Critical Policy Studies

ISSN: 1946-0171 (Print) 1946-018X (Online) Journal homepage: www.tandfonline.com/journals/rcps20

'Better than Doing Nothing' – constructing support for biodiversity offsetting in Finland

Thomas Molnár Karlsson & Kamilla Karhunmaa

To cite this article: Thomas Molnár Karlsson & Kamilla Karhunmaa (2024) 'Better than Doing Nothing' – constructing support for biodiversity offsetting in Finland, Critical Policy Studies, 18:2, 165-184, DOI: 10.1080/19460171.2023.2212025

To link to this article: https://doi.org/10.1080/19460171.2023.2212025

© 2023 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.

Published online: 02 Jun 2023.

Submit your article to this journal

Article views: 1703

View related articles

View Crossmark data

Citing articles: 3 View citing articles

Full Terms & Conditions of access and use can be found at
https://www.tandfonline.com/action/journalInformation?journalCode=rcps20

CRITICAL POLICY STUDIES
2024, VOL. 18, NO. 2, 165–184
https://doi.org/10.1080/19460171.2023.2212025

'Better than Doing Nothing' – constructing support for biodiversity offsetting in Finland

Thomas Molnár Karlsson[a] and Kamilla Karhunmaa[b]

[a]Faculty of Social Sciences, University of Helsinki, Helsinki, Finland; [b]SPIRAL, University of Liège

ABSTRACT

Despite widely covered controversies, biodiversity offsetting continues to be introduced in novel places as a solution to counter biodiversity loss. As previous studies have focused on contestation around offsetting, there is a lack of studies analyzing how actors generate consensus while constructing biodiversity offsetting policies. To assess this, we analyze the early phases of policy construction in Finland, a country that until recently did not have policy mechanisms for offsetting in place. Based on document analysis and interviews with experts, we argue that expert stakeholders' widespread support for biodiversity offsetting is explained by the interplay of three framings in the early phase of policy development. First, expert stakeholders share an understanding of biodiversity offsetting as a necessary policy mechanism to which there are no alternative solutions. Second, divergent views on the mechanism are accommodated through maintaining an interpretatively flexible understanding of the policy mechanism. Third, concerns over past policy failures are refurbished as opportunities to learn from in developing an experimental approach to policy implementation. This designates offsetting primarily as an expert issue for technical deliberation and forecloses other policy options, while placing high expectations on the ability of experimental governance to solve problems.

KEYWORDS

Biodiversity offsetting; ecological compensation; interpretative flexibility; nature conservation; experimental governance; evidence-based policy

1. Introduction

> [Biodiversity offsetting] fails almost every time [laughs]. But it's always better than the alternative of not doing anything (MIN#1, February 2021)

Our research process started with a conundrum. Biodiversity offsetting, or the process of compensating for ecological impacts in one place by ameliorating habitats in another, does not have a great track record of success (Zu Ermgassen et al. 2019; Corbera et al. 2021). Policymakers and expert stakeholders working on the issue are well aware of the numerous difficulties and failures of past implementations around the world. And yet, biodiversity offsetting continues to be implemented globally as a solution to the dramatic decreases in biodiversity we are currently facing, with the number of initiated offset

CONTACT Kamilla Karhunmaa Kamilla.karhunmaa@helsinki.fi Faculty of Social Sciences, PO Box 54, University of Helsinki, Helsinki 00014, Finland

© 2023 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.
This is an Open Access article distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. The terms on which this article has been published allow the posting of the Accepted Manuscript in a repository by the author(s) or with their consent.

projects increasing annually (Bull and Strange 2018). At first glance, such support does not seem to make sense. Why design and implement a policy mechanism that 'fails almost every time'?

One motivation to implement biodiversity offsetting comes from the heightened global attention placed on biodiversity loss. Efforts to stop the loss of biodiversity pre-date current talks of crises, as over 150 states as early as 1992 committed themselves to halting the loss of natural habitats in the Convention on Biological Diversity (CBD). More recently, the Kunming-Montreal Global Biodiversity Framework set a decision to 'halt and reverse' biodiversity loss by 2050 by putting in place 23 targets to be achieved by 2030 (CBD 2022). The agreement follows the spectacular failure of the Aichi Biodiversity Targets from 2010, of which not a single target had been fully met by the set date of 2020 (Global Biodiversity Outlook 5 2020).

Despite sustained global agreement for decades, tackling biodiversity loss has proven a difficult policy problem to solve. One policy mechanism, biodiversity offsetting, has gained a particularly important role in the development of possible solutions. On a global scale, biodiversity offsetting is both widely implemented and heavily debated, making the concept central in discussions about how to – or not to – tackle biodiversity loss (Damiens, Porter, and Gordon 2020; Corbera et al. 2021). The policy implementation and practical unfurling of biodiversity offsetting has faced a tumultuous path with numerous apparent failures and setbacks (Bormpoudakis, Tzanopoulos, and Apostolopoulou 2020; Corbera et al. 2021; Lockhart and Rea 2019; Lockhart 2015). As such, it can be viewed as a classic case for policy studies to trace how policy makers' incompatible views and values lead to policy controversies and disputes over the relevant 'facts' of the situation (Schön and Rein 1994). A significant part of previous research has followed this logic and focused on biodiversity offsetting policies as a site of contestation and irreconcilably 'divergent ideologies' that may result in non-implementation (Sullivan and Hannis 2015; see also Lockhart 2015; Lockhart and Rea 2019; Bormpoudakis, Tzanopoulos, and Apostolopoulou 2020; Sullivan and Hannis 2015). At the same time, the conundrum of how support is generated and sustained for a controversial and prone-to-failure policy mechanism has received less attention (exceptions include Corbera et al. 2021; Damiens, Porter, and Gordon 2020; Hrabanski 2015).

Our study aims to fill this gap by analyzing the construction and preliminary consolidation of expert support for biodiversity offsetting in Finland. As a latecomer to biodiversity offsetting, the Finnish case highlights how the existing policy terrain and past failures related to biodiversity offsetting are incorporated into ongoing policy discussions, and how these are mobilized in policy framings that generate support for implementing offsetting. We address two research questions: *1) How is biodiversity offsetting constructed as a policy mechanism? 2) How do the policy framings of biodiversity offsetting engender support for its implementation?*

We contend that analytical resources from interpretative policy analysis (IPA), which are most often used to explain policy controversies, can also be employed to understand the generation of consensus and support in policy framing processes. Our analysis shows that expert support for biodiversity offsetting in Finland follows from the interplay of three mutually reinforcing framings, where biodiversity offsetting is constructed as i) a policy necessity, ii) sufficiently flexible to incorporate multiple views, and iii) subject to experimental governance and re-evaluation. To understand the sustained support for

seemingly failed policy mechanisms, it is therefore necessary to analyze the policy framing process as one of building shared understandings of less-than-ideal possibilities. This can happen through the perceived lack of viable alternatives and by preempting problems with the promise of experimental policy designs.

2. Literature review

Shifts in environmental governance

In this study, we take a constructivist approach to environmental policy that focuses on how discursive and material practices constitute particular 'truths' about the world and how to govern it (Feindt and Oels 2005; Leipold et al. 2019). Our approach draws on the broad field of IPA that calls for analyzing the messy realities of policy processes by examining how values, norms, and facts interact in the construction of policy problems and solutions (Yanow 2000). We focus on the interactive and dynamic framing of policy processes, based on highlighting certain aspects of reality while ignoring others, and binding these together in a coherent form (Van Hulst and Yanow 2016). Policy framing is a process through which certain problematic situations are converted into more defined problems and specific solutions for them are proposed (Bacchi 2009). While analysis of framing processes often focuses on policy controversies (e.g. Sullivan and Hannis 2015), we contend that the tools of IPA are equally suitable for analyzing how the appropriate actors, questions, and evaluation tools are defined in the context of consensus as well as how alliances and compromises are fostered. When it comes to biodiversity offsetting, such an approach is useful for elucidating the meanings invested in the concept and how they contribute to constructing offsetting as a particular type of policy mechanism.

As a policy mechanism, biodiversity offsetting sits within the wider sphere of market-based environmental policy mechanisms (Hrabanski 2015; Bonneuil 2015). Articulated through quantified notions of environmental harm, such policy mechanisms seek to recognize, calculate, and in some way compensate or offset the damage done to the environment, often through the creation of designated markets for environmental impacts (Chiapello and Engels 2021; Frankel, Ossandón, and Pallesen 2019). Their prominence has been discussed as a shift in environmental policy from protecting certain areas or species to the creation of various equivalences, exchangeabilities, and intangible assets (Apostolopoulou and Adams 2017; Zu Ermgassen et al. 2019; Barral 2021; Chiapello and Engels 2021).

Another contemporary shift in environmental governance that has been linked to biodiversity offsetting, and which is particularly prominent in Finland (see Section 3), has been the rise of a culture of experimental governance (Leino and Åkerman 2021; Jones and Whitehead 2018; Adkins and Ylöstalo 2021; Kivimaa and Rogge 2022). We characterize experimental governance broadly as 'a commitment to a process of trying something new, evaluating the results, and revising practices based on what has been learned' (Leino and Åkerman 2021). The shift to experimental governance should be viewed as part of a larger process of governance reforms, where public administration is expected to work in a more science-based manner, or constantly forming, experimenting with, and reviewing policies (Adkins and Ylöstalo 2021). However, the notion that experiments are fast, scalable, and result in better policies has been challenged, as the

assumed benefits from experimentation often rest on a simplified conceptualization of the relationship between experiments, learning, and institutional change (Leino and Åkerman 2021; Kivimaa et al. 2017). Evidence from experimentation is not a neutral input to policy, but rather a specific form of political strategy that often works to depoliticize policymaking and make it more expert-driven (Standring 2017). Experimentation thus enacts a particular form of governance that alters both the arenas and forms of democratic intervention in policy (Jones and Whitehead 2018; Adkins and Ylöstalo 2021). It plays a central role in the construction of biodiversity offsetting policies and practices as these are driven by a strong interaction between science and policymaking.

Implementations and interpretations of biodiversity offsetting

For proponents, biodiversity offsetting rests on the idea that it is possible and desirable to compensate for 'unavoidable' environmental impacts as the last step of a so-called *mitigation hierarchy*, where impacts have first been avoided, minimized or restored (BBOP 2013; Zu Ermgassen et al. 2019). One of the earliest examples is the practice of wetland mitigation banking developed in the US during the early 1990s (Hrabanski 2015). This introduced a regulatory framework where the restoration of wetland habitats is developed through a commercial banking system that quantifies environmental gains and transforms them into 'wetland credits,' which are subsequently traded by project developers to meet legal requirements for environmental mitigation (Robertson 2004, 2006; Turnhout 2018). Since then, different institutional designs have emerged. These can generally be distinguished between policies that implement offsetting as mandatory demands placed on development projects or as a voluntary option that developers can adopt in order to lower their environmental impact and promote their environmental responsibility (Koh, Hahn, and Boonstra 2019). Shared between the different implementations is the creation of biodiversity 'units'[1] that can be calculated and compared, and consequently exchanged between different sites.

In conservation policy and practice, the role of offsetting has become consolidated to the extent that some researchers state that a perceived dichotomy currently exists between two options: either implementing biodiversity offsetting or allowing 'business as usual' development to continue (Moreno-Mateos et al. 2015; Curran, Hellweg, and Beck 2015). For example, von Hase and ten Kate (2017) have suggested that there is no realistic way to reach major conservation goals, such as the Aichi Targets, without the use of biodiversity offsetting. This leverages the urgency of biodiversity loss as an argument for offsetting policies – if nothing else, then due to a lack of alternative solutions.

At the same time, contributions from political ecology, critical geography, and science and technology studies have articulated the frailties that offsetting as a policy mechanism faces. These range from questioning the ways in which nature is commodified (McAfee 1999; Dauguet 2015; Apostolopoulou and Adams 2017) to understanding the messy realities and uncertainties related to defining, calculating, and ensuring the proposed environmental impacts (Robertson 2006). In critical contributions, biodiversity offsetting has often been characterized as a market-based instrument associated with a neoliberal strategy of 'selling nature to save it' (McAfee 1999). However, both the practical implementation as well as the

discourses related to offsetting are more varied and call for attending to their practical unfurling. For example, more radical approaches have attempted to mobilize biodiversity offsetting in efforts to put limits on economic development (Damiens, Porter, and Gordon 2020). Likewise, in some contexts, such as Germany, biodiversity offsetting is based on national and regional authority, with local municipalities performing a central role (Wende, Herberg, and Herberg 2005; Koh, Hahn, and Boonstra 2019).

The varied implementations suggest that to understand the development of biodiversity policies it is necessary to turn to local manifestations and how offsetting is realized in practice. However, studies on local implementation have tended to focus on the prevalence of contestation, especially that which erupted in the 2010s related to the roll out of biodiversity offsetting in England (Lockhart 2015; Lockhart and Rea 2019; Bormpoudakis, Tzanopoulos, and Apostolopoulou 2020; Sullivan and Hannis 2015). For example, Sullivan and Hannis (2015) emphasize the existence of divergent understandings and values around biodiversity offsetting, which they describe as 'ethical, political and ideological, rather than technical' (172) – and therefore with poor prospects of being resolved. This reinforces a view of biodiversity offsetting as a policy failure unlikely to be implemented, leaving unanswered the questions of how and why it in fact lives on (Corbera et al. 2021).

One way of explaining the widespread implementation of biodiversity offsetting and its survival lies in its ability to adapt to local, national, and international agendas (Hrabanski 2015), often retreating to what Corbera et al. (2021) call 'policy refugia' – or different small-scale projects from which offsetting may or may not at a later stage return to national policy debates. We employ Pinch and Bijker's (1984) concept of *interpretative flexibility* to analyze the construction and adaptation of biodiversity offsetting. Interpretative flexibility was first used to describe the contingency and openness of scientific and technological developments, in other words the existence of multiple pathways that are divided among competing interpretations. In the following sections, we employ the notion of interpretative flexibility to investigate the construction of support for biodiversity offsetting, which is characterized by the dynamic interplay of competing framings about the meaning of offsetting and its role in environmental politics.

3. Research design

Research context

Our study is situated in Finland, which can be characterized as an open and liberal Nordic welfare state with a tradition of corporatist policymaking. Finland holds a long history of integrating interest groups into political decision-making to enhance consensus for legislative reforms. During the 2010s, Finnish governance has undergone an 'experimental turn,' which has been pushed in a top-down manner nationally through emphasizing the need for evidence-based and innovative policymaking (Leino and Åkerman 2021). In terms of biological diversity, Finland is experiencing a continuous decline in biological diversity despite political commitments to halt biodiversity loss by 2020. In a recent assessment, 57% of habitat types were regarded as declining, which was attributed mainly to agriculture and forestry as well as construction projects – whereas

only 5% of habitats were regarded as undergoing an improving trend (Kontula and Raunio 2019).

The Government Programme of 2019 first suggested the piloting of biodiversity offsetting in Finland. This was preceded by extensive efforts at the science–policy interface to prepare the use of biodiversity offsetting in Finland. Starting in the 2010s, these included research projects (Primmer et al. 2019; Kangas and Ollikainen 2019), commissioned reports (Raunio et al. 2019; Moilanen and Kotiaho 2017; Pekkonen et al. 2020; Suvantola et al. 2018) and pilot initiatives, such as the Habitat Bank, which promoted a market-based approach to biodiversity offsetting (Ollikainen 2018; SYKE 2017). The majority of these were premised on seeing Finland as a latecomer to biodiversity offsetting, as until now it was one of the few European countries that did not have an official strategy or national policy frameworks for biodiversity offsetting nor any widespread voluntary compensation mechanisms in place (Pekkonen et al. 2020).

Following the Government Programme of 2019, the Ministry of the Environment established a working group, consisting of public officials, researchers, representatives of non-governmental organizations (NGOs) and industry organizations, to focus on the possibility of implementing ecological compensation as part of the reform of the Nature Conservation Act. The working group ended up suggesting the inclusion of biodiversity offsetting as a voluntary measure[2] for the first time in the national legal framework. The suggestions by the working group were largely transferred to the Nature Conservation Act, which was accepted in December 2022. The Act sets biodiversity offsetting as a voluntary mechanism that can be implemented either via compensatory measures (i.e. restoring a degraded area, increasing the surface area of a species or habitats, improving the ecological quality of a habitat) or conservation measures (i.e. setting aside an area for permanent conservation to preserve or improve its ecological quality). The law specifies measures for parties interested in offsetting as well as for landowners interested in producing ecological values for compensation (Finlex 2023). At the same time, the reform places great emphasis on the pilot projects administered by the Finnish Environment Institute and the specification of biodiversity offsetting at a later stage. Several new projects were created to test and develop biodiversity offsetting during our research process. These include a pilot for biodiversity offsetting (SYKE 2021) as well as two interdisciplinary research projects aiming to generate knowledge to support the implementation of biodiversity offsetting (BOOST[3]; University of Jyväskylä[4]). Temporally, our study focuses on developments in 2020–2021, predating the legislative reform and the implementation of the pilot projects, and as such shedding light on the formation and initial consolidation of expert opinions.

Materials and methods

The primary materials for this study consist of interviews with experts involved in and knowledgeable of reforms around biodiversity offsetting in Finland. We complemented this with documents, reports, policy briefs, and media materials on offsetting in Finland (Annex 1). The first step was to analyze the documents setting the scene for biodiversity offsetting in Finland. This pre-search gave an overview of the groups and understandings involved, which guided later methodological choices and the formulation of the research questions.

Table 1. Interviewees of the study

Interviewee	Role in relation to biodiversity offsetting
IND#1	Industry representative
IND#2	Industry representative
IND#3	Industry representative
MIN#1	Ministry official
NGO#1	NGO representative
NGO#2	NGO representative
RES#1	Researcher
RES#2	Researcher
RES#3	Researcher

Following the document analysis, a decision was taken to focus on expert stakeholders with a special role and knowledge in relation to biodiversity offsetting: researchers, ministry officials, representatives of NGOs, and industry organizations. While these groups do not cover all potential interest and stakeholder groups – omitting, for example, local inhabitants affected by offsetting activities – they are the primary groups usually consulted about legislative design and review in Finland and represented in ministerial working groups. The interviews were conducted by the first author during the winter and spring of 2021 (Table 1).

All interviews were semi-structured, lasted around one hour, and were conducted in English over Zoom. After presenting the research, the interviewees were asked what they considered the major benefits and challenges of biodiversity offsetting and what role they saw for the mechanism in Finnish environmental governance. The number of interviews was decided based on saturation. Saturation was monitored during the process of conducting interviews as the repetition of themes and arguments. While more interviews could have been produced, the combination of interviews with the documents from the pre-search was considered sufficient to provide a detailed description of arguments and understandings among the experts.

In the analysis, we draw on interpretative policy analysis, particularly processes of policy framing (Van Hulst and Yanow 2016) to make sense of how actors discuss the benefits and challenges related to constructing and implementing a new policy mechanism. The initial analysis and coding was done as part of a Master's thesis (Karlsson 2021), which focused on how expert storylines (Hajer 1995) articulate divergent understandings of biodiversity offsetting in Finland. Despite the analysis identifying different storylines, we observed a rather strong consensus for implementing biodiversity offsetting. This led us to the puzzle outlined at the beginning of article: how to explain widespread support for a policy mechanism 'that fails almost every time'?

To assess this, we turned to IPA and analysis of policy framing. We view policy framing as a dynamically and interactively built shared understanding of a situation: what is the issue, what are the problems, who are the relevant actors, what is relevant knowledge and how to set boundaries for each of these (Bacchi 2009; Van Hulst and Yanow 2016)? This led us to reinterpret the materials with a focus on the factors that explain support for biodiversity offsetting, which we traced to three recurring themes. We refer to the analytical categories developed in the next section as policy fram*ings*, thus seeking to highlight their interactive and mutually reinforcing character. To support our analysis, we use quotes and identify the relevant actors supporting a specific stance where

possible (see Table 1). The quotes have been edited for clarity and readability by removing repetition and grammatical errors.

4. Results

The following sections focus on the three policy framings that generated support for biodiversity offsetting among the interviewed experts, namely: a shared understanding of biodiversity offsetting as indispensable for countering ecological degradation; interpretative flexibility in the conceptualization of biodiversity offsetting; and support for experimental policymaking. These framings converged in constructing biodiversity offsetting as a promising policy tool. This enabled support for biodiversity offsetting among the experts, while simultaneously enacting divergent interpretations of the practical unfurling of biodiversity offsetting.

Biodiversity offsetting as 'Better Than Doing Nothing'

All the interviewed experts supported the implementation of biodiversity offsetting in Finland despite concerns about its practical implications and outcomes. A recurring argument was that biodiversity offsetting is indispensable in order to halt biodiversity loss. This was leveraged by framing the drivers of biodiversity loss as inevitable developments over which the actors did not have control. Thus, the scope of policy solutions was focused on compensating for harm instead of addressing the causes of environmental impacts (see also Chiapello and Engels 2021). Additionally, the baseline situation was framed as not having any legislation, voluntary measures, or other policy means in place to halt biodiversity loss. This situation was described by a Ministry representative:

> I just can't see how we can protect biodiversity without implementing ecological compensation, I just can't see us reaching the goal of protecting biodiversity without it [. . .]. Because you always will allow exemptions from nature conservation, you always find situations where you balance between nature conservation and some kind of project, which from the national point of view, safety point of view, health point of view, economic point of view, is more important to the nation. And that means that you always allow something to go on, and that will deteriorate the nature conservation or the biodiversity. And that means you just keep on sort of nagging away at those biodiversity values. And if you don't put anything back, you just lose, just keep on losing (MIN#1, February 2021).

Since addressing the root causes of biodiversity loss was perceived as impossible and out of the reach of the interviewed experts, offsetting was framed as necessary. Implementing offsetting and having some sort of guidelines thus became a success in itself, since *not* implementing offsetting would amount to accepting that biodiversity loss will continue.

Most experts viewed biodiversity offsetting as an inevitability that was going to be implemented in one form or another in Finland. This led those that had previously been more critical toward offsetting to shift their stance to one they themselves described as more 'pragmatic' (NGO#1, NGO#2). Such a stance relied on the reformist idea that by being involved and accepting some concessions, NGOs could still have a greater impact than by being shut out of policy processes altogether (Damiens, Porter, and Gordon 2020):

> My perspective is pragmatic [. . .] it's a fact that there are a lot of companies who want to do projects that will destroy nature. All the time. So, from the pragmatic perspective, I think it [biodiversity offsetting] is a lot better than doing nothing (NGO#2, February 2021).

By framing biodiversity offsetting as 'better than nothing' and contrasting it to a situation of inaction, actors from diverse backgrounds and with different aims for nature conservation could converge on the necessity of its implementation.

Interpretative flexibility of biodiversity offsetting

Despite widespread support and a strong belief in the inevitability of biodiversity offsetting, the experts also voiced divergent interests regarding the implementation and institutional design of offsetting policies. The greatest source of contention during the interviews was whether offsetting should be a voluntary or mandatory policy mechanism. At the time of the interviews in 2021, this decision was still open, while the legislation from December 2022 settled on a voluntary mechanism.

The conflicting views we encountered demonstrate quite different perspectives on the role of offsetting in environmental governance. Those who argued for a voluntary basis for biodiversity offsetting tended to frame the implementation as a matter of establishing the correct conditions that would enable and provide incentives to carry out ecological compensation:

> We need to promote that kind of voluntary activity by creating some kind of a system, which establishes a formal requirement for the authority to provide some kind of certification or something for those actors who voluntarily carry out ecological compensation. It doesn't have to be something that you are forced to do, but also something that you want to do (MIN#1, February 2021).

From this perspective, catering to the interests of developers and providing increased legitimacy via a reliable certification system becomes a central priority for policy design. The aim is to mobilize private finance into environmental governance by giving incentives to do compensation. This frames the interests of development and conservation as potentially aligned and argues that – with the right implementation – biodiversity offsetting could lead to a 'win-win' (RES#2, IND#2) for both conservation and development (see also Lockhart and Rea 2019).

On the other hand, several experts argued for mandatory legislative implementation and emphasized the need to stringently control offsetting activities. This was based on a strong skepticism toward companies who would probably 'do anything that is not illegal' (NGO#2). However, while several actors voiced concern that biodiversity offsetting might become a 'license to trash' (MIN#1, RES#3), they still believed this could be avoided, especially through a strong regulatory framework:

> If you have a clear place for ecological compensation measures within the legislation [. . .] there's not so much risk of the concept being diluted or hijacked by some anti-conservationist forces (NGO#2, February 2021).

The conflicting prescriptions for biodiversity offsetting relate to deep-seated notions about economic dynamics and the distinct roles of private and public actors. This was also evident in the rather different concerns about the outcomes of implementing

offsetting in Finland: expert stakeholders either worried that offsetting would become a burden on developers, which would deter them from doing compensation – or that compensation would result in greenwashing and not lead to real environmental benefits.

While the experts were aware of tensions between divergent prescriptions for how biodiversity offsetting should unfold, potential conflicts were sidelined or deferred to the future in favor of a shared support for the implementation. As RES#1 said, 'the devil is in the details [. . .] people might disagree [about biodiversity offsetting], but broadly thinking there is quite a good consensus.' The broad consensus was enabled by a flexible policy construction that accommodates multiple understandings and focuses on shared ambitions, rather than conflict over the 'details' of the implementation. Framing biodiversity offsetting in a loose and interpretatively flexible manner at the start of a policy process can be seen as a strategy to foster alliances amongst actors and defer difficult questions to a later stage. Such difficult questions were expected to be solved gradually through setting up an experimental design for biodiversity offsetting and by learning from the 'failed implementations' that had taken place previously.

Evoking experimentation as a policy strategy

The possibility to support biodiversity offsetting despite concerns about its outcomes was further enabled by promoting an experimental approach to policy development, drawing on the privileged role of experimentation in Finnish policymaking (see Sections 2 and 3). Experimentation was argued to resolve challenges regarding the implementation of biodiversity offsetting, as an interviewee recounts:

> I'm not that optimistic that I could say that we would get it right the first time, because there are loads of examples from unsuccessful policies from other countries, and very few of the successful ones. [. . .] But I think one key is to grant that these problems exist and learn by doing, I think that is how it's going to go, and then we need legislation that enables modifications in regulations and instructions (IND#1, January 2021).

Implementing biodiversity offsetting incrementally based on accumulated experiences would leave it open to corrections, which many of the experts considered necessary for developing a successful policy mechanism. Evoking experimentation thereby made it possible to relegate decisions about the 'details' of how biodiversity offsetting should be designed to a proximate future and this contributed to the flexibility of policy framing.

While the experts emphasized that experiences with biodiversity offsetting in Finland would be necessary, examples from other countries were also considered to provide relevant knowledge. In fact, Finland's latecomer status in biodiversity offsetting was leveraged as a possibility to learn from 'bad examples abroad' (NGO#2) and thereby develop better policies:

> [. . .] the experts in Finland are very aware of the problems in other countries. And that's a very good thing because I really think that we can learn a lot from bad examples abroad, and perhaps create some better systems here (NGO#2, February 2021).

This constructs biodiversity offsetting as an open-ended policy with multiple potential outcomes, yet also as one in which biodiversity offsetting is elevated to a goal in itself, rather than a means to halt biodiversity loss (see also Frankel, Ossandón, and Pallesen

2019). Past failures with offsetting were ascribed to bad implementations rather than biodiversity offsetting itself. This frames its success as a matter of competence and technical expertise rather than politics:

> So people don't know what they are doing when they try to do ecological compensation. And that's the reason why they have been systematically failing all over the world. But it is not the compensation as a principle, as such, that is flawed or failed, it is the implementation (RES#3, January 2021).

The possibility that offsetting could become successful in Finland, coupled with the lack of alternative solutions to biodiversity loss, turns the discussion toward questions of *how* – rather than *whether* – the implementation should proceed. Furthermore, it side-lines concerns about the 'systemic effects' of biodiversity offsetting, which one interviewee dismissed by arguing that such concerns are a 'more philosophical question than a real question' (RES#3). Even those experts who were concerned about the implications of offsetting emphasized the possibility that offsetting could have beneficial outcomes if it was implemented well (NGO#1, NGO#2, RES#2, RES#3, MIN#1, IND#1). The 'real questions' (RES#1) were thus framed as those revolving around the technical functions of offsetting that were deemed fully knowable and controllable:

> There are people who don't like offsets, which is ridiculous if they are scientists, because there is nothing to like or dislike, it is just that if you do this, this and that, then the outcome will be that, which means no net loss. So there are rules to the game, and if you obey the rules, the outcome will be good for nature. And if you like it or not has nothing to do with it. So it's not an ideology, but just how nature works (RES#3, January 2021).

When it came to *how to get it right*, the experts focused mainly on technical questions concerning how to compensate These were framed as checklists, critical questions or 'operationally important decisions' that comprised a list of questions regarding the design of offset projects that should be attended to (e.g. Moilanen and Kotiaho 2018). The questions raised related first and foremost to ecological aspects, such as how to define units and ensure permanence and additionality. However, some interviewees also raised concerns about the social implications of biodiversity offsetting and its acceptability, which was perceived as a necessary condition for successful implementation ((see also Varumo, Kotilainen, and Primmer 2022). While all of these aspects constitute complex challenges for policy design and implementation, the experts believed that all potential issues could be solved through piloting and accumulating experience.

Consequently, the process of producing new knowledge and integrating it into policy design revolved around producing tools and measurements that would lead to improved learning and better policies. The practical work involved in producing knowledge and translating it into policy was black-boxed as creating 'a system that has some kind of measurement tool and then, in the long run, it kind of corrects itself in a kind of scientific fashion when experiences build up' (RES#1). As such, the process of designing and correcting biodiversity offsetting was described as a rather straightforward and technical endeavor conducted by experts, based on an accumulation of experiences and evidence. This framing designates both the 'correct' questions that policy is responding to as well as the experts and type of expertise that are involved in devising solutions.

5. Discussion

Our research process began with a puzzlement over how biodiversity offsetting garnered widespread support amongst Finnish experts despite acknowledgment that it was difficult and prone to fail. While previous case studies on biodiversity offsetting have focused on fundamental 'value struggles' that have ultimately impeded its implementation (e.g. Sullivan and Hannis 2015), instead we encountered a rather uniform desire to see biodiversity offsetting implemented in Finland. We propose that the interaction and mutual reinforcement of the three policy framings presented above have shaped the support for offsetting as well as the initial design of the policy mechanism. We discuss the implications of and further questions raised by each of these framings below.

Framing necessities and missing alternatives

The experts share a solution-oriented approach that emphasizes the need to *do something* and be pragmatic in efforts to stop biodiversity loss. Often this was justified through conceptualizing biodiversity loss as an impending crisis that sufficient attention had not been paid to. However, the options set out by experts were limited to either offsetting or continuing business as usual, effectively blocking a discussion on other policy mechanisms, including improving, enforcing, or introducing new regulation to halt biodiversity loss (Moreno-Mateos et al. 2015; Curran, Hellweg, and Beck 2015). Through a perceived lack of alternative solutions together with limited views on actors' capacities to deter destructive development or implement alternative measures, offsetting is constructed as a necessary – and perhaps even the only – way to halt biodiversity loss. This aligns expert support for implementation. At the same time, these policy framings shape what are viewed as relevant questions, with more radical critique sidelined as 'philosophical' rather than 'real', as it is presumed not to provide solutions for how to reach no net loss of biodiversity. Together, these policy framings generate a form of lock-in, where retracting from biodiversity offsetting is seen as a policy failure in itself – whereas in fact it could lead to the emergence of other approaches and solutions that arguably do exist (Guillet and Semal 2018; Curran, Hellweg, and Beck 2015; Moreno-Mateos et al. 2015).

On this point, we echo previous research arguing that biodiversity offsetting 'forecloses the possibility of a conservation challenge to the drivers of environmental destruction' (Apostolopoulou and Adams 2017, 28). This claim has been especially directed at the logics of offsetting as a way to make things the same (MacKenzie 2009) – and thereby pave the way for the commodification of nature (Apostolopoulou and Adams 2017; Dauguet 2015; Robertson 2006; Spash 2015). The critique of the neoliberal nature of offsetting has mainly focused on how compensation reframes nature conservation in a way that privileges development interests and sidelines concerns about normative and ethical implications (Apostolopoulou and Adams 2017). Our findings echo this, with actors quite pessimistically agreeing that not much can be done about many of the root causes of biodiversity loss. Such explanations nonetheless fail to address how offsetting secures support among a wide range of actors, including those who are concerned about the intrusion of 'anti-conservationist forces' through offsetting policies.

For these actors, support for biodiversity offsetting is rooted in the construction of nature conservation in terms of net principles, mitigation hierarchies, and unavoidable

environmental impacts. This in turn sets the stage for biodiversity offsetting as *the* environmental solution to ensure no net loss. The implementation of biodiversity offsetting in Finland thereby extends an approach that takes the exchangeability of environmental impacts to be key for successfully halting biodiversity loss. Manifestations of this approach can be traced to visual representations (Carver 2021), policy formulations (Moreno-Mateos et al. 2015), and the construction of environmental knowledge (Turnhout 2018), which all enable and promote the possibility of calculating, valuing, and eventually offsetting environmental impacts. These varying means enact nature as something offset-able (Carver 2021) that will 'work' in the intended way if only designed correctly. Not only does this give salience to offsetting as a viable and necessary policy option, it also constructs high expectations for being able to control ecosystems and leaves little space for dealing with surprises.

Accommodating differences via interpretative flexibility

As an interpretatively flexible concept, offsetting accommodates conflicting understandings and garners support from a wide range of experts who agree about the necessity of biodiversity offsetting, while nonetheless disagreeing about the central aspects of its implementation. As such, the policy construction and initial consolidation in Finland differs from past examples, particularly the roll out of offsetting in the UK, which raised polarized discussions based on divergent ideologies (Sullivan and Hannis 2015). Rather, our study echoes findings by Corbera et al. (2021), who show that offsetting adapts to context-specific concerns, thereby being able to reemerge despite past failures.

Since interpretative flexibility stems from an openness to multiple interpretations (Pinch and Bijker 1984), it remains to be seen how the policy formulation of biodiversity offsetting as a voluntary mechanism will affect support for it in Finland. As the current proposal limits offsetting to a voluntary mechanism, it has raised several open questions that were already reflected in the interviews. One of the most significant questions is whether there will be a marketplace for purchasing biodiversity offsets produced by third parties or whether developers will be expected to carry out compensations directly themselves,[5] which will result in different compensation practices and units. The possibility of future conflicts is foreshadowed by the statement that 'the devil is in the details,' which suggests that contestation might already be nested within the current support for biodiversity offsetting. This resembles the situation depicted by Lockhart and Rea (2019), where erupting contestation over the specifics of biodiversity offsetting contributed to the decrease in support for the roll out of offsetting in the UK during the mid-2010s. Whether such contestation will emerge in Finland is dependent on several aspects, most notably on whether pilot projects are able to deliver on the multiple expectations and questions raised concerning the implementation.

Implications of an experimental approach

Pilot projects, the possibility of learning from past mistakes, and the opportunity to accumulate knowledge are assumed to enable the 'repair' and gradual improvement of offsetting policies. In this context, policymaking becomes a continuous effort of evaluation, diagnosis and design, rather than the setting and enforcement of standards or

practices (see also Frankel, Ossandón, and Pallesen 2019). This is present in the experts' framing of experimentation and evidence-based learning as largely a technical system, where evidence is assumed to *speak for itself* and to flow linearly and unproblematically from science to policy (Wesselink, Colebatch, and Pearce 2014; Beck 2011; Karhunmaa 2020). Acknowledgement of the previous failures of biodiversity offsetting have not so much been appreciated as a prompt to think anew the varying means of halting biodiversity loss, but seem instead to currently redirect attention to repairing offsetting mechanisms and implementing them better (see also Frankel, Ossandón, and Pallesen 2019). This reflects an experimental ethos of looking for and experimenting with better solutions, but only within the confined boundaries set by no net loss principles (see also Carver 2021). Space for voicing concerns and contestation over offsetting therefore seems rather limited and predefined largely to ecological aspects and technical implementations (see also Varumo, Kotilainen, and Primmer 2022).

Rather than providing a silver bullet for policymaking, however, experimentation raises key questions about the production of relevant knowledge (Turnhout 2018; Turnhout, Dewulf, and Hulme 2016) as well as the process of integrating new knowledge into the policymaking process (Leino and Åkerman 2021; Kivimaa et al. 2017). What counts as relevant, useful, and good knowledge and how diverse voices and accepting uncertainty can be fostered remain open questions. As the offsetting of biodiversity involves simplifying complex ecologies into exchangeable values through uncertain and convoluted calculatory practices (Moreno-Mateos et al. 2015; Robertson 2006), it involves decisions that affect the design of policy mechanisms as well as how nature is enacted and made governable as a set of fungible systems. Such decisions shape not only how different species and habitats are valued and treated (Robertson 2006), but also how the extent and limits of knowledge and control are acknowledged in policy. While experimental policymaking at first glance seems to provide space for deliberating on the limits of knowledge, paradoxically this is countered by promises of creating ever better, self-correcting tools that risk overlooking the complexity of ecological systems in an effort to preserve biodiversity (Turnhout, Neves, and De Lijster 2014).

6. Conclusion

Halting biodiversity loss is said to require new policy solutions. In this study, we have investigated how one such policy – biodiversity offsetting – is able to garner support, despite its controversial and tumultuous past. Based on interviews with Finnish experts, we have shown how support for biodiversity offsetting is premised on the interplay of three policy framings. At the initial stages of policy formation, these framings converge to produce a shared understanding of biodiversity offsetting as necessary, open to multiple implementations, and corrigible via experimentation. Demonstrating how novel policies are never built on an empty slate, these policy framings acknowledge and repurpose existing criticisms and past failures as prompts for experimental governance and learning in policy implementation.

The notion that accumulated experiences lead to improved policymaking evokes a problematic understanding of science–policy interactions, which fails to acknowledge the politics inherent in the production of environmental knowledge (Turnhout 2018). This calls for more research not only on the normative commitments embedded in biodiversity

offsetting, but also on those embedded in experimental governance and its currently rather privileged position with regard to environmental policy. On a more general level, the notion that no alternatives to biodiversity offsetting exist also deserves further attention. We take our cue from Frankel, Ossandón, and Pallesen (2019), who draw upon Merton (1940) to suggest that at times bureaucracy leads to the means becoming more important than the goals. We wonder whether being unable to see and discuss alternatives to biodiversity offsetting that arguably *do* exist (see, for example, Moreno-Mateos et al. 2015) reflects a similar dynamic – one where experimenting to correct for past failures and devise a 'system that corrects itself' is in fact displacing debates about the indisputably vital goal of targeting biodiversity loss.

Notes

1. Units are usually habitat or species based, but we do not go into these distinctions in this study.
2. In Finnish, biodiversity offsetting has been referred to as 'ekologinen kompensaatio' or ecological compensation. We choose to use the internationally consolidated term biodiversity offsetting in this article, as the principles behind the two are the same in the Finnish case.
3. https://boostbiodiversityoffsets.fi/en/ [accessed September 25 2022].
4. https://converis.jyu.fi/converis/portal/detail/Project/101644467?auxfun=&lang=fi_FI [accessed September 25 2022].
5. This question was also raised at an event discussing the initiation of biodiversity offsetting in Finland on 31 May 2022: https://boostbiodiversityoffsets.fi/luontohyvitysten-kauppa-kaynnistyy-millaisia-kriteereja-myytavien-hyvitysten-pitaa-tayttaa/ [accessed 21 September 2022].

Acknowledgments

We wish to address a special thanks to Nina Janasik for her insightful comments and guidance during the research process. We also wish to thank the participants in the fall colloquium of The Finnish Society for Environmental Social Sciences (YHYS) 2021 for their valuable inputs as well as all interviewees for participating in the study.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

Kamilla Karhunmaa acknowledges funding from Säätiöiden Post doc –pooli, Emil Aaltonen Foundation.

Notes on contributors

Thomas Karlsson has a multidisciplinary background and obtained his Master of Science degree from the University of Helsinki in 2022. He is currently pursuing a PhD in analytical chemistry at the University of Copenhagen. His research focuses on the development of novel detection methods for environmental pollution monitoring and their role in the construction and governance of environmental issues.

Kamilla Karhunmaa is a post-doctoral researcher at the University of Helsinki and the University of Liège. She obtained her PhD from the University of Helsinki in 2021 and works at the intersection of environmental policy and science and technology studies. She studies how we collectively make sense of environmental concerns and act on them.

ORCID

Kamilla Karhunmaa http://orcid.org/0000-0002-6134-8014

References

Adkins, L., and H. Ylöstalo. 2021. "Experimenting with Wellbeing: Basic Income, Immaterial Labour and Changing Forms of Productivity." *Critical Sociology* 47 (3): 373–387. doi:10.1177/0896920520940011.

Apostolopoulou, E., and M. W. Adams. 2017. "Biodiversity Offsetting and Conservation: Reframing Nature to Save It." *Oryx* 51 (1): 23–31. doi:10.1017/S0030605315000782.

Bacchi, C. 2009. *Analysing Policy*. Frenchs Forest, N.S.W: Pearson Higher Education AU.

Barral, S. 2021. "Conservation, Finance, Bureaucrats: Managing Time and Space in the Production of Environmental Intangibles." *Journal of Cultural Economy* 14 (5): 549–563. doi:10.1080/17530350.2020.1846593.

BBOP, Business and Biodiversity Offsets Programme. 2013. "To No Net Loss and Beyond: An Overview of the Business and Biodiversity Offsets Programme (BBOP)." www.forest-trends.org/biodiversityoffsetprogram/guidelines/Overview_II.pdf.

Beck, S. 2011. "Moving Beyond the Linear Model of Expertise? IPCC and the Test of Adaptation." *Regional Environmental Change* 11 (2): 297–306. doi:https://doi.org/10.1007/s10113-010-0136-2.

Bonneuil, C. 2015. "Tell Me Where You Come From, I Will Tell You Who You Are: A Genealogy of Biodiversity Offsetting Mechanisms in Historical Context." *Biological Conservation* 192: 485–491. doi:10.1016/j.biocon.2015.09.022.

Bormpoudakis, D., J. Tzanopoulos, and E. Apostolopoulou. 2020. "The Rise and Fall of Biodiversity Offsetting in the Lodge Hill Large-Scale Housing Development, South East England." *Environment and Planning E: Nature and Space* 3 (3): 706–731. doi:10.1177/2514848619884890.

Bull, J. W., and N. Strange. 2018. "The Global Extent of Biodiversity Offset Implementation Under No Net Loss Policies." *Nature Sustainability* 1 (12): 790–798. doi:https://doi.org/10.1038/s41893-018-0176-z.

Carver, L. 2021. "Seeing No Net Loss: Making Nature Offset-Able." *Environment and Planning E: Nature and Space* 1–21. doi:10.1177/25148486211063732.

Chiapello, E., and A. Engels. 2021. "The Fabrication of Environmental Intangibles as a Questionable Response to Environmental Problems." *Journal of Cultural Economy* 14 (5): 517–532. doi:10.1080/17530350.2021.1927149.

Convention on Biological Diversity. 2022. Kunming-Montreal Biodiversity Framework. Available at https://www.cbd.int/doc/c/e6d3/cd1d/daf663719a03902a9b116c34/cop-15-l-25-en.pdf. [Accessed 8 Feb 2023]

Corbera, E., R. Lave, M. Robertson, and S. Maestre-Andrés. 2021. "Neoliberal Policy Refugia: The Death and Life of Biodiversity Offsetting in the European Union and Its Member States." *Transactions of the Institute of British Geographers* 46 (2): 1–15. doi:https://doi.org/10.1111/tran.12434.

Curran, M., S. Hellweg, and J. Beck. 2015. "The Jury is Still Out on Biodiversity Offsets: Reply to Quétier et al." *Ecological Applications* 25 (6): 1741–1746. doi:10.1890/14-2363.1.

Damiens, F. L. P., L. Porter, and A. Gordon. 2020. "The Politics of Biodiversity Offsetting Across Time and Institutional Scales." *Nature Sustainability* 4 (2): 170–179. doi:https://doi.org/10.1038/s41893-020-00636-9.

Dauguet, B. 2015. “Biodiversity Offsetting as a Commodification Process: A French Case Study as a Concrete Example.” *Biological Conservation* 192: 533–540. doi:10.1016/j.biocon.2015.08.015.

Feindt, P. H., and A. Oels. 2005. “Does Discourse Matter? Discourse Analysis in Environmental Policy Making.” *Journal of Environmental Policy & Planning* 7 (3): 161–173. doi:10.1080/15239080500339638.

Finlex. 2023. Luonnonsuojelulaki. Available at https://www.finlex.fi/fi/laki/alkup/2023/20230009. [Accessed 8 Feb 2023]

Frankel, C., J. Ossandón, and T. Pallesen. 2019. “The Organization of Markets for Collective Concerns and Their Failures.” *Economy and Society* 48 (2): 153–174. doi:10.1080/03085147.2019.1627791.

Global Biodiversity Outlook 5 Secretariat of the Convention on Biological Diversity. 2020. Montreal, Canada.

Guillet, F., and L. Semal. 2018. “Policy Flaws of Biodiversity Offsetting as a Conservation Strategy.” *Biological Conservation* 221: 86–90. doi:10.1016/j.biocon.2018.03.001.

Hajer, M. A. 1995. *The Politics of Environmental Discourse: Ecological Modernization and the Policy Process*. Oxford: Oxford University Press.

Hrabanski, M. 2015. “The Biodiversity Offsets as Market-Based Instruments in Global Governance: Origins Success and Controversies.” *Ecosystem Services* 15: 143–151. doi:10.1016/j.ecoser.2014.12.010.

Jones, R., and M. Whitehead. 2018. “‘Politics Done Like Science’: Critical Perspectives on Psychological Governance and the Experimental State.” *Society and Planning D: Society and Space* 36 (2): 313–330. doi:10.1177/0263775817748330.

Kangas, J., and M. Ollikainen. 2019. “Economic Insights in Ecological Compensations: Market Analysis with an Empirical Application to the Finnish Economy.” *Ecological Economics* 159: 54–67. doi:10.1016/j.ecolecon.2019.01.003.

Karhunmaa, K. 2020. “Performing a Linear Model: The Professor Group on Energy Policy.” *Environmental Science & Policy* 114: 587–594.

Karlsson, T. M. 2021. The devil is in the details–consensus and contestation of ecological compensation among experts in Finland (unpublished Master's thesis). Helsinki, Finland: University of Helsinki. http://urn.fi/URN:NBN:fi:hulib-202109013600

Kivimaa, P., M. Hildén, D. Huitema, A. Jordan, and J. Newig. 2017. “Experiments in Climate Governance – a Systematic Review of Research on Energy and Built Environment Transitions.” *Journal of Cleaner Production* 169: 17–29. doi:10.1016/j.jclepro.2017.01.027.

Kivimaa, P., and K. S. Rogge. 2022. “Interplay of Policy Experimentation and Institutional Change in Sustainability Transitions: The Case of Mobility as a Service in Finland.” *Research Policy* 51 (1): 104412. doi:https://doi.org/10.1016/j.respol.2021.104412.

Koh, N. S., T. Hahn, and W. J. Boonstra. 2019. “How Much of a Market is Involved in a Biodiversity Offset? A Typology of Biodiversity Offset Policies.” *Journal of Environmental Management* 232: 679–691. doi:10.1016/j.jenvman.2018.11.080.

Kontula, T., and A. Raunio, eds. 2019. “Threatened Habitat Types in Finland 2018.” In *SYKE and Ministry of the Environment*, http://urn.fi/URN:ISBN:978-952-11-5110-1.

Leino, H., and M. Åkerman. 2021. “The Politics of Making Finland an Experimenting Nation.” *Critical Policy Studies* 16 (4): 441–459. doi:https://doi.org/10.1080/19460171.2021.1985549.

Leipold, S., P. H. Feindt, G. Winkel, and R. Keller. 2019. “Discourse Analysis of Environmental Policy Revisited: Traditions, Trends, Perspectives.” *Journal of Environmental Policy & Planning* 21 (5): 445–463. doi:10.1080/1523908X.2019.1660462.

Lockhart, A. 2015. “Developing an Offsetting Programme: Tensions, Dilemmas and Difficulties in Biodiversity Market-Making in England.” *Environmental Conservation* 42 (4): 335–344. doi:10.1017/S0376892915000193.

Lockhart, A., and C. Rea. 2019. “Why There and Then, Not Here and Now? Ecological Offsetting in California and England, and the Sharpening Contradictions of Neoliberal Natures.” *Environment and Planning E: Nature and Space* 2 (3): 665–693. doi:10.1177/2514848619850778.

MacKenzie, D. 2009. “Making Things the Same: Gases, Emission Rights and the Politics of Carbon Markets.” *Accounting, Organizations & Society* 34 (3): 440–455. doi:10.1016/j.aos.2008.02.004.

McAfee, K. 1999. “Selling Nature to Save It? Biodiversity and the Rise of Green Developmentalism.” *Environment and Planning D: Society and Space* 17 (2): 133–154. doi:10.1068/d170133.
Merton, R. K. 1940. “Bureaucratic Structure and Personality.” *Social Forces* 18 (4): 560–568. doi:10.2307/2570634.
Moilanen, A., and J. S. Kotiaho. 2017. *Ekologisen Kompensaation Määrittämisen Tärkeät Operatiiviset Päätökset [Important Operative Decisions of Planning Biodiversity Offsets]*. Ministry of the Environment. http://urn.fi/URN:ISBN:978-952-11-4754-8.
Moilanen, A., and J. S. Kotiaho 2018. Planning Biodiversity Offsets: Twelve Operationally Important Decisions. Tema Nord 2018: 513. Available at http://norden.diva-portal.org/smash/record.jsf?pid=diva2%3A1201285&dswid=3823. [Accessed 8 Feb 2023].
Moreno-Mateos, D., V. Maris, A. Béchet, and M. Curran. 2015. “The True Loss Caused by Biodiversity Offsets.” Biological Conservation 192: 552–559. 10.1016/j.biocon.2015.08.016.
Ollikainen, M. 2018. “Habitat Bank – Offsetting Biodiversity Loss.” *SciTech Europa Quarterly* 26: 286–287.
Pekkonen, M., T. Ryttäri, A. Belinskij, S. Koljonen, H. Mykrä, K. Kostamo, and P. Ahlroth. 2020. “Tietotaso Ja Kokemukset Ekologisesta Kompensaatiosta Suomessa [Level of Knowledge and Experiences on Biodiversity Offsetting in Finland].” Ministry of the Environment. http://urn.fi/URN:ISBN:978-952-361-244-0 .
Pinch, T. J., and W. E. Bijker. 1984. “The Social Construction of Facts and Artefacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other.” *Social Studies of Science* 14 (3): 399–441. doi:10.1177/030631284014003004.
Primmer, E. L., J. Varumo, E. Kotilainen, M. Raitanen, M. Kattainen, S. Pekkonen, P. Kuusela, P. Kullberg, A. K. Johanna, and M. Ollikainen. 2019. “Institutions for Governing Biodiversity Offsetting: An Analysis of Rights and Responsibilities.” *Land Use Policy 81* 680: 776–784. doi:10.1016/j.landusepol.2018.11.040.
Raunio, A., S. Anttila, M. Pekkonen, and O. Ojala. 2019. “Suitability of Habitat Types for Biodiversity Offsetting in Finland.” *Ministry of the Environment*. http://urn.fi/URN:ISBN:978-952-361-012-5.
Robertson, M. M. 2004. “The Neoliberalization of Ecosystem Services: Wetland Mitigation Banking and Problems in Environmental Governance.” *Geoforum* 35 (3): 361–373. doi: https://doi.org/10.1016/j.geoforum.2003.06.002.
Robertson, M. M. 2006. “The Nature That Capital Can See: Science, State, and Market in the Commodification of Ecosystem Services.” *Environment and Planning D: Society and Space* 24 (3): 367–387. doi:https://doi.org/10.1068/d3304.
Schön, D. A., and M. Rein. 1994. *Frame Reflection*. New York: Basic Books.
Spash, C. L. 2015. “Bulldozing Biodiversity: The Economics of Offsets and Trading-In Nature.” *Biological Conservation* 192: 541–551. doi:10.1016/j.biocon.2015.07.037.
Standring, A. 2017. “Evidence-Based Policymaking and the Politics of Neoliberal Reason: A Response to Newman.” *Critical Policy Studies* 11 (2): 227–234. doi:10.1080/19460171.2017.1304226.
Sullivan, S., and M. Hannis. 2015. “Nets and Frames, Losses and Gains: Value Struggles in Engagements with Biodiversity Offsetting Policy in England.” *Ecosystem Services* 15: 162–173. doi:10.1016/j.ecoser.2015.01.009.
Suvantola, L., L. Halonen, L. Leino, and E. Miettinen. 2018. *Ekologisen Kompensaation Ohjauskeinojen Kehittäminen [Developing Policy Instruments for Ecological Offsetting]*. Prime Minister’s Office. https://julkaisut.valtioneuvosto.fi/handle/10024/161220.
SYKE. 2017. “The Habitat Bank of Finland.” https://www.syke.fi/en-US/Research__Development/Research_and_development_projects/Projects/Habitat_Bank/The_Habitat_Bank_of_Finland%2839809%29.
SYKE 2021. “Ekologisen Kompensaation Pilotointi [Ecological Compensation Pilot].” 2021. https://www.syke.fi/fi-FI/Tutkimus__kehittaminen/Tutkimus_ja_kehittamishankkeet/Hankkeet/Ekologisen_kompensaation_pilotointi/Ekologisen_kompensaation_pilotointi61705 .
Turnhout, E. 2018. “The Politics of Environmental Knowledge.” *Conservation & Society* 16 (3): 363–371. doi:10.4103/cs.cs_17_35.

Turnhout, E., A. Dewulf, and M. Hulme. 2016. "What Does Policy-Relevant Global Environmental Knowledge Do? The Cases of Climate and Biodiversity." *Current Opinion in Environmental Sustainability* 18: 65–72. doi:10.1016/j.cosust.2015.09.004.

Turnhout, E., K. Neves, and E. De Lijster. 2014. "'Measurementality' in Biodiversity Governance: Knowledge, Transparency, and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)." *Environment & Planning A: Economy & Space* 46 (3): 581–597. doi:10.1068/a4629.

Van Hulst, M., and D. Yanow. 2016. "From Policy "Frames" to "Framing" Theorizing a More Dynamic, Political Approach." *The American Review of Public Administration* 46 (1): 92–112. doi:10.1177/0275074014533142.

Varumo, L., J. Kotilainen, and E. Primmer. 2022. "Social Acceptance of Biodiversity Offsetting: Motivations and Practices in the Designing of an Emerging Mechanism." *Environmental Policy & Governance* 1–12. doi:10.1002/eet.2031.

von Hase, A., and K. ten Kate. 2017. "Correct Framing of Biodiversity Offsets and Conservation: A Response to Apostolopoulou & Adams." *Oryx* 51 (1): 32–34. doi:10.1017/S0030605316001022.

Wende, W., A. Herberg, and A. Herberg. 2005. "Mitigation Banking and Compensation Pools: Improving the Effectiveness of Impact Mitigation Regulation in Project Planning Procedures." *Impact Assessment & Project Appraisal* 23 (2): 101–111. doi:10.3152/147154605781765652.

Wesselink, A., H. Colebatch, and W. Pearce. 2014. "Evidence and Policy: Discourses, Meanings and Practices." *Policy Sciences* 47 (4): 339–344. doi:https://doi.org/10.1007/s11077-014-9209-2.

Yanow, D. 2000. *Conducting Interpretive Policy Analysis*. Thousand Oaks, CA: Sage.

Zu Ermgassen, S. O. S. E., J. Baker, A. Richard, N. S. Griffiths, M. J. Struebig, and J. W. Bull. 2019. "The Ecological Outcomes of Biodiversity Offsets Under 'No Net Loss' Policies: A Global Review." *Conservation Letters* 12 (6). doi:10.1111/conl.12664.

Annex 1. Background documents on biodiversity offsetting in Finland

Reference	Description
Brax (2018)	Article by WWF about biodiversity offsetting in Finland (in Finnish)
Kotiaho et al. (2016)	Report for the Ministry of the Environment about how to reach the target of restoring 15% of degraded ecosystems in Finland
Nygren, Brunet, and Kankainen (2020)	Rulebook to the Offsetting Game, which was developed as part of a research project about biodiversity offsetting at Tampere University
Ollikainen (2018)	Portrait article presenting the Habitat Bank project
Pekkonen and Ollikainen (2015)	Video recording of the 2015 Helsinki Challenge presentation of the 'Biodiversity Now!' project
SYKE (2019)	Policy brief recommending the implementation of ecological compensation in Finland
BOOST (n.d.)	Research project focusing on the implementation of biodiversity offsetting in Finland
Raunio et al. (2019)	Report for the Ministry of the Environment about the suitability of habitat types for biodiversity offsetting
Ministry of the Environment, (n.d.)	Information page about the implementation of biodiversity offsetting as part of the reform of the Nature Conservation Act
Ministry of the Environment (n.d.)	National action plan for conservation of biodiversity 2013–2020, which mentions implementation of biodiversity offsetting

References

Biodiversity offsetting as an operational tool for a just sustainability transition towards no net loss of ecosystems and biodiversity (BOOST). n.d. "BOOST for Biodiversity Offsets." Accessed September 29, 2022. http://boostbiodiversityoffsets.fi/en/.

Brax, A. 2018. "Ekologinen Kompensaatio – Aito Apu Vai Lupa Pilata? [Ecological Compensation - Genuine Help or License to Trash?]." WWF Finland. 2018. Accessed September 29, 2022. https://wwf.fi/wwf-lehti/wwf-lehti-4-2018/ekologinen-kompensaatio-aito-apu-vai-lupa-pilata/.

Finnish Environment Institute (SYKE). 2019. "Ecological Compensations Are Worth Taking in to Use." Accessed September 29, 2022. http://hdl.handle.net/10138/307028.

Kotiaho, J., Kuusela, S., Nieminen, E., and Moilanen, A. 2016. "Framework for Assessing and Reversing Ecosystem Degradation: Report of the Finnish Restoration Prioritization Working Group on the Options and Costs of Meeting the Aichi Biodiversity Target of Restoring at Least 15 Percent of Degraded Ecosystems in Finland." Accessed September 29, 2022. http://urn.fi/URN:ISBN:978-952-11-4603-9

Ministry of the Environment. n.d. "Reform of the Nature Conservation Act and Decree."Accessed September 29, 2022. https://ym.fi/en/reform-of-the-nature-conservation-act.

———.n.d. "Saving Nature for People: National Action Plan for the Conservation andSustainable Use of Biodiversity in Finland 2013-2020." Accessed September 29, 2022. https://ym.fi/documents/1410903/38439968/National_action_plan2013_SavingNatureforPeople-EA60AA4E_861F_414D_9EFE_E8B967313381-96885.pdf/3fd101e9-6a12-91f8-211c-a2ab1d32794b/National_action_plan2013_SavingNatureforPeople-EA60AA4E_861F_414D_9EFE_E8B967313381-96885.pdf?t=1603260663505

Nygren, N., Brunet, L., and Kankainen, V.. 2019. "Kompensaatiopeli: A Game for Discovering the Implementation of Biodiversity Offsetting and Its Controversies. Version 04/2020. Accessed September 29, 2022. "https://projects.tuni.fi/uploads/2020/04/f774fb40-kompensaatiopeli_rules_online_04_2020.pdf.

Ollikainen, M. (2018). "Habitat Bank – Offsetting Biodiversity Loss." *SciTech EuropaQuarterly*, no. 26: 286–87. Accessed September 29, 2022. https://blogs.helsinki.fi/habitaattipankki/files/2018/05/SciTech-Europa-26.pdf

Pekkonen, M. and Ollikainen, M.. 2015. *Team Biodiversity Now*. Helsinki Challenge.https://challenge.helsinki.fi/upcoming-events/grand-finale-biodiversity-now.

Raunio, A., Anttila, S., Pekkonen, M., and Ojala, O. (2019). "Suitability of Habitat Types for Biodiversity Offsetting in Finland." Ministry of the Environment. http://urn.fi/URN:ISBN:978-952-361-012-5.