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D5.8 Guidelines for best-practice in co-design

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1. Executive summary

To develop challenge-driven and solutions-orientated research, COACCH has sought to proactively involve stakeholders in a process of co-design, co-production and co-delivery. This report summarises insights and key messages from the evaluation conducted in [Deliverable 1.10](#) (Findings from thematic working groups and deep engagement case studies) and proposes guidelines with practical steps for best practice in collaborative research.

Following the introduction to the project in Section 2, we begin with Section 3 outlining our definitions of co-design and how the concept has been applied in the COACCH project. In Section 4 we bring together the many findings of the iterative and detailed evaluation (Deliverable 1.10) in a new and synthesised manner covering six topics: 1. Stakeholder management; 2. Joint process; 3. Partnership; 4. Ownership and buy-in; 5. Formats for engagement; 6. Communication.

These evaluation findings are followed by Section 5, which provides the core output for this deliverable. Here, we propose a series of guidelines for best practice in collaborative research. This is focused, in line with the COACCH project, on instrumental (utilitarian) co-design, focused on creating useable knowledge, and using a brokered approach. A co-design which uses emergent (critical) process, which aim to propose new ways or challenges existing thinking, and the use of more open spaces for discussion, would need to use a different approach.

These have been organised into a five-step process: Preparation; First meetings; Internal exchange; Check-in; Final product development. In each, we provide practical advice on implementation and specific case examples from the COACCH project.

This was an ambitious project, even without the collaborative element, and there have been many challenges to implementing a co-designed approach in practice. These collaborative actions were also made more difficult due to the COVID-19 pandemic. Nevertheless, there has been a spirit of collaboration and openness to greater stakeholder involvement, and COACCH has involved a step-change in the way that many of the research team have previously approached their work. Two key lessons stand out for us above all: firstly, the importance of being committed to a more involved approach to stakeholder collaboration, with its iterative and adaptive format and secondly, the need for all engaged to be in regular and transparent communication about research and user needs, as well as constraints. Finally, we suggest that these guidelines and a focus on adaptive interactions and open communication is relevant to all research, not only that which is labelled as co-designed.

2. Introduction

Stakeholder engagement is highly relevant to climate change risk assessment and decision-making, given the complexity and subjectivity involved, and it has been widely used in the climate domain (Cheng et al. 2008).

Stakeholder engagement has also become a central element of research projects that consider climate change risks, mitigation and adaptation (e.g. Cairns et.al. 2013; Kok et al., 2011). As described in Welp et al. (2006), science-based stakeholder dialogues can be important for: (i) identifying relevant research questions; (ii) providing a reality check for research; (iii) providing access to knowledge, data and inputs.

However, stakeholder engagement (alone) tends to employ workshop sessions and often involves consultation (discussion) rather than direct engagement, so that stakeholder interest and inputs are limited.

More recent literature highlights that participatory stakeholder processes, such as co-design and co-production, should be used throughout the duration of a research project to address these issues (Beier et al, 2016). Furthermore, there is a recent focus on science-practice interactions and participatory practice orientated research (Groot et al, 2014), which aim to jointly develop new knowledge to inform policy and decision-making processes.

These trends were reflected in the Horizon 2020 work programme, which highlighted the need for co-creation of knowledge and co-delivery of outcomes with economic, industrial and research actors, public authorities and/or civil society.

Indeed, the call text for SC5-06-2016-2017 (*Pathways towards the decarbonisation and resilience of the European economy in the timeframe 2030-2050 and beyond*) set out that the research should be built around the co-design of pathways and scenarios with economic and societal actors.

In response, the COACCH project has included co-design and co-production as a key principle for the development and delivery of the research programme and the stakeholder engagement process. This is reflected in the project title (**CO**-designing the **A**ssessment of **C**limate **CH**ange costs, COACCH).

The COACCH Project

The objective of the COACCH project is to produce an improved downscaled assessment of the risks and costs of climate change in Europe that can be of direct usability and respond to the different needs of end users from the research, business, investment, and policy making community. To deliver this, COACCH assembled Europe's leading climate change impacts and economic modelling teams together with stakeholders to co-develop methods and analyses in an innovative research practice, policy integration.

This objective is further broken down into five specific goals, one of which to develop a challenge-driven and solutions orientated research and innovation approach, involving proactively business, industrial, public decision makers and research stakeholders in the co-design, co-production and co-delivery of policy driven research.

This involves a major change from previous European economic cost studies on climate change (e.g. the ClimateCost project, Watkiss et al., 2011) which have been science led, and have used stakeholder engagement only for dissemination to communicate results.

Purpose and overview of this report

The objective of Deliverable 5.8 is to develop guidelines for best practice in co-designed research. In this report, we detail the approach developed at the outset of the project and use the regular feedback from stakeholders and consortium members to reflect on the engagement process. On this basis, we consider lessons learned and use these to propose guidelines for best practice in co-designed climate research. The report begins with an overview of co-design in COACCH (Section 3) followed by the main section of the report (Section 4) which details its implementation. This leads into a series of guidelines and practical steps for implementing collaborative research (Section 5) ending with a summary of our main conclusions (Section 6).

3. Co-designing COACCH research

To help implement co-design in COACCH, we undertook a detailed literature review on previous studies, to identify what makes a successful co-design process and outcomes. The review showed that definitions of co-design and co-production vary widely. To ensure consistency for the COACCH project, the following definitions were proposed:

Co-design (cooperative design) is the participatory design of the research project with stakeholders (including the users of the research). Co-design is the first phase of the co-production process, in which researchers and non-academic partners jointly develop a research project and define research questions that meet their collective interests and needs.

Co-production (cooperative production) is the participatory development and implementation of a research programme or project with stakeholders. This uses practice orientated research (see below), co-producing the research using an iterative process to help the research translate into useful and useable information or knowledge. This is also sometimes termed **joint knowledge production**.

Co-delivery / co-dissemination (cooperative delivery) is the participatory design and implementation of strategies for the appropriate use of the research, including the joint delivery of research outputs and exploitation of results.

Practice-orientated research is the development of research to help inform decisions and/or decision makers. It is delivered using co-production and trans-disciplinary research. It is also sometimes known as actionable science or science policy practice.

These different stages of process overlap and feed into each other and ultimately into the ongoing evaluation process which has formed the basis of this report (See Figure 1).

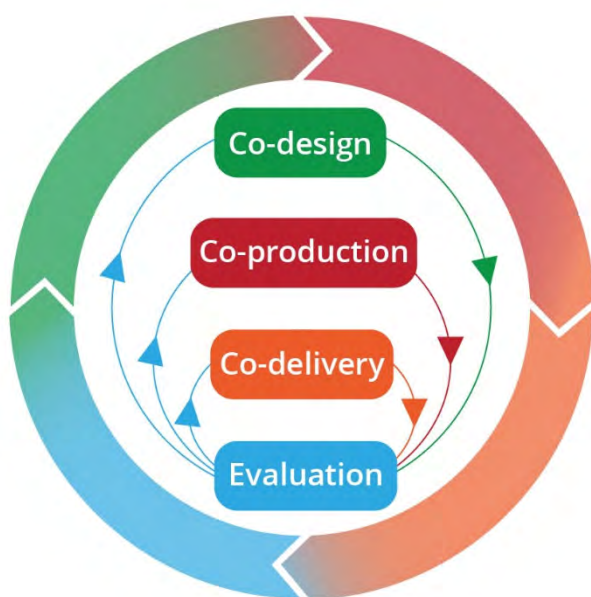


Figure 1. Interactions between different stages of collaboration in COACCH

A series of common principles for successful co-design were identified from the literature (see Box 1) and the decision was taken that COACCH should adopt an instrumental and brokered ('bounded') approach to collaborative research (Harvey et al. 2017).

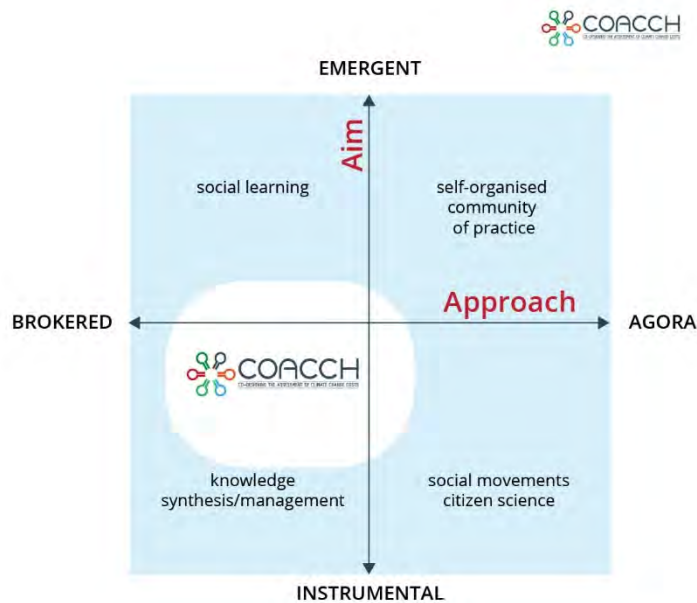


Figure 2 Matrix of Co-Design Objective and Approach. Adapted from Harvey et al., 2107.

Such an approach focuses on the generation of usable information for policy makers, and uses knowledge brokers within the research team to steer the overall co-creation process.

Box 1. Common features of successful co-design and co-production of research (source: COACCH Deliverable 1.4)

- Process orientated, as the co-production process is as important as the outputs;
- Objective and outcome led, with clearly identified roles and responsibilities;
- Targeted, ensuring representative stakeholders are involved;
- User and decision orientated, to meet user needs and produce information of relevance for decisions;
- Joint product orientated, using outputs to help build the engagement and co-production process;
- Iterative, with an ongoing process of review and learning throughout the project;
- Time managed, with enough time, resources and facilities to deliver the process;
- Transparent and inclusive;
- Part of a cycle of evaluation and learning, drawing lessons from the process for future research programmes.

The common features in Box 1 were used to develop a series of steps for the project – developed as a ‘protocol’ of nine principles (

Box 2) along with an accompanying roadmap for delivery. The overarching aim of the protocol was to ensure that the project produced usable knowledge for decision-making.

Box 2. Nine principles of COACCH co-design and co-production protocol

1. Identify a group of representative stakeholders
2. Identify user needs and the potential uses of COACCH information for decisions.
3. Develop a process for co-production including the identification of goals, outcomes, and roles and responsibilities for the co-production process (in a roadmap) to be discussed and agreed with stakeholders.
4. Identify a set of joint products (outputs) for the project to work towards
5. Allow sufficient time for the co-production process, and seek to build opportunities for continued engagement through the project.
6. Allocate sufficient financial and staff resources to the co-production process and use a facilitated process for engagement.
7. Adopt an iterative approach, providing opportunities to adjust the goals, method and outcomes as the project progresses, and identify checkpoints for discussion.
8. Ensure an inclusive process that recognises and respects different views.
9. Ensure a continuous process of monitoring and evaluation, using this to inform the project as it progresses, and to provide lessons for future co-production at the end.

For more detailed information on the COACCH approach, please refer to [Deliverable 1.4 Co-design and co-delivery protocol](#)

4. Evaluation of COACCH collaborative research approach

Background

The main form of stakeholder collaboration in COACCH was through four workshops held across the course of the four years of the project. These workshops formed the central place for interactions on co-design, co-production and co-delivery of research outcomes (see Table 1).

Table 1. Overview of COACCH workshops

	Workshop 1	Workshop 2	Workshop 3	Workshop 4
Date	May 2018	October 2019	December 2020	September 2021
Format & location	Face-to-face Brussels	Face-to-face Brussels	Online	Online
Aims	<p>Identify user information needs and uses for project results. (CoDes)</p> <p>Discuss and prioritise key research questions to focus on. (CoDes)</p> <p>Discuss and agree on collaboration goals, roles and process goals, outcomes. (CoDes)</p> <p>Identify joint products (outputs) to work towards. (CoDes)</p>	<p>Discuss interim results (CoProd)</p> <p>Consider research interactions with ongoing policy/ decision-making processes (CoProd, CoDel)</p> <p>Discuss and jointly shape future research activities and products (CoDes, CoDel)</p> <p>Review and adjust co-design approach. (CoDes)</p>	<p>Discuss interim results (CoProd)</p> <p>Discuss joint products to synthesise research (CoProd, CoDel)</p> <p>Gather inputs for upcoming work (CoProd)</p>	<p>Discuss results from last work phase (CoProd)</p> <p>Discuss joint products to synthesise research (CoProd, CoDel)</p> <p>Review evaluation and guidelines for co-designed research (CoProd, CoDel)</p>
Full report and further information	Deliverable 1.3 https://www.ecologic.eu/15679	Deliverable 1.7 https://www.ecologic.eu/16988	Deliverable 1.8 https://www.ecologic.eu/17793	Deliverable 1.9 https://www.ecologic.eu/18309
Key: CoDes: co-design; CoProd: co-production; CoDel: co-delivery				

The workshops were complemented with detailed discussions within the research consortium on how to implement stakeholder needs. Further bilateral exchanges were carried out with ‘deep engagement’ stakeholders via dedicated members of the consortium, referred to as ‘relationship managers’. Relationship managers instigated regular contact to support in-depth collaboration to provide stakeholders with targeted analysis for their organisation’s needs.

To evaluate and improve these co-design, co-production and co-delivery activities in an iterative way, stakeholder and consortium feedback was gathered on a regular basis (see Table 2)

Table 2. Overview of evaluation inputs gathered during the COACCH project

Collaborative process	Evaluation input	When gathered
Workshop 1	Evaluation survey 1 filled by workshop participants	May 2018
Workshop 2	Evaluation survey 2 filled by workshop participants	September 2019
Workshop 3	Evaluation survey 3 filled by workshop participants	December 2020
Workshop 4	Evaluation poll 4 filled by workshop participants	September 2021
Bilateral engagement	Annual surveys filled by relationship managers and interviews with deep engagement stakeholders (n=3)	Q1 of 2019, 2020, 2021
Research team reviews	Research topic tables and interviews with COACCH team sector leads (n=6)	Workshop 1, Annual project meetings 2019, 2020, 2021, Interviews June 2021

The detailed evaluation of these stakeholder collaboration activities was carried out for Deliverable 1.10, an overview of which is provided in Annex 1 of the current document. During the fourth stakeholder workshop in October 2021 the findings of Deliverable 1.10 were presented and discussed in small groups. In follow up, we clustered the resulting insights into six main topics with key messages which we now present below. The key messages were circulated to stakeholders to be approved for use in this report.

Topic 1: Stakeholder management

In COACCH a detailed stakeholder management strategy was developed at the outset. An attempt was made to define different types of stakeholders (i.e. ‘deep engagement’ or ‘working group’) denoting different levels of proposed engagement. However, discussions at the first workshop revealed that this binary was a little confusing and somewhat artificial so a more fluid approach was taken. In most cases, engagement was via personal contacts and with a single person. So-called ‘relationship managers’ (from the consortium) were clearly designated and were tasked with maintaining regular contact. This approach seemed to work well and meant that stakeholders had a reliable person through whom all project information was channeled. Nevertheless, those assigned with a relationship manager role perhaps underestimated the resources needed to carry out the deep engagement activities. These partners frequently commented that co-design was a lot more work than they had expected and planned for.

The individualised approach unfortunately did lead to gaps in our engagement when people moved organisation or their commitments shifted. Furthermore, engaging with only one person created a further risk to the balance of stakeholders engaged in the project. The decision was made to maintain group continuity from the start to finish rather than bringing in ‘new faces’. While this meant that there was a good level of cohesion, the initial balance of stakeholder interests and geographic spread was somewhat reduced over the course of the four years of the project. Several stakeholders recommended engaging with a larger number of representatives

of an organisation. The aim of this wider engagement would be to reduce the risk of communication dropping off or of inadvertently creating a bottleneck through one contact point. This broader outreach was also seen to have the added benefit of bringing in a greater depth of knowledge to the project.

Key messages

- Take an open and active approach to stakeholder management; identify a group of representative stakeholders at the outset and monitor participation to ensure a balance of participants is maintained over the project duration.
- Build personal relationships but engage with whole organisations to reduce bottlenecks, increase the impact of research and representation of multiple perspectives.
- Allocate sufficient financial and human resources to the co-production process; differences in resource allocation may create imbalances in ability or willingness to engage among both researchers and stakeholders.
- Support bilateral engagement through capacity building with the research team, e.g. by providing a guiding structure as well as carrying out regular monitoring and progress evaluations.

Topic 2: Joint process

A process for collaboration was developed on the basis of an extensive review of the literature on co-design (See Deliverable 1.4). This was presented and discussed at the first stakeholder meeting. The aim was to develop a shared sense of direction for the project and for all parties to agree on the 'rules of engagement' along with respective roles and responsibilities. This initial agreement set a marker for the collaborative way in which the project was intended to develop and in many ways COACCH was successful in implementing a joint research process.

Designing specific outputs (e.g. economic assessments) or products (policy briefs) provided a useful focal point for discussions. Nevertheless, while there were regular check-ins on the content of the research and the collaborative process through evaluations, there was no explicit revisiting or adjustment of the roles and responsibilities after the first meeting. Furthermore, evaluation feedback highlighted that visual guiding elements such as a roadmap or a graphical overview of the project would have been helpful tools to guide engagement and mark progress.

Key messages

- Define what co-design could look like in theory and agree on what it should look like in practice within the project; this includes defining goals, process, roles and responsibilities, and developing a visual roadmap for the overall co-design and co-production process.
- Adopt an iterative approach with frequent evaluation and progress check-ins on co-design process and research, adjusting expectations, aims and outputs along the way.

- Agree on the methods and frequency of stakeholder engagement, and ensure enough time, resources and facilities to deliver meetings; this should be reviewed as the project progresses and change in response to feedback.
- Provide an easy-to-grasp graphical overview of the project to communicate processes and interlinkages between research activities, outputs and co-design processes; this can be used as a reference point and updated as the project progresses.
- Develop joint products, whether reports or tools, using outputs to help build the engagement and co-production process.

Topic 3: Partnership

Despite the co-design framing of the COACCH project, we found that the research team were somewhat unprepared for the extent to which they would be held accountable to stakeholder interests. There may have been a need for a more detailed discussion at the outset of the project about what the partnership with stakeholders would entail. However, the majority of the consortium embraced the opportunity to exchange more closely with stakeholders and found the steering of their work a positive experience. Several stakeholders noted that COACCH had far higher levels of collaboration than in other projects.

In parallel, there may have been a need to be clearer with stakeholders about what it was realistic to expect of the project, given the parameters of the economic models selected. Indeed, some of the team members even expressed some regret that the constraint of preselecting the models during the proposal stage had meant that they had conducted their work more or less as expected and felt disappointment that they had not been able to adapt their work even further to stakeholder interests. The primary lessons from this process are that both researchers and stakeholders have many implicit assumptions about what this type of partnership can deliver; these must be made more explicit and be discussed regularly to clarify and manage expectations on both sides.

Key messages

- Encourage researchers to push the boundaries of their work by incorporating stakeholder suggestions; this will increase the real-world relevance and usability of their outputs.
- Be clear with stakeholders about what co-design means in the context of the project and what the planned research can realistically achieve given the parameters of the funded activities.
- Establish a transparent and inclusive approach, and maintain frequency of communication outside of major meetings with stakeholders, e.g. with bilateral discussions or general opportunities for catch-up.

Topic 4: Ownership and buy-in

Giving stakeholders the opportunity to actively shape the research direction is key to ensuring their engagement and commitment to the co-design process. Stakeholders were encouraged to develop co-ownership of the research by determining the topics and questions that COACCH should focus on. While this had to be within the parameters of the funded action, and the project description of work, we felt that involving stakeholders in a meaningful way provided an important signal of the shape of the process to come. Furthermore, we carried out regular and explicit reporting, detailing how each research question was being addressed and on the level of progress. The aim of this was to demonstrate the project's accountability to stakeholders and to increase the sense of trust and commitment among all involved parties.

Another way in which buy-in was increased was by asking stakeholders about important decision-making processes which the project could feed results into. Wherever possible, relationship managers would try to support stakeholders by adapting the presentation of results to the needs of a specific policy window or other decision-making process. The project has numerous successes where COACCH results or outputs were included in policy documents, because of this approach. This also supported dissemination of results in a targeted and end-user oriented way. One area where perhaps more efforts were needed was to ensure that the research responded to changing needs over the course of the project. Not least, the Covid-19 pandemic and climate impacts in Europe over the course of the project's four year lifespan have had important effects on stakeholder interests.

Key messages

- Identify user needs and the potential uses of information for decisions at the start of the process.
- Communicate stakeholder contributions to research design and outputs on a regular basis to build trust and confidence about the usefulness of their contributions to the research.
- Provide opportunities to engage with stakeholders as the work progresses, and seek collaboration for effective co-production where possible, e.g. tied to windows of opportunity in policy processes.
- Discuss and collaborate in the delivery of the findings to meet targeted needs.
- Review stakeholder needs and uses for research outputs not only at the outset but throughout the project; assess together how developments in the decision-making landscape might affect the research and messaging of results.

Topic 5: Formats for engagement

Over the course of the project, four interactive stakeholder workshops were held (two in person, two virtual). The first workshop was held to discuss the joint programme of work. The subsequent workshops were held to report on progress, and also seeking contributions and guidance from stakeholders on subsequent phases of work. A range of formats were used to

support different preferences for engagement such as voting exercises, visioning, small group discussions, poster presentations, quiet individual work, panel discussions and more. While these formats were appreciated by participants, it was only really in the first workshop, where the focus was on setting out the conditions for co-design, that this interaction was deemed fully successful. In later workshops many more participants commented that presentations had been too condensed (intended to leave time for discussion) or that longer presentations had left insufficient time for discussion. Thus creating a well-balanced workshop where all participants felt that the correct amount of time was given to each activity was a challenge.

Especially towards the end of the project, the team had developed an increasing understanding of the way in which stakeholders wished to be engaged with (considerable advance distribution of results and more time for discussion during meetings). One area which was seen to have an important contribution to better overall outcomes was space for informal bilateral discussion. Particularly in the face-to-face events, dinner events, lunch and coffee breaks provided a welcome opportunity for participants to dive deeper into understanding stakeholder needs and research plans. Reflections in the evaluation showed that these bilateral interactions could be taken further by bringing use-cases into the wider plenary for a more applied discussion.

Key messages

- Use a range of formats (e.g. formal plenary, world cafés, small breakout discussions, written exercises, surveys) to allow for different ways of exchanging information and for different views to be heard.
- Create informal spaces at physical meetings (e.g. lunches and dinners) to foster trust-building and deeper understanding of needs and expectations and create open channels for continued bilateral exchange.
- Provide space and time for detailed co-design discussions with transparent exchange on user needs and limitations of research.
- Favour applied discussions that lead to clear outputs (e.g. case studies and use-cases) over styles that report results to receive general feedback.

Topic 6: Communication

Communication was raised in the ‘roles and rules’ discussion with stakeholders at the first workshop and has been repeatedly emphasised by stakeholders during the project. Although efforts were made to keep channels open and to communicate results, feedback from interviews suggested that even more internal communication could have taken place to keep stakeholders abreast of interim progress. It was intended that the social media platforms used by the project should provide this kind of update, but of course it is important to bear in mind that not all stakeholders are regular social media users.

The background briefings circulated before workshops were positively received and based on interviews, stakeholders found these to be clear, understandable and of high quality. Although communication was not included as a principle per se in the COACCH protocol, the evaluation process has revealed its central importance to such collaborative projects.

Summary

The general findings of the COACCH evaluation suggest that the project and its approach have been well received and appreciated and the results have been of interest and use to many of the stakeholders. At the same time, the way in which the engagement process was conducted is certainly open to further refinement and improvement. In the following section we use the literature on co-design and co-creation and the experiences gathered during our evaluation process to propose a series of steps and practical guidance for conducting collaborative research.

5. Guidelines for best practice in collaborative research

This section presents the COACCH project's guidelines for conducting collaborative research. This is focused, in line with the COACCH project, on instrumental (utilitarian) co-design, focused on creating useable knowledge for policy makers, and using a brokered approach. A co-design which uses emergent (critical) process, which aim to propose new ways or challenges existing thinking, and the use of more open spaces for discussion, would need to use a different approach.

The guidelines are structured according to the general phases of a collaborative research process (co-design, co-production, co-delivery and evaluation) as detailed in Section 2 of this report.

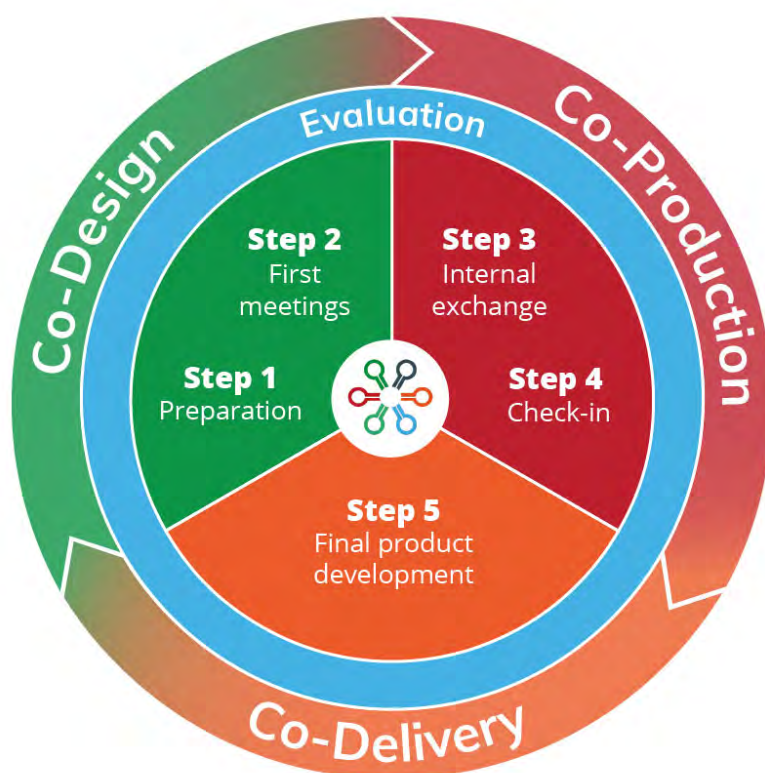


Figure 3. Overview of collaborative research phases and steps for practical implementation

We have broken down the phases of a collaborative research process into a series of five detailed steps (see

Figure 3) with practical implementation guidance. Many of these steps straddle several phases due to the iterative and interlinked nature of the approach. Evaluation, for example, takes place across the project but is considered in most detail in steps three and four. For ease of use, we have linked the practical guidance to the most relevant phase but activities should be considered as fluid and ongoing.

Co-Design

The aim of the co-design phase is to identify the key stakeholders to work with and to develop a proposed engagement process, agreeing on objectives and roles for stakeholders and the research team. End-user (stakeholder) interest and potential uses of the research results and products should be discussed, and the commitment needed for participation made clear. Research teams should be briefed on the process, highlighting the time and resources required. Once these are clear and agreed, the key research topics for the project should be defined and developed together. Co-design is the main focus for the first two steps of the collaborative process: Step 1: Preparation; and Step 2: First stakeholder meetings.

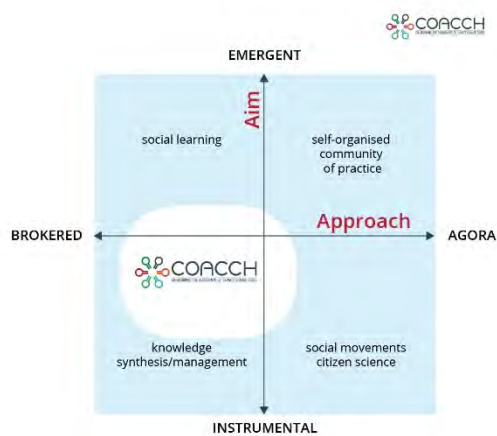
Step 1: Preparation (prior to first meeting with stakeholders)

The aim of the preparatory step is to set the scene for the process of research collaboration. This includes: assigning the roles of knowledge brokers to steer the collaborative process; identifying overall objectives and developing the collaborative approach to be implemented; recruiting representative stakeholders and briefing the research team. This should all take place before the first meeting with interested stakeholders. In the best-case scenario, the knowledge brokers designing the approach will review literature and best practice from other projects to find inspiration for their specific project.

Practical guidance:

- Designate a team of knowledge brokers within the project consortium who are responsible for guiding the collaborative process.
- Identify overall objectives and set out what co-design could look like in theory and which approach to take (**see Example 1**). It also involves the initial scoping of goals, outcomes, and potential definitions of roles and responsibilities.
- Provide a briefing with the research team to make clear what co-design involves, how it differs from a traditional project, and what will be expected of researchers. Get agreement to the approach.
- Identify a long-list of potential stakeholder organisations, set criteria for stakeholders (e.g. relevance, coverage) and narrow down (prioritise) to a workable number in line with project objectives and resources.
- Approach stakeholder organisations for participation. Set out the likely benefits but also the commitments involved.
- Ideally identify two to three people for each stakeholder organisation who are committed to following the project's development and will contribute with institutional knowledge. Identify 'relationship managers' within the research team to be responsible for maintaining the relationship with stakeholders.
- Conduct an initial survey with each stakeholder to collate user needs, interests and decision-making processes where the project could engage.
- Create an easy-to-grasp graphical overview of the project to communicate processes and interlinkages between research activities and co-design processes to stakeholders.

Example 1: Developing a collaborative approach in COACCH



At the start of the COACCH project, an extensive literature screening on co-creation and collaborative research approaches was undertaken. The screening included research projects, grey literature like guidance documents and journal articles. The screening was the basis for developing the COACCH approach (a brokered focused on producing usable information) including definitions used and activities elaborated within the COACCH project, putting together a list of 9 key principles and a list of tips for collaboration within the COACCH process. The principles have been revisited several times and were the

basis for evaluation activities.

Step 2: First meetings with stakeholders

The objective of first meetings with stakeholders is for all those involved in the project to develop a shared vision of the collaborative process. These meetings should be based on theoretical ideas of co-design, translating these in discussions on what co-design should look like in practice. The meetings should jointly develop and agree goals, process, roles and responsibilities, and develop a visual roadmap for the overall co-design and co-production process. This step plays a major role in the project, establishes the basis for collaboration, and builds trust between the involved researchers and stakeholders.

Practical guidance:

- Collaboratively discuss and agree the overall objective and goals of the co-design process.
- Agree on roles, rules and responsibilities for engagement as well as methods and frequency of engagement activities.
- Develop and agree a graphical overview of the project to communicate processes and interlinkages between research activities and co-design processes
- Collaboratively explore joint products such as reports or tools
- Outline the iterative approach of the project and begin the evaluation process
- Identify key policy and decision-making processes that the project results can feed into (see Example 2)

Example 2: Identifying policy and decision-making processes in COACCH



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At the first stakeholder workshop of the COACCH project, we used a simple template to gather stakeholder interests and information needs for current and upcoming decision-making processes. The stakeholders listed not only the different processes COACCH results could feed in but also the potential timeframe within the inputs would need to be delivered. For example, there were several national risk and adaptation assessments that were due for publication in a few years' time; these provided opportunities for COACCH to feed into within a realistic research project time-scale. Having an overview

and timeline of relevant user needs and opportunities meant that stakeholders could be approached in time to check which available material would be most valuable for them. In the best scenario, outcomes could be shifted in time to feed into multiple entry points into decision making processes. This exercise should be repeated regularly to keep the overview of processes up to date, e.g. during the following stakeholder workshop.

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Co-Production

The aim of the co-production phase is to undertake the collaborative work, including case studies or deep-dive methodological studies. It includes mid-project workshops to discuss and review first available outcomes and methodological approaches. It can also involve interim bilateral meetings with individual stakeholders, to discuss key issues or develop case studies. It has a major role on agreeing on joint knowledge products. The co-production phase includes two practical steps: Step 3: Exchange on collaboration within research team; and Step 4: Check-in with stakeholders.

Step 3: Exchange on collaboration within research team

The aim of this step is for researchers to exchange on the possibilities of accommodating research topics proposed by stakeholders and to evaluate and adjust the collaborative approach. It also serves as an important reminder to the research team of the need to produce outputs that are relevant and useable by stakeholders. Researchers should regularly evaluate their progress on working in line with stakeholder priorities and re-consider possibilities to respond to stakeholder needs. The discussions can be included in internal project meetings, other exchanges or survey formats and should be held regularly within the project duration. Furthermore, the collaborative process should be evaluated regularly throughout the duration of the project with the research team. This process of exchange does need management, and thus there is a continued role for the project knowledge brokers to push this along internally. It is their role to ensure that research teams understand why these steps are being taken, support researchers in these activities, and act to ensure that they are undertaken through a process of review, evaluation and management.

Practical guidance:

- Develop an internal roadmap for delivering co-production (knowledge brokers) and share this with the research team.
- Review and agree with research team partners on the activities to be conducted (**see Example 3**)
- Revisit stakeholder priorities regularly to encourage researchers to incorporate stakeholder suggestions
- Reiterate the co-design approach of the project and agreement on how this will be implemented in practice in the research activities

Example 3: Agreeing on research activities to be conducted in COACCH

To gather user needs, we used lists of research topics which were discussed and prioritised by stakeholders in the first workshop. During the next internal COACCH project meeting, consortium members went through the research topics and indicated if research topics could be covered within the project (yes/maybe/no).

Research topic – River flooding			Prague		Amsterdam	
Topic and level of stakeholder interest at Brussels workshop	COACCH team discussion results	How? (method/model)	Progress (0-3)	Activities undertaken and results	Progress (0-5)	Activities undertaken results
High interest						
1) Improved, more accurate assessment of total flood costs (direct + indirect + intangible) to underpin flood risk policy	Definitely covered	LISFLOOD, GLOFRIS	3		4	Direct (completing indirect going c
2) Showcasing the role of critical infrastructures (e.g. transport networks) in avoiding flood-related socio-economic tipping	Definitely covered	New: OSaMag	2	Baseline finished, now connecting with EC	4	Direct (include First re network compa

The lists of research topics were revisited by the researchers at least once a year throughout the project. They helped to retain a regular focus on stakeholder priorities. The lists were used for monitoring and reporting back to COACCH stakeholders during and at the end of the project. (See also Annex 2 of [COACCH Deliverable 1.10](#) Findings from thematic working groups and deep engagement case studies).

Step 4: Checking-in with stakeholders

The aim of stakeholder check-ins is to gather inputs - and facilitate collaborative working - on drafts, interim results, pilots or mock-ups of the research work and to adjust these based on the discussions. They should be organised regularly. Regular (e.g. annual) workshops can be used for larger groups. Bilateral or small group discussions can accommodate more in-depth and more frequent exchanges (between larger meetings), and also allow more direct co-production activities. The annual check-ins should be used to evaluate the collaboration process and if necessary adjust the approach being applied.

Practical guidance:

- Establish and maintain contact with individual stakeholders – with regular check-in (physical or online) identifying opportunities to collaborate on concrete processes and outputs.
- Schedule regular full project workshops (all stakeholders) to refine awareness of user needs and match these to potential activities and outputs. As the project progresses, these meetings will move to discussion of early results and key messages for co-delivery outputs.
- Refer to and update graphical overview of project.

- Be in regular communication with stakeholders outside of meetings, e.g. send newsletters, notification of outputs or reports, and use other opportunities for checking-in, e.g. surveys.
- At regular meetings, re-assess stakeholder needs and specific processes that research results can contribute to. Ensure relevant material is circulated well in advance of meetings, so that when stakeholders attend, they are up-to-speed with key progress or initial results and have tested beta versions of tools or databases, etc.
- Review key policy and decision-making processes that the project results can feed into, and seek to confirm how to make this happen, i.e. how to support or feed into relevant policy decisions or policy documents.
- Communicate transparently how the research has been adjusted to stakeholder needs and priorities throughout the project (e.g. presenting research topic tables in Example 3).
- Use a variety of engagement formats during workshops (e.g. plenary, small group discussions, written exercises) and give sufficient space and time for discussion and different types of contribution (**see Example 4**).
- Reserve enough space and time and do not reduce timeslots for informal discussions, e.g. dinners, breaks.

Example 4: Discussing interim results in COACCH

Within the COACCH project we used a diversity of engagement formats to support the gathering of stakeholder inputs. For example, during the second stakeholder workshop we presented methodological approaches and interim results on a number of sectoral assessments within a market-place format. The session started with short overview presentations for each assessment in plenary, followed by a poster session in which stakeholders had the opportunity to move around freely from one poster to the other. The setting gave room to accommodate the different stakeholder interests and discuss detailed questions and feedback on an individual basis, i.e. to 'meet an expert' and dive into the detail in areas of interest.



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Co-Delivery

The objective of the co-delivery phase is to develop products and tools that synthesise the project, and engage stakeholders to refine key messages and outputs and even help with project dissemination. These project outcomes are then disseminated, communicated and exploited by researchers and stakeholders.

Step 5: Developing final products and dissemination

Final products and especially synthesised project results or tools for end-users should be developed in a participatory way. Stakeholders should define their general needs and priorities for chosen formats, length of reports etc. Stakeholder inputs should be gathered on concepts and draft products and tools. Specific activities and actions should be identified to help ensure results can feed into relevant decisions or documents (of end-users). An iterative process should be used to develop important end-user oriented products.

Practical guidance:

- Discuss dissemination needs and joint products for end-users, e.g. reports or tools
- Provide tailored information to feed into key policy and decision-making processes or reports, i.e. to make it easy for end users to use project results
- Develop joint products for identified use cases
- Share activities and findings on use cases with the full research team and stakeholders to encourage shared learning.
- Gather feedback on interim versions of products and tools and adjust based on stakeholder inputs, especially using end-users to help shape the key messages as well as the style (length, of outputs
- Identify opportunities, whether networks, events or activities, to disseminate results

Example 5: Developing summary products in COACCH

The regular discussions with stakeholders allowed for an understanding of individual information needs and a number of research findings were adapted to provide targeted outputs. COACCH dissemination products such as policy briefs were developed based on the identified needs, e.g. regarding sectoral focus, or geographical scale. In this way, customised summary products for specific use cases were developed; the summary of sub-national assessment results was particularly interesting to stakeholders. This engagement significantly increased the use and reporting of COACCH results (and thus impact).



6. Summary

This report has reflected on the collaborative approach as applied in COACCH for instrumental, brokered co-design. Sections 2 and 3 have reiterated the description of activities conducted to define co-design and report on how this approach was practically implemented in COACCH. Section 4 has then brought together in a new and synthesised manner the many findings of the iterative and detailed evaluation process as described in Deliverable 1.10. Finally, in Section 5, we have brought together the key learnings and used these to produce a series of practical guidelines with illustrative examples for implementing collaborative research in practice.

Looking back, it is clear that this was an ambitious project, even without the collaborative element, and the co-creation process was undertaken during the COVID-19 pandemic. It is also noted that attempting to co-design and co-produce knowledge that is based on highly technical models of climate change and economic impacts is challenging. There have been difficulties in applying a fully collaborative and flexible approach to a project that was fairly prescriptively designed from the outset (in its agreed research agenda and description of work) due to the predetermined selection of the models to be used. Nevertheless, there has been a spirit of collaboration and openness to greater stakeholder involvement that has marked a step-change for many consortium members. There has also been extremely positive feedback from the stakeholders engaged in the process, especially those that were involved as deep engagement stakeholders.

We have been able to derive numerous lessons on how to co-design a research project in practice, but there are two standout elements. First is the importance of being open to feedback and to have a baseline commitment to engage in an adaptive and iterative approach to research. Second is the importance of researchers and stakeholders remaining in regular and transparent communication about their needs and constraints. This is both in terms of where the research should be headed, but also to be honest about resources and capacities to respond to one another's needs. Finally, we suggest that the above guidelines and a focus on adaptive interactions and open communication is relevant to all research, not only that which is labelled as co-designed.

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Annex 1 Evaluation of COACCH co-design protocol implementation

The evaluation of stakeholder collaboration follows the 9 COACCH principles (Box 2) and is detailed in Deliverable 1.10 in full.

COACCH co-design principle	Activities	Findings and lessons learned
1. Identify a group of representative stakeholders	<ul style="list-style-type: none"> • Deliverable 1.1 Stakeholder Database. • Creation of two main types of stakeholder: WGS and DES. • Identification of other individuals of interest for dissemination purposes. 	<ul style="list-style-type: none"> • The distinction between types of stakeholders ('working group' or 'deep engagement') or may cause unnecessary confusion or tension as well as heterogenous experiences of project engagement that may not be positive in the long-run. • While it is possible to identify a group of representative stakeholders creating and holding onto a balanced and representative group is something that needs to be actively monitored and managed. • For a truly 'representative' group, it is important to target specific people rather than the organisation. • Engaging with multiple people from an organisation can increase the extent and impact of knowledge co-production as well as minimising the risk of stakeholder 'bottlenecks' or drop-out.
2. Identify user needs and the potential uses of COACCH information for decisions.	<ul style="list-style-type: none"> • Discussions between relationship managers and stakeholders prior to Workshop 1 - template with stakeholder needs • Co-design of research topics, tipping points and scenarios at Workshop 1 • Outline decision-making processes for use of COACCH results at Workshop 1. • Ongoing collaboration and communication throughout the project 	<ul style="list-style-type: none"> • Possibility that stakeholder expectations exceed the capacities of the project to respond within the constraints of the research agreement with the European Commission. • May be a need to think about exchanging with stakeholders at the proposal stage to ensure that models and consortium is able to respond to user needs and that stakeholders are made aware of the limitations. • Close bilateral interactions with stakeholders can help to provide targeted information that can be used in strategies and policy processes e.g. EU Climate Adaptation Strategy).

		<ul style="list-style-type: none"> Integrating focused workshops (e.g. sectoral or risk-specific) could be more conducive to effective co-design and co-production of research.
3. Develop a process for co-production to be discussed and agreed with stakeholders.	<ul style="list-style-type: none"> Dedication of full Work Package in the project to co-design process. Literature review on state of the art for collaborative climate change research. Development of COACCH protocol and nine principles Presentation of proposed process at Workshop 1 Establishing of 'roles and rules' for engagement. 	<ul style="list-style-type: none"> Greater attention could have been paid in the initial phase to discussing the co-design and co-production process to be applied which could have been revisited during regular follow-ups. There may be a gap in the approach taken towards roles and rules of engagement; these may need to be re-visited. Rather than just checking if stakeholders are 'satisfied' there may be a need to provide space for more detailed discussion on the process from both research team and stakeholder points of view. The decision to move online was taken without consultation as there were few alternatives. However, it might have been appropriate to have consulted with stakeholders about preferred length and structure of the meetings.
4. Identify a set of joint products (outputs) for the project to work towards	<ul style="list-style-type: none"> First workshop (Deliverable 1.3) Second workshop (Deliverable 1.7) Third workshop (Deliverable 1.8) Fourth workshop (Deliverable 1.9) 	<ul style="list-style-type: none"> Stakeholders were able to share their feedback in different outputs such as the scenario explorer web tool and the policy briefs. This was not only in an abstract way at the first meeting; these outputs were shared during the project's lifespan and so stakeholders could share early feedback on their content and design.
5. Allow sufficient time for the co-production process and build opportunities for continued engagement through the project.	<p>4 workshops dedicated to co-design, co-production and co-delivery over project lifetime</p> <ul style="list-style-type: none"> Conversation spaces built into face-to-face workshops for informal exchange Ongoing bilateral engagement and communication to allow for ad-hoc engagement and feedback 	<ul style="list-style-type: none"> Spaces for open discussion and informal one-to-one interactions were appreciated by both stakeholders and consortium members and led to greater understanding of the shape that the joint products should take. Shorter sessions with less space for discussion e.g. during the tipping points discussion at the second workshop and at the third workshop, which was online, led to lower levels of satisfaction from the stakeholders but not necessarily for the consortium. Opportunities for continued engagement were there, but very much relied upon the proactive initiative of individuals seeking

		contact with one another. These processes could perhaps have been further supported through check-ins and reporting.
6. Allocate sufficient financial and staff resources to the co-production process and use a facilitated process for engagement.	<ul style="list-style-type: none"> • Generous allocation of staff time guaranteed that sufficient resources were able to organise, prepare, and manage the various co-production activities. • Dedicated event planning staff, with extensive experience in facilitating stakeholder workshops. • Adequate financial resources for event spaces and facilities, meals, and coffee breaks. • External moderator to increase impact and user-experience at in-person workshops. 	<ul style="list-style-type: none"> • The principle held true in that it is important to be generous with financial and above all human resources to support an effective collaborative process. • There are positive and negative aspects to consider when bringing in an external moderator to a closely collaborative process. On balance, it may be better to have a member of the consortium moderate, although this should be someone with proven experience with event facilitation of this type. • The face-to-face meetings were valued by many for the space they provided for informal interactions. The dinners, coffee breaks and other unmoderated exchanges were missed by many after the workshops moved online.
7. Adopt an iterative approach, providing opportunities to adjust the goals, method and outcomes as the project progresses, and identify check-points for discussion.	<ul style="list-style-type: none"> • Range of reporting activities and opportunities for feedback were incorporated in the collaborative process and revisited at several points over the project. • Annual review and feedback process on progress with consortium at project meetings • Reporting back to stakeholders at workshops and bilateral meetings. 	<ul style="list-style-type: none"> • Time schedule of the project activities should be in line with the engagement process. It needs to be defined how discussions can be taken-forward from one stakeholder meeting to the other and what main check-in points are for the different work streams. • A clear conceptual overview on inputs and outputs between different work streams and work packages could be helpful to present to stakeholders to show central research elements, interlinkages and main outputs of the project.
8. Ensure an inclusive process that recognises and	<ul style="list-style-type: none"> • First workshop (Deliverable 1.3) • Second workshop (Deliverable 1.7) • Third workshop 	<ul style="list-style-type: none"> • The stakeholder engagement activities were all executed in a spirit of transparency and respect. The consortium was open to ideas and feedback from stakeholders, although as mentioned above,

<p>respects different views.</p>	<p>(Deliverable 1.8)</p> <ul style="list-style-type: none"> • Fourth workshop (Deliverable 1.9) • Bilateral interactions between deep engagement stakeholders and case study leads • Bilateral interactions between relationship managers and all stakeholders 	<p>the ability to change the research agenda may have been constrained by the structural reality of the project.</p> <ul style="list-style-type: none"> • During a 3.5 year stakeholder engagement process it is natural that the activities of stakeholders vary and some stakeholders need to reduce their activities, change jobs, etc. Therefore, during the course of the entire project new stakeholders should be contacted to join the discussions. Attempts to gather relevant stakeholders or to reach a certain balance between groups should be a continuous process. • It should be made clearer from the outset to the research team that the priorities and research needs formulated by stakeholders are of key importance and that the research activities will be monitored and evaluated according to their ability to meet stakeholder needs. • Discuss main research directions with the stakeholders at different stages during the project, also if inputs will not be taken up 1 to 1, they should be used as starting points for research objectives, etc.
<p>9. Ensure a continuous process of monitoring and evaluation, using this to inform the project as it progresses, and to provide lessons for future co-production at the end.</p>	<ul style="list-style-type: none"> • Three annual reviews conducted with relationship managers in Q1 of 2019, 2020 and 2021. • Evaluation surveys after each workshop <p>(Deliverable 1.3, 1.7, 1.8, 1.9)</p> <ul style="list-style-type: none"> • Progress check with COACCH consortium via research topic tables at annual project meetings • Findings from thematic working groups and deep engagement case studies (Deliverable 1.10) • Guidelines for best practice (Deliverable 5.8) 	<ul style="list-style-type: none"> • Use a mix of evaluation tools to gather general and detailed feedback. Re-consider your approach based on the evaluation after each event / before the next event of a series • For comparability try to use same evaluation questions throughout the project to show possible developments and improvements at the end of project.

Annex 2: Overview of planned collaborative work process

The image below provides an overview of how the engagement with stakeholders was foreseen at the project outset.

