory…	…via a suitable approach
		…via participatory evaluation
Ensuring sustainability of citizen observatories	I want to ensure sustainability of the Citizen Observatory after the funding period…	…by making project outputs open access
		…by accessing open funding calls
		…by defining a new service
		…by moving the Citizen Observatory's infrastructure to the cloud
		…by collaborating with other Citizen Observatories that have similar objectives

Table 2. Template for Level 3 with distinct building blocks

Building blocks	Description or Example
Header made up of full user story, with level 3 focus in bold	e.g. 'I want to set up a Citizen Observatory ***by identifying a shared issue'***
Why is it relevant?	[header and brief rationale]
How can this be done? / How can this be addressed?	[header and text, divided into sections]
[BOX] Lessons learned from the [...] project /Example from the [...] project	[lessons learned or example from a project]
[BOX] Useful resources	[Brief description of relevant external resources (linked), such as talks, webinars, videos, conference sessions, project reports, tools]
[BOX] You may also be interested in:	[navigation to other relevant Cookbook pages]

The agreed functionalities for the WeObserve Cookbook are as follows:

Content-specific pages

- **Provide access to all the resources (detailed pages),** this level of the Cookbook contains the detailed materials, outputs, references and links to resources.

Cross-cutting functionalities

- **Cross-link of content** to ensure valuable user experiences
- **Language capabilities**: content will be made available in English
- **Search functionality** via consistent tagging of content.

2.5 Development of the WeObserve Cookbook content

The detailed content for the Cookbook pages at level 3 was produced by all WeObserve partners. As lead of the Cookbook, IHE Delft assigned small teams of WeObserve partners to specific Level 3 pages.

IHE Delft produced a template for Level 3 pages (see Annex II) as well as guidelines (see Annex III) with detailed information for the WeObserve partners on the process of writing the Level 3 pages of the WeObserve online Cookbook, in terms of timing, responsibilities and writing style. The WeObserve partners teamed up to draft the building blocks per Level 3 page according to the template *[descriptive text and featured tool (if applicable), relevant images/video, lessons learned/example, links to relevant resources*]. IHE reviewed all drafted pages on a continuous basis as pages were completed to ensure consistency and coherence of content and writing styles across all pages.

A tailored dashboard was set up to manage the Cookbook content production process. The dashboard shows the assignment of, and the status of specific sections on each page. As soon as these sections were drafted, their status on the dashboard was updated accordingly.

WeObserve Cookbook (GDoc)	Contributors	Uploaded	Edited	Edits uploaded	Descriptive text per page	Lessons learned/ Examples	Relevant image / videos on page	Links to resources included

	WeObserve Cookbook (GDoc)	Contributors	Uploaded	Edited	Edits uploaded	Descriptive text per page	Lessons learned/Examples	Relevant image / videos on page	Links to resources included
	Landing page	IHE	☑	☑	☑	SEE EDITS IN "EDITORIAL ISSUES" TAB			
	About the Cookbook	IHE	☑	☑	☑	SEE EDITS IN "EDITORIAL ISSUES" TAB			
	Cookbook Levels 2 and 3								
	1. I want to understand what Citizen Observatories are								
1.1	by learning about their characteristics	ECSA & IHE / IIASA	☑	☑	☑	Finalised	n.a	Finalised	Finalised
1.2	by learning about their history	ECSA & IHE / IIASA	☑	☑	☑	Finalised	Finalised	Finalised	Finalised
	2. I want to set up a Citizen Observatory								
2.1	by building a community	IHE & UoD	☑	☑	☑	Finalised	Finalised	Finalised	Finalised
2.2	by identifying a shared issue	IHE & UoD	☑	☑	☑	Finalised	Finalised	Finalised	Finalised
2.3	through a suitable co-design process	IHE & UoD	☑	☑	☑	Finalised	Finalised	Finalised	Finalised
2.4	and need to secure funding	ICCS & IHE	☑	☑	☑	Finalised	Finalised	Finalised	Finalised
2.5	and comply with ethics	IHE & IIASA / UoD	☑	☑	☑	Finalised	Finalised	Finalised	Finalised
	3. I want to engage stakeholders								
3.1	by understanding the context and identifying key stakeholders	IHE & UoD	☑	☑	☑	Finalised	Finalised	Finalised	Finalised
3.2	by learning how to work with various types of stakeholders	IHE & UoD	☑	☑	☑	Finalised	Finalised	Finalised	Finalised
3.3	in ways that keep them motivated over time	IHE & UoD	☑	☑	☑	Finalised	Finalised	Finalised	Finalised
	4. I want to know what data & knowledge we need								
4.1	by finding out what exists already	ECSA & CREAF	☑	☑	☑	Finalised	Finalised	Finalised	Finalised
4.2	by deciding what data to collect	CREAF, ICCS, AAWA, UoD	☐	☐	☐	Reviewed	Selected	Selected	Some inputs compi
	5. I want to work with data								
5.1	by collecting data	CREAF, IHE, AAWA	☑	☑	☑	Finalised	Finalised	Finalised	Finalised
5.2	by managing the data	CREAF, IHE	☑	☑	☑	Finalised	Finalised	Finalised	Finalised
5.3	by ensuring data quality	CREAF, IHE, AAWA	☑	☑	☑	Finalised	Finalised	Finalised	Finalised
5.4	by sharing our Citizen Observatory data	CREAF, IHE	☑	☑	☑	Finalised	Finalised	Finalised	Finalised
5.5	by integrating data from several Citizen Observatories or other sources	CREAF, IHE	☑	☑	☑	Finalised	Finalised	Finalised	Finalised
	6. I want to generate insights & results from our data & knowledge								
6.1	by visualising & interpreting the data	IIASA & UoD	☑	☑	☑	Finalised	Finalised	Finalised	Finalised
6.2	by analysing the data	IIASA & CREAF	☑	☑	☑	Finalised	Finalised	Finalised	Finalised
	7. I want to achieve impact with the CO results								
7.1	by communicating the Citizen Observatory results effectively	ECSA, AAWA	☑	☑	☑	Finalised	Finalised	Finalised	Finalised
7.2	~~by lobbying for policy change~~	~~IHE & AAWA~~	n.a			n.a	n.a	n.a	n.a
7.3	by ~~planning and delivering action/change-making~~ triggering change	IHE & UoD, AAWA	☐	☐	☐	Reviewed	Reviewed	Reviewed	Reviewed
7.4	by linking the Citizen Observatory to the SDGs	IIASA & IHE	☑	☑	☑	Finalised	Finalised	Finalised	Finalised
7.5	by adopting open data policies & data standards	IHE & CREAF	☑	☑	☑	Finalised	Finalised	Finalised	Finalised
	8. I want to measure impacts of the CO								
8.1	via a suitable approach	IHE & UoD	☑	☑	☑	Finalised	Finalised	Finalised	Finalised
8.2	via participatory evaluation ~~with CO participants~~	UoD & IHE	☑	☑	☑	Finalised	Finalised	Finalised	Finalised
~~8.3~~	~~by capturing one or more impact stories/impact briefs~~	~~IHE & UoD~~	n.a			n.a	n.a	n.a	n.a
	9. I want to ensure sustainability of the Citizen Observatory after the funding period								
9.1	by making project outputs open access	IHE & CREAF	☑	☑	☑	Finalised	Finalised	Finalised	Finalised
9.2	by accessing open funding calls	ICCS & IHE	☑	☑	☑	Finalised	Finalised	Finalised	Empty
9.3	by defining a new service	ICCS & UoD	☑	☑	☑	Finalised	Finalised	Finalised	Finalised
9.4	by moving the Citizen Observatory's infrastructure to the cloud	CREAF, IHE	☑	☑	☑	Finalised	Finalised	Finalised	Finalised
9.5	by collaborating with other Citizen Observatories that have similar objec	IIASA & ECSA	☑	☑	☑	Finalised	Finalised	Finalised	Finalised

In the WeObserve website content management system (CMS), ICCS set up a template according to the structure of the Level 3 pages. IHE Delft uploaded all finalised content to the CMS. ICCS and IHE Delft liaised closely to finalise the look and feel as well as the navigation of the online Cookbook in accordance with the agreed design and functionalities. This resulted in the beta version of the online Cookbook by 15 March 2021.

2.6 Feedback on beta version and finalisation of the Cookbook

During WeObserve Forum #6 (online), a dedicated interactive session took place on 15 March 2021 to obtain feedback on the beta version of the Cookbook. More than 20 CoPs participants provided feedback from two perspectives:

1. as a Cookbook user (on the design of the interface) and
2. as CO/CS practitioner (on the content and resources included on Level 3 pages).

The feedback was collected on a Miro board (see Figure 3), using a generic user feedback template which was divided into four sections:

1. What is good?
2. What can be improved?
3. Ideas
4. Actions

Also, the WeObserve Advisory Board members were invited by email to provide their feedback on the WeObserve Cookbook, again on a dedicated Miro board (see Figure 4).

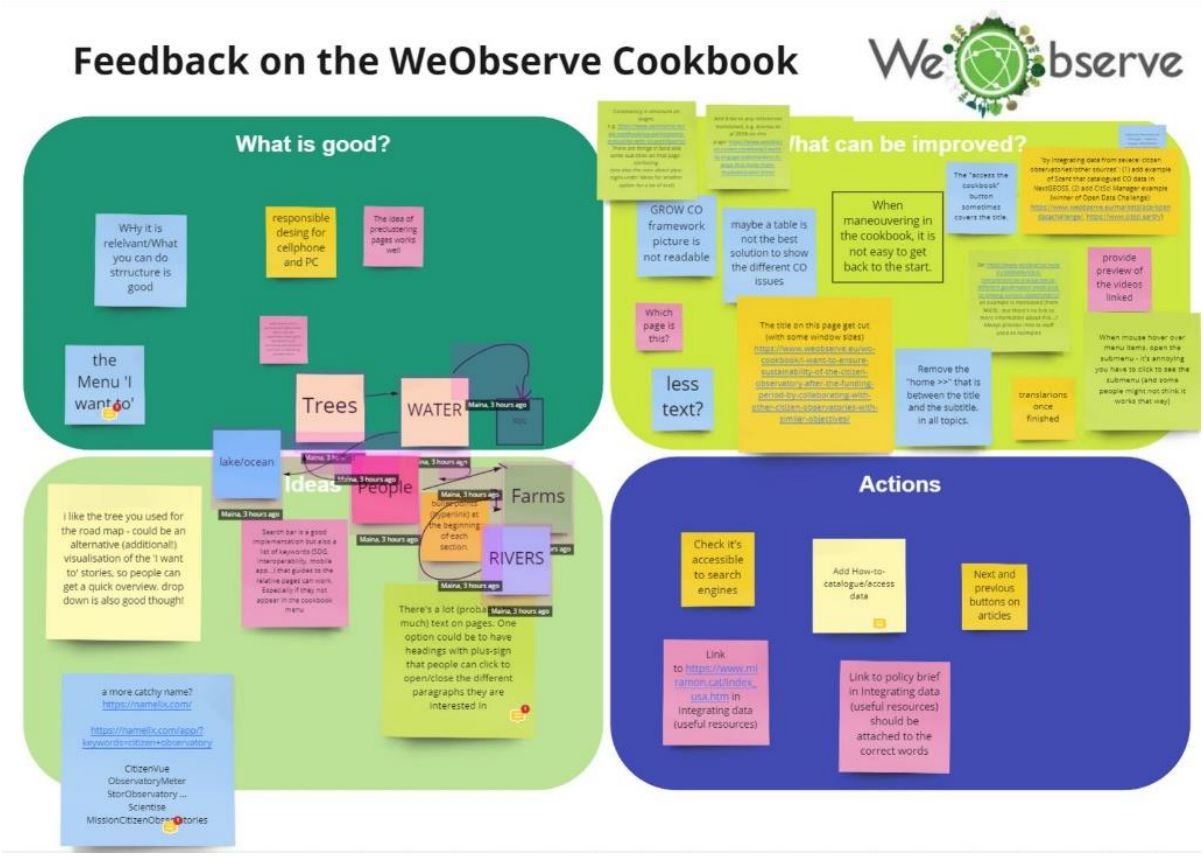


Figure 3. Feedback on the WeObserve Cookbook during the Forum #6.

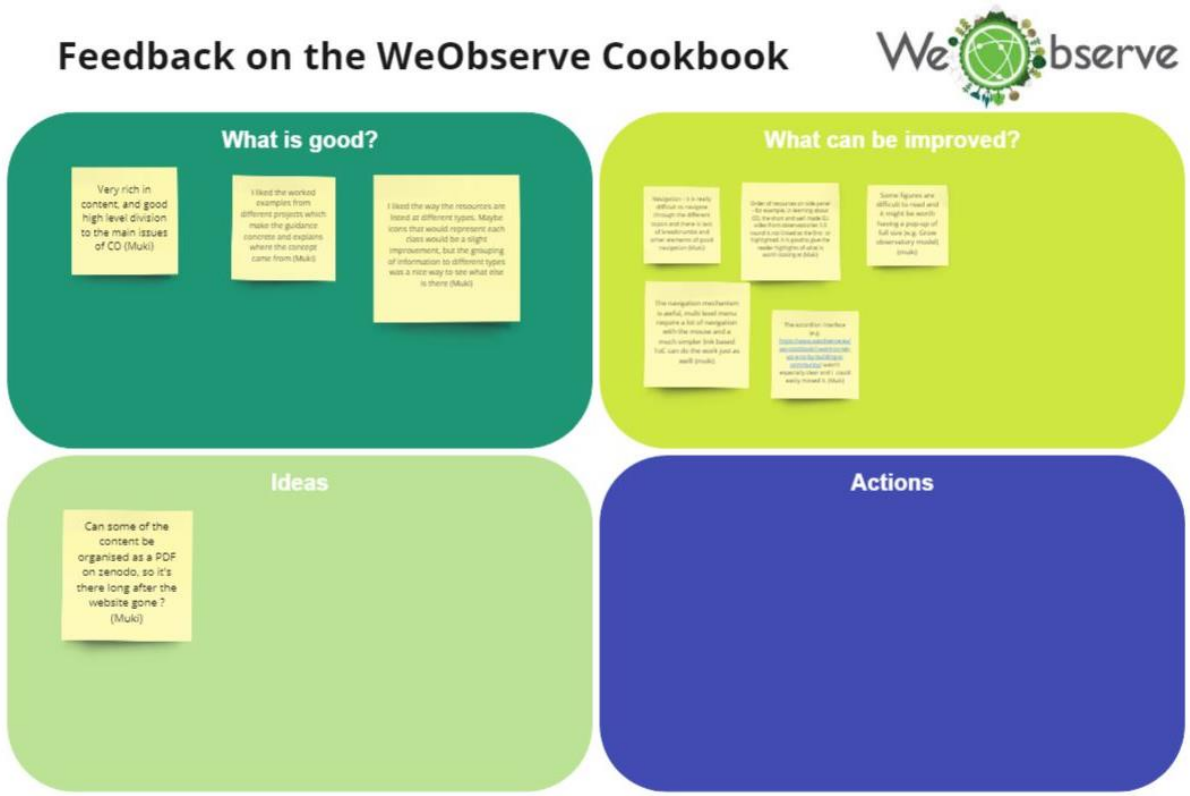


Figure 4. Advisory Board members feedback on the WeObserve Cookbook.

In summary, the feedback obtained related to the following functional and design aspects:

- **Accessibility**
  - On the Landing page - access to the Cookbook should be done via the 4 cluster topics
  - When mouse hover over menu items, open the submenu - it's annoying you have to click to see the submenu
  - Check the Cookbook is accessible to search engines
  - A search bar is a good idea but also a list of keywords could help (e.g. SDG, interoperability, mobile app...) to guide users to the relative pages can work.
- **Appearance**
  - The "access the cookbook" button sometimes covers the title.
  - The title on this page gets cut (with some window sizes)
  - Consistency in structure on pages, e.g. https://www.weobserve.eu/wo-cookbook/via-participatory-evaluation-with-co-participants/ There are things in bold and some sub-titles on that page - confusing.
  - One page 1.1 maybe a table is not the best solution to show the different CO issues

Moreover, ten comments related to specific content improvements such as image resolution, additional references, and additional links. These were updated for the final version of the Cookbook.

Once these items had been addressed, a professional editor edited all Cookbook pages. All proposed edits were reviewed by IHE Delft before making the corresponding changes in the uploaded versions of the Cookbook pages.

2.7 Launch of the WeObserve Cookbook

The WeObserve Cookbook was launched online on 30 March 2021, during the WeObserve webinar 'ECSA & EU-Citizen.Science webinar: Lessons and insights from WeObserve' (see Figure 5 below) and promoted via Twitter.

Figure 5. WeObserve Cookbook launch during the ECSA & EU-Citizen.Science webinar

Figure 6. WeObserve Cookbook promotion via the WeObserve Twitter account

3 WeObserve Cookbook 'walk through'

The online WeObserve Cookbook is accessible from the WeObserve website via www.weobserve.eu/weobserve-cookbook. This chapter presents a 'walk through' of the Cookbook by means of screenshots (March 2021) and brief explanations.

3.1 The WeObserve online Cookbook 'Landing' page

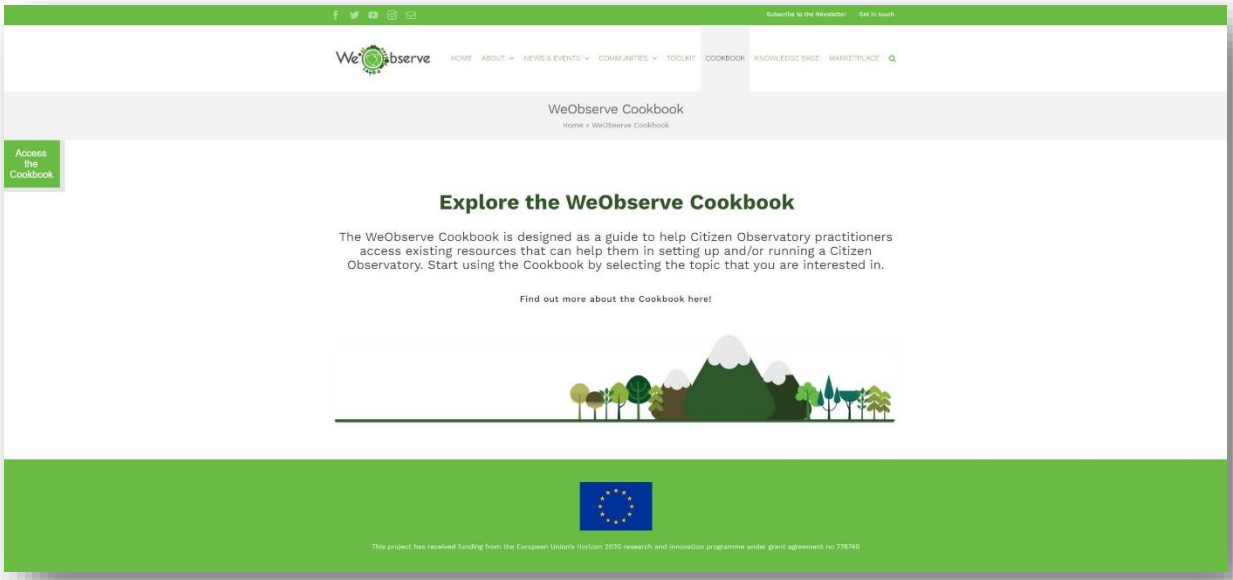


Figure 7. WeObserve Cookbook 'Landing' page

The Cookbook 'Landing' page is the first contact of users with the WeObserve Cookbook. Once the user clicks the 'Start Using the Cookbook' button (on the top left), a direct link to access the Cookbook unfolds on the top left of the page, and the user can access the different levels of the Cookbook.

The 'Access the Cookbook' button presents guidance for Citizen Observatory leads and community managers in four main areas: 1) getting to know and understanding COs; 2) creating and running a CO; 3) achieving impact with COs; 4) ensuring sustainability of COs. This clustering serves to guide users through available resources.

In addition, on the WeObserve Cookbook 'Landing' page, the user can find out background information about the Cookbook by clicking 'find out more about the Cookbook' which takes them to the 'About the Cookbook' page. The 'About' page summarises that the resources captured in the Cookbook have been produced and compiled by the WeObserve consortium and WeObserve CoPs members. Also, the About page presents due acknowledgements of the contributors to the Cookbook, namely the WeObserve partner organisations and specific team members, the WeObserve Community of Practice and the WeObserve Advisory Board members.

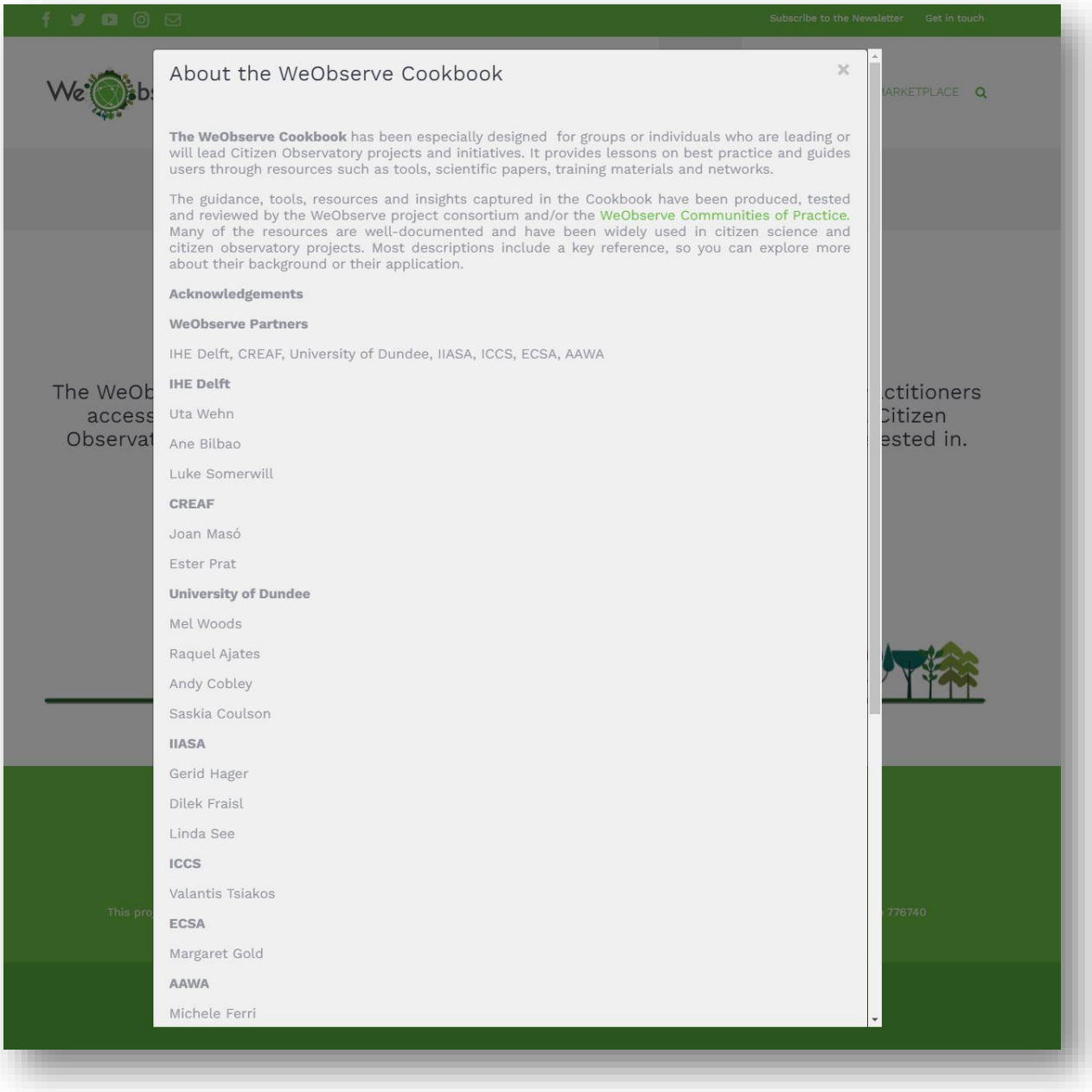


Figure 8. WeObserve Cookbook 'About' page

3.2 Example of navigation to relevant content

On the top left of the 'Landing' page, users can click on the 'Access the Cookbook' button, and the Cookbook navigation menu shows. Level 0 (Starting point) of the Cookbook consists of four main topics. Users can choose the topic they want to dive into, and hovering the cursor over, they can easily navigate through different topics and levels based on their needs and interests.

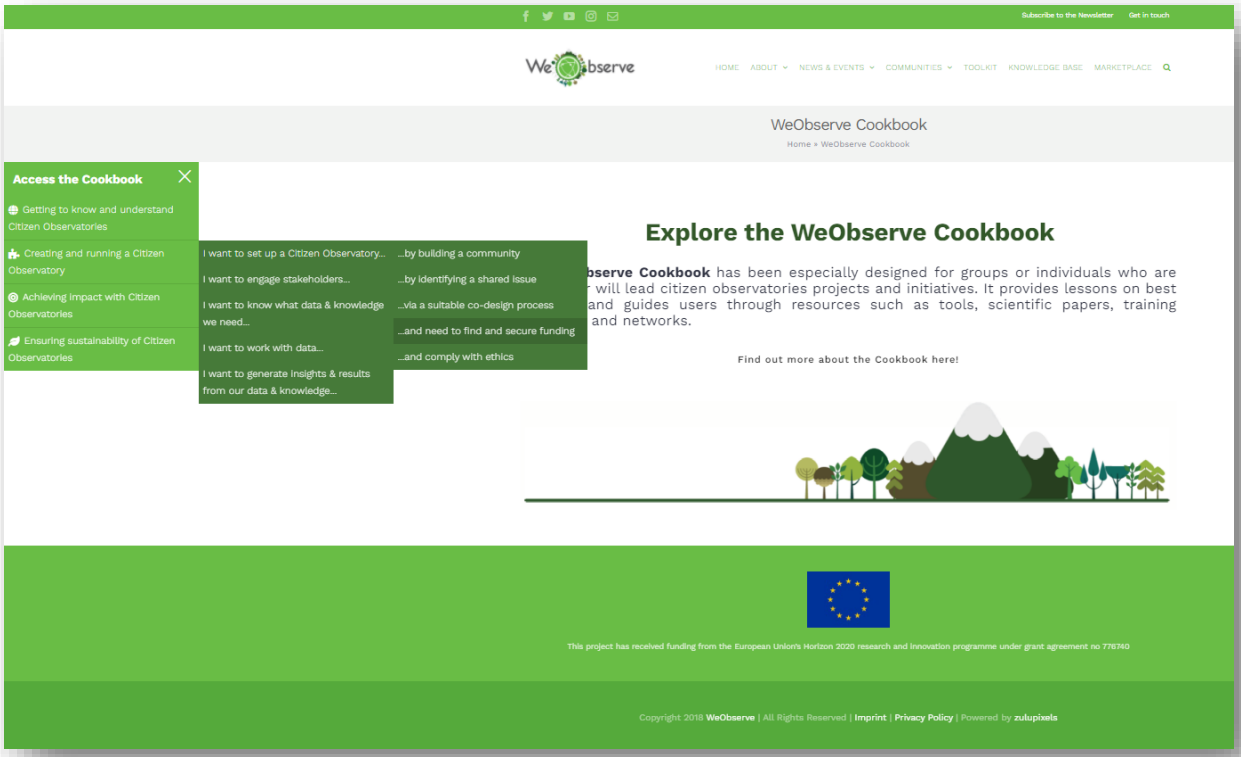


Figure 9. WeObserve Cookbook navigation menu - showing level 0, level 1 and level 2.

3.3 Example of ‘Detailed Cookbook’ page

In total, there are 30 detailed pages in the Cookbook. Please find below the example of the page “*I want to generate insights and results from our data and knowledge by visualising and interpreting the data*”:

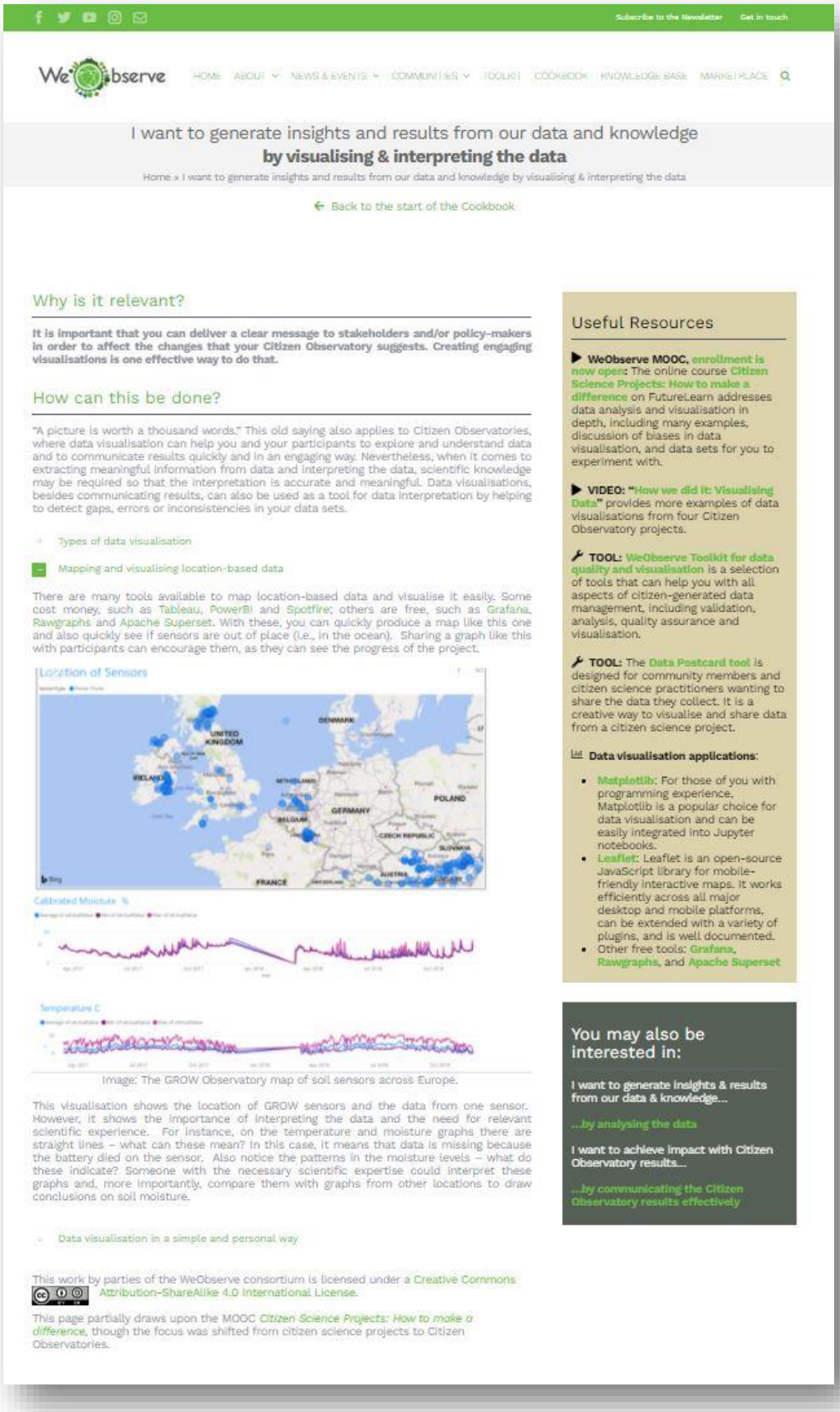


Figure 10. WeObserve Cookbook 'Detailed' Level 3page

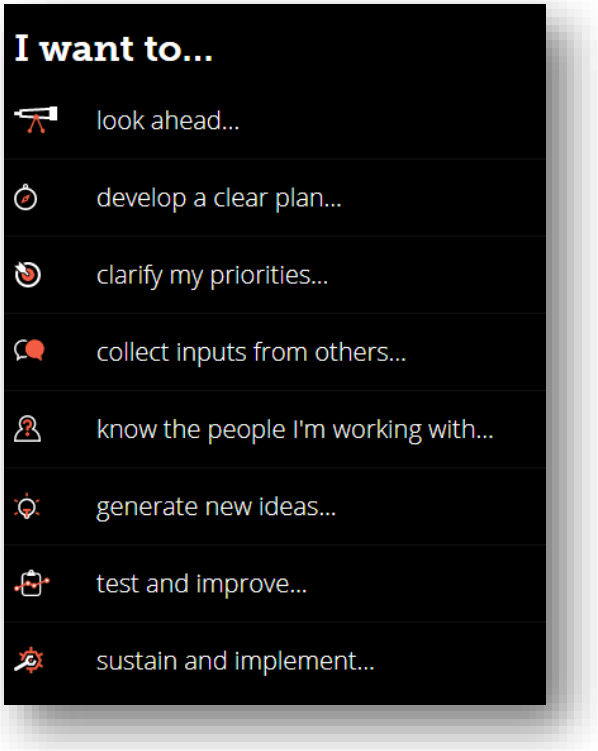
4 Conclusions and next steps

IHE Delft will continue to maintain the content of the WeObserve Cookbook, even beyond the end of the WeObserve project (end March 2021). ICCS will continue the technical maintenance of the entire WeObserve website for three years from April 2021-March 2024, which will ensure the online availability of the content. By March 2024, the full online version of the WeObserve cookbook will be compiled into a PDF and uploaded to Zenodo by IHE Delft.

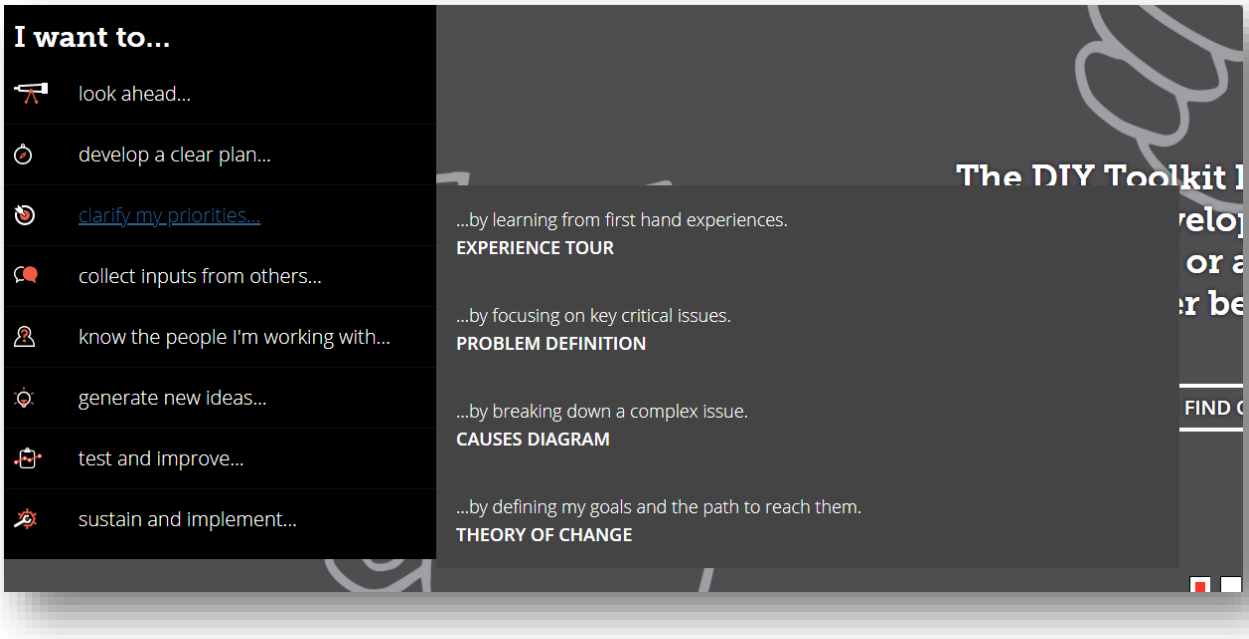
Furthermore, if the H2020 WeObserve & Change Green Deal proposal (January 2021), led by IHE Delft, is awarded in 2021, enhancements of the WeObserve Cookbook can be undertaken. Specific functional changes will be done in a demand-driven way, based on further end-user interactions. Content-related additions will include guidance on how to use Citizen Observatories to generate behaviour change towards sustainable lifestyles.

Annex I: DIY Toolkit example

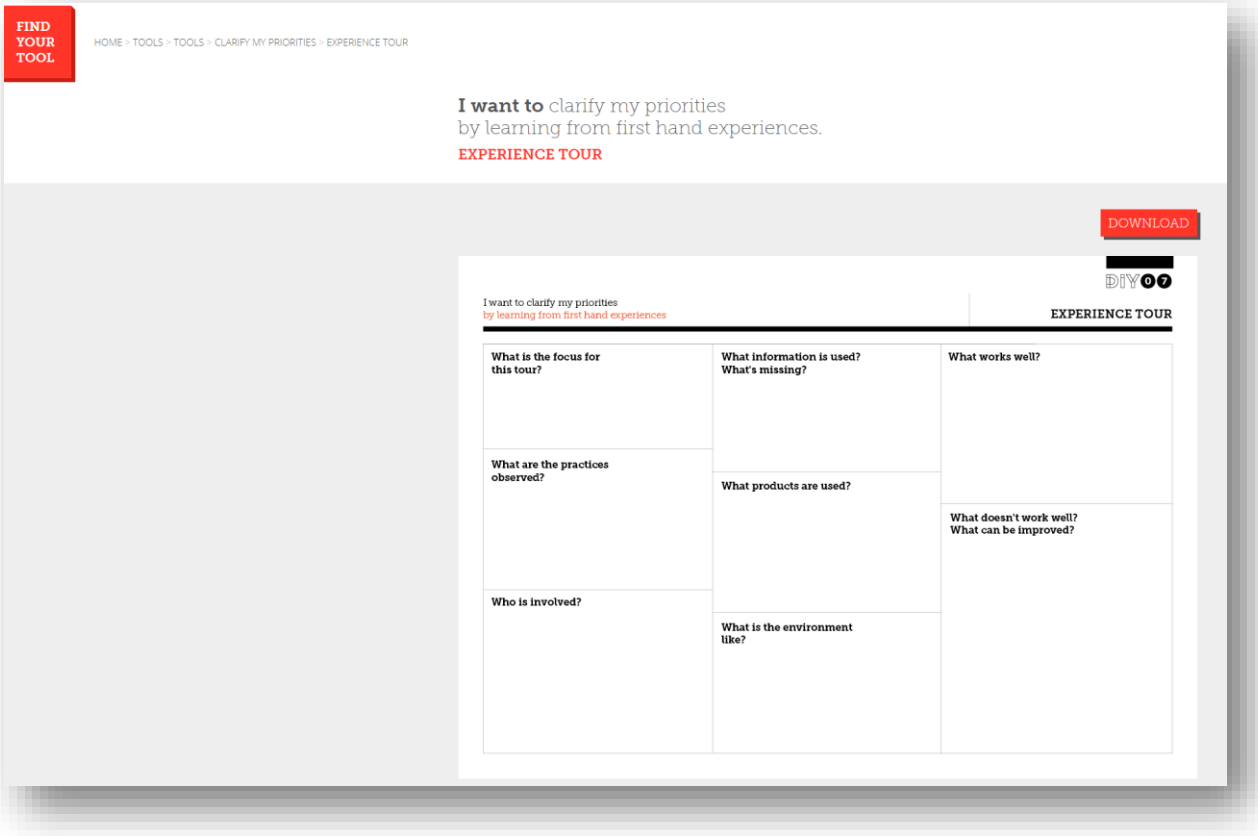
The WeObserve Cookbook was inspired by the set up and navigation of the DIY Toolkit page. As illustrated below, the DIY toolkit used the so-called user stories approach (*I want to <achieve something> by <doing something>*). Once the 'aim' is selected at the 'I want to…' level, a second drop down menu appears that presents different options that users can employ to achieve their aim. Thus, the second level contains the 'means' (*<by doing something>*). The third level contains the detailed page with specific tools and resources to use.



DYI decision tree model. First level ('Aim', I want to…)



DIY decision tree model. Second level (‘Means’, by <doing something>)



DIY decision tree model. Third level (‘Resources’, detailed page)

Annex II: Template for WeObserve Cookbook Level 3 pages

This annex presents the template that was provided to the WeObserve partners for drafting content for the detailed Level 3 pages of the WeObserve Cookbook.

Template for WeObserve Cookbook Level 3 pages

An example of a drafted page is available here.

Please use a 'light' writing style, i.e. non-academic, not referencing individual sentences etc.

Potential sources of inputs for all Level 3 pages:

- WO MOOC, videos, the WO CoPs and their outputs, WO landscape report, WO policy briefs, WO Toolkit, CO project experiences (respective project deliverables)

Level 3 page building blocks

Headline: **I want to … text**

[text as defined for level 3; any changes/edits to this headline need to be clearly marked]

Why is it relevant?

text, 35-70 words max.

How can this be done? / How can this be addressed?

Header: change the header to done/addressed as appropriate for the specific Level 3 page.

- *E.g. for co-design, this reads 'How can this be done?'*
- *E.g. for ethics, this is a broader issue, so the header reads 'How can this be addressed?'*

Section content

- *1-2 short paragraphs of text, 250 words max. per suggested tool/approach.*
- *max 1-3 tools/approaches featured*
- *include video/image per approach*

[BOX] Lessons learned from the [...] project /Example from the [...] project

Header: change the header to refer to the featured project and whether it's a lesson learned or an example

- *E.g. for the co-design page, this reads 'Lessons learned from the Ground Truth 2.0 project'*

Box content

- *text, 100-150 words max.*
- *focus on specific lesson(s) related to the topic of this Level 3 page*
- *image optional*

Useful resources

- *Brief description of relevant related content, followed by link to content*
- *1-5 related items*
- *if >5 items, these need to be clustered under overarching, meaningful headers*

Relevant content can consist of videos, tools, open access scientific papers.

- *Please link to sources that are likely to ensure long term access (e.g. Zenodo, vimeo) and which are less commercially oriented than e.g. YouTube.*

Annex III: Guidelines for WeObserve Cookbook Level 3 page writing

This annex presents the guidelines that were provided to the WeObserve partners for drafting content for the detailed Level 3 pages of the WeObserve Cookbook.

START HERE - Guidelines for WeObserve Cookbook Level 3 page writing

These guidelines provide detailed information for the WeObserve partners on the process of writing the Level 3 pages of the WeObserve online Cookbook, in terms of timing, responsibilities and style.

Overview of relevant resources:

- The WeObserve Cookbook hierarchy across levels 0-3 is available here.
- The individual WeObserve Cookbook pages are available in this folder and from the dashboard (see next bullet)
- The dashboard of the Level 3 pages is available here, which shows the assignment of WeObserve partners as teams to specific Level 3 pages, and the status of specific sections per page. Please use the dashboard to update the status of the respective building blocks per page. Please alert IHE as soon as each page is ready for review.
- The generic template for Level 3 pages is available below in this document and also on each Level 3 page.

Level 3 page writing process:

Stage	Who	Timing
• **Drafting**: draft all building blocks per page *[descriptive text and featured tool (if applicable), relevant images/video, lessons learned/example, links to relevant resources*]. The Level 3 page drafting needs to be done according to this template. Some potential input has been sourced already per page.	**All WO partners** in teams, as per assignment on dashboard	**1-9 March 2021**
• **Reviewing** of each Level 3 page on a continuous basis (as pages are completed) to ensure consistency and coherence of content and writing styles across all pages.	**IHE** *WO partners* need to alert IHE as soon as each page is ready for review.	**1-9 March 2021**
• **Uploading** of each Level 3 page to produce the beta version	**IHE,** with support from ICCS as needed	**3-12 March 2021**
• **Feedback on beta version**	**Participants** of the WO CoPs Forum #6	**15-16 March 2021**
• **Updates** will be done in response to feedback from Forum participants	**IHE**, all WO partners as applicable	**17-24 March 2021**
• **Launch and public promotion** of the Cookbook	**All WO partners**	**25-31 March 2021**

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Linked WeObserve deliverables

Deliverable	Status
D2.1 EU Citizen Science Observatories Landscape Report – Frameworks for mapping existing CO initiatives and their relevant communities and interactions	Public
D2.4 EU Citizen Observatories Landscape Report II: Addressing the Challenges of Awareness, Acceptability and sustainability.	Public
D2.5 Policy Brief I	Public
D2.6 Policy Brief II	Public
D2.7 WeObserve CoP Final Progress Report	Public
D3.1 Develop infrastructure and WeObserve Toolkits	Public
D3.2 WeObservve distance Learning programme I	Public
D3.3 WeObserve Toolkits for Building Champion Communities	Public
D3.4 WeObserve Distance Learning programme II	Public
D4.1 Citizen Observatories and GEO Community activities	Public

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