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# Landholder perceptions of biodiversity offsetting rights and responsibilities: implications for policy reform in New South Wales, Australia

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## ABSTRACT

We address the problem of landholder participation in biodiversity offsetting, a policy tool based on principles of market-based incentives. Our study focuses on the working rules of offsetting, specifically the rights and responsibilities of landholders. Our case study is an application of biodiversity offsetting in the Greater Sydney Metropolitan area, New South Wales, Australia. We conduct empirical analysis of landholders' perceptions of their rights and responsibilities and subsequently apply an institutionalist perspective to infer implications for public policy reform. We find that landholders' perceptions of their rights and responsibility with regard to *i*) providing offsets, *ii*) receiving money for doing so, *iii*) land management, and *iv*) transferring the land, elicit diverse reasons for (non)participation in biodiversity offsets in the Greater Sydney Metropolitan area. Some landholders consider themselves in alignment with the current working rules of the scheme, others do not. We reflect on these findings by abductively inferring reasons for institutional reform. The broader significance of our study resides in its potential to inform institutional design in jurisdictions where established schemes are under review, or may become subject to review.

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## 1. Introduction

Biodiversity offsetting is a mechanism used by planning authorities and developers to compensate for biodiversity losses associated with economic development. Over the past two decades, offset policies have been advanced in a range of countries, including the United States, Australia, Brazil, Colombia and South Africa. In a thorough effort to systematically map the global implementation of biodiversity offsets, Bull and Strange (2018) found that roughly 13,000 offset projects extended over some 154,000 km<sup>2</sup>, across 37 countries worldwide. The US was the first country to pioneer biodiversity offsetting in the early 1970s, in a major wetland mitigation program (Ambrose 2004; Bull and Strange 2018). Australia is another country where enthusiasm for biodiversity offsetting emerged early on (Salzman 2005; Gibbons and Lindenmayer 2007; Coggan et al. 2010), with the Australian federal government using offsets under the Environment Protection and Biodiversity Conservation Act 1999. This Act provides a legislative framework for offsetting to happen, but only through complementary State or Territory government measures, sometimes also involving local government as land managers (Fallding 2014). Australia is generally considered an early adopter of biodiversity offsetting (Sullivan and Hannis 2015). Examples of

recent schemes and major offsetting initiatives include the New South Wales BioBanking and Biodiversity Offsetting schemes (Burgin, 2008; Wotherspoon and Burgin 2008), which are our focus in this paper.

The design and practice of offsetting are rooted in mainstream economic theory (Turner et al. 1994), where claims of rationality, perfect information and self-interest align to produce optimally efficient outcomes through the price signal (Ayres 2008). The pricing of flora and fauna would then serve to protect nature by incentivising stakeholders with money. Voices from civil society have questioned whether market-based offsetting can ultimately provide positive social and environmental outcomes (Gooden and 't Sas-Rolfes 2020). Critical scholarship has questioned the vision of human-nature relationships that biodiversity offsetting promotes. Spash (2015, p. 541), for example, observes that offsets are often used as 'pragmatic replacements for appeals to ethics and direct regulation' and argues that offset schemes use economic logic to legitimise, rather than prevent, ongoing habitat destruction. Apostolopoulou and Adams (2019), adopting a Marxist historical-geographical perspective, extend this strand of criticism by giving social contestation a central role in questioning the implementation of offsetting. Focussing on the history of biodiversity offsetting in

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England,<sup>1</sup> these authors draw attention to its class character and argue for a new emancipatory politics that would encompass legal rights for nature.

Tensions can arise between, on the one hand, uncritically or pragmatically embracing offsetting and its underlying ontological and epistemic premises and, on the other, rejecting offsetting altogether. These tensions pose challenges for researchers studying situations where offset schemes are already established, as is the case for our current study. In such situations, researchers can opt to pursue a ‘third way’ type of inquiry, in between mainstream economic analysis of optimality and market failure, and critical deconstruction of offsetting. Such a ‘third way’ inquiry, then, would have as its objective the identification of policy reforms that are informed by the workings of offsetting. It can follow a two-layer approach, connecting human activity in the offset marketplace with the overall actual and future outcomes of a scheme. Regarding the first layer – human activity in the offset marketplace – a broad literature carries ample evidence that landholder participation in conservation schemes can be problematic for a range of reasons. Beyond price – the main ‘carrot’ in offsetting and other market-based mechanisms – there are many other known factors that determine participation rates of landholders in market-based mechanisms for biodiversity conservation (St John et al. 2010; Burton and Paragahawewa 2011; Van Herzele et al. 2013). Empirical elicitation of such factors can offer an understanding of the workings of the offset marketplace – that is, how landholders interact with the working rules of an offset scheme. The second layer, which is the evaluation of biodiversity offsetting meeting its ultimate public policy goal – securing long-term biodiversity outcomes from a whole-of-society perspective<sup>2</sup> –, then builds on the inquiry into the working rules of offsetting schemes (the first layer). If we move away from notions of optimisation for allocative efficiency and allow for plural understandings (Kothari et al. 2019) of the relationships between humans and nature, then we can adopt the premise that a broader diversity of participants in offsetting may lead to more sustained outcomes. Such diversity would allow a broader range of environmental values (held by landholders) to be incorporated in the scheme; not giving landholders discretion over the ecological values of offsets provided, but rather giving them more opportunity to participate in offsetting.

It has been shown that biodiversity offset markets can meet the needs and worldviews of the *buyers* – often developers – of offsets (Sullivan and Hannis 2015; Spash 2015; Primmer et al. 2019).

Much less is known about the other main category of stakeholders involved in biodiversity offsetting: the landholders *supplying* (selling) offsets (Primmer et al. 2019). While a rich literature exists on landholder uptake of various private land conservation programs, such as publicly funded conservation tenders, agri-environmental schemes and payment for ecosystem services, (Wilson and Hart 2002; St John et al. 2010; Morrison et al. 2011; Greiner and Gregg 2011; Burton and Paragahawewa 2011; Sutherland et al. 2012; Garbach et al. 2012; Moon 2013; Mettepenningen et al. 2013; Van Herzele et al. 2013; Taylor and Van Grieken 2015; Greiner 2015; De Krom 2017), there exists only limited literature on landholders’ uptake of biodiversity offsets. One Australian example is Coggan et al. (2013), who address different stakeholder views (including landholders) on the transaction costs of offsetting. A European example, Calvet et al. (2019), was also identified, who report on the determinants of offsets acceptability among farmers in France. Other studies report on the public perception of biodiversity offsets, but did not specifically focus on landholders who may supply offsets (e.g. Scholte et al. 2016; Burton et al. 2016).

The aim of our study is to investigate the possible policy implications of factors beyond the credit price signal that are at play in offsetting – that is, factors often considered external under a mainstream economic approach. Pursuing the ‘third way’ of inquiry outlined above, we adopt the institutionalist economic perspective developed by Daniel Bromley and colleagues (Bromley 2004, 2008; Vatn 2005; Lee 2009). We operationalise this perspective by incorporating Primmer et al. (2019)’s notions of offsetting rights and responsibilities. Seen as institutional categories, offsetting rights and responsibilities can elicit empirically how landholders relate to the institutional setting of biodiversity offsetting and how this setting influences their uptake of offsetting.

Our case study is the established biodiversity offsets scheme in New South Wales (NSW), Australia. Our research questions are: do the current working rules of biobanking in NSW correspond with landholders’ perceptions of their rights and responsibilities with respect to offsetting? And, if not, what policy implications could be inferred from any misalignment?

The article is structured as follows. **Section 2** introduces the institutionalist economic perspective and its central focus on abduction. This section also introduces offsetting rights and responsibilities. **Section 3** presents our case study, the biodiversity offsets scheme in the Greater Sydney Metropolitan area, NSW, Australia, and explains our methodology for data collection and analysis. **Section 4** presents findings in four thematic subsections: provision of offset; receiving payments; management of the land and

transfer of the land. This section is then followed by a discussion (Section 5), exploring emerging arguments for policy reform. Section 6 concludes the paper.

## 2. Economic institutions and biodiversity offsetting

Modern environmental governance largely occurs in and through institutions. Institutions are the rules or rule sets of governance that constitute both formal and less formal aspects of organising action and behaviour. Institutions both shape and constrain economic and political behaviour: they provide the expectations, stability and meaning that are essential to the coordination of economic and political life (Vatn 2005, p. 60). ‘Institutionalism’ gained prominence in American economics during the interbellum, declining after WWII (Rutherford 1994). Early American institutionalism stressed institutional change and evolution, for example through analysis of the role of new technology as a driver of change in society’s underlying habitual ways of living and thinking. Thus, the early institutionalists saw institutions not merely as ‘constraints’ on individual action. Rather, institutions were seen as embodying generally accepted ways of thinking and behaving and moulding the preferences and values of its actors. In recent decades, there has been renewed interest in institutional perspectives on economics, especially in its applications to environmental governance and policy design (Van Den Bergh and Stagl 2003; Paavola and Adger 2005; Slavikova et al. 2010).

Institutional economics may be defined as a school of economics that emphasises the importance of non-market factors (as social institutions) in influencing economic behaviour (Merriam-Webster 2011). In our case, our interest is in the social institutions influencing landholder (non)participation in offsetting. The logic of abduction, a distinct mode of inquiry in institutional economic analysis (Bromley 2004), can bring together empirical evidence about observed factors and the accepted rules of offsetting. Under the abductive mode of inquiry, the ‘ends in view’ of a particular mode of governance of an offset scheme are produced by experimentation and subject to constant change. This approach differs from the deductive mode of inquiry which characterises contemporary mainstream economics: when mainstream economists use accepted rules as the (scientific) basis for policy prescriptions that claimed to be ‘welfare enhancing’ or ‘efficient’ then deduction becomes the basis of normative prescriptions about what is thought best to do (Bromley 2004).

Bromley’s theory of volitional pragmatism (2008, 2006) advances the strand of thought outlined above. Epistemically rooted in the classical American

Pragmatism of Charles Sanders Peirce (De Waal 2013; Atkin 2015), volitional pragmatism links a theory of action based on abduction with the realm of public policy. It offers the conceptual tools for establishing an account of the need for economic and political change. Volitional pragmatism complements a growing body of empirical work in social science on collaboration, institution building and political process (Vatn 2005). Volitional pragmatism invites the abductive study of economic actors’ perspectives on the future and their ‘working out’ on how that future ought to unfold. This future-oriented perspective places emphasis on the *reasons* for humans acting collectively – in our case the government bodies responsible for biodiversity offsetting and the overall societal outcomes of public biodiversity policy – to undertake specific events – such as policy reform – today.

As volitional pragmatism is in essence a conceptual tool, or an approach to enquiry, it must be linked to concrete aspects of institutional settings in order to yield data for analysis. To this end, Primmer et al. (2019)’s findings on offsetting rights and responsibilities offer an entry point into Bromley’s institutionalist perspective: offsetting rights and responsibilities, and how they are experienced and/or perceived by economic actors, can be taken to represent the individual and collective habits, beliefs and social norms associated with biodiversity loss. Thus, eliciting experiences and perceptions with respect to offsetting rules and responsibilities can expose the ‘working rules’ of a scheme beyond what is formally stated and documented.

From literature review, Primmer et al. (2019) inferred that commonly acknowledged rights of landholders relate to property, i.e. the rights to: access the area; extract resources; manage the area and its resources; exclude others from using the area; and transfer the rights. Primmer and colleagues then identify what the rights and responsibilities of landholders could be in the context of a biodiversity offsets scheme<sup>3</sup>: *i*) the right to provide offsets; *ii*) the right to generate an income; *iii*) the right and responsibility to manage the land; and *iv*) the right to transfer the land. We adopt these four categories to organise and present our own findings from a case study of biobanking in the Greater Metropolitan Sydney area, NSW, Australia. We focus on how rights and responsibilities are perceived differently by participating and non-participating landholders. We will also look at how different rights and responsibilities can conflict with each other, as well as with landholders’ perceptions of the rights of nature (Chapron et al. 2019) and the right of society at large to biodiversity. The former (rights of nature) is a departure



from Primmer et al. (2019), who do not consider nature as a legal actor in biodiversity offsetting. Rather than considering the rights of nature and of society at large *per se*, we use landholders' perceptions of the rights of nature and of society as *proxies*, analysing how their perceptions of rights of nature and society at large might conflict with the perception of their own rights and responsibilities, as landholders.

### 3. Materials and methods

Eliciting experiences and perceptions with respect to offsetting rights and responsibilities can expose the 'working rules' of a scheme beyond what is formally stated and documented (Primmer et al. 2019). Our methodological design comprises three tiers of inference (Figure 1). First, we apply inductive coding of stakeholder interviews (Charmaz 2006), and then deductively interpret our coded findings in terms of biodiversity offsetting rights and responsibilities. *Induction* involves reasoning from observation, via analysis, to theory. *Deduction*, on the other hand, involves reasoning from an idea, via observation to a conclusion. We then apply a third tier of inference, the logic of abduction (Paavola 2004), to explore how the 'ends in view' of offsetting as a tool of environmental governance might be articulated, and unpack the reasons that government bodies responsible for managing offsetting policy might wish to consider reforming it. In our context, the term *abduction* refers to the place of explanatory reasoning in generating hypotheses. Below, we introduce our case study, and subsequently explain our data collection process.

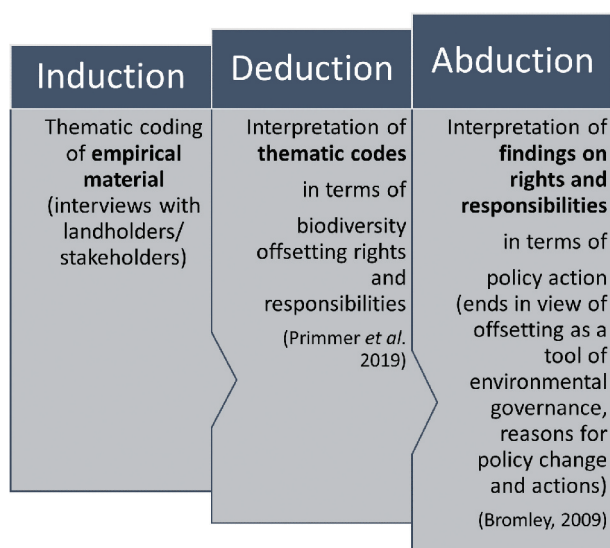


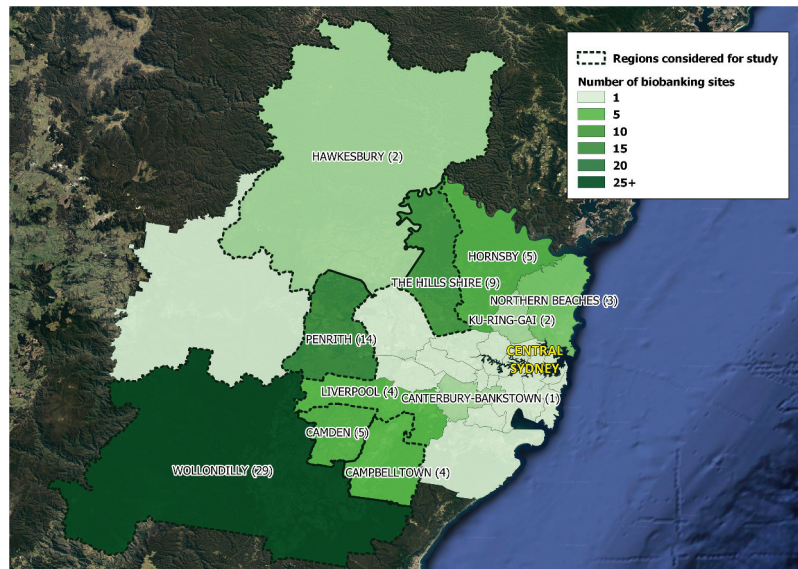
Figure 1. Methodological design.

#### 3.1. Case study: biodiversity offsets in the Greater Western Sydney area

Our project employs a case study of the biodiversity offsets scheme in NSW, where offsets are priced monetarily.<sup>4</sup> In 2008, the NSW government, developed the Biodiversity Banking and Offsets scheme, commonly known as biobanking, an offset scheme designed to address the loss of biodiversity values in NSW. Under a change in legislation, a reformed scheme became effective in 2016, called the NSW Biodiversity Offset Scheme (BOS). While the scheme has undergone changes regarding several of its characteristics (Byron et al. 2014), the principles for landholder participation remain unchanged. Credits are generated when landholders enter a binding agreement (called biobanking agreement under the old legislation and biodiversity stewardship agreement under the current legislation) to improve and maintain the biodiversity values of their land in perpetuity. These credits are then sold directly on the market, brokered by the Biodiversity Conservation Trust (BCT), an intermediary in charge of the management of the Scheme.<sup>5</sup> The funds generated from the sale of these credits cover the Total Fund Deposit (TFD) held in trust by the BCT to make the annual land and vegetation management payments (Part A payment). Landholders typically also generate a profit on top of the TFD from the sale of credits (Part B payment).

Our case study location was the Greater Sydney Metropolitan area (see Figure 2 below). As of May 2019, nearly half of the biobanking agreements made under the scheme (the Biodiversity Banking and Offsets Scheme at the time) were located in this area ( $N = 84$ , or 47%). Moreover, most of the past and planned urban development is situated in this region.

Data collection primarily covered six local government areas (LGAs) in the Greater Sydney Metropolitan area: the Wollondilly, Penrith, The Hills, Camden, Campbelltown and the Hawkesbury. Within the Greater Sydney Metropolitan area, these areas represent a range of settings for biodiversity conservation. Where Campbelltown and Penrith are LGAs near Sydney and are largely developed, the LGAs of Camden, Wollondilly and The Hills are situated further away and still have bio-diverse bushlands while being under pressure for development. Finally, the Hawkesbury LGA represents the other end of the spectrum, with an area that is largely preserved and faces less development pressures. The selected LGAs also represent different degrees of landholder participation, with landholders in Wollondilly, Penrith and The Hills participating actively (29,



**Figure 2.** Greater Sydney Metropolitan area (NSW, Australia) and BioBanking agreements per region between May 2010 and May 2019.

14 and 9 contracts respectively), while landholder participation in Camden, Campbelltown and Hawkesbury is minimal (5, 4 and 2 contracts) (as of May 2019).

### 3.2. Data collection and analysis

In the early stages of the research, four groups of stakeholders were identified by the research team and its collaborators, as representing the ‘pool’ of participants or potential participants in the scheme: *i*) public institutions; *ii*) religious congregations; *iii*) entrepreneurial landholders (individuals who buy land and biobank it strategically to generate a profit) and *iv*) individual landholders (e.g. farmers, rural living landholders). According to project collaborators, entrepreneurial, religious and public landholders readily participated in the Scheme, while individual landholder (e.g., farmers, hobby farmers and rural residential landholders)<sup>6</sup> participation was poor. We wanted to understand the reasons that compelled landholders to participate or, on the contrary, to not participate in the Scheme. To do so, we conducted 24 semi-structured interviews with 34 landholders (Table 1). Ten interviews were conducted

with 14 interviewees who participate in the Scheme, and represented the four types of landholders identified earlier (including some individual landholders). Additionally, we conducted 14 interviews with 20 interviewees who did not participate in the Scheme. These interviews were conducted with individual landholders (primarily rural residential landholders, as well as a few farmers), as they were identified as the landholder category with poor participation.

A fifth category, companies offsetting their own developments, exists. However, we did not consider it, as our focus was on offset carried out by a third party rather than by a company having the impact itself.

Interviewees’ awareness of the Scheme ranged from landholders who were not aware of the concept of biodiversity offsets and of the specific biodiversity offsets scheme in NSW, to landholders who participated in the biodiversity offsets scheme in NSW (Table 2 below). Interviewing both participants and non-participants enabled us to understand what prevented some landholders from participating, and what enabled others to participate.

To recruit landholders, we contacted agencies, organisations and associations that work with

**Table 1.** Type of landholders (participants and non-participants) interviewed.

Relationship to Scheme	Type of landholder	Number of interviews conducted	Number of interviewees
Participants	Religious congregations	2	3
	Public landholders	2	2
	Entrepreneurs*	2	3
	Farmers (graziers)	3	4
	Rural residential landholders**	1	2
	Non-participants	Rural residential/hobby farmers	12
	Farmers (horticulture)	2	2
Total		24	34

\*One entrepreneurial landholder was in the process of participating in the biobanking Scheme. However, we included him in the ‘participant’ category as he was not seeing any obstacle to his future participation, beside the credit price that was low at the time of the interview.

\*\*These rural-residential landholders bought land that was already biobanked.

**Table 2.** Landholders' awareness of the scheme.

Participant/non-participant	Level of awareness of the scheme	Number of interviewees
Non-participant interviewees	Not aware of the concept of offsets and of the Scheme	4
	Aware of the concept of offsets but not of the Scheme	5
	Aware of the concept of offsets and of the scheme but decided not to participate	8
	Enquired about the scheme but: i) decided not to participate; ii) may participate	2
	Assessment in process. Might participate	1
Total number of non-participant interviewees		20
Participant interviewees	Participate in the scheme	14
Total number of participants interviewees		14
Total number of interviewees (participant and non-participant)		34

**Table 3.** Stakeholder categories interviewed.

Stakeholder category	Number of interviews	Number of participants	TOTAL
Local government	1	3	3
State government	1	3	3
Consultants	3	3	9
Environmental group (Landcare)	1	1	1
<b>TOTAL</b>	<b>6</b>	<b>10</b>	<b>16</b>

landholders in our case study location. Staff members or volunteers in those agencies/organisations/associations shared a summary of our research with their members through email and social media. We also publicised our research project in two local newspapers in the Camden and Wollondilly area. We then employed snowball sampling to recruit additional participants.

Semi-structured interviews were conducted face-to-face. Interviews lasted between 60 to 90 minutes. All interviews were recorded and transcribed. The interviews were structured around three main sections: 1. Characteristics of the landholder and the land operation; 2. Landholders' experience and perspective of the Scheme<sup>7</sup>; and 3. Factors influencing decision-making regarding private land conservation (see Appendix 1 for the Interview guide)<sup>8</sup>. Prior to the interview, participants were given a consent form. Each participant agreed to the terms and signed the consent form.

In addition to landholders, semi-structured interviews were also conducted with other stakeholders involved in the Scheme (see Table 3 below). The aim of those interviews was to gain additional information on the functioning and management of the Scheme, its strengths and weaknesses, as well as to gain insights on the types of landholders who participate/do not participate in the Scheme and their reasons for doing so. While those were the general topics of interest, distinct interview guides

were developed for each stakeholder so as to adapt to their experience/role in the Scheme.

Interview transcripts with landholders and other stakeholders involved in the Scheme were systematically analysed using NVivo software. Initial inductive thematic coding (Charmaz 2006) was used to identify salient themes. Those initial themes were then placed into Primmer et al. (2019)'s rights and responsibilities framework: *i*) Right to provide offsets; *ii*) Right to receive money. *iii*) Right and responsibility to manage the land; and *iv*) Right to transfer the land. Finally, we applied abduction, as presented in Section 2, in order to interpret our findings on rights and responsibilities in terms of policy action. These interpretations are presented in the Discussion section (Section 5).

## 4. Findings

This section presents landholders' perspectives on the different rights and responsibilities related to landholders' participation in the biobanking scheme.

### 4.1. Providing offsets

For the landholders interviewed, the right to provide offsets was tied to: *i*) the rights of nature and society as a whole, and *ii*) the responsibility to pay for ecological assessment. Firstly, we provide an overview of the range of perspectives expressed by landholders about the relationship between the right to provide offsets and the rights of nature and society as a whole. Secondly, we present a misalignment between the right to provide offsets and the responsibility to pay for ecological assessment as expressed by landholders.

#### 4.1.1. Rights of nature, rights of society as a whole

Interviewees identified three different understandings of the alignment of the right to provide offsets and

the rights of nature and society as a whole. We present these understandings as a gradient going from total alignment to total misalignment.

The first understanding, expressed by one landholder only, was that the right to provide offsets and the rights of nature are fully aligned. For this landholder the Scheme offered a satisfactory strategy to maintain biodiversity in the Greater Sydney Metropolitan area, as it helps to foster greater ecological connectivity:

Western Sydney has tiny little patches all over it, none of which are viable, okay? But if you accept the fact that they're not going to be viable, and you go to the areas where you have substantial country that has a much lower value, because you've got to look at the economics of it, and has great potential for connectivity and all the rest of it. That is where you need to maintain your biodiversity in those areas (P20).

The second understanding was that the right to provide offsets and the rights of nature and society are partially misaligned. For some landholders, the right to provide offsets is misaligned with the rights of nature as offsets involve a process of destruction of nature to make way for development. However, it is also partially aligned, as it allows for some degree of restoration and protection. As such, it was considered by some as '*better than nothing*' (P19, P22) or '*our only option*' (P6):

Population has got to go somewhere; houses have got to go somewhere. So if they can do that and help us keep our little bits of bush in pristine condition, preserved, then it's at least... I think it's better than nothing (P22).

Other landholders shared this partial misalignment view and responded to it by making their participation conditional. For example, one interviewee working for a Council explained that the Council would not offset the impacts of mining projects or developments within the boundary of the Council area. A rural-residential landholder who did not participate in the Scheme explained that she would only consider biodiversity offsetting if the development causing the impact demonstrates public good outcome, for example the development of a train line in an underserved area.

The third understanding was that the right to provide offsets is fully misaligned with the rights of nature and society at large, for two reasons: *i*) the current working rules of the Scheme do not allow alignment, and *ii*) the nature of biodiversity offsetting itself is fundamentally misaligned with the rights of nature. Several landholders expressed doubt regarding the working rules of the Scheme. For example, while offsets are to be provided 'in perpetuity', some landholders knew of offset sites that were subsequently cleared. This led them to doubt whether

protection of biodiversity through biodiversity offsets could be effective. Some also doubted the ability of the Scheme to protect 'like-for-like' plant community types in the future. For example, one respondent explained that in the future there will be no more native vegetation available to offset further impacts of development within the same community type. A second commonly expressed reservation regarding the governance of the Scheme was that vegetation loss in one specific area might be offset in another area, which will therefore disadvantage the humans and animals living in the area that experienced a loss in biodiversity:

[I]n terms of residential development, [..], it concerns me to say, 'All right, we're going to put all these towers here and knock down this bushland and we're going to go out to the Hawkesbury and regenerate a paddock and regrow some trees in a paddock or whatever'. What's happened to this environment here that you've destroyed? It's different. It's not the same [...] You're not able, really to replace that and you're not able to replace [the value] that has for the people and livestock that live there; the birds and the animals (P27).

For some landholders, the misalignment of the Scheme with the rights of nature was not due to faults in its governance structure and working rules, but rather to the nature of the concept of biodiversity offsetting in itself, which allows the destruction of nature. One landholder expressed the unacceptability of the offsetting concept as follows:

[W]e shouldn't be clearing [t]here and then growing stuff here. We just shouldn't be clearing there (P3).

In addition, those landholders considered participating in biodiversity offsetting as equivalent to supporting developers' profit-making activities through destruction. One landholder explained that she would rather use her own money than receive money from developers:

I would rather do it on our buck [...] than do it to think that I'm helping some bugger make some more millions (P3).

#### 4.1.2. *The responsibility to pay for ecological assessment*

The rules of the Scheme in NSW require landholders to pay the costs of the mandatory initial ecological assessment of their land. This requirement was often perceived as misaligned with the right to provide biodiversity offsets as it acts as a deterrent for landholders who cannot afford to pay for the initial assessment, and/or are reluctant to spend the money without having certainty that the assessment will allow them to enrol into the Scheme:



[W]e do not want to outline money for something that we don't really understand or know anything about and might not happen (P7).

For others, it also appears to be unfair for the assessment cost to be the responsibility of the landholder:

To me it's incongruous that I have to fund an assessment of the quality of the vegetation if the [...] Scheme wants to assess my property, they're welcome, but why should I pay for it? If they want the vegetation retained, come and assess and make me an offer. It seems that the cart is before the horse (P2).

## 4.2. Receiving money

In this subsection, we focus on landholders' perspectives on their right to receive money in exchange for conservation work. We distinguished two main perspectives *i*) payment as compensation, which is about receiving payment to cover the costs of conservation work; and *ii*) payment as incentive, where the payment needs to allow for a profit.

### 4.2.1. Payment as compensation

Some landholders put emphasis on payment as compensation. This was notably the case for religious congregations participating in the Scheme. The two congregations interviewed often stated that the main motivation to participate in biobanking is an ethical one: the need to '*take our part in caring for this land and restoring native vegetation*' (P16). They referred to the 2015 *Laudato si* of Pope Francis and its call to 'care for our common home'. As a result, religious congregations put more emphasis on compensation as illustrated by an interviewee whose congregation sold credits at a price that did not recoup the opportunity cost:

The opportunity cost money was quite low, but we wanted to do it, because we wanted to have some land, at least, that maintains the native [vegetation], yes (P16).

This was also the case for several non-participant rural-residential landholders who indicated that profit was not a priority and, in some cases, highlighting that profit seeking was going against their values:

I wouldn't want to make money out of it, because that doesn't fit in with what I'm trying to do for the environment, but I wouldn't like to be doing a whole lot of work, which is, I'm paying for everything (P15).

When asked what they would use the money for, they often explained that they would be satisfied if the Scheme could cover management costs and help them employ contractors to do the work.

### 4.2.2. Payment as incentive

For other landholders, making a profit out of biodiversity offsetting was an important part of why they participated or considered participating in the Scheme.

Depending on the objectives of the landholders, the profit could be used for different purposes. For a multi-generational farming family participating in the Scheme, biodiversity offsetting was a way to make the profit needed to keep the farm going. The family used offsetting to protect the integrity of the farm by preventing a split and to use the profits to diversify investments:

A lot of farming families fight and split the farm up [...] if you take the option away, you effectively sell the right to do anything to the land and; therefore, [...] no argument can be made and then you take that cash and invest it in things that are unemotional [...] (P21).

For the two public landholders interviewed, the profit generated by their participation in the Scheme was set aside as a sinking fund for other works, or as money to be allocated to other biodiversity protection projects.<sup>9</sup> For more 'entrepreneurial' landholders participating in the Scheme, land was bought for the purpose of enrolling it in the Scheme and deriving a profit from it. Finally, some rural-residential landholders saw offsetting as a way to make a profit out of their land. However, contrary to the multi-generational farming families, public landholders and entrepreneurs, these landowners did not yet participate in the Scheme as they were unconvinced regarding its economic soundness. They appeared to calculate the opportunity cost of their land based on its residential development value, i.e. what the land could be worth if it were to be rezoned from agricultural or rural use to residential or urban use. One landholder expressed a concern about locking in his land under the Scheme as follows:

There is more development going on in the area [...]. So that will change the nature of the area quite a bit. I suspect there'll be rezoning of land and all sorts of things, so if we do BioBank we're going to lose that potential (P34).

This concern contrasted with the perspectives of multi-generational family farmers who seemed to base their opportunity cost on the farming value of the land:

As far as an opportunity cost in terms of losing the land for farming there's no argument. We're always going to do much better out of the biobank (P22).

In practice, a sharp distinction between payment as incentive and payment as compensation did not always exist: some landholders who value payment

as incentive sometimes also value the compensation dimension. This was notably the case for some public landholders who explained that the compensation allowed them to carry out conservation activities that they could not otherwise have undertaken. A farmer participating in the Scheme also explained that payment as compensation was important as it enabled him to contract bush regenerators to improve the ecological state of the land. Finally, an entrepreneurial stakeholder who bought a property to offset it, also wants to live on the property. The compensation payment provided him with the ability to generate an income for himself as he conducts the conservation activities.

Among the landholders interviewed, those putting emphasis on payment as incentive were more often participants in the Scheme than those putting emphasis on payment as compensation. However, this divide does not always hold true as some rural-residential landholders who do not currently participate, but are interested in the Scheme, put emphasis on payment as incentive, while participant religious congregations put emphasis on compensation.

### 4.3. Managing the land

Issues around the right to manage land were often brought up by other stakeholders, such as consultants and the representative of Landcare interviewed, rather than landholders. In contrast, issues related to the responsibility to manage the land was mentioned by landholders.

#### 4.3.1. The right to manage the land

Two perspectives on the right to manage the land were identified:

- (i) the right to manage the land is directly related to the right to provide offsets and to receive money for it;
- (ii) the right to manage the land is misaligned or in contradiction with the right of nature and society at large.

Illustrating the first viewpoint, one of the consultants interviewed argued that the initial objective of the Scheme was to enable landholders, principally farmers, to derive an additional revenue stream from the protection of biodiversity on their property:

Landowners who have good years and bad years and probably more bad years than good years, do not make a lot of money [...] [but] if landowners have got the right [biodiversity] values, there's nothing wrong with them receiving an appropriate level of payment to managing that biodiversity and that's actually putting the value on biodiversity (P41).

As such, it appears that the perceived policy objective of the Scheme, in addition to securing biodiversity outcomes, is also to provide landholders with the opportunity to derive an income from it by undertaking the land and vegetation management work themselves. This is particularly relevant for landholders on small and/or degraded properties who, according to one consultant interviewed, are unlikely to generate a profit from the sale of credits, and whose only financial gain from biodiversity offset would be through deriving an income from management activities. This also applies to second-tier landholders (i.e. landholders who bought a property on which a biobanking agreement has already been set up) who did not benefit from the profit derived from putting the land under offset.

The second viewpoint stemmed from the observation that the quality of management undertaken by landholders varies widely. One interviewee argued that the best way to ensure consistency in quality would be to take the management out of the hands of landholders altogether.<sup>10</sup> Making the hiring of restoration practitioners compulsory may secure more positive biodiversity outcomes on private properties. However, this solution may not fully resolve this tension as, according to one of our interviewees, there is disagreement, within the ecological restoration industry, regarding adequate practices and methods.

In our interviews, participant landholders often placed more emphasis on payment as incentive than payment as compensation. When landholders (participant or non-participant) put emphasis on compensation, they did not always appear to use it to derive an income. However, the hypothesis that preventing landholders from deriving an income by not being allowed to manage their land may discourage some to participate cannot be discarded.

#### 4.3.2. The responsibility to manage the land

Two overall perspectives emerged from the landholder interviews with regard to the responsibility to manage the land. The first related to their ability to carry out the required management activities. The second related to landholders' concerns in having to deal with unforeseen management issues within the financial constraints of the Scheme.

Some landholders interviewed did not express doubts about their ability to complete the work, because they had expertise in ecological restoration or were using the services of experienced restoration practitioners. In comparison, other landholders displayed low confidence regarding their ability to undertake conservation work on their land and

stated that they would rather participate in group activities for conservation, such as joining a Landcare group, rather than work on their property alone. They would need to get *'information on how to go about what you're doing anyway for starters, until you get into it'* (P12) and receive *'advice on how to do it'* (P4).

Concerns related to having to deal with unexpected management issues within the financial constraints of the Scheme were mostly raised by non-participants. Such concerns crystallised on the potential for new weeds, not present at the time of the ecological assessment, to emerge. The costs of managing such weeds would therefore not be accounted for:

Ten years ago, we did not have Chilean needle grass. We did not have African love grass. A part of that Scheme is they do not want that on this property. That is extremely difficult to control (P8).

This concern also pertained to changing regulations for chemicals, which might lead to changes in costs related to weed management.

Among the landholders interviewed, those who worried about their ability to carry out conservation activities were non-participants. However, not all non-participants voiced this concern. Indeed, some expressed strong confidence in their bush regeneration skills.

#### 4.4. Transferring the land

On the issue of transferring the land, some landholders perceived the right to participate in biodiversity offsetting as contradicting the right to transfer the land. In contrast, others saw these rights as compatible.

Contradiction was mainly felt by landholders who worried that due to the restrictions imposed by offsetting, putting an agreement on their land would impact their ability to sell the property at a good price. This was of particular importance for older landholders who may need to downsize in the future and will need the money from the sale to fund their retirement:

If we did decide that we needed to sell the property, that would put a restriction on us, and it might make it a lot more difficult to sell the property, and if we were in a situation where we really needed to sell the property, and that could mean the difference between selling and not selling, then that would really put us in hardship (P11).

Some landholders also felt that entering into an agreement would burden successive landholders, particularly if these were their own children, reducing the option value of the land by imposing restrictions on what can be done with it in the future:

You have no way of knowing what's going to happen in the future and restricting people to what they can and can't do might place some sort of burden (P27).

At the other end of the spectrum, other landholders saw participating in offsetting as a way to safeguard the bequest value of their land, ensuring that the conservation work they had undertaken on their property would be maintained in the future. They saw the right to participate in offsetting and the right to transfer land as going hand in hand:

I wouldn't be opposed to something which would preserve what we've done in our lifetime on this property to ensure that the vegetation remains [...]. I would hate to think that another person purchasing this property would simply come in with a bulldozer and say, 'I hate trees', and bulldoze them all (P26).

These two opposite perspectives were expressed by non-participant landholders. Participants in the Scheme often did not make mention of possible contradictions between the right to participate in offsetting and the right to transfer the land. This is most likely because most do not intend to sell their land in the near future or manage public land that will not be sold.

## 5. Discussion

We have elicited perceptions of offsetting rights and responsibilities by probing stakeholder perceptions around rights and responsibilities. This has yielded a picture of the working rules of the offset schemes in NSW. To explore the normative policy implications of our findings, we turn to the logic of abduction. Abductive reasoning involves inference to the best explanation (Tavory and Timmerman 2014). Our study set out to investigate the possible policy implications of factors at play in offsetting that would be considered external under a mainstream economic approach. Our research asked whether the current working rules of biodiversity offsets in NSW correspond with landholders' perceptions of their rights and responsibilities with respect to offsetting. Our findings suggest this correspondence is far from perfect.

In this section we first reflect on and discuss our set of observations (Section 5.1) to subsequently identify implications for policy reform (Section 5.2). Here, our primary interest is in possible reasons for policy change rather than in specific policy recommendations.

### 5.1. Synthesis of landholder perceptions of offsetting rights and responsibilities

The overall picture that emerges from our findings is that participants in the Scheme have often (partially)

reconciled their right to provide offsets with their vision of the rights of nature. In contrast, many (but not all) non-participants often saw a contradiction between their right to provide offsets and the rights of nature and those of society at large. This is due to their conception of nature as non-substitutable, or of the governance of the Scheme as not providing enough protection for nature.

Our results indicate that participants often placed emphasis on payment as incentive, with the exception of religious congregations.<sup>11</sup> In contrast, many non-participants placed emphasis on payment as compensation. The latter category often displayed limited interest in participating in the Scheme. Landholders looking uniquely for compensation often had strong environmental motivations. They often did not have a positive view of the Scheme (for one or several of the reasons mentioned above) and often used other funding sources, such as grants provided by another government agency (i.e. Local Land Services).

A smaller group of non-participants put emphasis on payment as incentive and were interested in the Scheme but hesitated to participate as they were not convinced of its economic soundness. These landholders appeared to calculate the opportunity cost of their land based on its residential development value, i.e. what the land could be worth if it were to be rezoned from agricultural or rural use to residential or urban use, and subdivided. This contrasted with other participants in the Scheme who based their opportunity cost on the farming value of the land.

Rather than by landholders with regard to their own situation, the right to manage the land was addressed by other stakeholders (consultants, environmental association representative) when sharing their view on how the Scheme should function. As such, the insights obtained do not explain directly how the right to manage the land influences landholders' willingness to participate in the Scheme. However, a general insight is that conditioning landholders' right to manage the land (by making it compulsory to hire a bush regenerator to carry out the work) may discourage landholders who expect to derive an income from offsets.

With regard to the responsibility to manage land, non-participants in the Scheme often expressed concern about their ability to conduct conservation activities. While some non-participants had full confidence in their ability to carry out the work, other landholders cited (perceived or real) lack of skills, and ability to manage the land if unforeseen events were to occur (i.e. emergence of a new weed).

Participants did not mention concerns about their right to participate in offsets being in contradiction with their right to transfer the land. In contrast, non-participants often mentioned this point and had diverging opinions on the matter. Some perceived participating in the Scheme as compatible with their right to transfer the land. The added advantage of a transfer on their own terms was seen as a mechanism to ensure that the conservation work they undertook would be maintained. In contrast, other landholders perceived participation in the Scheme as potentially interfering with their right to transfer the land. They felt participating in the Scheme would diminish the land value or put unnecessary burden on the next landowner.

## 5.2. Policy reform

### 5.2.1. Practical and regulatory improvements

Our findings indicate that a number of practical barriers exist that could be resolved with a change of emphasis in the Scheme's current implementation. First, the high cost of the mandatory ecological assessment could, for example be borne by other stakeholders, notably the buyer of credits or the government agency managing the Scheme. The cost could then potentially be deduced from the sale of credits. Second, landholder uncertainties around the practicalities of undertaking land and vegetation management could be addressed with (more) targeted information and technical support for landholders, notably guidelines and training on how to undertake on-property conservation work. Third, landholder concerns around the way offsets would impact land value could be mitigated by providing documented records of selling prices of offset land and expected impacts on land values. Fourth, more (and systematic) information could be provided on the environmental and ecological outcomes on existing biodiversity offset properties, so as to provide conservation-oriented landholders with insights on what can be achieved. A caveat here is that this assumes that offsets bring positive outcomes, which may not always be the case. Fifth, the availability of additional funds could be envisioned in cases where landholders work on heavily degraded land or face the emergence of new weeds. Sixth, enforceable standards for ecological restoration on offset sites could be developed. As is currently the case for assessors conducting the initial ecological assessment, ecological restoration practitioners participating in the Scheme could be accredited or licenced. Finally, a stable planning environment, particularly land use zoning procedures, may make the Scheme more attractive to some landholders. As seen in Section 4, some landholders appear to calculate the opportunity cost of



their land based on its potential residential value once rezoned residential. The Scheme will only be attractive to these landholders if the planning environment remains stable and non-residential land is sure to remain zoned as non-residential in the future.

### 5.2.2. Accommodating ethical and moral perspectives

Where exercising ethical notions involves a more individual (self-)assessment of values as relatively good or bad, morality is a more intersubjective community assessment of what is good, right or just for all (Walker and Lovat 2014). In our case study, moral objections were largely voiced around the Scheme's misalignment with landholder perceptions of the rights of nature and those of society at large. A first possible policy implication is that the Scheme would need to adopt a more transparent application of the mitigation hierarchy, so that the necessity and legitimacy of offsetting becomes clear to participants. Our findings show that several participants did not see a need to destroy vegetation in the first place and therefore did not agree with the premises of offsetting it. A second implication is that a tightening of the working rules of the Scheme also appears to be necessary for some landholders to consider biodiversity offsets as effective. Some of the landholders interviewed considered the rules of the Scheme to be too loose to achieve positive ecological outcomes. Some of the fundamental rules of the Scheme, such as 'like-for-like' and 'in perpetuity' would need to be renegotiated for some landholders to consider participation. However, for a certain category of landholders even these institutional reforms would not reconcile fundamental differences in value framing (Sullivan and Hannis 2015).

### 5.2.3. Sufficient reason for policy change?

Our abductive exploration yields the plausible conclusion, without positively verifying it, that changes in the working rules of the Scheme would be warranted for our case study situation. In the sections above, we have outlined some possible changes and what they would most likely achieve in terms of bringing a more diversely motivated group of landholders on board of the Scheme. For the policy administrators, notions of policy cost-effectiveness and allocative efficiency will inherently play a role in deciding whether there is sufficient reason for policy reform. Indeed, these notions are the very *raison d'être* of any market-based offsetting scheme. However, the evolving rules and norms in which the scheme operates – as measured, in our study, by landholders' perceptions of offsetting rights and responsibilities – especially landholders' ethical and moral considerations, are a prompt for policy

administrators to expand their reasoning beyond mainstream economic considerations.

## 6. Conclusions

We find that landholders' perceptions of their rights and responsibility with regard to providing offsets, receiving money for doing so, and managing and transferring the land, elicit diverse reasons for (non)participation in biodiversity offsets in the Greater Sydney Metropolitan area. Some landholders consider themselves in alignment with the current working rules of the scheme, others do not. The current working rules of the Scheme make entrepreneurial sellers, public landholders, as well as religious congregations and some individual landholders (e.g. farmers) willing to participate, and many individual landholders (e.g. rural-residential landholders, farmers) unwilling to participate.

Abductive enquiry may elicit reasons for individual landholders or groups of landholders to undertake specific events. It can also elicit reasons for collective action, or policy action for public policy outcomes. Landholders or developers will not undertake policy reform. Rather, policy makers will, and their actions can be informed by landholders' decision to participate or not in the Scheme. Our findings demonstrate that when a broader institutional perspective on market-based biodiversity offsetting is adopted, abduction emerges as a compatible mode of enquiry to elicit how the 'private' reasons of offset buyers and sellers (over and beyond the offset price signal) become the concern of policy makers and shape the case for public policy reform.

Rather than call for either a wholesale dismissal of offsetting, or proposing established economic measures to reduce market failure, our approach offers a broader perspective beyond the boundaries of traditional economic analysis, into the formal and informal institutions (the working rules) of offsetting, with a view to emphasise and elicit the human dimension of private land conservation in an economic setting. The broader significance of our study resides in its potential to inform institutional design in jurisdictions where established schemes are under review, or may become subject to review.

## Notes

1. Biodiversity offsets pilots were trialled in England between 2012 and 2014 and a consultation process on biodiversity offsetting was conducted in 2013. However, offsetting was not rolled out more widely at that time.
2. We remind the reader that, following the mitigation hierarchy, offsetting should always be considered

a last resort (Arlidge et al. 2018), after avoidance, minimisation and remediation on-site.

3. Primmer et al. (2019) held several workshops on the rights and responsibilities of each stakeholder group (e.g. developer, landowner, government authority, knowledge intermediaries, citizens) in an offset scheme, if such a scheme was to be implemented in Finland.
4. Not all offsets schemes put a price on nature. Other Australian jurisdictions (e.g. Commonwealth, Western Australia, Queensland) are based on environmental outcomes regardless of price.
5. The latter option did not exist under the previous scheme, as the BCT was created under the new legislation.
6. Ten interviews were conducted in pairs. Nine were with stakeholders owning and/or managing properties together (i.e. couple, parent/child, landowner/land-manager). One was with two landholders on different properties.
7. At the time of study, no significant changes had been made to the process of landholder participation between the BioBanking Scheme and the NSW Biodiversity Offsets Scheme. As such, landholders who engaged with the BioBanking Scheme or the BOS could be interviewed without compromising our findings.
8. The questions were adapted to the interviewee's degree of awareness of biobanking. For landholders who did not have knowledge of biobanking, the questions under Section 2 were framed around the characteristics a scheme would need to have and the type of support/information they would need to be provided to find it attractive.
9. The focus on payment as incentive by public landholders needs to be nuanced. A consultant interviewed mentioned that, from his point of view, public landholders often focus on obtaining funding to manage the natural areas within their jurisdictions. Additionally, compared to other landholders, they often do not have additional costs to cover (e.g. mortgage). As a result, it is possible that some public landholders may focus on payment as compensation more than payment as incentive.
10. Whilst imposing the hiring of contractors on landholders has not eventuated, landholders are often bound to accept guidance from professional restoration practitioners.
11. According to a consultant interviewed, this is also likely to be the case of some public landholders. However, this was not observed in our two interviews with public landholders participating in the Scheme.

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