

Workshop report on theories and its implication for practice

Deliverable number: D1.6

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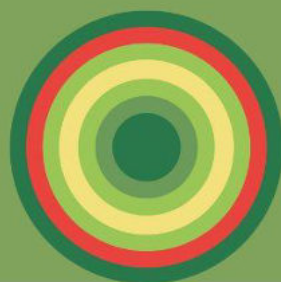
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BETTER DECISIONS FOR BIODIVERSITY AND PEOPLE



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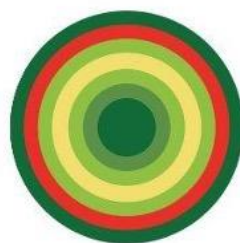
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List of abbreviations and acronyms

Acronym	Definition
CG	CzechGlobe – Global Change Research Institute of the Czech Academy of Sciences
CGE	Culture Goes Europe
CM	Consortium Meeting
CU	Coventry University
DC	Dadima's CIC
ESSRG	Environmental Social Science Research Group
FIBL	Research Institute of Organic Agriculture
FUG	Forum Urban Gardening
GD	GoodIssue nonprofit Ltd.
IFZ	Interdisciplinary Research Centre for Technology, Work and Culture
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
KPI	Key Performance Indicator
MLU	Martin Luther University Halle-Wittenberg
NINA	Norwegian Institute for Nature Research
OOF	Greater Oslo Council for Outdoor Recreation
PLANET4B	understanding Plural values, intersectionality, Leverage points, Attitudes, Norms, behaviour and social Learning in Transformation for Biodiversity decision making
RU	Radboud University
UNIPI	University of Pisa
WCMC	UNEP-WCMC
WP	Work Package
WS1	Workshop 1
WS2	Workshop 2
WS3	Workshop 3

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Executive summary

- This report summarises and reflects upon a third workshop within PLANET4B T1.4 aiming to discuss theories applicable to biodiversity decision-making. Previously, in the first workshop we debated a theory inventory and identified potentially applicable theoretical inputs. In the second, we explored which theories from an updated inventory have the potential to inform the work within each of the eleven case studies in the project. In the third workshop, we complemented our previous work by discussing two theoretical frameworks and their practical implications for the research process, planning of interventions, policy recommendations, and our communication activities.
- The overall goal with these three workshops was to steer project-wide dialogues to make partners more aware of each other's epistemologies, as well as to fine-tune the theoretical backbone informing the work in cases and in the project.
- The third workshop was held online, and we produced audio-visual records and notes during the experience; these notes and audio-visual records were analysed qualitatively.
- We explored the applicability of a "Reflexivity-Contextualisation Matrix", and reflected on the ups and downs of the "Leverage Points Framework," to find that, although both frameworks have been used in the project, it is important to complement them with other approaches to improve transdisciplinarity and inclusivity.
- In the process, we learned four "practical" lessons from applying theoretical frameworks in transdisciplinary research; such lessons are linked to: 1) the practice of selecting interventions, 2) the research practice itself, 3) the practice of policy change, and 4) the practice of communication within and beyond the project.
- These learning outcomes can be applicable to other research projects, particularly transdisciplinary ones, either during grant proposal writing or in more advanced stages of project development.
- This is particularly relevant for biodiversity research in light of recent calls to bring plural voices and multiple ways of knowing toward more effective, just and equitable solutions to global biodiversity loss.

1 Introduction

In PLANET4B, Work Package 1 ('Understanding theories of decision making and intersectionality for a transdisciplinary framework of analysis') steered a diverse constellation of partners working in intensive (place-based) and extensive (sectoral) case studies towards building mutual understanding about our different disciplines, experiences and background, while co-developing a transdisciplinary diagnostic framework for biodiversity (more information about the project's case studies is available in Mendes et al., 2023b). WP1 involved a series of tasks to explore how biodiversity discourses, intersectionality, and social sciences theories have been/can be applied to biodiversity. In this context, the transdisciplinary diagnostic framework in development in WP1 aims to synthesise the work of all tasks. The purpose is to build knowledge on biodiversity decision-making to help us steer biodiversity prioritisation at different levels of change (intra-personal, inter-personal, and institutional).

We use the term "diverse constellation of partners" to avoid the simplistic dichotomy between academics (or "scientists") and practice-oriented partners, to make it clear that, in PLANET4B, we carry multiple identities and knowledge. Our project includes academics working in non-research institutions (NGOs, environmental organisations, etc.), practice professionals working in research universities, academics who are also activists, and many other lived experiences. Although we avoid the research-practice dichotomy, sometimes in this report we will refer to partners working on research activities as "research partners", and to partners working on case study/learning community implementation as "practice partners", for the sake of clarity. In this context, WP1 helped us connect and collaborate, aware of our ontological and epistemological diversity, as well as our rich experiences, identities and backgrounds. In this direction, Task 1.4 contributed to building mutual understanding, in line with epistemic justice, through a series of 3 workshops (WS1, WS2, WS3).

Previously, in WS1 and WS2 we debated theories applicable to biodiversity decision-making, their commonalities and conflicting mechanisms. Building on that work, in WS3 we strived for pragmatism, in the most co-developed workshop so far. This time, not only WP1 and WP2 ("Mapping and advancing transformative and creative methodologies to trigger behavioural and institutional change") but also WP3 ("Learning communities for transformative change") and WP4 ("Synthesising transformative pathways and ensuring policy relevance") contributed to the co-creation and design. In WS3, we aimed to discuss a selected number of frameworks and their implication for practice.

To achieve this goal, we:

- Introduced the purposes of a transdisciplinary diagnostic framework for biodiversity decision-making, paving the way for Task 1.5;
- Built upon the experiences from case study dialogues (a series of case-by-case meetings, held previously to WS3), to debate how reflexivity and contextualisation contribute to the selection of interventions. In doing so, we assessed the Reflexivity-Contextualisation Matrix (RCM)¹, developed in WP2;
- Deliberated upon the possibilities and limits of the Leverage Points Framework (LPF)² as a starting point for a new transdisciplinary framework for biodiversity;
- Discussed how cases imagine scaling out the outcomes of interventions and research into policy recommendations; importantly, policies here are considered a type of practice in the context of our project.

This report documents the ideas behind WS3, as well as the learning outcomes and lessons learned from the experience. Across the report, we reflect upon the complexities involved in the transdisciplinary research process in PLANET4B. With this in mind, this report is organised as follows. Section 2 provides context about the overall goal of WP1 which culminates in a transdisciplinary diagnostic framework. Section 3 summarises the co-creation pathway preceding WS3, and presents an outline of the workshop. Section 4 fleshes out the workshop's outcomes, in subsections dedicated to the RCM, the LPF, and policy recommendations. Section 5 problematises the achieved learnings and four lessons as we advance in PLANET4B. Section 6 concludes the report by outlining how our results feed into other WPs and tasks.

2 Contextualising what we mean by a transdisciplinary diagnostic framework in PLANET4B

One of PLANET4B's goals is to better understand decision-making processes affecting biodiversity. Practically, everything we do in modern life has consequences for biodiversity. But it is complex to link our actions with the decision-making process behind them, how our values and identities inform such actions, and their consequences for biodiversity. During this session of WS3, we explored the complexity involved in answering questions such as: What is biodiversity-relevant decision-making? Which theoretical frameworks can help us better understand decision-making processes affecting biodiversity? One way of approaching such questions is by observing that every day we make several personal, community and institutional choices (i.e. we make decisions) about the way we consume, the way we act, and the kind of Nature experiences we seek. Although some of these decisions might be unconscious, they have consequences for biodiversity.

¹ The RCM is a framework that offers new lenses for reflexivity during the process of selecting interventions, applicable within and beyond PLANET4B. Although developed in WP2, we discussed it in our WP1, Task 1.4, because this tool provides practical insights on how behaviour science theories can be used in biodiversity decision-making. In fact, one of the requirements of Task 1.4 workshops is that we discuss "preliminary findings on key behaviour science theories potentially influencing biodiversity decision-making."

² The LPF is a framework that illustrates how interventions in specific places (leverage points) "within a complex system (a corporation, an economy, a living body, a city, an ecosystem) can produce "big changes in everything" (Meadows, 1997, p78). We discussed this framework because it has been informing the work across PLANET4B, especially in WP3.

So, our identities and backgrounds are linked to the decisions we make about processes affecting biodiversity. However, we have little knowledge about how exactly our values and identities (intra-personal level) and our collective actions and relationships (inter-personal levels) influence our decision-making as regards biodiversity. Likewise, although we know well how our governance instruments and regulations (institutional level) affect biodiversity, we know little about how such policies and regulations consider biodiversity, and what impacts these considerations. To fill these knowledge gaps, under WP1 we have been surveying theories and discourses in a way that is sensible to a plurality of voices in our consortium.

We collated and analysed different theoretical inputs from various social sciences disciplines (see Aspøy et al., 2023), to understand how such theories help us understand biodiversity-related decision-making. We also conducted a biodiversity discourse analysis to understand how biodiversity is framed by distinct groups in society, for example, governments, NGOs and the private sector (Schleiffer et al., 2023). We did that to make sure that our work, both in collaborative tasks and in more individual exercises, respects our differences. To make this process more robust, we cooperated on a series of workshops to develop a methodological framework for intersectionality. Importantly, although such an intersectionality framework was developed in the context of PLANET4B, it is certainly applicable to other transdisciplinary projects (Thaler and Karner, 2023).

Through these activities, we are now more aware of the different ways our disciplines think of decision-making, policies and interventions. This was fundamental for our current Task 1.5, under which we are co-developing a transdisciplinary diagnostic framework for biodiversity. A transdisciplinary diagnostic framework can be interpreted as a “collection of multiple frameworks”, allowing us to build upon the work of all the previously mentioned tasks in WP1. We are aware that no single framework can tackle the complexity involved in unpacking the black box of biodiversity-relevant decision-making. Yet, we understand that a combination of frameworks can be used for that purpose.

It is important to specify why we chose the word “diagnostic” in our transdisciplinary diagnostic framework. We believe that a diagnosis is necessary before we continue with the prescriptive aspect of the project (i.e. suggesting transformative pathways for biodiversity prioritisation). We are interested in a diagnosis of which theories are informing the research within each case study. Or, still, the mental models we have in our minds when we work towards understanding how our actions and decisions affect Nature. To pave the way to building such a diagnosis, in WS2 (see Mendes et al., 2023) we designed the storytelling exercise so we could understand which “theories of change” implicitly or explicitly inform the research and interventions within cases. To fine-tune such “theories of change,” more recently, between February and March 2024, we have conducted case-by-case dialogues.

Therefore, the diagnostic part of what we are doing is to understand which theories we are using to ground our research across case studies in order to have a common language in the research-intensive and transdisciplinary parts of our project. Thus, the diagnostic aspect involves understanding each other’s theories of change, not only focusing on the logic informing the research within case studies but also on the languages we use to approach a transdisciplinary integration among our diverse

constellation of partners. In the end, we aim at a transdisciplinary diagnostic framework that can accommodate depth and clarity, to be used in the initial stages of transdisciplinary projects focused on biodiversity-related decision-making, in a way that allows mutual understanding, respect for diversity, and inclusivity.

It is important to mention that PLANET4B's transdisciplinary diagnostic framework is a work in progress within WP1's Task 1.5.

3 The co-creation and composition of the third workshop

As previously observed, in 2023 we conducted two theory workshops. Task 1.4 leaders organised WS1 as an online experience and applied it twice (April 6, and April 11, 2023) to accommodate all interested. At that moment, we assessed theories applicable to biodiversity decision-making, debating an inventory of theoretical inputs. Following WS1, this inventory was reshaped together with project members and then expanded and validated to encompass around 290 theories, concepts, frameworks, and models, from a total of eleven fields of the social sciences. More information on that workshop can be found in Mendes and Inoue (2023).

Subsequently, on October 25th-27th, 2023 we organised WS2, an in-person event in Nijmegen, Netherlands. At that time, PLANET4B partners were considerably more aware of each other's backgrounds and cases' specificities, which helped us collaborate in an arts-based storytelling exercise. In WS2, each case was invited to tell their "stories of change in an imagined scenario for the Earth in 2050". Cases reflected upon what theories underlie their work, what leverage points they aim to address, and what policy recommendations might entail for them to achieve their goals. The process and outcomes of WS2 can be found in Mendes et al. (2023a).

Building on those workshops, more recently, on March 14th, 2024, we gathered for the third and final online workshop under Task 1.4: WS3. The foundation of our idea for WS3 was two-fold. First, different from WS1 and WS2, which were centred on theories "per se", in WS3 we opted to focus much more on the practical uses of theoretical inputs (frameworks, theory dialogues). This format would allow us to better understand "how to engage with theories" more pragmatically in case studies. Second, the workshop explored how these theoretical frameworks inform interventions and potential policy recommendations emerging from cases.

Therefore, in WS3, instead of individual theories, we debated a widely-known theoretical framework (Leverage Points Framework) and an unpublished framework (Reflexivity-Contextualisation Matrix), originally developed in PLANET4B (Soliev et al., 2023). We opted to deflect from individual theories because single theories alone cannot account for explaining the mechanisms behind the "desired transformations" investigated in PLANET4B cases. In fact, as identified in Mendes et al. (2023, pp 30-33), no case study in the project has a single "theory of change" informing our ongoing research. The challenge is, then, how to make sense of our multiple theories of change through a transdisciplinary diagnostic framework that is powerful enough to illuminate the pathway for societal transformations towards biodiversity prioritisation, in cases individually, but also in PLANET4B cases as a collective.

To help us tackle this challenge, in WS3 we debated the RCM and the LPF. The RCM is a product of PLANET4B and was developed within the first year of the project. It was introduced in the deliverable D2.1 (see Soliev et al., 2023), and we held a WP2 workshop in Berlin in January 2024, where the framework was also discussed. We chose to further discuss the RCM in WS3 because it helps cases select and justify interventions that are methodologically and theoretically aligned with our knowledge and experiences, which range across multiple disciplines and sectors of activity. So, it is a practical research tool. Similarly, we selected the LPF because it has been widely used in the project, in particular in WP3/Task 3.2 (systems mapping activities). As a result, we co-designed WS3 as a space to debate possibilities, discussing strengths and limitations of both frameworks to inform our practices in PLANET4B.

Based on the above, RU, NINA and UNEP-WCMC, along with the project’s coordinators, engaged in a series of online meetings to co-create WS3, as we discuss in the next subsection.

3.1 Meetings for co-creation and design

Workshop 3 was co-designed by Cristina Y. A. Inoue (RU), Vinícius Mendes (RU), David Barton (NINA), Yennie Bredin (NINA), Céire Booth (UNEP-WCMC), Ilkhom Soliev (MLU) and Agnes Zolyomi (MLU). In total, we engaged in a series of three online meetings. Table 1 documents these meetings. Importantly, the meeting of 28/02/2024 happened initially during the “monthly progress meeting of Task 1.5” and continued in the “PLANET4B open office.”

Table 1. Online meetings for co-creation and design of the third workshop. Source: Authors’ own work.

Date	Participants	Topics discussed
27/02/2024	Cristina Y. A. Inoue (RU), Vinícius Mendes (RU)	Preliminary ideas for WS3.
28/02/2024	David Barton (NINA), Céire Booth (UNEP-WCMC), Yennie Bredin (NINA), Cristina Y. A. Inoue (RU), Vinícius Mendes (RU), Ilkhom Soliev (MLU), Agnes Zolyomi (MLU)	Presentation of initial ideas, discussion of goals and format of WS3.
01/03/2024	David Barton (NINA), Cristina Y. A. Inoue (RU), Vinícius Mendes (RU)	Fine tuning the activities of WS3.

Besides these meetings, we exchange e-mails to clarify points about such topics as our goals and challenges, the format, responsibilities of facilitators, timing of sessions, and overall functioning of WS3. In the following part, we detail the outcome of this process, i.e. the outline of WS3.

3.2 The online format of the third workshop

We opted to conduct this workshop online to allow for ample participation. Additionally, this format would be less time consuming. Table 2 presents the outline of WS3, including the goals, methodology and duration of each session.

Table 2. Outline of Workshop 3. Source: Authors' own work.

Session	Goals	Methodology	Duration
Introduction	Present and discuss the purposes of a transdisciplinary diagnostic framework for biodiversity decision-making	Presentation, with the use of slides Partner facilitating: NINA	30 min
PART 1 – Reflexivity-Contextualisation Matrix (RCM)	Discuss strengths and limitations of the RCM in the context of PLANET4B	Small room discussions (where we had pre-assigned some partners as note-takers), followed by Plenary session Partner facilitating: RU	60 min
PART 2 – Leverage Points Framework (LPF)	Discuss strengths and limitations of the LPF in the context of PLANET4B	Small room discussions (where we had pre-assigned some partners as note-takers), followed by Plenary session Partner facilitating: RU	90 min
PART 3 – From Case Study Interventions to Policy Recommendations	Debate how cases might scale out findings from interventions to policy	Plenary session Partner facilitating: UNEP-WCMC	60 min
Wrap-up	Conclude the workshop	Plenary session	10 min

Although this format was adequate to achieve our intended goals, we recognise some of its limitations. First of all, the timing of the workshop was 4h10min, which might have been too long for a meeting of this nature. To circumvent this issue at least partially, we had breaks in between sessions to guarantee some time for rest and refreshments. The main limitation of the workshop however was the online format. We are aware that an in-person meeting would certainly guarantee deeper levels of socialisation and connection, which are crucial aspects of a collaborative endeavour such as ours. But again, considering the time constraints and considerable efforts involved in having WS3 in-person, we chose the online format to concentrate our forces on the work in case studies and other project-related tasks.

4 Debating theoretical frameworks and their applicability in PLANET4B

Here we present the main outcomes of WS3. The section is divided as follows. Initially, we revisit the RCM, focusing on its strengths and limitations based on the positions of WHS3 participants. Then we do the same for the LPs framework. Finally, we demonstrate a practical use of these frameworks in PLANET4B: to help ground our policy approaches. We do so by analysing participants' opinions regarding potential policy recommendations emerging from case studies.

4.1 The Reflexivity-contextualisation Matrix (RCM)

The RCM is a tool created in WP2 (“Mapping and advancing transformative and creative methodologies to trigger behavioural and institutional change”) and introduced in Soliev et al. (2023). The RCM offers new lenses for reflexivity during the process of selecting interventions. For example, as a political scientist, one can ask: “given my training and epistemological identity, which types of intervention methods would I feel more comfortable applying in my (action) research?” The RCM helps us locate ourselves amid a wide spectrum of methodological possibilities.

Crucially, the RCM illustrates the relation between 1) how social transformations can occur (*y-axis*) and 2) the contextualisation of interventions (*x-axis*) (see Figure 1). These relations are explained below:

“On the one hand, transformations can be achieved through reflexivity – that is, by consciously and intentionally considering our relationship with others and with the issues at hand and in turn the potential impacts of our behaviour, decision-making, and daily actions, or through altering default choices – that is, changing the order or appeal of available options, which in turn nudge one towards certain choices, not necessarily consciously or intentionally.” (Soliev, 2023, p.2)

“On the other hand, the interventions vary in terms of their focus which can be more abstract – that is, addressing broader individual and social issues such as how we organise ourselves as a society, for example, in an equitable way, or more contextualised – that is, addressing specific questions such as how we address very particular biodiversity related challenges in particular areas and with particular actors.” (Soliev, 2023, p.2-3)

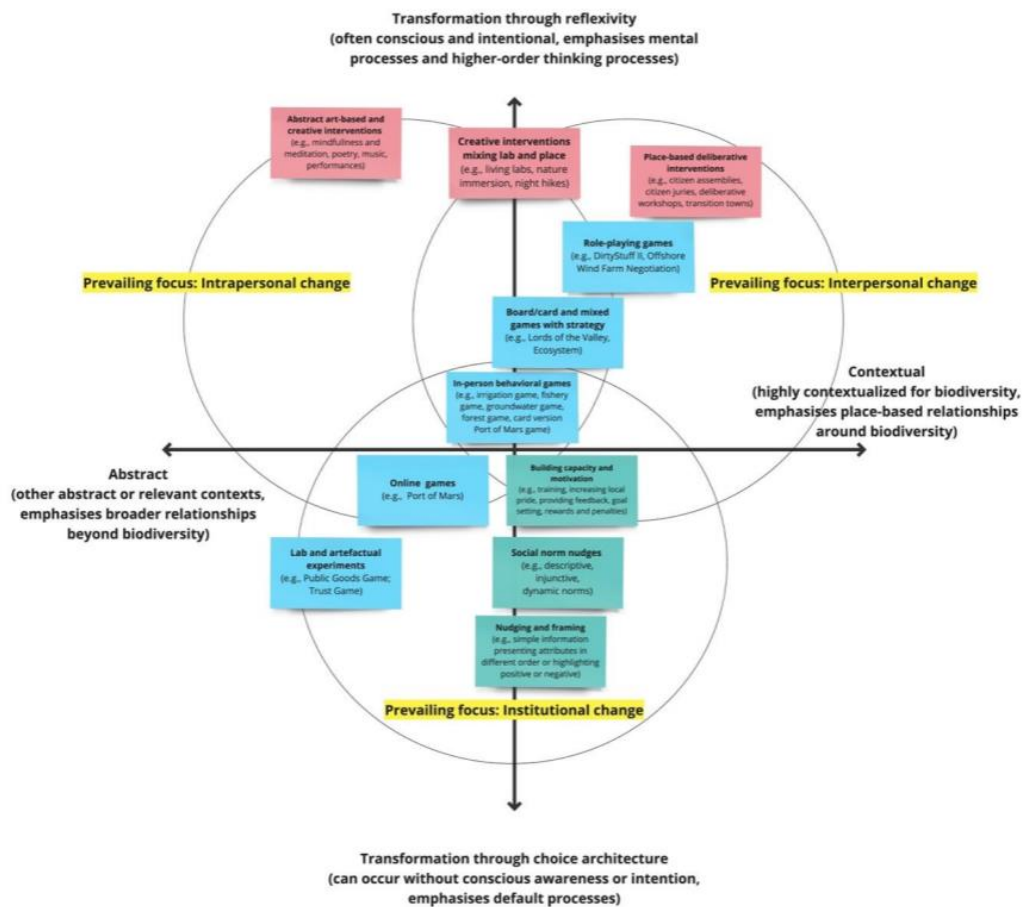


Figure 1. The Reflexivity-Contextualisation Matrix (RCM). Source: Soliev et al. (2023, p.13).

The RCM is, thus, a prescriptive framework that connects intervention methods with the type of transformation they might entail. To understand how the RCM connects with the work we are conducting in PLANET4B, in WS3 we discussed the question: “What were the strengths and limitations of the Reflexivity-Contextualisation Matrix for identifying interventions in your case?”

Workshop participants were curious about the potential of the RCM. Some have observed that the RCM helps to reflect on the level of change that every case study wants to address with their interventions. For example, the framework can support discussions between partners within case studies:

“I think the matrix is quite useful also for reflecting within the group. (...) We were hugely discussing and came up with some additional new conclusions regarding what, for example, our living lab, where it could be placed within the matrix and what actually would be an institutional change intervention. So, for that, I think it’s quite useful.”

A participant from another case study observed that the RCM is applicable to assess interventions in use:

“[...] The RCM is a useful means in which we can position the case study and consider potential interventions. Whilst the tool was not used to select our interventions, it has been useful as a point of reference for reflecting on the interventions we are using.”

Nevertheless, most of the comments in this session of WS3 were dedicated to the points in which the RCM can be improved. For some, the RCM helps to understand nudging methods, but it is still necessary to clarify what exactly a nudging intervention is. In the framework, it is not clear why nudging was associated with institutional change.

“The framework was a bit confusing. For example, for me nudging is interpersonal, so I was confused that it was placed in institutional change.”

Most cases have not yet used the RCM to select or fine-tune their current intervention methods. In fact, some cases knew from previous research what kind of interventions they would be applying in their case study, as a case study researcher observed:

“We decided for interventions based on knowledge of the system and the actual context. The methods were chosen based on what we were familiar with and, consequently, knowledge on how to adapt them to our specific needs in the case study, and finally according to the skills needed for the implementation.”

In this case, researchers did not design the intervention according to the RCM because they were familiar with the aim of the case study from the start.

Another place-based case³ researcher questioned the timing for introducing the RCM in PLANET4B, which might have hindered its applicability to inform the work in cases during the initial stages of research, as the comment below exemplifies:

“[...] The whole framework was proposed at the beginning. This framework was based on initial work, some ideas are no longer applicable (...). The framework might be useful for the initial ideas, but we did not really use it.”

The RCM is a product of PLANET4B and was developed within the first year of the project, therefore, it was not introduced in the beginning of PLANET4B. It was introduced in the deliverable D2.1 (Soliev et al., 2023), and a WP2 workshop was held in Berlin in January 2024 to discuss the matrix. Regardless, the issue of timing for introducing the framework appeared in other comments. While the aforementioned comments came from place-based cases, sector-based cases⁴ were careful about the extent to which the RCM might inform interventions. For some, the RCM was less used due to a lack of resources to implement direct interventions:

“How we consider the knowledge we are generating in our case could be implemented as interventions later because one of the struggles we have is also the lack of time and resources to actually design an intervention, even though we are not required to as an extensive sector case. (...) I have worked more at an institutional policy instrument level, and it helped me to think more about the interface between policy instruments, intervention and the scale.”

The comment above highlights the complexity of imagining interventions in extensive case studies, which are more focused on “traditional” social sciences research

³ Please, see Mendes et al. (2023b) for more information on what the term place-based case study means in the context of PLANET4B.

⁴ Please, see Mendes et al. (2023b) for more information on what the term sector-based case study means in the context of PLANET4B.

methods, such as interviews and literature reviews. Extensive cases are required to “engage directly” with processes and communities (e.g. in the context of the Stakeholder Board), but most of these cases do not plan interventions at the local level. Yet, it does not mean that these cases are not applying interventions. To clarify this, it is worth revisiting the specific interpretation of “intervention” in PLANET4B’s directory of intervention methods:

[...] the term “intervention method” is used in connection with the directory to refer to methods supportive of triggering a change. Classical interventions include regulatory (laws), market-based (policies with incentives, taxes), and advisory-voluntary (education, awareness raising, etc.) interventions. Interventions also include methods aimed at changing people’s perception, understanding, attitude and/or behaviour. Our focus, in compiling the directory, has been on identifying methods capable of intervening in this latter grouping.” (Soliev et al., 2023, p.3).

Taking this into account, two things seem fundamental. First, interventions (broadly defined) are different from intervention methods. Interventions can be market-based, regulatory-based, advisory-voluntary, or targeting behavioural change. For each of these types, we can use specific “intervention methods.” In PLANET4B, intensive cases focus on interventions triggering behavioural change. Therefore, the directory provided by Soliev et al. (2023) targets “intervention methods” applicable to the specific intervention categories in which PLANET4B focuses on: arts & deliberative methods, nudging, framing and serious games. Although extensive cases are much more focused on market-based or regulatory-based interventions, these cases can apply other types of interventions as well.

This leads us to a second observation: in PLANET4B, not only intensive cases but also extensive cases are encouraged to try out behavioural change interventions. For cases not involving place-based processes or communities, intervention methods can be used with their respective Stakeholder Boards, for example. Stakeholder Boards are diverse groups of people working together with extensive cases, ideally involving representatives from business, government, environmental NGOs, media, and academic sectors (see Mendes et al., 2023b) for more information on Stakeholder Boards).

Another group of comments during this session of WS3 suggested that the RCM can lead to exclusions of colleagues with professional backgrounds that do not speak the same language as the ones traditionally used in academic research. Others, still, observed that the RCM can lead to exclusions of disciplines that do not speak the same language as the disciplines from which the RCM arises.

To cope with these challenges, some participants suggested that a longer explanation about how to implement the intervention methods, like the ones represented in the RCM, would be helpful. In this direction, another training session could be applied.

4.2 The Leverage Points Framework (LPF)

The Leverage Points Framework (LPF) was introduced by Donella Meadows (1997) to identify how to change or transform a social system. The LPF has been widely applied in the field of environmental sciences.

“In considering how to influence the behaviour of a system, Meadows identified twelve leverage points ranging from ‘shallow’—places where interventions are relatively easy to implement yet bring about little change to the overall functioning of the system—to ‘deep’ leverage points that might be more difficult to alter but potentially result in transformational change.” (Absol et al., 2017, p.31).

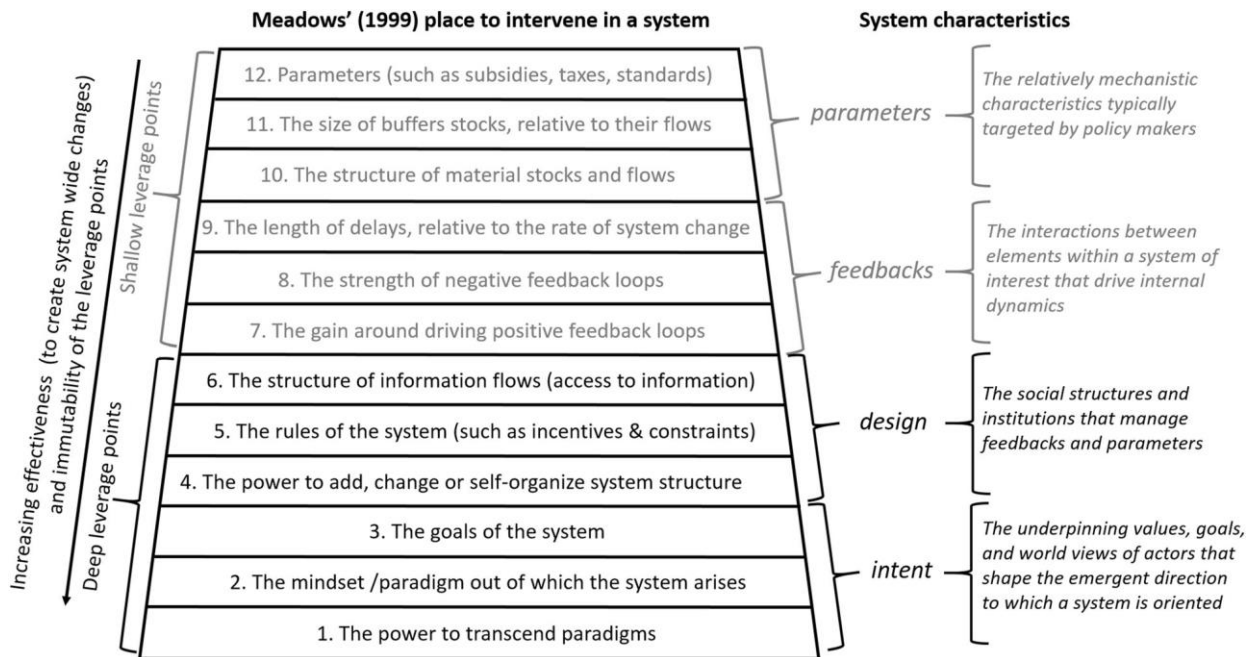


Figure 2. The Leverage Points framework. Source: Abson et al. (2017).

This framework can be helpful in identifying where to target interventions (which levels, which parts of the system, etc.), what kinds of interventions, and what are the potential system-level outcomes of interventions. Across WP1 we have used the LPF to reflect about interventions. However, this framework has been applied in different ways in the project. So, in this part of WS3, we discussed the strengths and limits of this framework in the context of informing the work in cases and helping to craft interventions. We were guided by the following question: “What are the strengths and limitations of the Leverage Points Framework (LPF) for understanding cases’ potential interventions?”

Others observed that the LPF can guide reflections about the knowledge generated from the research within cases. This is illustrated in the comment below, by a workshop participant who agreed to take notes during break-out room discussions:

“[...] They [workshop participants in a break-out room] realised that the initial interventions they had wanted to go with were quite shallow by looking at the leverage points. I think they were much more geared towards the shallow leverage point and so the leverage points framework helped them to think about this deeper aspect of knowledge that they seek to produce. And then target a rather much higher leverage point.”

Furthermore, we discussed if the LPF could potentially be used to cluster cases, for example, by types of LPs (deeper or shallower) cases are focused on. However, commenting on the work in progress for the development of the transdisciplinary diagnostic framework, a researcher observed that this is not possible yet, at the current stage of the project:

“[...] When we started to use the leverage points framework as a diagnostic tool, one hypothesis was that there would be some kind of pattern emerging between, for example, place-based and sector-based cases. (...) And honestly, there's none. Although we do not have all the (case study) dialogues in yet, there's no clear pattern emerging.”

This aspect reflects a series of other challenges that were raised during this session. One example is the fact that the LPF overlooks power relations:

“[...] So, community change, and changes in the community, was a limitation that was generally recognised. The framework does not include power structures and power relations.”

In this direction, others suggested that the LPF can be a hindrance for colleagues that do not work with the lenses of the systems thinking approach, from which the framework emerged. The comment below summarises this well, from the perspective of another note-taker concluding discussions from break-out rooms in the plenary session:

“[...] they [workshop participants in a break-out room] have different disciplinary backgrounds. They found it difficult to understand the language being used in the framework, and they realise that there would be the need for interpretation of the framework. (...) it's kind of complicated to use it at the beginning, when you don't have a background on system theory, or you are not familiarised with it, or you are working with people from outside the academia.”

A researcher commented further that the LPF focuses too much on materiality, so, it lacks tools to assess subjective aspects, such as those connected to religion:

“I think the LPF focuses a lot on materials, but it was very difficult to include religion. I am still struggling with it. Flows, parameters, feedbacks: is all imagination. Religious beliefs do not modulate behaviour by themselves, everything is connected.”

Another limitation is related to the challenge of using the LPF to help inform policy design. A workshop participant noted that:

“When actually thinking about the leverage points framework, ok, now we have the diagnosis, let's start to think about how to design a policy or how to select a policy. There is nothing there. It doesn't tell you about it. It doesn't tell you what kind of policy instruments to use or what kind of actors should be mobilised.”

A practice partner working on an intensive case study observed that the LPF is difficult to use in the analysis of materials produced in their case:

“[...] we got hundreds of post-its in our workshops. We tried to map using the LPF and it was very hard. Mainly as a non-academic. I was not looking at policy specifically, but classifying leverage points was difficult. Sometimes we selected policy recommendations. Maybe a good idea would be to discuss it with someone, doing it alone was very difficult. For example, information flows. We can look at them within the learning communities (communication with each other, sharing updates). That is different from the information flows mentioned by Meadows. She thinks of it as a system rather than a working group.”

One positive aspect about the LPF is its practical applicability for developing methodological approaches to analyse the data produced within cases. For example, code categories to analyse interview transcripts. A researcher working in an extensive case described how they have been using the LPF:

“[...] we used this framework to analyse our interviews. We used it as code, and it went very well. The interviewees mentioned implicitly many leverage points. It’s “brain work” to interpret the stakeholders’ words.”

Given the above mentioned, one key outcome from this session of WS3 is that the LPF is useful as a theoretical and methodological guideline for those working with, or able to adapt their work to the epistemologies of systems thinking. Yet, the LPF is limited when it comes to some aspects which are fundamental in PLANET4B. For example, (1) in the context of cases, the LPF does not provide tools to analyse how just or equitable the adopted interventions are. Moreover, (2) it is based on a human-nature dichotomy. It implies that humans are “engineers of change,” whereas the Natural system is objectified. As a consequence, the agency of the Natural system is disregarded. (3) The LPF is also very hierarchic – institutions, social structures, and the values of individuals are considered segregated or stratified levels which do not communicate with each other. Relationships of co-constitution between these different levels are neglected. Who can guarantee that interventions in a shallow LP (for example, LP 12 – parameters, at the institutional level) will not have an impact on deeper LPs (for example, LP 2 – mindsets, at the individual level)?

In a nutshell, the LPF needs fine-tuning and more reflection on including intersectionality and power relations in our current efforts in PLANET4B.

4.3 From interventions to policy recommendations

How can theoretical frameworks, such as RCM and LPF explored in the two previous subsections, be applicable in more practical terms, in a way that is relevant for PLANET4B? In this subsection, we use the example of practical approaches to policies in case studies to begin exploring this question. We are aware that this work will be developed in much more detail and depth in WP4. Thus, this section explores only some very preliminary dimensions of how cases have been approaching policy, as well as if (and how) theoretical frameworks have been supporting such activities.

We started this session of WS3 by observing that policies can be interpreted in many ways, from local interventions at the city level, affecting some neighbourhoods and social groups, to global regulations affecting entire sectors. Considering this broader conceptualisation of policy, we invited participants to an open reflection about our approaches to policy in case studies. Inspired by Nijmegen’s “stories of change” (see Mendes et al., 2023a), and also considering the case-by-case dialogues coordinated by NINA in the weeks preceding WS3, the following question animated the reflection: “What sort of approaches are you taking at the moment to identify specific policy interventions in your case?”

In the open plenary, a researcher working on the extensive case “Trade and global value chains” commented on the approach to policy change in this case:

“[...] we do not depart, in our case, from recommending a policy in itself, but from recommending changes in the European Deforestation-free products Regulation, a policy that is already there.”

This means that, we have at least two types of policy approaches: while some cases might provide recommendations concerning the needs of new policies, others might come up with adjustments in existing policy instruments at the EU level.

Following, a practice partner working on the intensive case “Opening Nature to Black, Asian and ethnic minority communities in the United Kingdom (DC/CU)” commented on the approach to policy in the context of this case:

“I just wanted to sort of give a perspective from where we are [in terms of policy interventions]. So, Geeta [scholar and practitioner working on the same case study] and I are quite fortunate in the sense that, through our contacts with Dadima’s, we already have contacts within Natural England, which is a government body, and DEFRA, which is also a government body. More locally, we have contacts with the Local Areas of Outstanding Natural Beauty. And even beyond some of the work we are doing directly, we’ve been contacted by local museums, at least two different museums who are interested in the work we’re doing. Not necessarily specifically on biodiversity, but on trying to engage with minorities, and through that we feel that we will have an opportunity to influence policy and decision-making. So, some of the contacts we have within Natural England are quite senior and they have even been on a number of our walks. They know exactly what we do, and they are also familiar with the work we are doing with the PLANET4B project. So, there already is a knock-on effect and we are already starting to get them to think about some of the work we’re doing and how they can take that away to potentially shape their policy.”

The example above highlights a potential strategy on how to approach policymakers. Accordingly, it is possible to work with “policy champions” to trigger change at the local level, with the potential to scale out results to EU contexts and beyond. Commenting on the quoted example, the coordinator of WP4 (“Synthesising transformative pathways and ensuring policy relevance”) observed that:

“In your case, it sounds like you’re very fortunate to essentially have good relations with key champions working in those government bodies. And it really so often comes down to having those key champions to drive that work forward and influence that type of policy change.”

Yet, it is important that the policy champions approach share pro-biodiversity values, as mentioned by the practice partner:

“So, it’s not just about finding the right people or people in those positions, but it’s about finding people in those positions that have similar interests and that makes it a double positive.”

Subsequently, a researcher working on the place-based case “Edible City and Inclusion in Graz”, introduced another dimension to policy change, based on the experience in their case study:

“[...] we have this kind of Living Lab, and it is framed as Biodiverse Edible City. The idea behind this is to better integrate existing policy strategies into something which would be a kind of joint policy strategy, tackling the planning of green spaces and the planning of food provision. So, the food landscape in the city of Graz, and also social justice issues, we are linking to quite concrete strategies which are right now under development. One is the

Biodiversity Strategy for the city of Graz. The city of Graz is the first city in Austria to translate the national strategy into a municipality strategy. There's another strategy of relevance currently in discussion. It takes a bit longer than originally thought. It's the Sustainable Food and Agriculture Strategy. (...) We are doing that by carrying out interviews with the people in charge of those strategies and being involved in the implementation and activities of those strategies in order to understand how the processes are working. (...)

What we would like to suggest is more integrated processes, so, attempting that different departments work closer together. On the other hand, we are analysing the policy documents to figure out potential overlapping. (...) We would like to elaborate on recommendations, how the planning of such an edible city could be organised differently in terms of tapping different knowledge sources, communities, knowledge and participatory processes."

The WP4 coordinator highlighted that this case could generate crucial lessons about policy coherence, scalable to other EU contexts:

"I can definitely already see, you know, one of the key outcomes here being improved policy coherence, right? And I think that's an issue right across the EU. Across the globe, in fact. And there could be some really interesting lessons from that case study that can be scaled up to other places."

In the context of the place-based case "Nature recreation in Oslo, Norway", social groups targeted for interventions, including children with disabilities and immigrants, have already a certain level of collective organisation to access nature, as noted by a researcher involved in this case:

"We know from statistics that when it comes to nature use, adults participate less in all sorts of different activities that have to do with experiences in nature. Also, access is of course more difficult for children or youth with disability. (...) [Our case is working on] integrating both immigrants and people with disabilities, different groups in society, and they are already quite organised."

Moreover, access to policy stakeholders has been a challenge, as noted by a researcher working on the case "Sustainable investment behaviour Global-EU-Norway":

"I must say the one thing we struggle with, which is more general, is that NINA, as a biodiversity Research Institute, has never before worked with the finance sector, and it's very hard for us to find policy entry points."

This might be a hindrance for devising policy recommendations and implementing interventions.

Finishing this part of WS3, the WP4 lead observed that it is crucial to focus on the enabling factors (facilitating policy change), even in cases when access to certain actors/stakeholders is difficult. Additionally, the institutional context is another important factor (how strong institutions are, in the context of each case?) while reflecting upon strategies to trigger pro-biodiversity policy change.

"We look at the experiences of the case studies, and we're taking lessons out of that. It is important to really focus on what some of the enabling factors were in ensuring that these interventions were more successful than, I think, this sort of issue around who you're engaging with. And also, how invested they are, and how strong that institution already is."

Based on the above, we identify some key points to consider in the policy activities in WP4. During this session, intensive cases were much more eager to share their experiences than extensive cases, possibly because they are endowed with more capabilities and resources due to the place-based nature of their cases. The issue of access seems fundamental here, because extensive cases are working with sectoral policies at the national, EU and/or international level, which often makes it challenging to have direct contact with policymakers. As regards intensive cases, it looks like the challenge is different: there is much variation in the types of approaches (e.g. some cases are focusing on policy coherence and integration, others on policy champions; others, still, on bottom-up political mobilisations and social-organisation targeting specific intersectional identities – e.g. associations of people with migrant background, or associations of parents of children with disabilities). This will be addressed in WP4, where tailor-made policy advice will be provided, in order to support cases and formulate policy-relevant messages.

5 Four “practical” lessons about using theoretical frameworks in transdisciplinary research

In this part, we introduce and discuss four key lessons from WS3. We term them “practical” lessons because they are related to the applicability of theoretical frameworks on everyday activities in the context transdisciplinary projects. These “practical” lessons can help us select and apply theoretical frameworks in transdisciplinary research. For each lesson, we also point risks that can emerge with the use of such frameworks, potentially jeopardising their usefulness. We ground the discussion on the empirical results from the previous section, in the context of the case studies and PLANET4B more broadly. Based on what we have learned in WS3, as well as in previous workshops, how can transdisciplinary case studies make use of theoretical frameworks in their daily work? What can we learn from the experiences in PLANET4B thus far about the practicality of using theoretical frameworks in transdisciplinary research?

Lesson 1: *Theoretical frameworks can be useful in the practice of selecting and reflecting about interventions, but such frameworks might be introduced time-wisely, and explained clearly.* In PLANET4B, to a certain extent, cases have used the LPF and the RCM frameworks to select, or at least to reflect about, interventions. Some cases are using the RCM to inspire conversations and fine-tune current activities, involving both “research partners” and “practice partners” in the decision-making process about next steps in the implementation of interventions. With the use of the LPF, some cases became more aware of “where” to target their interventions (individual, community, or institutional level), as the framework helps to connect “places to intervene” with expected impact. Nevertheless, some factors might hinder the usefulness of theoretical frameworks in the process of selecting or fine-tuning interventions. One such factor is the timing of introduction of a given framework in the project. If too late, when cases have already selected some interventions, frameworks such as the RCM face the risk of being used only for reflexivity purposes. If too early, such as the LPF (which was proposed in the grant application), the framework might be considered a straitjacket that hinders more creative alternatives. Another factor is how well are such frameworks

explained, and understood, project-wide. Difficulties in explaining or understanding theoretical frameworks might reduce their perceived value in intervention practices.

Lesson 2: Theoretical frameworks can be applicable to the practice of transdisciplinary research (processes and methods), yet it is important to have flexibility on how to apply such frameworks, to avoid using them as straitjackets. In PLANET4B, some cases have used the LPF to create code categories to analyse interview transcripts. Moreover, through a series of activities, such as storytelling exercises (see Mendes et al., 2023a), cases engaged with the LPF to identify and better understand which “theories of change” are behind the wider societal transformations that their cases’ research might trigger. The RCM has been used by cases to fine-tune their intervention research methods. For example, in a way that is more adapted to cases’ researchers training and experience. However, as we have seen in the previous section, some partners have had difficulty working with, and sometimes even understanding, the LPF and the RCM.

Lesson 3: Theoretical frameworks might be useful to ground the practice of policy change, but theories should be considered as guidance not the silver bullet, in light of the complexity of understanding which/how/if theories inform policy change. In previous workshops, and in WS3, we steered preliminary discussions on how cases have been “approaching policy”. In the Nijmegen storytelling exercise (see Mendes et al., 2023a), cases proposed potential policy recommendations that might emerge from their research. But at that stage, the policies emerging from each case were mostly conjectural. In WS3, however, we have seen that cases are applying in their everyday practices concepts such as policy coherence, policy champions, exploring institutional capacities and other enabling factors in triggering/promoting/accelerating policy change in the context of the case studies. These concepts have been applied to policy approaches, for example, through conversations with policymakers during Nature walks, via participation in policy debates at the local level, etc. Yet, although many of these concepts are (explicitly or implicitly) present in the LPF, it was not clear if that framework was a triggering factor informing how the cases have been working with policies. Furthermore, it is clear that partners require specific, tailor-made policy recommendations. While the LPF can provide guidance on understanding at what level to design policy interventions to target the envisioned change, concrete recommendations can only be co-developed with the help of policy experts working in the field.

Lesson 4: Theoretical frameworks can support the internal and external communication practices of transdisciplinary projects, but can also create barriers between research and practice, and between different research communities. In WS3, a common topic of discussion was: do the RCM and the LPF help us communicate among ourselves, or do they actually create hindrances? In the project, we have become progressively more aware of our epistemological and professional diversity, and more conscious about the logics informing the research within each case study. Also, these frameworks, in particular the LPF, helped partners understand the ideas behind system thinking and the different intervention levels (intra-personal, inter-personal, institutional). However, as it became clear during WS3, we still face challenges related to using theoretical frameworks, such as the LPF and the RCM, given our different disciplines and epistemologies, some of which do not typically use such frameworks. Moreover, it has been challenging to collaborate with practice

partners through the use of these frameworks. So, the following additional questions may help guide the selection of theoretical frameworks in transdisciplinary research: a) Which communities does our project want to connect with?; b) Do the frameworks adopted/developed in the context of the project “speak” a language that is accessible to such communities?; c) Can this framework be “translated” in a way that is adaptable to different target audiences (e.g. groups with non-research background, business, policy, civil society)?; d) How accessible is the theoretical framework to researchers coming from disciplines or research traditions different from the one originating the framework (e.g. positivists, interpretivists, etc.)?

These lessons are crucial for advancing transdisciplinary biodiversity-related research projects, such as PLANET4B, in as much as they provide direction on how to potentially use theoretical frameworks in planning, applying and interpreting interventions. Furthermore, these lessons shed light on what to avoid, and challenges that might emerge, during the selection/development/implementation of theoretical frameworks in research projects inclusive of diverse constellations of partners.

6 Conclusion and outlook

Here, we briefly reflect on the main outcomes of WS3; what we learned from this experience and what key challenges were debated, that can improve our work in the next chapters of PLANET4B.

The Reflexivity-Contextualisation Matrix (RCM) and the Leverage Points Framework (LPF) have been applied in PLANET4B’s case studies in multiple ways (to reflect upon interventions, to derive knowledge from the research, and even to inform the intervention methods selection). However, these frameworks have limitations that cannot be disregarded. For example, the LPF lacks tools to analyse power relations and injustice. Whereas the RCM is developed in the language of a research tradition that is not entirely accessible to some partners.

Although frameworks, such as the ones discussed here, can potentially be used in research on biodiversity relevant decision-making, it is important that, while devising a PLANET4B-original transdisciplinary diagnostic framework (Task 1.5), we pay attention to the exclusions that the “language of frameworks” might entail, in PLANET4B and beyond. It is challenging to devise a transdisciplinary diagnostic framework powerful enough to create mutual (trans- and inter-disciplinary) understanding considering “research partners” and “practice partners”. In line with this, any theoretical frameworks intended to be used in transdisciplinary research must strive not to disconnect some people, while excluding others. In fact, a researcher coordinating the development of the transdisciplinary diagnostic framework pointed out that:

“WP1 intends to use these frameworks as a common language, or languages, to help us communicate. Yet, we questioned the extent to which these frameworks are inclusionary, helping us to understand one another, and the extent to which they are exclusionary. (...) If you start a complex project like PLANET4B, with so many disciplines and practitioners from different fields, what's the best way to gain trust and understanding amongst one another? Since we're in a very experimental project, it's a very relevant question to ask.”

As we have seen in WS3, valuable lessons emerged from our work in PLANET4B thus far. These lessons are practical, in a way that informs further work in PLANET4B as regards how to co-develop a transdisciplinary diagnostic framework, applicable within cases, project-wise and beyond the project, in a way that 1) informs interventions, 2) is useful during research-intensive activities, 3) facilitates understanding theory-policy connections, and 4) helps structure intra- and extra-project communication. Although these lessons are applicable to PLANET4B, they might have repercussions beyond the project, informing similar transdisciplinary research endeavours in the field of biodiversity decision-making. A transdisciplinary diagnostic framework in line with those lessons might be useful to help similar transdisciplinary projects to understand at what level to design and prescribe biodiversity-related policy recommendations that are feasible while being equitable and just.

References

- Aspøy, H., Bredin, Y. K., Köhler, B. J. & Barton, D. N. (2023). Inventory of behaviour science theories potentially influencing biodiversity decision-making. (Report No D1.2). Project 101082212 – PLANET4B. Brussels: European Research Executive Agency.
- Abson, D. J., Fischer, J., Leventon, J., Newig, J., Schomerus, T., Vilsmaier, U., ... & Lang, D. J. (2017). Leverage points for sustainability transformation. *Ambio*, 46(1), 30-39. DOI 10.1007/s11625-021-00961-8.
- Meadows, D. (1997). Leverage Points: Places to Intervene in a System. *Whole Earth*, 91(1), 78-84.
- Mendes, V. & Inoue, C. Y. A. (2023). Workshop report on key theories of behaviour, decision making and change. (Report No D1.4). Project 101082212 – PLANET4B. Brussels: European Research Executive Agency. Available from: https://planet4b.eu/wp-content/uploads/2023/05/PLANET4B_D1.4_Workshop-report-on-key-theories.pdf.
- Mendes, V., Inoue, C. Y. A., Aas-Hanssen, A., Barton, D., Bolsø, R., Bonetti, M. ... & Villa, M. (2023a). Workshop report on theory commonalities and conflicts. (Report No D1.5). Project 101082212 – PLANET4B. Brussels: European Research Executive Agency. Available from: https://planet4b.eu/wp-content/uploads/2023/11/PLANET4B_D1.5_Workshop-report-on-theory-commonalities-and-conflicts.pdf.
- Mendes, V., Kelemen, E., Inoue, C. Y. A., Aas-Hanssen, A. E., Barton, D., Bolsø, R. ... & Villa, M. (2023a). Learning Communities and sectoral Advisory Boards established for 5 intensive place-based and 6 extensive sector-based case studies (Report No D3.1). Project 101082212 – PLANET4B. Brussels: European Research Executive Agency. Available from: https://planet4b.eu/wp-content/uploads/2023/12/PLANET4B_D3.1_Establishing_Learning-Communities.pdf.
- Schleiffer, M., Smith, B., Frick, R., Bredin, Y., Sabir, G., Udall, D. ... & Home, R. (2023). Report on biodiversity and related concepts perceptions. (Report No D1.1). Project 101082212 – PLANET4B. Brussels: European Research Executive

- Agency. Available from:
https://planet4b.eu/wp-content/uploads/2023/05/PLANET4B_D1.1_Report-on-biodiversity-and-related-concepts-perceptions.pdf.
- Soliev, I. (2023). One hundred ways to transform biodiversity prioritisation in individual, community, and institutional decision-making. (Research Brief). Project 101082212 – PLANET4B. Brussels: European Research Executive Agency. Available from:
https://planet4b.eu/wp-content/uploads/2023/06/PLANET4B_brief_D2.1_One_hundred_ways_biodiversity_prioritisation-1.pdf.
- Soliev, I., Franklin, A., Zolyomi, A., Smith, B. & Brown, G. (2023). Directory of key methods most suitable for biodiversity decision-making contexts. (Report No D2.1). Project 101082212 – PLANET4B. Brussels: European Research Executive Agency. Available from:
https://planet4b.eu/wp-content/uploads/2023/05/PLANET4B_D2.1_Directory-of-key-methods-most-suitable-for-biodiversity-decision-making-contexts.pdf.
- Thaler, A. & Karner, S. (eds.) (2023). Methodological framework for intersectionality analysis. (Report No D1.3). Project 101082212 – PLANET4B. Brussels: European Research Executive Agency. Available from:
<https://planet4b.eu/project-documents/methodological-framework-for-intersectionality-analysis/>.

Statement on data availability

Data used to produce this report included notes taken by the authors during the workshop, power point presentations and other sources of media (audio and video) shared with the authors via the internal data repository of the project (SharePoint).

Statement on ethics

This report does not include pictures from the workshop's participants, but includes their names, in Annex 1. According to the General Data Protection Regulation (GDPR) of the European Union (EU), names of individuals are personal data. Consent for using names was ensured during the workshop. The authors have no conflicts of interest to declare.

Annex

List of participants attending the third workshop (WS3) of Task 1.4, Work Package 1 (March 14th, 2024)

#	Participants	Institution
1	David Barton	NINA
2	Lindy Binder	CU
3	Marta Bonetti	UNIFI
4	Céire Booth	UNEP-WCMC
5	Yennie Bredin	NINA
6	Geraldine Brown	CU
7	Maryna Bykova	CGE
8	Kármén Czett	ESSRG
9	Helene Figari	NINA
10	Cristina Y. A. Inoue	RU
11	Sandra Karner	IFZ
12	Geeta Ludhra	DC
13	Subash Ludhra	DC
14	Vinícius Mendes	RU
15	Pedro Navarro Gambin	UNIFI
16	Patricia Ofori-Amanfo	CG
17	György Pataki	ESSRG
18	Ghezal Sabir	FiBL
19	Elif Tugba Simsek	CG
20	Ilkhom Soliev	MLU
21	David Steinwender	IFZ
22	Anita Thaler	IFZ
23	Agnes Zolyomi	MLU