

Improving Arguments for Local Carbon Rights: The Case of Forest-Based Sequestration

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ABSTRACT *Land-based climate mitigation schemes such as REDD+ imply the creation of 'rights to carbon' for actions that enhance carbon sinks. In many cases, the legal and normative foundations of such rights are unclear. This article focuses on special rights on the basis of improvement. Considering improvement in relation to carbon sinks requires asking what it means to 'improve' an environmental resource. Our answer departs in two significant respects from the standard conception of improvement, namely by reconceiving action in relation to ecosystem services, and accordingly, making the case for a counterfactual baseline to be used to compare an improved and unimproved state. Our modifications potentially allow for a variety of agents to claim special carbon rights on the basis of beneficial interactions with land-based carbon sinks. We give three archetypical examples of agents who may claim pro tanto special rights to carbon based on their interaction with carbon sinks.*

1. Introduction

If dangerous climate change is to be avoided, deforestation must be reduced and, where possible, reversed. The world's forests are estimated to have offset up to 60% of cumulative CO₂ emissions between 1990 and 2007.¹ Yet deforestation, particularly in the globally critical rainforests of the Amazon, the Congo Basin, and South East Asia, threatens to undermine climate stabilisation. In 2015, emissions from deforestation and forest degradation were around 3.9 gigatonnes (Gt) CO₂ per year.² Preservation of forests, and rainforests in particular, is therefore the goal of the United Nations Reducing Emissions from Deforestation and Forest Degradation programme (REDD+).³ The basic idea behind REDD+ is that payments are made for 'avoided deforestation', so that would-be deforesters have an alternative source of income to, for example, logging, mining, or commercial farming.

These developments raise the prospect that the carbon stored in forests will be recognised as a commodity through the creation of tradable carbon rights.⁴ Strictly speaking, however, the terms 'carbon rights and rights to carbon' are misnomers. We are not talking about rights to graphite or diamond. Rather, the 'right to carbon' is increasingly used as a limited ownership right of carbon dioxide sequestered by biomass within a certain area. Living forests both store carbon dioxide (e.g. in individual plants and soil) and possess the potential to store future carbon dioxide. At its most minimal, the right is to benefit

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or receive payment for the stored or sequestered carbon dioxide. We will use the terms ‘carbon rights’, ‘rights to carbon’, ‘rights to carbon sequestration capacity’, and ‘rights to carbon sink capacity’ interchangeably throughout.

As a United Nations initiative, REDD+ is designed to operate at the level of the state.⁵ Concerns about substate minorities and local communities, particularly indigenous peoples, have been acknowledged.⁶ This has led to the proposal of REDD+ safeguards, which at a minimum stipulate that there should be ‘respect for the knowledge and rights’ of indigenous peoples. Some indigenous groups have proactively asserted such rights and in doing so have challenged the state-centric assumption of REDD+. One of these is the Paiter Surui tribe in Brazilian Amazonia.

In 2010, the Surui claimed that they, not the state of Brazil, were the proper holders of the ‘right to carbon’ in their lands. Working with the NGO Forest Trends, the Surui obtained an advisory legal opinion that they, not the state of Brazil or any other entity, own the carbon sequestration capacity of their forest territory. The advisory legal opinion was derived through a commissioned analysis of the Brazilian constitution, which found that ‘[s]ince indigenous peoples are the only ones with the power to carry out REDD+ or reforestation activities and projects within indigenous lands, they are thus the only possible owners of eventual carbon credits or other benefits derived from these activities’.⁷ The Surui Chief, Almir Narayamoga Surui, commented that

this report confirms that we have the right to carbon, and is an important political and legal instrument to recognize the rights of indigenous people for the carbon in their standing forests. It helps in our dialog[ue] with the government, businesses, and other sectors, strengthening the autonomy of indigenous groups to manage our territories.⁸

The Surui became the first indigenous group to sell carbon credits under the REDD+ scheme and did so until 2018, as part of their overall development plan. The REDD+ initiative was suspended after gold deposits were discovered in their territory, leading to an overwhelming increase in deforestation.⁹ Despite the demise of the Surui’s REDD+ project, their claim that they have a ‘right to carbon’ raises interesting questions. As well as the legal issues, it raises the normative question of whether there is an appropriate justification for that right. Can special rights to carbon sequestration capacity be justified?¹⁰

On the international political stage, the answer seems to be a clear ‘yes’.¹¹ According to the United Nations Doctrine of Permanent Sovereignty over Natural Resources,¹² states have a right to the natural resources on their territory, and this can presumably be extended to the resource of carbon sequestration capacity. Normatively speaking, however, the answer is far from clear. The Doctrine of Permanent Sovereignty over Natural Resources does not stand up well to moral scrutiny.¹³ One kind of challenge asks whether states are the (only) appropriate agents who have rights over resources. Perhaps substate groups, such as the Surui, or even superstate institutions can have rights over resources.¹⁴

The second challenge follows from the increasing realisation that (i) resources can be disaggregated and (ii) rights to resources can be unbundled. By (i), we mean that a given object can be a resource for different reasons. It might be capable of serving analytically distinct functions. By (ii), we mean that there can be different kinds of rights to resources, as there are different kinds of ownership rights. Tony Honoré differentiated 12 ‘incidents’ of property rights, which need not all be held by a single agent.¹⁵ For example, a person

may have the right to live in a house for the rest of their life, but they may not sell the building or the land.

Taken together, these two elements mean that even if a state (or any substate or super-state agent) has a legitimate territorial claim, it does not automatically follow, normatively speaking, that it has 'full liberal ownership rights', i.e. all incidents of ownership over all the natural resources within that territorial area.¹⁶

Beto Borges at Forest Trends seemed to suggest that the Surui did have a moral right specifically to the carbon sequestration capacity of their lands. He was quoted as saying

Not only do the indigenous groups *have the ethical right for carbon credits projects on their land and because of their stewardship role over the generations*, but this finding [the advisory opinion] now means they have the legal right as well. It's a major step forward.¹⁷

However, a lot of normative unpacking is needed here. If we take seriously the idea that resource rights can be unbundled, it is possible to accept that the Surui have extensive rights to their traditional lands but to hold that this does not necessarily entail the 'right to carbon'. If resources can be disaggregated, then separate arguments can be made for different kinds of rights over them.

What moral arguments could justify an agent's 'right to carbon'? This is the question we take up in this article. We investigate the extent to which arguments from improvement can give moral justification to ownership rights to carbon sequestration capacity in various cases.¹⁸ Improvement is one of the most well-known moral grounds for special rights. Another is 'attachment'.¹⁹ It is not clear how either of those relates to 'stewardship', the justification invoked above by Borges.

In everyday use, a steward is an agent who manages an entity on behalf of its owner. On this everyday understanding too, stewards may not wantonly destroy or alienate the things they are charged with managing; that prerogative belongs to the owners. 'Environmental stewardship', a concept increasingly in use since the 1960s, is taken to refer to patterns of 'responsible' usage of natural resources or 'care for the environment'. In general, therefore, talk of 'environmental stewardship' can be used to signal that the speaker believes that the current generation of humans are not the owners of and therefore should not dominate nature, and should not see it as a resource to be used instrumentally entirely for their own personal benefit without reference to other entities with intrinsic value, who are the true 'owners', whether those others may be future generations, deities, or nature itself.

We shall talk about the Surui's right to carbon as a right to own the carbon sequestration capacity of their lands for four reasons. First, it is not our place to make an argument that the Surui themselves are stewards in the context of some richer metaphysical (in the Rawlsian sense) conception, such as the stewards of lands that have intrinsic value or are owned by another (e.g. spiritual) being. Second, along Rawlsian lines again, it is not clear what place such arguments should have in an international initiative on reducing greenhouse gas (GHG) emissions. Thirdly and relatedly, it is worth exploring the limits to arguments that are not based on richer metaphysical ideas potentially involved in human beings as stewards of nature, in order to see whether those who do not share those metaphysical ideas can nevertheless accept the 'right to carbon' in the case of groups such as the Surui.²⁰ Fourthly, the Surui's right to carbon was exercised as a right to the economic benefit of carbon credits from the sequestration capacity of their land,

which is incompatible with seeing it as intrinsically valuable. Henceforth, we talk of the right to carbon as an ownership right.²¹

We choose to discuss improvement rather than attachment because we believe it offers a more promising basis to justify special rights in cases such as the Surui's right to carbon. There are three reasons for this. First, it is hard to conceive of an attachment to the resource of carbon sequestration capacity. This is not to deny that agents might be attached to practices and/or have life plans that improve carbon sequestration capacity (millions of individuals are certainly attached to practices that deplete it). For attachment claims to hold up, however, the resource in question must be regarded as essential or central to the practices, not simply a replaceable means to it.²² It is entirely possible that agents may start to build their lives around the project of maintaining or improving carbon sequestration capacity, but it is unclear that this is the case for all indigenous groups who may wish to follow the Paiter Surui's example in asserting their rights to carbon. Second, as noted, on some accounts,²³ attachment is incompatible with seeing the resource in question as a commodity to be traded, which the Surui have since done.²⁴ Third, Chris Armstrong has convincingly argued that attachment claims should not increase the amount of resource holdings of any one agent, but simply affect what kinds of resources constitute that holding.²⁵ In short, attachment-based claims for special rights do not sit easily with the idea of trading for gain.

We begin in Section 2 by introducing the argument from improvement justification for special rights. Section 3 sets out the case for a counterfactual baseline to assess relevant actions as improvements. Based upon this, Section 4 identifies two archetypical carbon-sink improving agents who can claim *pro tanto* special rights: carbon farmers and sequestration service providers. Section 5 introduces the third archetypical agent: the forest dweller. Section 6 concludes.

2. Arguments from Improvement: The General Form

In its most general form, the argument from improvement can be stated as follows:

An agent A has a special claim to natural resource R, or (at least some of) the added value of that resource, if A makes an improvement to R.

As Armstrong shows, special rights based on improvement can be divided into two forms. The first 'desert based' form holds that justice is served when agents who improve natural resources receive the added value of the improvement, or at least a proportion of it.²⁶ The underlying rationale for this is that those agents are responsible for the creation of the added value and thus deserve to keep (at least a proportion of) it, and that this can be sufficient to generate an entitlement. By contrast, instrumental justifications do not rely on the claim that it is intrinsically just that agents retain (some of) the added value, but rather that a system which entitle agents to retain the added value resulting from improvements furthers justice. For example, rewarding those who make improvements might encourage further improvement and value creation, meaning that the society becomes better off as a whole. Provided the least well off in a society are benefitted by this system, it is just. Under those circumstances, those who create the extra value are rewarded by having a claim to a proportion of it. However, this reward could be replaced by other incentives.²⁷

As noted above, standard formulations of improvement appear inapplicable to actions affecting ecosystem services such as carbon sinks. Our aim is to see how far arguments for improvement can go in the case of terrestrial carbon sinks. A full treatment of improvement of ecosystem services is beyond the scope of a single article, requiring a full assessment of each of the following questions:

- (1) Improvement of what? – the ‘substrate question’.
- (2) Improvement in what respect? – the ‘metric question’.
- (3) What counts as ‘making an improvement’? What is the baseline against which an improvement is judged and which kinds of actions count?
- (4) What other conditions must be present for improvement to result in a special claim all things considered?

These questions are interrelated, but we shall focus on the third. However, we wish to make some brief remarks about the other questions. We do this below, before moving onto discussion of the third question in Section 3.

To answer question (1), the substrate question, we begin with Armstrong’s definition of a natural resource as ‘Rohstoff’, i.e. ‘the raw materials we are confronted with in coming into existence in the world, with which we can potentially support our various (and competing) human projects’.²⁸ Something is natural insofar as it is not created by humans (we can think of a continuum here between two idealised poles, ‘pristine nature’ or ‘Rohstoff’ and ‘completely artificial’). The most intuitive examples of natural resources are the discrete objects which can be acted upon directly. As Armstrong notes, definitions of ‘natural resource’ in international law and in distributive justice usually understand resources as discrete objects extracted from the environment, such as trees, fish, minerals, and so on, leaving aside the natural systems and processes responsible for their existence.²⁹ However, this intuitive view of natural resources does not apply when it comes to justifying special ‘rights to carbon’. As noted in the Introduction, we are not talking about rights to discrete objects made of carbon, such as a lump of graphite or diamond, but rights to carbon sequestration capacity. The carbon sink function of forests is generated from interactions of the wider natural system and processes, i.e. it is a systemic good. Our definition of natural resources must therefore include both the objects that fit into the intuitive definition of natural resources (i.e. as discrete objects) and the systems and processes that generate those objects. One further point to note is that in many cases, the systems and processes will constitute nonexcludable goods. Carbon sequestration capacity is one example of this: the sequestration capacity can in principle be taken up by GHG emitted anywhere in the world.

On a commonsensical view, something is a resource insofar that it is a potential means to a valuable end. This leads us to question (2), the metric question. If a resource is a potential means to a valuable end, an improvement to that resource is a change in the properties of a resource which makes it better able to serve human ends. This means that a full justification of a special claim from improvement will have to provide a theory of what is valuable. In particular, it would have to adopt either a monist or a pluralist conception. Deciding on which metric to adopt is no easy task, and we do not attempt to do so here but simply outline the main issues faced. The advantage of a monist conception of value is its simplicity. For example, if a natural

resource is that which has exchange value, then it is easy to judge whether it has been improved; one simply asks whether the exchange value has increased. The disadvantage is that by insisting on the convertibility of all values and ends to a single standard, a monist conception fails to fully respect any of them. A pluralist conception of value would say that some things just cannot be converted or traded. However, to be manageable, the pluralist conception of value must prioritise. In doing so, it faces the problem that any action which brings about an improvement with respect to one end might simultaneously diminish the chance of attaining other important ends. For example, once you have carved a stone into a delicate statue, it will not be so useful as a bathroom tile. Does this single action then count as an 'improvement'? If, in order to count as an improvement, an action must result in an improvement with respect to all ends endorsed by a pluralist view (or even be Pareto optimal), it is highly unlikely that any action could ever be regarded as an improvement. This problem is difficult enough when we consider simple objects, such as a piece of stone, but it takes on a whole new layer of complexity when we talk of systemic resources, such as the climate system or a forest ecosystem. Therefore, on a pluralist view, prioritisation is necessary: an improvement can only be relative to a one specified valuable end (or at least a limited subset of ends) among many. Deciding on what is contained in this subset makes any pluralist conception prone to internal conflict.

Turning now to question (4), it should be noted that special rights based on improvement are understood here as *pro tanto* claims, which can be defeated by other considerations. No improvement-based argument holds that an act of improvement is a sufficient condition for special rights. Even on desert-based arguments, which have the fewest constraints, an agent must have a right to the resource in question and not violate the rights of others in the process of improvement. Instrumental justifications of improvement go further and hold that special rights are only to be accepted if doing so furthers broader goals of distributive justice.

In the case of rights to carbon, there are further considerations which might tell against there being a special right all things considered. One concerns the fair distribution of emissions rights. Those who take an integrationist approach to this question would see emissions rights as part of a larger package connected to global resource systems. For example, Tim Hayward argues for a basic right to an amount of 'ecological space',³⁰ whereas Fabian Schuppert postulates a right to the benefits of ecosystem services, which can form a constraint on the appropriation and use of natural resources.³¹ Another possible constraint hinges on questions of historic responsibility. Many, although not all, commentators believe that historic responsibility for creating the problem of climate change should be taken into account. Depending on the position one takes on this question, any particular agent's claim from improvement might not result in that agent being entitled to any new material gains all things considered. Instead, they might be viewed as paying off part of their 'ecological debt'.³²

In the following sections, we put aside, as far as possible, these kind of countervailing considerations and constraints to claims and discuss only the arguments for *pro tanto* special rights. We should, however, also acknowledge that the current situation with regard to the global climate is far from ideal in many respects, from the historical issues mentioned above to continuing problems of noncompliance and inadequate motivation of various agents. Indeed, we return to this in Section 5.

3. A Counterfactual Baseline for Resource Improvement

An improvement claim must establish a baseline of comparison between the *ex ante* properties of a resource before being interacted with and its *ex post* properties after being acted upon to better serve selected human ends. As we saw, the nature of a resource largely determines what these properties are and how we may affect them.

One baseline can be called simple addition. Simple addition is appealed to when the would-be improver straightforwardly changes the properties of some natural resource in useful ways, relative to its *ex ante* properties. At its most basic, simple addition requires no more than a single agent interacting with a single natural resource object, since this action is sufficient to produce a useful change in the properties of this object. In many examples of simple addition, the *ex ante* properties are often characterised as being given by ‘pristine nature’, expressed as natural resources having ‘come into existence without human interference’,³³ or being ‘uncreated’ by us.³⁴ Value is then added by interacting with these uncreated resources so as to change their properties in seemingly straightforward ways. An improver adds to the value of the resource by cutting down a tree and milling the lumber into planks of wood. This is because most improvement-based arguments are concerned with the question of ‘initial appropriation’ of natural resources. Other starting points are perfectly compatible with simple addition: for example, the planks of wood could be transferred to another agent, who turns them into crates. Here the *ex ante* properties would be the planks of wood, not pristine nature. What simple addition does require (at least in principle) is clear ‘preinteraction’ and ‘postinteraction’ states of affairs.

Simple addition is intuitively plausible when it comes to interaction with tangible resource objects, but it is not appropriate when it comes to certain kinds of systemic resources, of which carbon sequestration capacity is a prime example. For carbon sequestration capacity, a counterfactual baseline is needed because it is not possible to precisely ascertain the preinteraction and postinteraction positions. This is due to the physical characteristics – the nature – of a carbon sink. Physically speaking, the global carbon sink is a nonexcludable good: access to it cannot be limited to a certain group of agents. Indeed, short of ceasing to breathe or leaving planet Earth altogether, it is impossible for any agent to withdraw from interacting with global carbon sequestration capacity.³⁵ We might say that carbon sequestration capacity is a systemic resource that is not only nonexcludable, but also from the point of view of any living agent nonextricable.³⁶

Simple addition, which presupposes clearly identifiable states of ‘pre’ and ‘post’ interaction thus cannot be used for nonexcludable and nonextricable resources. Therefore, we need to assess activities according to a baseline scenario which already presumes some degree of interaction between the relevant agent(s) and the resource. Indeed, the concern about climate justice and just claims to carbon sinks has only arisen because the human interaction with carbon sinks over time has changed the relative abundance of this carbon sequestration capacity: from a public good to a newly rivalrous common pool resources (CPR).³⁷ This has changed the physical properties of forests, as well as their relative properties such as scarcity and abundance.

A counterfactual baseline builds in this assumption of interaction and compares different possible patterns of interaction from the point of view of the would-be improver but also taking into account possible or likely patterns of interaction of other agents. This is quite different from simple addition’s comparison of ‘some’ versus ‘zero’ interaction.

Using a counterfactual baseline, an improvement to a terrestrial carbon sink involves a change from the state of the local carbon sink prior (t_1) to a more desirable state of the local carbon sink (t_2), where t_2 is judged against counterfactual scenarios, that is, other land-use patterns plausibly available to the agent(s) in question (t_2^*).

A key problem then, is how to determine the relevant counterfactual scenarios. Indeed, this is a contentious issue in REDD+ policy literature. A helpful article by Richard Dudley describes a ‘very simple model’ has six key components: (i) the area of the forest, (ii) the amount of carbon already stored in the forest area, (iii) the ‘saturation value’ (the maximum amount of carbon that can be stored in the forest area), (iv) the time taken to reach the saturation value, (v) the forestation rate, and (vi) the deforestation rate.³⁸ The values assigned to each of these will likely be a mixture of measurements, estimates, and projections across different scenarios. One long-acknowledged problem is the temptation to exaggerate prospective deforestation rates, precisely to gain more economic credit. At present there is no single assessment framework for determining an assessment baseline, and state actors at least are simply left to propose their own. Whilst we cannot develop this suggestion here, it seems that a politically independent verification system would be a useful addition to the institutional architecture.

For now, however, we introduce the three archetypical agents who might have a claim to special rights from their improvement to carbon sinks. Again, we emphasise that these are archetypical agents and the differences between them are analytic. Whilst we might expect certain kinds of agents to fit more readily into certain categories, it is entirely possible that a single agent might change category over time. Alternatively, if the lands they control can be subdivided, a single agent might satisfy the conditions for one archetype in one place but a different archetype in another.

4. Carbon Farmers and Carbon Sequestration Service Providers

To introduce the distinctions between the different kinds of agent, let us further simplify Dudley’s simple model. Recall that the final two components were forestation rate and deforestation rate. Call these, respectively, (f) and (d).

We can identify at least five analytically separate courses of action available to an agent with a significant degree of control over the land area:

- (a) Increase f to $f + n$, maintain d (increase in anticipated forestation rate)
- (b) Maintain current values of f and d (status quo)
- (c) Maintain current values of f , decrease d to $d - n$ (decrease in anticipated deforestation rate)
- (d) Decrease f to $f - n$, maintain values of d (decrease in anticipated forestation rate)
- (e) Maintain f , increase d to $d + n$ (increase in anticipated deforestation rate)

Our first archetypical agent is the carbon farmer. We use the term ‘carbon farmers’ to refer to agents who deliberately set out to remove CO₂ from the atmosphere by means of actively enhancing already existing carbon sinks or creating new ones. That is, they have all five paths of action available to them, and they choose (a) to change their pattern of interaction in order to increase the rate of uptake of carbon dioxide over their land area. The most obvious way of doing this is to plant more trees, but there are increasingly other

forms of carbon dioxide removal (CDR) methods being developed which could achieve this, for example, bioenergy carbon capture and sequestration (BECCS) projects and direct air capture factories that remove carbon dioxide from ambient air.³⁹

This agent appears to be the most straightforward example of a would-be improver. By means of the counterfactual baseline introduced above, we are in a position to recognise her action (a) as an improvement if it increases the local uptake of carbon dioxide from the atmosphere, relative to what was projected to occur; (b) and (d) might be expected to be the most relevant counterfactuals. According to the argument from improvement, therefore, the carbon farmer gains a *pro tanto* special right to at least some of the added value of that improvement.

Let us now move onto our second archetypical agent, the carbon sequestration service provider. Like carbon farmers, carbon sequestration service providers deliberately undertake actions to enhance carbon sequestration capacity, but the nature of their action is different. For whatever reason, option (a) is not so readily available to them.

Rather than planting new trees, carbon sequestration providers refrain from their planned deforestation in order to conserve forests in order to preserve their function as carbon sinks. That is, they choose to undertake actions (c).⁴⁰ This kind of avoided deforestation case is at the heart of the REDD mechanism, which aims to create economic incentives not to deforest that outweigh existing market returns to agents who deforest in order to mine or farm the land.⁴¹

Here is when the shift to a counterfactual baseline makes the most obvious difference. In (c) the agent does nothing intentional to 'add value' to the carbon sequestration capacity of the land. The agent simply slows its decline. On a simple addition model, course of action (c) does not count as an improvement. With a counterfactual baseline, however, the options are to be considered relative to other available courses of action. Here, (b) and (e) seem to be among the most relevant counterfactuals. As such, refraining from deforestation can count as an improvement because this results in there being greater carbon sequestration capacity available, relative to what would have occurred otherwise (e.g. under the status quo (b)). In a counterfactual sense, this action does indeed change the properties (physical and relative) of local carbon sinks by rendering them more abundant than they would otherwise have been. Thus we argue that the action of carbon sequestration service providers should also be recognised as an improvement by appealing to the counterfactual benefit baseline, although as noted the counterfactual conditions taken to be most relevant may differ between carbon sequestration providers and carbon farmers. Accordingly, carbon sequestration providers are eligible for *pro tanto* special rights to carbon sinks.

The third kind of agent is that which we call forest dwellers. The difference between forest dwellers and carbon sequestration service providers is closer in one respect than the difference between carbon sequestration providers and carbon farmers. However, a very significant difference exists between forest dwellers and the other two agents. Because of this complexity, we discuss the case of forest dwellers in a separate section.

5. Unintentional Improvement and Carbon Sinks: The Forest Dwellers

Forest dwellers' claims to improvements are based upon preserving carbon sequestration capacity as a matter of course in their daily lives. An example would be indigenous peoples

that have developed skills and practices to subsist and survive in their traditional homelands. The past and present abuses of, and challenges faced by, indigenous peoples in maintaining their traditional practices in the face of colonialism and capitalism are sadly well documented. Despite this, there are still groups who manage to maintain their traditional practices in the Amazon and elsewhere. Such groups have trodden very lightly upon the Earth. Forest dwellers differ from carbon sequestration service providers in two respects. First, forest dwellers choose (b), that is, the maintenance of their traditional practices and with them, given forestation and deforestation rates. As a matter of fact, however, these rates are negligible compared to, for example, commercial afforestation/deforestation, and thus option (c), the reduction of deforestation (at least by amount that would make a noticeable difference), is not open to them.⁴² Like sequestration service providers, however, option (e) is on the table and here serves as the counterfactual baseline. That is, the forest dwellers' improvements are judged by reference to the difference between the status quo and the extent to which deforestation could have taken place.

The second difference between the two groups relates to the fact that for the sequestration providers, incentives are needed to make their improvement, that is, to move from their status quo to (c). With the forest dwellers, there are no incentives needed to encourage them to retain their current practices; for example, they may see other values recognised in doing so.⁴³ It is possible that incentives might form part of the specification of the different counterfactual scenarios, but we shall not attempt this right now.

While forest dwellers' preservation is a consequence of traditional subsistence activities which they wish to continue, carbon sequestration providers conserve forests which they would otherwise destroy, but only conditional upon the payment of incentives. This is another central plank of REDD+ policy, known as the 'additionality' criterion. It stipulates that 'a REDD+ activity or project should generate benefits, such as reduced emissions or increased removals that would not have happened without the activity (i.e. the Business as Usual scenario)'.⁴⁴

The problem with the REDD+ additionality criterion is that it rewards agents who would deforest in the absence of incentives, but it fails to reward agents like the forest dwellers, who refrain from deforestation without demanding incentives to do so. Because they would not be deforesters under business as usual, they cannot claim that their current activities have caused an improvement compared to what they would otherwise have done (thus meeting the additionality criterion), but instead with regard to what they could have done. In short, it seems that forest dwellers are being rewarded for doing what they would do anyway. Their way of using their land and interacting with the environmental goods upon it seems to be entirely their own free choice, one which is made without the desire or the intention of producing or maintaining carbon sequestration capacity. They do not appear to have borne costs in choosing to continue their practices, or at any rate, they appear to think any costs are worth bearing. The fact that their practices contribute to the maintenance of a common pool resource that has come to be widely valued is simply a happy accident. They therefore do not stand to be rewarded, despite having maintained the carbon sequestration capacity of their territory.⁴⁵ These groups could of course change their behaviour, start to plan deforestation, and demand incentives to stop. Many would say this would be a regrettable state of affairs. We agree, and we would like to make a case that in the current nonideal context, the forest dwellers choice of maintenance of the status quo – action (b) – can count as an improvement against the

counterfactual baseline of increased deforestation (e). Hence it can generate a *pro tanto* special right.

Given the general drive towards deforestation globally and especially in the Amazon, we can say with some confidence that if more agents acted like forest dwellers then there would be a significant (counterfactual) improvement in carbon sequestration capacity. Moreover, we can suggest with some confidence that sequestration capacity is more secure in the hands of forest dwellers than it is in the hands of those who would deforest unless incentives were paid. With these thoughts in mind, we can make a case that forest dwellers may also have a *pro tanto* special claim.

In a context of nonideal justice, it can be justifiable to reward agents for what they would be doing anyway. One such context is when it is arguably better to make a compromise and to acquiesce to the demands of [selfish/disinterested] agents when doing so is needed to ameliorate a much greater injustice. In order to avoid the greater injustice of dangerous climate change, atmospheric GHGs must be stabilised. Managing carbon sequestration capacity is a vital part of that task. Forest dwellers, along with carbon sink service providers and carbon farmers, are contributing to global carbon sequestration capacity and should be seen as agents potentially participating in an overarching system. Motives for participation can be expected to differ among these agents; some will demand incentives, some may not.⁴⁶ Whatever we think of agents who demand incentives,⁴⁷ it is unfortunately necessary to consider incentives in order to set up a system which results in sufficient global carbon sequestration capacity. Once such a scheme is instantiated, however, it should be impartial among all those who make relative improvements, regardless of their motivation, for both practical and normative reasons. Practically, because if only those who demanded incentives were entitled to special rights, we could expect that it would not be long before everyone demanded them – the regrettable situation alluded to earlier. Normatively, doing so is in line with a common-sense view that people's intentions do not wholly determine their entitlements.⁴⁸

6. Conclusion

We have argued here that improvement can indeed ground special rights for actions that enhance carbon sinks. This conclusion has required rethinking the structural features of the 'simple addition' baseline assumed in the standard argument from improvement, which seemed to work well when applied to discrete resource objects but not when applied to system goods such as carbon sinks. With the recognition that carbon sinks are nonexcludable and nonextricable environmental system goods, we argued in favour of adopting a counterfactual baseline which compares an action against plausible alternative courses of action available to agents with sufficient control over a given land area. Using this counterfactual baseline, we then considered three archetypical agents that might be said to improve carbon sequestration capacity and hence be eligible for *pro tanto* special rights to carbon. These were the carbon farmers, carbon sequestration service providers, and forest dwellers. We believe our argument grounds *pro tanto* improvement-based claims in a variety of relevant cases, including, but not limited to, schemes as REDD+. For example, we argued that forest dwellers, who do not meet REDD+'s 'additionality' criterion, nevertheless can have *pro tanto* special rights to carbon.

These modifications to the concept of improvement require much further discussion and defence than we have been able to give them here, and they may not be accepted by all readers. We shall leave the reader to decide whether the changes we propose stretch the concept of improvement too far. Those that do have the task of finding alternative justifications for special rights to carbon sinks. We believe, however, that this is the best case that can be made from the argument from improvement.

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NOTES

- 1 Pan, Yude, Richard A. Birdsey, Jingyun Fang, Richard Houghton, Pekka E. Kauppi, Werner A. Kurz, Oliver L. Phillips *et al.* 2011. “A Large and Persistent Carbon Sink in the World’s Forests.” *Science* 333(6045): 988–93. <https://doi.org/10.1126/science.1201609>.
- 2 FAO (Food and Agriculture Organization of the United Nations). 2015. “FAO Assessment of Forests and Carbon Stocks, 1990–2015.” <http://www.fao.org/3/a-i4470e.pdf>. Accessed August 20, 2022. Of these, deforestation accounted for emissions of 2.9 Gt CO₂ per year, while degradation caused around 1 Gt per year.
- 3 UNFCCC, *Compilation of Economy-Wide Emission Reduction Targets to Be Implemented by Parties Included in Annex I to the Convention*, UNFCCC/SB/2011/INF.1/Rev.1.
- 4 Karsenty, Alain, Aurélie Vogel, and Frédéric Castell. 2014. “‘Carbon Rights’, REDD+ and Payments for Environmental Services.” *Environmental Science & Policy*, Climate Change and Deforestation: The Evolution of an Intersecting Policy Domain, 35: 20–29. <https://doi.org/10.1016/j.envsci.2012.08.013>.
- 5 A broader issue which we do not consider here is the efficacy and moral appropriateness of the marketisation of carbon implied by REDD, along with other payment for ecosystem services schemes. Such rewards are envisaged within an existing UNFCCC mechanism and are already being claimed. We assume that within this non-ideal context it is appropriate to consider the grounds of rewarding some agents for actions affecting carbon sinks.

- 6 McDermott, Constance L. 2014. "REDDuced: From Sustainability to Legality to Units of Carbon – The Search for Common Interests in International Forest Governance." *Environmental Science & Policy*, Climate Change and Deforestation: The Evolution of an Intersecting Policy Domain, 35: 12–19. <https://doi.org/10.1016/j.envsci.2012.08.012>; Gupta, Joyeeta. 2012. "Glocal Forest and REDD+ Governance: Win–Win or Lose–Lose?" *Current Opinion in Environmental Sustainability*, Climate Systems, 4(6): 620–27. <https://doi.org/10.1016/j.cosust.2012.09.014>; Karsenty *et al.* op. cit.
- 7 Telles do Valle, Raul Silva, and Erika Magami Yamanda. 2010. "A Legal Opinion on the Ownership of Carbon Credits Generated by Forest Activities". In *Avoided Deforestation (REDD) and Indigenous Peoples: Experiences, Challenges and Opportunities in the Amazon Context*, edited by Raul Silva Telles do Valle. Sao Paulo: Forest Trends and Instituto Socioambiental Brazil, p 106. <https://www.forest-trends.org/publications/avoided-deforestation-redd-and-indigenous-peoples-experiences-challenges-and-opportunities-in-the-amazon-context/>. Accessed August 20, 2022.
- 8 Butler, Rhett. 2009. "Brazilian Tribe Owns Carbon Rights to Amazon Rainforest Land." Mongabay, December 9, 2009. <https://news.mongabay.com/2009/12/brazilian-tribe-owns-carbon-rights-to-amazon-rainforest-land/>. Accessed August 20, 2022.
- 9 Zwick, Steve. 2019. *The Surui Forest Carbon Project: A Case Study*. Washington DC: Forest Trends, p. 1. https://www.forest-trends.org/wp-content/uploads/2019/03/doc_5751-1.pdf.
- 10 H.L.A. Hart differentiated between special rights, which are those which are justified by reference to some contingent event, such as a transaction, or a relationship, and general rights, which hold regardless of any events or transactions. See Hart, H.L.A. 1955. "Are There Any Natural Rights?" *Philosophical Review* 64(2): 175–91. For a critical discussion, see Waldron, Jeremy. 1988. *The Right to Private Property*. Oxford: Oxford University Press, especially chap. 4.
- 11 By contrast, in the early days of normative theorising about emissions rights, the answer was 'no'. As Megan Blomfield pointed out, earlier theorists assumed that there were no special rights to the atmosphere. However, they failed to realise that a significant part of the global carbon sink was in fact territorially located and that territorial rights are on many accounts regarded as special rights. See Blomfield, Megan. 2013. "Global Common Resources and the Just Distribution of Emission Shares." *Journal of Political Philosophy* 21(3): 283–304. <https://doi.org/10.1111/j.1467-9760.2012.00416.x>.
- 12 United Nations, "'Permanent Sovereignty over Natural Resources'. UN General Assembly Resolution 1803 (XVII)." December 14, 1962. <https://www.ohchr.org/EN/ProfessionalInterest/pages/NaturalResources.aspx#:~:text=The%20right%20of%20peoples%20and%20nations%20to%20permanent%20sovereignty%20over,people%20of%20the%20State%20concerned.>
- 13 Armstrong, Chris. 2017. *Justice and Natural Resources: An Egalitarian Theory*. Oxford: Oxford University Press.
- 14 Under the Brazilian constitution "the Union holds formal property rights and the Brazilian Indians have the permanent possession and exclusive right to use the land and its natural resources." Sales, Rodrigo, Viviane Otsubo Kwon, and Patricia Vidal Frederigho. 2010. "Legal Aspects of the Surui Carbon Project." In Telles do Valle, ed. op. cit., p. 131.
- 15 Honoré, A.M. 1961. "Ownership." In *Oxford Essays in Jurisprudence*, edited by A.G. Guest, 107–47. Oxford: Oxford University Press.
- 16 Armstrong op. cit. The 'disaggregation challenge' can apply to substate groups as well as against states, although it is far more commonly levelled against the latter.
- 17 Quoted in Butler op. cit., emphasis added.
- 18 We do not aim to provide an in-depth empirical or legal analysis of the Surui's situation and activities. We chose this to illustrate the normative issues that we wish to consider without being an overly hypothetical or contrived example. Nor do we assume that they fall into a single category of the archetypical agents that will be outlined here.
- 19 Armstrong op. cit.
- 20 We can note here that the advisory legal opinion focused on ownership and made only passing reference to the idea of stewardship.
- 21 Much more could be said here, and we thank an anonymous reviewer for highlighting this issue. To our knowledge, a case for rights based on stewardship alone has not been made in (Western) political philosophy. Perhaps it is time to try, but we cannot do so here. For an interesting argument that stewardship is not an appropriate concept for environmental ethics, see Palmer, Clare. 1992. "Stewardship: A Case Study in Environmental Ethics." In *The Earth Beneath*, edited by I. Ball, M. Goodall, C. Palmer, and J. Reader, 67–82. London: SPCK.

- 22 There are different ways of cashing out this claim. One way of doing so is to say that rather than being regarded as a means to an end, the resource is constitutive of that end. See Raz, Joseph. 1986. *The Morality of Freedom*. Oxford: Oxford University Press, p. 200.
- 23 For instance that of Avery Kolers, outlined in Kolers, Avery. 2009. *Land, Conflict, and Justice: A Political Theory of Territory*. Cambridge: Cambridge University Press.
- 24 The scheme was not to the satisfaction of all members of the Paiter Surui, however, some of whom asked to terminate the contract. See <https://redd-monitor.org/2015/01/13/leaders-of-the-paiter-surui-ask-that-the-carbon-project-with-natura-be-terminated/>
- 25 Armstrong op. cit.
- 26 Armstrong op. cit., pp. 97ff.
- 27 Armstrong op. cit., p. 97.
- 28 Armstrong op. cit., p. 11.
- 29 Armstrong op. cit., p. 12.
- 30 Hayward, Tim. 2007. "Human Rights Versus Emissions Rights: Climate Justice and the Equitable Distribution of Ecological Space." *Ethics & International Affairs* 21(4): 431–50. <https://doi.org/10.1111/j.1747-7093.2007.00117.x>.
- 31 Schuppert, Fabian. 2012. "Reconsidering Resource Rights: The Case for a Basic Right to the Benefits of Life-Sustaining Ecosystem Services." *Journal of Global Ethics* 8(2–3): 215–25. <https://doi.org/10.1080/17449626.2012.706232>.
- 32 Paredis, Erik, Gert Goeminne, Wouter Vanhove, Frank Maes, and Jesse Lambrecht. 2008. *The Concept of Ecological Debt; Its Meaning and Applicability in International Policy*. Gent: Academia Press.
- 33 Risse, Mathias. 2012. *On Global Justice*. Princeton, NJ: Princeton University Press, p. 114.
- 34 Armstrong op. cit., p. 11.
- 35 Even ceasing to breathe might not be enough as decay releases carbon dioxide. However, this is presumably not a matter of agency.
- 36 This entails that it is always possible that an agent's attempt to enhance carbon sequestration in a particular location will be cancelled out by the simultaneous actions of other agents in other locations.
- 37 As Robert Keohane and Elinor Ostrom note, '[p]ublic goods and CPRs are ideal types at either end of a continuum characterized by the degree of rivalry in consumption of the resource. Hence, the key to the public goods-CPR distinction seems to be the abundance of the resource relative to the function that it performs'. See Keohane, R.O., and E.O. Ostrom, eds. 1995. *Local Commons and Global Interdependence*. London: Sage, pp. 14–15.
- 38 Dudley, Richard G. 2010. "A Little REDD Model to Quickly Compare Possible Baseline and Policy Scenarios for Reducing Emissions from Deforestation and Forest Degradation." *Mitigation and Adaptation Strategies for Global Change* 15(1): 53–69. <https://doi.org/10.1007/s11027-009-9204-7>.
- 39 For an overview of CDR methods, see Minx, Jan C., William F. Lamb, Max W. Callaghan, Sabine Fuss, Jérôme Hilaire, Felix Creutzig, Thorben Amann *et al.* 2018. "Negative Emissions – Part 1: Research Landscape and Synthesis." *Environmental Research Letters* 13(6): 063001. <https://doi.org/10.1088/1748-9326/aabf9b>.
- 40 This raises an empirical question concerning the justification for expecting deforestation in future. In many countries with rainforests within their borders, such an expectation is widely considered to be plausible and is represented as 'Business as Usual' reference scenarios in REDD policy assessment. See Huettner, Michael, Rik Leemans, Kasper Kok, and Johannes Ebeling. 2009. "A Comparison of Baseline Methodologies for 'Reducing Emissions from Deforestation and Degradation.'" *Carbon Balance and Management* 4(1): 4. <https://doi.org/10.1186/1750-0680-4-4>.
- 41 For more about REDD assessment baselines, see Angelsen, Arild, ed. 2008. *Moving Ahead with REDD: Issues, Options and Implications*. Bogor, Indonesia: Centre for International Forestry Research; and Huettner *et al.* op. cit.
- 42 This is acknowledged at the start of the advisory opinion: 'this history of good stewardship works against indigenous communities, if positive incentives for REDD are based on methodological approaches that use historical trends to establish a baseline. To the extent that they have not generated emissions in the past, it can be argued that there is little potential to reduce emissions in future'. Olander, Jacob, Beto Borges, and Almir Narayamoga Surui. 2010. "The Surui Project: Building Indigenous Peoples' Capacity for Informed Engagement with REDD Finance." In Telles do Valle, ed. op. cit., p. 121.
- 43 The incentives could perhaps be incorporated into the different scenarios and courses of action, but we shall not attempt to do this here.

- 44 Sills, E.O., S.S. Atmadja, A.E. Duchelle, D.L. Kweka, I.A.P. Resosudarmo, and W.D. Sunderlin, eds. 2014. *REDD+ on the Ground: A Casebook of Subnational Initiatives Across the Globe*. Bogor, Indonesia: Centre for International Forestry Research. https://www.cifor.org/publications/pdf_files/books/BCIFOR1403.pdf.
- 45 Townsend, Justine, Faisal Moola, and Mary-Kate Craig. 2020. "Indigenous Peoples Are Critical to the Success of Nature-Based Solutions to Climate Change." *FACETS* 5(1): 551–56.
- 46 For an example of such a demand, consider the Yasuni rainforest demand by the government of Ecuador, as discussed by Armstrong, Chris. 2016. "Fairness, Free-Riding and Rainforest Protection." *Political Theory* 44(1): 106–30. <https://doi.org/10.1177/0090591715594840>.
- 47 See Cohen, G.A. 2008. *Rescuing Justice and Equality*. Cambridge, MA: Harvard University Press.
- 48 Another objection is based on the idea of desert: forest-dweller groups were (until recently) not in a position to know about climate change and the value of carbon sequestration and accordingly did not act with the specific intention to maintain sequestration capacity. They may have acted to preserve other environmental goods valuable to them, but if we are to disaggregate resources, each claim must be considered on its own merits. Therefore they do not deserve the added value of the improvement. Our answer to this is to say that a specific intention to achieve an improvement to R is a necessary condition for having any entitlement to (part of) the added value of the improved R violates many common-sense understandings and practices. Some great inventions have been made when the person is trying to do something else or happen by accident. However, the accidental nature of an invention does not normally preclude the agent in question keeping at least a part of the benefits of a lucky break. Put simply, there is a distinction between entitlement and desert, and entitlement need not track desert fully or exclusively. Rather, desert is one of several elements that ought to be taken into account when determining whether a distribution of entitlements is just. Perhaps it may be sufficient to generate an entitlement, but it is not necessary. The fact that agents have not explicitly intended all the beneficial consequences of their activity does not normally preclude them from being entitled to (some of) those benefits. For various reasons, they might not be entitled to all such benefits, but this is entirely consistent with the argument from improvement as stated at the beginning of this article, which seeks only to justify special rights to a part of the added value. Of course, it is open to anyone to insist that these common-sense understandings and practices are in fact wrongheaded and unjust. We simply make the modest point that if the principle that only intended gains generate entitlements is adopted, then this must be done consistently and not brought in as an *ad hoc* measure for this particular case. It is also worth noting that in the past, agents who have been deemed entitled to benefits of their 'unintended improvements' have been relatively privileged. To insist that the principle no longer applies (when more disadvantaged agents stand to benefit) seems hypocritical.