

# Workshop report on key theories of behaviour, decision- making and change

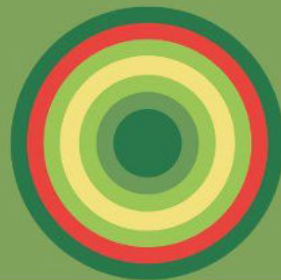
**Deliverable number: D1.4**

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PLANET4B

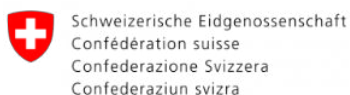
BETTER DECISIONS FOR BIODIVERSITY AND PEOPLE



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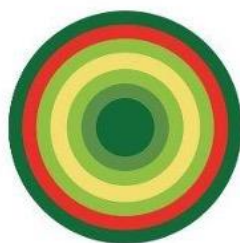


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## Key deliverable information

**Project acronym**                      **PLANET4B**

<b>Project title</b>	understanding Plural values, intersectionality, Leverage points, Attitudes, Norms, behaviour and social Learning in Transformation for Biodiversity decision making
<b>Starting date</b>	01 <sup>st</sup> November 2022
<b>Duration</b>	36 months
<b>Website</b>	<a href="https://planet4b.eu/">https://planet4b.eu/</a>
<b>Project coordination and scientific lead team</b>	Ilkhom Soliev; Alex Franklin; Agnes Zolyomi; Torsten Wähler

**Deliverable number**                      **D1.4**

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<b>Task leader</b>	Radboud University (RU)
<b>Dissemination level</b>	Public
<b>Status</b>	Final

### Deliverable description

Workshop report of the first project member workshop (M6) will debate an inventory of theories of change and identify different leverage points (parameters, system structure, feedback loops and mental models) in biodiversity policy.

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## **Acknowledgements**

The Task 1.4 team would like to thank workshop participants for their time and willingness to share information, experiences and opinions on the first workshop to debate the project's inventory of theories.

## List of abbreviations and acronyms

Acronym	Definition
CG	CzechGlobe – Global Change Research Institute of the Czech Academy of Sciences
CGE	Culture Goes Europe
COM-B	Capability (C), Opportunity (O), and Motivation (M) as key factors capable of changing Behaviour (B)
CU	Coventry University
DC	DADIMA'S C.I.C.
EAST	EAST Framework (Easy, Attractive, Social, Timely)
ESSRG	Environmental Social Science Research Group
FiBL	Research Institute of Organic Agriculture
FuG	Forum Urban Gardening
IFZ	Interdisciplinary Research Centre for Technology, Work and Culture
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
MLU	Martin Luther University of Halle-Wittenberg
NINA	Norwegian Institute for Nature Research
OOF	Oslo og Omland Frilfutsråd
PLANET4B	understanding Plural values, intersectionality, Leverage points, Attitudes, Norms, behaviour and social IEarning in Transformation for Biodiversity decision making
RU	Radboud University
UNEP-WCMC	United Nations Environment Programme World Conservation Monitoring Centre
UNIFI	University of Pisa
WP	Work Package

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## Executive summary

- Workshop 1 aimed to collate theories applicable to influence biodiversity decision-making, filling a knowledge gap.
- We debated an inventory of theoretical inputs, and preliminarily identified a range of applicable theories.
- It was conducted twice and had 24 participants in total. We used Zoom and Miro.
- Findings include a preliminary set of applicable theoretical inputs and additional theories to investigate.
- Results from the workshop will inform the activities of other WP1 tasks, as well as WP3 and WP4.

## 1 Introduction

Goals for protecting global biodiversity, such as those from the Post-2020 Global Biodiversity Framework, agreed at the COP15 in Montreal, will likely not be met if the current trajectory of nature depletion is maintained. Such goals may only be achieved “through transformative changes across economic, social, political and technological factors” (IPBES, 2019, p. 14). In this context, a growing community considers that such changes require transformations in the current socio-economic system (WWF, 2022). Nonetheless, diversity among human groups, involving distinct values, knowledge systems, beliefs, priorities and worldviews make it challenging to orchestrate effective biodiversity-related policies and initiatives. Moreover, social markers of difference such as gender, religion, ethnicity, race, age, culture, and disability, addressed in theories of intersectionality, often result in power imbalances in biodiversity decision-making and in different levels of nature prioritisation.

Given the complexity of tackling biodiversity loss in a plural world, a single disciplinary approach is insufficient to inform relevant decision-making. “Complexities necessitate interdisciplinary collaboration in the design of appropriate policies” (Sterner et al., 2019, p. 14). Effective biodiversity policies from global to local levels require careful analysis of underlying mechanisms across scientific disciplines (ibid.). Thus, “biodiversity mainstreaming” requires participation of a broader range of stakeholders, including businesses, policy actors, Indigenous peoples, local communities, nonstate actors, and their respective systems of (disciplinary) knowledge (Grumbine and Xu, 2021, p. 14).

Systems-thinking is a useful framework to identify leverage points in policies affecting biodiversity, particularly from an intersectionality perspective, as well as in inter- and transdisciplinarity contexts. Leverage points can help us better understand and design interventions for sustainability transformations, while considering social justice and equity across different worldviews (Leventon et al., 2021). As such, the approach is in line with sustainability transformations that entail diverse knowledge and plural pathways, while considering the essentially political nature of social and environmental change (Scoones et al., 2020). Despite the potential of the framework, empirical applications of leverage points to test different types of interventions to trigger behavioural change towards biodiversity prioritisation, across sectors, geographies, and intersectionality dimensions, remain either largely absent or very fragmented. Thus, it is relevant to assess and collate theories of behaviour, decision-making and

change for better understanding how they can inform biodiversity decision-making and action.

This report presents the details of PLANET4B's workshop 1 on theories, dedicated to initiate the discussion of the project's theory inventory and identify more applicable theories to the work within the project. The rest of section 1 provides the project-specific background information, as well as goals and expected outcomes of the workshop. Section 2 is dedicated to the planning process, as well as the methods for collection and analysis of participants' input. Section 3 details key results and outcomes from workshop 1. Section 4 concludes the document by summarising key results from the workshop, as well as an outlook for the next steps.

### *1.1. Background information*

PLANET4B aims to develop a transdisciplinary theoretical framework, and test different behavioural and decision-making interventions targeting a wide range of stakeholders, to trigger improved biodiversity policy prioritisation and action. Stakeholders are key enabling players across civil society, policy and business sectors. Essentially, PLANET4B's main objectives are:

- 1) to understand how gender, religion, ethnicity, race, age, culture, disability, norms, values and behaviour intersect and are implicated in biodiversity relevant decision-making across a range of different scales and settings; and
- 2) to channel this understanding of complexity into the design of stakeholder interventions, transformative pathways and a series of targeted (yet, scalable) policy recommendations, to prioritise biodiversity and halt biodiversity loss.

To achieve these goals effectively, PLANET4B aims to select a group of key theories to inform and guide the project's transformative change stories and stakeholder interventions.

Thus, WP1 was created to organize a literature search of academic material, media sources, projects and practices to provide foundations for such a transdisciplinary framework. Within this scope, Task 1.2 was in charge of organising an inventory of theories potentially applicable to behaviour and decision-making related to biodiversity, categorised in a gradient of intrapersonal, interpersonal, and institutional levels of change. At the time of the workshop, the working version of the inventory encompassed a collection of 61 theoretical inputs (frameworks, theories, models, concepts).

Equipped with this inventory, Task 1.4 is in charge of organising and facilitating a series of three workshops, with the following overall goals. The first workshop has debated the inventory of theories (held in April 2023). The second and third workshops (planned for October 2023 and April 2024 respectively) aim to further identify theory commonalities, complementarities and possible conflicting variables and mechanisms, in order to develop the final conceptualisation of theories particularly relevant for the PLANET4B objectives.



The first workshop was held online with two sessions, on April 6<sup>th</sup> and on April 11<sup>th</sup>, 2023 respectively. It was conducted twice in order to accommodate for the participation of all interested partners. The next section details the specific goals and expected outcomes of this workshop.

### *1.2. Theories workshop 1: goals and expected outcomes*

Workshop 1 had the following specific goals: a) debate the inventory of theoretical inputs of behaviour, decision-making, and change collated within Task 1.2; b) identify key theoretical inputs from the inventory relevant (or potentially relevant) for biodiversity in each level of change (intrapersonal, interpersonal, institutional); c) identify theoretical inputs (already included or yet to be added to the inventory) potentially applicable to the work in PLANET4B, within case studies and in other WPs; d) debate how the theoretical inputs that were considered applicable can inform interventions targeting civil society, policy, and business stakeholders.

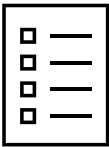
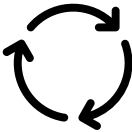
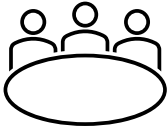
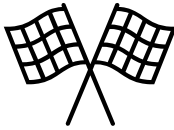
The expected outcomes of the workshop were as follows: a) participants would have a first glimpse and a basic understanding of theoretical inputs that are being considered for the conceptualisation of PLANET4B's theoretical framework; b) a preliminary identification of key theoretical inputs and their potential applications in PLANET4B for each level of change (intrapersonal, interpersonal, and institutional); c) a preliminary understanding of how these theoretical inputs can be used in case studies and in the design of interventions targeting civil society, policy, and business stakeholders.

## **2 Organising an interdisciplinary debate on theories**

This section addresses the planning process, organization, and methods for collection and analysis of participants' input during workshop 1; it includes four subsections. The first explains the workshop format and sessions, as well as the process of selecting participants. The second describes the materials developed to be used before and during the workshop. The third introduces the main characteristics of the inventory of theories and the approach for discussing it during the workshop. The last subsection addresses how input from participants was collected and analysed.

### *2.1 Planning workshop sessions and selecting participants*

The goal of workshop 1 was to steer participants to debate and have a basic understanding of an inventory of 61 theoretical inputs. We were aware that the interdisciplinary nature of the inventory, and the disciplinary and epistemological diversity within the consortium, could easily lead to unfocused discussions; or, even, to a feeling of being overwhelmed by a large group of theories. To avoid this, the workshop was organised in four sessions (see Figure 1) that would give participants the opportunity to talk about the theoretical concepts they were familiar with, as well as listen to discussions about unfamiliar theoretical concepts.

Session 1	Session 2	Session 3	Session 4
 <ul style="list-style-type: none"> <li>• Introduction to workshop</li> <li>• Explanation of dynamics</li> </ul>	 <ul style="list-style-type: none"> <li>• Discussions in breakout rooms</li> <li>• Coffee breaks in between</li> </ul>	 <ul style="list-style-type: none"> <li>• Plenary for summing up discussions</li> </ul>	 <ul style="list-style-type: none"> <li>• Suggestions and final remarks</li> </ul>

**Figure 1.** The four sessions of workshop 1. Source: authors' own work.


In session 1, we introduced the agenda (see Figure 2), explained the goal of the workshop and its expected outcomes. Additionally, we justified the format, explaining why we would have consecutive rounds of discussions in breakout rooms.

Dynamics of 1st Workshop

### Agenda

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9:00 – 9:10 – Very short intro to task 1.4  
9:10 – 9:40 – First round of break-out room discussions (30 min!)  
9:40 – 10:10 – Second round of break-out rooms (same process)  
10:10 – 10:15 – Coffee Break (5 min!)  
10:15 – 10:45 – Third round of break-out rooms (same process)  
10:45 – 11:15 – Fourth round of break-out rooms (same process)  
11:15 – 11:20 – Coffee Break (5 min!)  
11:20 – 11:50 – Plenary session (Secretaries summarize, 10 min each!)  
11:50 – 12:00 – Final remarks, and Wrap up



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**Figure 2.** Slide used in the introduction of the workshop, with agenda and duration of activities. Source: authors' own work.

In session 2, we had four rounds of discussions, 30 minutes each, in three simultaneous breakout rooms. Breakout rooms were organised by the levels of change as a primary focus: Institutional, Interpersonal, and Intrapersonal, in alignment with the inventory. In each round, participants were asked to freely choose a room to visit and discuss the theoretical inputs within that particular level. The only requirement was that all participants should visit each level at least once. Partners switched rooms four times. One reason for switching rooms was to allow every participant to provide feedback all three levels. Allowing people to choose rooms freely was also to let participants spend more time discussing theoretical inputs at the level(s) that were(are)

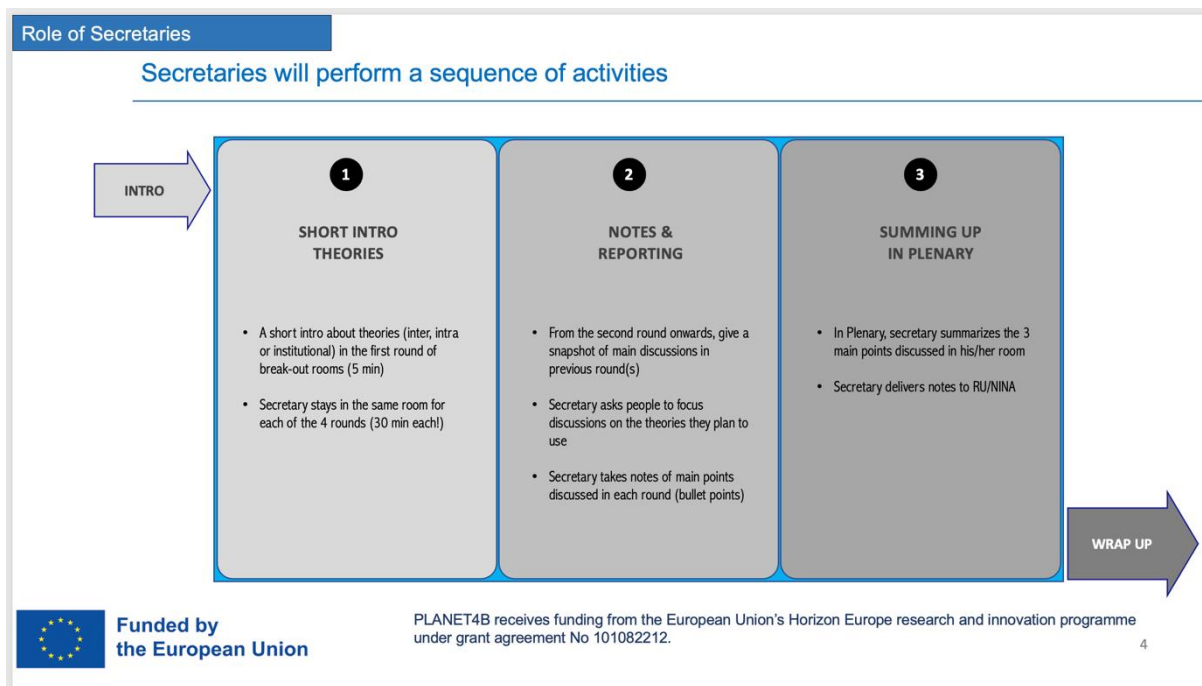
most relevant for their PLANET4B work. Another reason for allowing change of rooms was that if discussions in one room were dominated by one or two participants, the next time participants switched rooms the compositions and dynamics of the groups would change.

Each room was facilitated by an appointed secretary, a previously approached PLANET4B consortium member. In the first round, each secretary did a short presentation of the theoretical inputs from a respective level of change (in accordance with the inventory). From the second round onwards, secretaries would initially summarise discussions from previous rounds, and give the floor for discussions. We prepared a set of questions so that secretaries could guide discussions in accordance with the workshop's specific goals. The questions (Q) were as follows:

- Q1: How can these theoretical inputs help identify leverage points (for respective level of change) in biodiversity-related decision-making and policy?
- Q2: Which theoretical inputs are more useful to your case study/ work in PLANET4B, and how can they be used?
- Q3: How can these more useful theoretical inputs inform interventions aiming to influence policy and business sectors/actors?
- Q4: To which scale(s) are such theoretical inputs applicable (local, regional, or global)?

During breakout rooms, the secretaries were in charge of taking notes of the main discussion points. For that, they had the option to use a Miro board developed for that purpose. Alternatively, the secretaries could also take notes in a separate document of their preference.

In session 3, each of the three secretaries were asked to summarize in a plenary the main points discussed in their respective levels, for a maximum of 10 minutes. Because participants already had the opportunity to provide their input during the four consecutive rounds of discussion in breakout rooms, this plenary session was planned to be brief. For this, primarily the secretaries were asked to provide their input. Yet, in some cases, secretaries finished before the allocated time, and other participants had the chance to provide quick comments. Figure 3 contains the complete list of activities performed by secretaries during workshop 1.



**Figure 3.** Slide used in the introduction of the workshop, explaining activities performed by secretaries. Source: authors' own work.

In session 4, the facilitator opened the discussion for final input, comments, and suggestions. After this session, to which participants indeed contributed in both of the workshop series, the workshop was concluded.

### Selecting workshop participants

In total, we had 24 participants (all PLANET4B partners) in both series of the workshop, including secretaries and excluding the facilitator (13 people in the first and 11 in the second) (see Annex 1 for the full list of participants). The workshop was planned particularly for the partners assigned to Task 1.4 who combined a wide spectrum of disciplinary expertise from natural sciences, social sciences, and humanities, as well as rich experience in transdisciplinary projects (CU, WCMC, CG, ESSRG, IFZ, NINA, MLU, UNIPI, FiBL). Additionally, invitations were sent to case study partners from DC, OOF, CGE, and FuG, with the option to join the workshop if they considered discussing the theoretical inputs useful at this stage of the project and if their availability allowed it. After running a doodle with several options and analysing the preferences of the partners, we selected April 6<sup>th</sup> and April 11<sup>th</sup>. In the end, all the cases studies from PLANET4B were represented.

### *2.2 Materials and tools for online participation*

We developed a set of materials to be used before and during the workshop. These materials included a Miro board for secretaries to collect notes from discussions in breakout rooms (guiding questions were also displayed on the Miro board), two-pagers with an arrangement of theoretical inputs per level of change, and an adapted version of the inventory that was originally collated as part of T1.2. These materials were sent to secretaries beforehand.

Miro board: on the Miro board, which allows a collaborative online work, secretaries collected their notes during the rounds of online discussions. Alternatively, secretaries were informed that they could take notes on a separate document. In this case, such notes would need to be sent to workshop organisers afterwards.

Two-pagers on theories: all theoretical inputs per level of change were organised in two-pagers (word documents) containing very brief summaries of theories. These documents could be used by secretaries in the session "quick introduction to theoretical inputs" in break-out rooms. Such documents also illustrated theoretical inputs linking them to disciplinary origins. Such documents covered all theories in our initial inventory.

An adapted T1.4 version of the inventory: we developed a T1.4 version of the inventory with theoretical inputs separated by level of change in an excel spreadsheet. Each level (intrapersonal, interpersonal, institutional) was organised in a different tab. This spreadsheet could be used as an alternative way to introduce theoretical inputs during break-out room discussions.

Besides, Zoom sessions were created and links were sent to participants beforehand, and a PowerPoint presentation was developed to help the facilitator during the workshop.

### *2.3 The inventory of theories of behaviour, decision-making and change*

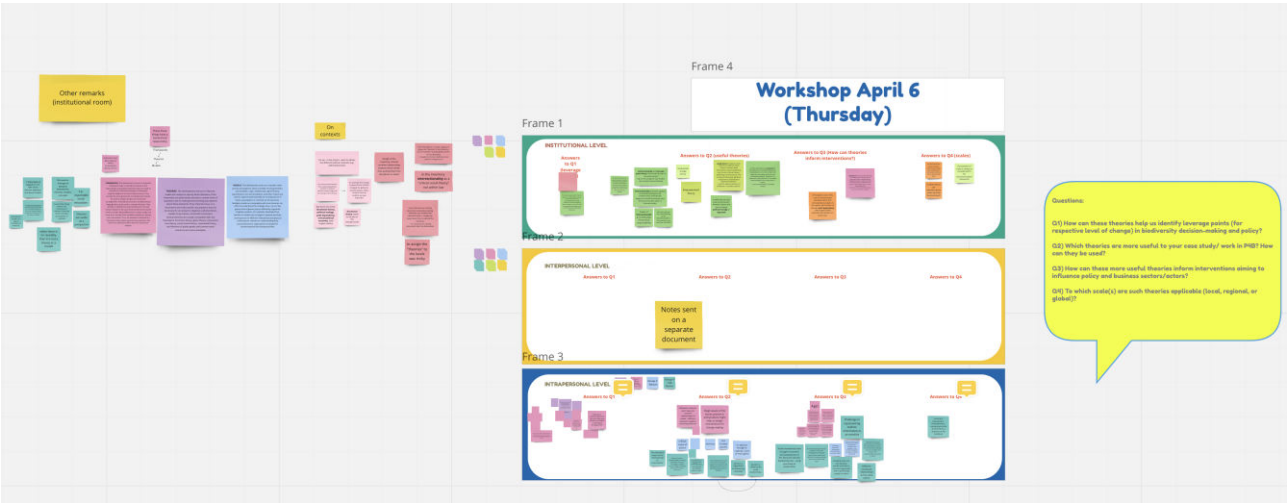
The working version of the inventory was in the form of an excel spreadsheet containing 61 theoretical inputs with respective titles, short descriptions, and some samples of literature. It was developed in Task 1.2 and all PLANET4B partners had the opportunity to contribute to it. In addition, this document was sent beforehand to all participants with a request of a prior screening. During the workshop, we took this into account and focused on stimulating discussions rather than going through all theoretical inputs in the inventory. Nevertheless, secretaries were still asked to provide a brief introduction to the theoretical inputs, to facilitate a common starting point for the discussion.

### *2.4 Strategies for collecting and analysing input from participants during the workshop*

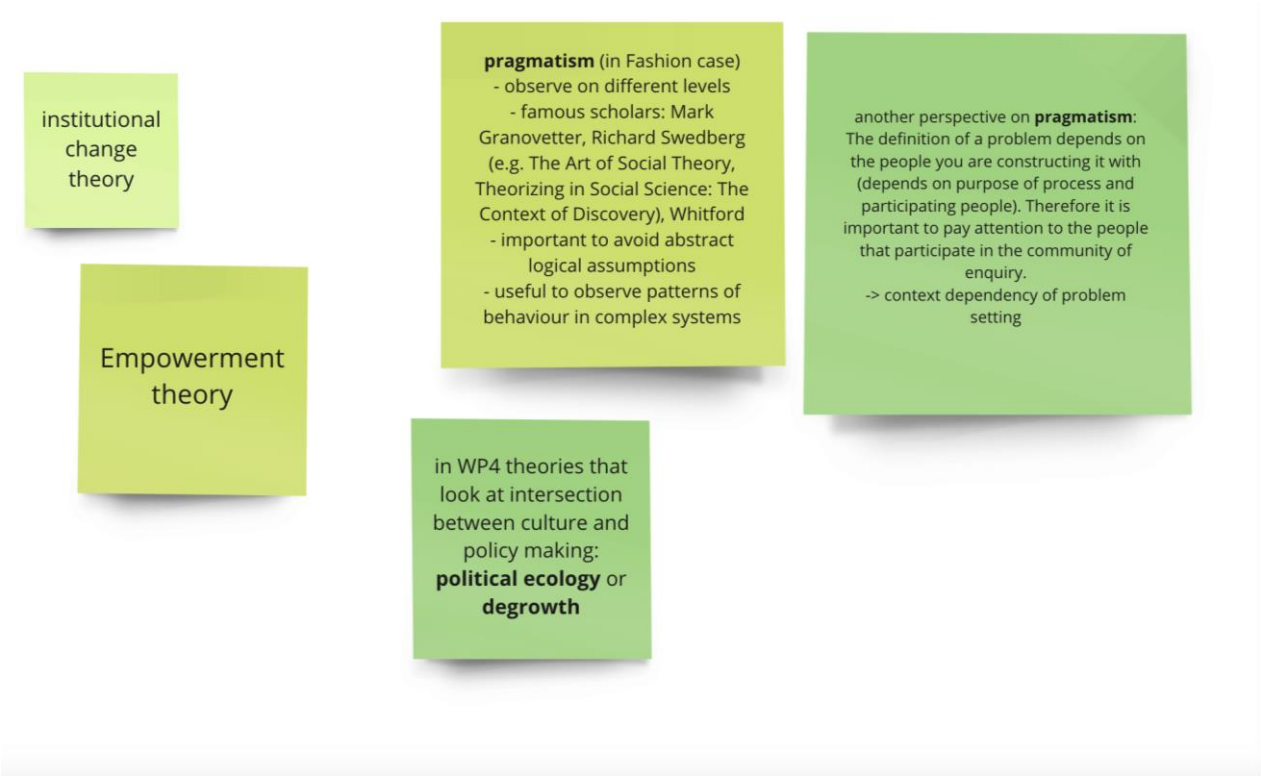
Here, we briefly describe our methods for collection and analysis of participant inputs. We used some of the materials referred to in section 2.2 to arrange the data collection. In particular, the Miro board was used for this purpose. After both workshops, we transformed all Miro board's sticky notes into text organised in an excel spreadsheet for further analysis. Additionally, two secretaries provided written notes from their respective rooms, which were also used as data input for the spreadsheet. Finally, the facilitator also took notes, which were used as additional data sources. In sum, participants' inputs were collected through the following tools:

- Miro board sticky notes
- Notes from secretaries (two of the secretaries sent notes)
- Notes from facilitator (taken during the plenary and wrap-up sessions)

Figures 4, 5 and 6 provide illustrations of the arrangement of sticky notes in both workshops' Miro boards. These notes were mainly taken by secretaries during break-out room discussions.

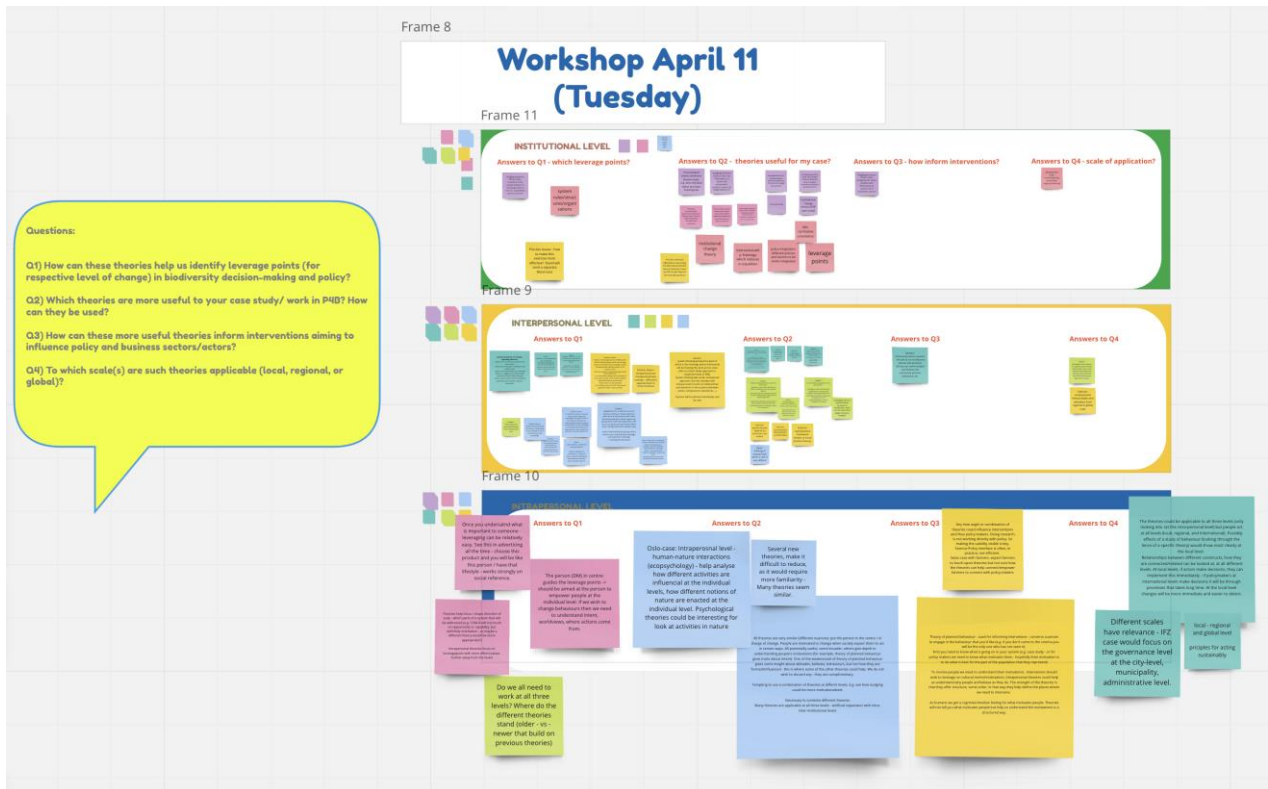


**Figure 4.** Miro board with notes from the workshop on April 6<sup>th</sup>. Source: authors' own work building on Miro board with inputs from workshop participants.



**Figure 5.** Zoom of Miro board with notes from the workshop on April 6<sup>th</sup>. Source: authors' own work building on Miro board with inputs from workshop participants.





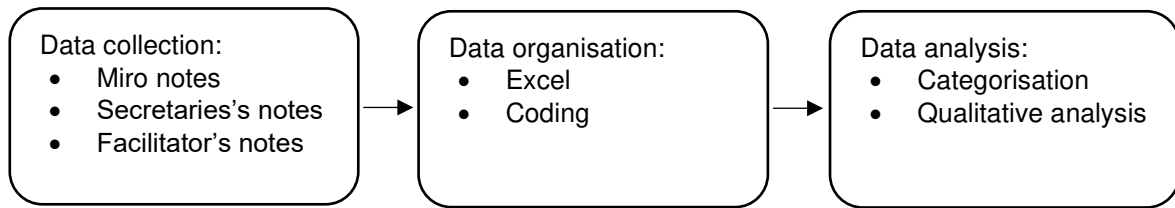
**Figure 6.** Miro board with notes from the workshop on April 11<sup>th</sup>. Source: authors' own work building on Miro board with inputs from workshop participants.

Data analysis was performed through a coding technique. For the coding, we inductively categorised all passages according to seven code categories:

- a. Inform business/policy interventions
- b. Limitations of inventory
- c. Limitations of workshop
- d. Theories from inventory
- e. Theories to be included
- f. Scales
- g. Suggestions

The categories were created to identify comments according to their relationship with the workshop's goals. To do so, the seven categories showed us the following. First, which input from participants was associated with informing business/policy interventions, and how. Second, passages and comments suggesting limitations of the inventory. Third, passages and comments suggesting limitations of the workshop. Fourth, which input was specifically directed to theoretical inputs from the inventory, identifying either how they could be used in PLANET4B, their strengths or limitations. Fifth, comments highlighting theoretical inputs that are missing and can potentially be included in the project's inventory. Sixth, the specific scales (global, regional, national, local) to which theoretical inputs can be applied. Seventh, suggestions for the next two workshops on theories.

Overall, the approach to collecting and analysing input in this workshop is summarised in Figure 7.



**Figure 7.** Methods for collecting and analysing data from the workshop. Source: authors' own work.

The next section details the main results and outcomes obtained from our workshop.

### 3 Key results and outcomes from workshop 1

Results include participants' perceptions regarding the theoretical inputs from the inventory (in terms of their usefulness in PLANET4B), theories yet to be added, but also limitations from the workshop and inventory, scales to which theories should be applied, and suggestions for the further workshops. The seven code categories, together with total number of comments received per category, are summarised in Table 1.

**Table 1.** Categories of comments in the workshop. Source: authors' own work.

Category	Outcomes (number of comments)
Suggestions	66
Theories from inventory	61
Theories to be included	24
Inform business/policy interventions	12
Limitations of workshop	11
Limitations of inventory	11
Scales	8

The next subsections explore these results. The logic for analysing comments and suggestions was, firstly, to focus on notes taken in the plenary session, where secretaries stated main points discussed in their respective breakout rooms. Secondly, the excel spreadsheet with all 193 comments was analysed in order to extract key insights.

#### 3.1 Theories from inventory and theories yet to add

Although there were four questions for discussions, in breakout rooms time was mainly dedicated to answering "Which theoretical inputs are more useful to your case study/work in PLANET4B, and how can they be used?". It was highlighted by a number of participants that the inventory contains important theories, but also concepts, frameworks, and models. Thus, we would need firstly to differentiate what we are considering as concepts/frameworks/models/theories, and then proceed to identify key theories. In particular, it was suggested that the consortium follows / adopts some of



the well-established interdisciplinary definitions of frameworks, theories, models (Ostrom, 2007), and concepts (Bryman, 2012), as provided below:

Frameworks: “[t]he development and use of a general framework helps to identify the elements and relationships among these elements that one needs to consider for institutional analysis. Frameworks organize diagnostic and prescriptive inquiry. They provide the most general list of variables that should be used to analyse all types of institutional arrangements. Frameworks provide a metatheoretical language that can be used to compare theories. They attempt to identify the universal elements that any theory relevant to the same kind of phenomena would need to include. Many differences in surface reality can result from the way these variables combine or interact with one another. Thus, the elements contained in a framework help analysts generate the questions that need to be addressed when they first conduct an analysis.” (Ostrom, 2007, p. 25)

Theories: “[t]he development and use of theories enable the analyst to specify which elements of the framework are particularly relevant to certain kinds of questions and to make general working assumptions about these elements. Thus, theories focus on a framework and make specific assumptions that are necessary for an analyst to diagnose a phenomenon, explain its processes, and predict outcomes. Several theories are usually compatible with any framework. Economic theory, game theory, transaction cost theory, social choice theory, covenantal theory, and theories of public goods and common-pool resources...” are some examples. (Ostrom, 2007, pp. 25-26)

Models: “the development and use of models make precise assumptions about a limited set of parameters and variables. Logic, mathematics, game theory, experimentation and simulation, and other means are used to explore systematically the consequences of these assumptions in a limited set of outcomes. Multiple models are compatible with most theories. An effort to understand the strategic structure of the games that irrigators play in differently organized irrigation systems, for example, developed four families of models just to begin to explore the likely consequences of different institutional and physical combinations relevant to understanding how successful farmer organizations arranged for monitoring and sanctioning activities.” (Ostrom, 2007, p. 26)

Concepts: “...are the way that we make sense of the social world. They are essentially labels that we give to aspects of the social world that seem to have common features that strike us as significant. ... the social sciences have a strong tradition of concepts, many of which have become part of the language of everyday life. Concepts such as bureaucracy, power, social control, status, charisma, labour process, cultural capital... alienation, and so on are very much part of the theoretical edifice that generations of social scientists have constructed. Concepts are a key ingredient of theories. Indeed, it is almost impossible to imagine a theory that did not have at least one concept embedded in it.” (Bryman, 2012, p. 8)

Nevertheless, leverage points (LP) and intersectionality theories were cited several times, and considered important to be used in concert to inform the final list of theories to be selected (i.e. all the frameworks/theories/models/concepts we select to compose our final PLANET4B theoretical framework would be informed by or related to

intersectionality and/or LPs). LPs, in particular, can be applied to all cases as part of the system analysis and identification of particular interventions in the systems. In some sessions, participants agreed on the necessity to merge theoretical inputs. The following frameworks/theories/models/concepts were also cited (in some cases, a number of times), in the discussions of respective levels of change, noting that their categorisation is not exclusive but rather indicative for how project partners perceived their prevailing origins and use.

*Institutional*: decolonial theory, political ecology, path dependence, critical political economy, institutional change theory, pragmatism (aligned with systems theory in all levels of change and suited to understand the context dependency of problem setting within cases), degrowth, nudging, psychological biases (zero-risk, status quo, framing), ontological politics, worlding environmental governance, telecoupling, post-normal science, responsible research and innovation (RRI), systems thinking (falls under institutional, but has overlaps with interpersonal in terms of relationships and dynamics in the systems).

*Interpersonal*: institutional change theory, commons, pragmatism, feminist care ethics, community action research, cultural evolutionary theory, cultural action research, nudging (that could be applied via choice experiments), ontological politics, COM-B (capability (C), opportunity (O), and motivation (M) as three key factors capable of changing behaviour (B)), theory of planned behaviour (it gives some insight about attitudes, beliefs, behaviours, but not how they are formed/influenced).

*Intrapersonal*: ecopsychology (particularly the role of emotions and feelings awakened by activities in nature), BIT's (The Behavioural Science Team) framework of EAST (Easy, Attractive, Social, Timely), pragmatism, feminist care ethics, behavioural theories also associated with experimental games (the role of communication, trust, etc.), nudges, psychological biases, critical social theories.

Concerning the relationship of theoretical inputs with the case studies planned in the project, some participants pointed out that it would be important to include theories that help us understand the ability of people to respond and change things (nature of response and ability to respond), and inform us in which context people can be instigators of change. Intersectionality, for example, was one theory considered crucial for contextualizing the practical responses/abilities of change enablers (civil society, policy, business actors).

In terms of additional theoretical inputs (concepts/frameworks/theories/models) to be included in the inventory, the workshop participants cited: economic and policy-making theories such as institutional rational choice, theories that consider geopolitical and/or national political contexts, empowerment theory, use of general concepts adaptable to solve specific problems (strategies must be adaptable to the distinct realities, composition and values of different cases/systems), theories of age or inter-generational dynamics, behavioural theories of income (when more income defines the behaviour and choices that can eventually have impact on the environment), marketing theories, theories of emotions/feelings (as regards to nature; for example, in the Amazon, the environment around the "peoples of the forest" and Indigenous peoples was viewed as being alive with agency; 'the spirits of the forest'), relationality, embodiment and embeddedness (looking beyond the skin as a definition of the

individual), property rights theory, transaction costs theory, classic public policy and decision-making theories (e.g. incremental theory, political system theory, institutionalism, group theory, and elite theory). It was also suggested that the inventory of theories (including concepts/frameworks/models) should be verified against some of the review articles dedicated to behaviour, decision-making, and change. It was confirmed that for next workshops of T1.4, further review articles will be assessed by consortium partners to enable an extended discussion of additional theoretical inputs that may be useful.

### *3.2 Informing policy and business interventions*

It was discussed that understanding age-related behaviour and culture, as well as inter-generational relationships, was crucial for tailoring interventions. In some contexts, it was perceived, the youth are more willing to live differently and change the frameworks of society compared to what was established by the older generations. By analysing the social context of who we target as change enablers and the values that inform inter-generational change, we can understand potential nuanced differences in the values of different age groups. How to make business and policy actors understand their 'responseABILITY' (Haraway, 2008) and acknowledge that young people cannot be handed over responsibilities without the ability to contribute to decision-making? A suggestion was made particularly in relation to this was to consider citizen assemblies as an intervention well-suited for taking advantage of many of the theoretical inputs. Citizen assemblies, with participation of youth, policy-makers and business actors, could be an intervention method that brings these different generations together, allowing youth and other agents to potentially influence change. Another dimension highlighted was the pressure youth movements have put on policy-makers around climate change and biodiversity loss (protests, such as Extinction rebellion and Fridays For Future, where youth has been physically present in front of decision-makers' offices).

One challenge, as participants observed during the workshop, is that doing research often does not involve working directly with policy. According to some participants science-policy interface is often, in practice, not efficient. Hence, making the interventions' applicability visible and policy-relevant is key. Which theories can inform us on how to inform business and policy actors of the (potential) effectiveness of interventions? According to workshop' participants, an individual (decision-maker) is at the centre. This individual somehow guides the leverage points. In this sense, participants suggested that interventions should aim to empower/change the behaviour at the individual level. If we wish to change behaviours, then it is also important to understand intent/motivations, worldviews, where the actions of decision-makers come from, apart from the socio-environmental context. How to understand their motivations? Participants observed that interventions should seek to leverage cultural norms/motivations. Accordingly, intrapersonal theories could particularly help us on this.

Communication and learning were also considered key by workshop participants. Environmental information might be better conveyed depending on emotive messaging and language. In this regard, employing intrapersonal methods in communication around the biodiversity crisis can be implemented particularly through experiential games. Yet, there are other dimensions and strategies to communication, such as

education, campaigns, commercials with nudging strategies, or building on other psychological or social aspects (such as peer-pressure, the desire to belong to a certain group propelling people to change their attitudes, etc.). Participants also suggested that it is important to target how people learn. How can we relearn for example, our relationships with nature? How do we reflect on and reframe decision-makers' understanding of their positions and responsibility for nature?

Regarding scales for interventions (from local to global), participants observed that some theories can be effective on community level but not at an international level. As the project will engage with experimental interventions, it is not pre-determined to which extent and how interventions can be scaled up from the local level. Participants suggested that we should aim at a better definition of how we understand problems for biodiversity at various scales, and how local issues can be upstreamed to the global scale. How can those problems be distinguished and what theories can be considered for each scale? For some cases, different scales can be simultaneously relevant. Another point regarding scales is the speed of transformations. At local and smaller scales, when actors make decisions, they can usually implement them faster than in national or international contexts, although this is not always the case. When actors at international scales make decisions, they will usually be implemented through processes that take considerably longer. Thus, changes at the local scale typically have the potential to be faster and easier to detect.

### *3.3 Suggestions for workshops 2 and 3*

More than once, the distinction between frameworks, theories, models, and concepts was raised in discussions. Some suggested we could work with models as a way to contribute to theories. For example, through establishing a strategy to understand and consider the hierarchical relationships between frameworks, theories, models, and concepts. Additionally, it would be helpful to improve our understanding of how theoretical inputs from the inventory interrelate (beyond categorising them into disciplines or levels).

The categorization of interpersonal, intrapersonal, and institutional levels was criticised. For example, at the interpersonal level, "why do we tend to emphasise the relationship between human and human, but not between human and non-human?" In the intrapersonal level, when we use psychological theories, one partner observed that it might be useful to include the consideration of institutional constraints to human behaviour, because psychological approaches tend to "blame" the individual (while the role of government, business sector, communities, groups, etc. remains unclear), whereas institutional constraints have a significant influence on people's awareness regarding biodiversity. Hence, in PLANET4B we are looking at both individual and institutional levels. Some partners suggested that there is a thin line between intrapersonal and interpersonal levels, pointing to the need to use a clearer gradient of categorisation, and, also more reflection on how to combine intra-interpersonal approaches. A suggestion to overcome artificial separation of levels was also to ask "inter-level" questions, for example, how nudging (intrapersonal) could be more institutionalised (institutional).

Partners provided additional suggestions. One proposition was to ask the question: "to what extent can these listed theories contribute to transformative change?" Some

observed that it will become easier to identify leverage points for transformation as research within case studies advances. Another partner asked: how do we check that we are not missing something important? One suggestion for addressing this question was to make sure to analyse relevant review papers that have already reviewed many theories. It was also suggested to better define the goal of our theory workshops. If outcome-focused, case studies could report on the theories underlying their data collection and expected policy recommendations (once they are aware); alternatively, if process-focused, workshops could propose activities to make PLANET4B partners more “theory sensitive” regarding their own and other partners’ worldviews. As such, it would be valuable if all partners uniformly participated in these workshops (and not only research-oriented partners). Also, it could be useful to have more time for the activity. To improve the process, a partner suggested to use an adaptive process in these workshops (meaning that further workshops will be adapted based on inputs and suggestions from workshop 1). Biases in terms of selecting specific theoretical inputs were also pointed out as important to consider, to avoid selecting only theories with which we are familiar.

It was also reiterated that further exchanges beyond T1.4 workshops would be encouraged within WP3 among project partners to ensure cross-fertilisation between case studies. For the next workshops, some participants pointed that understanding how the theories were (or are) implemented in other works would be very helpful.

### *3.4 Limitations of inventory and workshop*

Some limitations of the inventory were pointed out. First, some participants observed that we do not have yet listed in the inventory all the theoretical inputs we need in PLANET4B. Second, as regards to the design of the inventory, participants recommended considering relationships between theoretical inputs rather than allocating them to disciplines or intra-, inter- and institutional levels of change. Third, some theories might not have been categorized correctly (and/or sufficiently inclusively) in terms of their disciplines. For example, intersectionality was categorised as part of law but it is a critical social theory and therefore should be part of sociology or broader social sciences. Fourth, the number (#61) and disciplinary range of theoretical inputs required more detailed pre-screening/selection than anticipated by participants before the workshop. Fifth, theories in the inventory should be associated with the proposer, or a “resource person”, and respective contact information (e.g. email). This person could be contacted for more information by project partners. Such limitations can be transformed into suggestions for improving our inventory.

As for limitations of the workshop, participants observed a few technical and conceptual issues. As regards to technical issues, it was suggested that all participants should have editing rights to the Miro board (since only secretaries had such editing rights initially). Some other technical difficulties were reported in accessing the Miro board, such as the size of the frames provided. In terms of conceptual issues, participants generally felt the level of difficulty and complexity in talking about theoretical inputs was adequate but not in all cases. Although the four questions were addressed in breakout rooms, participants mainly discussed Q2. A few participants also discussed Q4. At the current stage of the project, participants perceived Q1 and Q3 as rather difficult or abstract to discuss in some detail. For these questions, participants provided broad comments/feedback. In addition, four questions were

considered too many for 30-minute breakout groups. It was considered difficult to have a discussion in breakout rooms when each participant has a different frame of reference – their disciplinary background or case study – for choice of theories. Thinking of several levels within a case study was also considered difficult, as well as shortlisting key theories at this stage. Moreover, a few participants that confirmed participation did not join the workshop, potentially preventing a richer debate. For the following workshops, it would be important to invite all (intensive) case study partners. In addition, it would be important to work better on time allocation for activities within the next workshops.

## 4 Conclusion and outlook

This workshop was the first opportunity for partners to debate our inventory of theories/frameworks/models/concepts. As such, it is natural that some limitations were present. Nonetheless, the workshop's outcomes met our expectations. The inventory of theories was debated, and some key theoretical directions were identified. These include particularly the following theoretical inputs: decolonial theory, political ecology, path dependence, critical political economy, institutional change theory, pragmatism, degrowth, nudging, psychological biases (zero-risk, status quo, framing), ontological politics, worlding environmental governance, telecoupling, post-normal science, responsible research and innovation (RRI), systems thinking, commons, feminist care ethics, community action research, cultural action research, cultural evolutionary theory, ontological politics, COM-B, theory of planned behaviour, ecopsychology, BIT's framework of EAST, behavioural theories, and critical social theories.

Yet, we finished the workshop with the agreement that additional theories would be further investigated, and with some concrete suggestions on how to do so. Most importantly, economic and policy-making theories such as institutional rational choice, theories that consider geopolitical and/or national political contexts, empowerment theory, theories of age or inter-generational dynamics, models of income, marketing theories, theories of emotions/feelings, relationality, embodiment and embeddedness, property rights theory, transaction costs theory, classic public policy and decision-making theories (e.g. incremental theory, political system theory, institutionalism, group theory, and elite theory) were theoretical inputs considered important for addressing as part of next steps.

Although our goal was to identify theories per level of change (intrapersonal, interpersonal, institutional), workshop participants questioned the relevance of such a categorisation, suggesting that in further workshops these three levels should be better refined or conceptualised, for example, in a gradient. Ideally, relationships between theories should be more explicit before further workshops. It was challenging to identify specific theories for each case study or further work for PLANET4B at this stage of the project. In addition, the participation of case study partners might be relevant for such a process of “narrowing down” theories. Partners suggested that we could work on identifying key theories per case study, and, potentially, collectively for case studies with similarities, before the next workshop. With regards to how theories could inform interventions targeting civil society, policy, and business stakeholders, participants pointed out some directions that would be further debated with consortium partners. In particular, it was highlighted that additional theories related to intergenerational

dynamics, psychological biases affecting decision-making, science-policy interface, and the role of communication strategies should be explored further.

These conclusions provide important contributions to our work in the following months, before workshop 2 scheduled for October 2023. A closer association of activities in Work Package 3 (learning communities for transformative change in case studies) and Work Package 1 (understanding theories of decision-making and intersectionality for a transdisciplinary framework of analysis) will provide ground to better understand which key theoretical inputs can inform each of our 11 case studies in more specific terms. Such theoretical inputs should then be incorporated into the inventory before workshop 2. Accordingly, in workshop 2, we will have a group of more specific theoretical inputs to work with, and the process of narrowing down key theories from the inventory should be possible. In addition, in the following months, a preliminary association of cases with respective leverage points will be initiated within WP3.



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## **Statement on data availability**

Data used to produce this report include the working version of Deliverable 1.2 “Inventory of behaviour science theories potentially influencing biodiversity decision-making”, a Miro board with content filled during the workshop, notes received from two secretaries and notes taken by the facilitator. None of these data sources are publicly available since they include personal data from participants.

## **Statement on ethics**

This report does not include pictures from the workshop’s participants. Yet, their names have been included in Annex 1. The authors have no conflicts of interest to declare.

## Annexes

### *Annex 1 List of participants in workshop 1*

#### **Participants attending on April 6<sup>th</sup>, 2023**

#	Participant	Institution
1	Bonetti, Marta	UNIFI
2	Cooke, Grania	UNEP-WCMC
3	Franklin, Alex	CU
4	Gronda, Roberto	UNIFI
5	Inoue, Cristina Y. A.	RU
6	Kaye, Sebastien	UNEP-WCMC
7	Kelemen, Eszter	ESSRG
8	Lampredi, Giacomo	UNIFI
9	Mendes, Vinícius	RU
10	Schleiffer, Mirjam	FiBL
11	Soliev, Ilkhom	MLU
12	Villa, Matteo	UNIFI
13	Wähler, Torsten	MLU
14	Zolyomi, Agnes	UNEP-WCMC

#### **Participants attending on April 11<sup>th</sup>, 2023**

#	Participant	Institution
1	Aspøy, Håkon	NINA
2	Barton, David	NINA
3	Bredin, Yennie	NINA
4	Home, Robert	FiBL
5	Karner, Sandra	IFZ
6	Junker-Köhler, Berit	NINA
7	Louckova, Blanka	CG
8	Ofori-Amanfo, Patricia	CG
9	Mendes, Vinícius	RU
10	Sabir, Ghezal	FiBL
11	Vaño, Simeon	CG
12	Vergamini, Daniele	UNIFI