Noting some effects of fabricating 'nature' as 'natural capital'

The contemporary moment of global ecological crisis is also a moment wherein 'nature' is being named and framed as 'natural capital'. This article considers aspects of this fabrication of 'natural capital', drawing attention to three connected processes: [1] commensuration, through which different elements of the natural world are made to correspond to one another through applying a common measure; [2] aggregation, through which different aspects of the material world are conceptualized together, enabling calculations of a total or 'net' quantity; and [3] capitalization, through which conserved 'standing natures' can be financed and developed as capital assets. The article queries the social and environmental benefits claimed for these processes of fabrication, drawing attention to some of the justice implications of asserting natural capital valuations for nature. In considering whether the conservation of 'natural capital' is the same as the conservation of 'nature', the article emphasizes the constitutive (*i.e.* world-making) implications of the naming and framing of 'nature' as 'natural capital'.

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fab·ri·cate
1 To make; create.
2 To construct by combining or assembling diverse, typically standardized parts.
3 To concoct in order to deceive.
(The Free Dictionary, 2017)

At the *World Conservation Congress* of the International Union for Conservation of Nature (IUCN) in September 2016, Motion 63 on 'natural capital' proposed development of a "natural capital charter" as a framework "for the application of natural capital approaches and mechanisms" (IUCN, 2016a). In "noting that concepts and language of natural capital are becoming widespread within conservation circles and IUCN," Motion 63 reflects the IUCN's prior adoption of "a substantial policy position" on the theme of "natural capital" (IUCN, 2014: 4). Eleven programmed sessions scheduled for the Congress included 'natural capital' in the title. Many were associated with the July 2016 launch of the global Natural Capital Protocol, which brings together leaders in the business community to create a world where business both enhances and conserves natural capital (Natural Capital Coalition, 2016). At least one Congress session, entitled "Matters of value: Natural capital, cultural diversity, governance and rights" (IUCN, 2016b), sought to open a space for expressions of concern regarding possible "unforeseen impacts of natural capital on broader issues of equitability, ethics, values, rights and social justice."

It is certainly the case that 'natural capital' as a noun indicating a fact that exists in the world is becoming increasingly normalized, even 'naturalized', in environmental governance. Natural capital initiatives arising in the last few years include:

- the World Forum on Natural Capital, described as "the world's leading natural capital event" (see www.naturalcapitalforum.com);
- the Natural Capital Declaration, a statement which commits the financial sector to the mainstreaming of "natural capital considerations" into all financial products and services (see www.naturalcapitaldeclaration.org);
- the Natural Capital Financing Facility, a financial instrument of the European Investment Bank and the European Commission aiming "to prove to the

Box 1. Brief definitions of key terms.

Aggregation – bringing different things together into a collection for which a total or 'net' quantity can be calculated.

Capitalization – a mix of types and sources of financing that funds development and commercialization of owned assets.

Commensuration – the process of making different things appear to correspond to one another through assigning and applying a common measure.

Debt-based financing and credit–debt mechanism – the loan of money by investors that confers credit through creating debt in return for promises of repayments of the original sum loaned plus interest on the debt.

Dividend-bearing asset – an entity or 'stock' whose ownership includes payments, usually through the distribution of profits.

Market-based instrument – policy instruments designed to shape behavior by using markets, prices and other economic variables and techniques.

Marketization – exposure to market forces, often through reductions of public subsidies and regulation.

Monetization – conversion of an entity into money or monetary forms of value.

Natural capital – nature and the 'natural world' approached in terms of asset values for human organizations and societies that can be calculated in monetary units using economic and accounting techniques.

Substitutability – where one thing can replace or substitute for another thing.

> market and to potential investors the attractiveness of biodiversity and climate adaptation operations in order to promote sustainable investments from the private sector" (see https://is.gd/04GzdA).
>
> All these initiatives take natural capital as an apparently exterior 'matter of fact', sharing definitions along the lines of that sanctioned by the UK's Natural Capital Committee that it consists of "our natural assets including forests, rivers, land, minerals and oceans" (see https://is.gd/a7NMDP).

Table 1. Habitat scoring system for biodiversity offsetting in England, also known as the 'biodiversity offsetting metric' (DEFRA, 2012).

Habitat condition	Biodiversity distinctiveness		
	Low (2)	Medium (4)	High (6)
Good (3)	6	12	18
Moderate (2)	4	8	12
Poor (1)	2	4	6

It seems as though increasingly where people in the past might have spoken of 'nature' or 'the natural environment', it is the term 'natural capital' that is invoked. This momentum begs the question: what does the term 'capital' do to the category 'nature' when these terms are joined? Additionally, what work does the metaphor nature-is-as-capital-is do in the world, and why exactly should nature be seen in terms of capital? And why is it that this particular fabrication is intensifying in this particular historical moment?

Explored below are three connected processes enacting this fabrication that perhaps shed some light on the questions above. These processes are:

1 commensuration – making different natures interchangeable;
2 aggregation – focusing on total quantities over differences and particularities;
3 capitalization – leveraging conserved 'standing natures' as capital assets.

Key terms are further defined in Box 1.

Commensurating natures

Table 1 presents what is now a somewhat iconic calculative device in the making of nature as natural capital, namely the biodiversity offsetting metric published by the UK's Department for Environment, Food and Rural Affairs (DEFRA, 2012). This device is designed to enable the combined scoring for a hectare of habitat of its qualities of ecological distinctiveness and its condition. Through this mechanism a value for a hectare of biodiversity habitat is generated as a numerical surrogate with a score of between 2 and 18. This numerical scoring makes different habitats in different places and temporal moments commensurate with each other. Application of the device permits scored habitat units lost through development-related transformation at one site to be 'offset' against investment in a similar number of units of conserved habitat somewhere else. The intention is to generate a measurable 'no net loss', or even a 'net gain' in total or aggregate

biodiversity, even though a loss has been enacted through development impacts.[1]

Appearing in DEFRA's technical documentation in 2012, the biodiversity offsetting metric was designed by private sector consultants through a series of overlapping commissioned reports. Taken together, these reports are suggestive of the entanglements of state and non-state actors and organizations at different scales that are coalescing around and working towards the design of biodiversity offsetting as a market-based instrument for environmental protection.[2] A 2009 scoping study for DEFRA (Treweek et al., 2009) was thus followed by a long technical report published in 2010 by the European Commission and involving some of the same authors. Entitled *The use of market-based instruments for biodiversity protection – the case of habitat banking*, the latter report was written by the UK-based Economics for the Environment Consultancy (eftec) and the Institute for European Environment Policy (eftec and Institute for European Environmental Policy, 2010). Eftec subsequently was involved in preparing a report for DEFRA called *Costing potential actions to offset the impact of development on biodiversity* (GHK Consulting and eftec, 2011). Its lead author was also the head of the Business and Biodiversity Offsets Programme, an international consortium of financial institutions, corporations (particularly those in extractive industries), environmental non-governmental organizations (NGOs) and government departments (see https://is.gd/IVFarI).

The DEFRA biodiversity offsetting metric is one of a range of new tools of commensuration that distil a perception that values for natures in different places and at different temporal moments can be interchangeable with each other. It is also a tool whose use in application acts in the world so as to bring these commensurabilities into existence. The empirical questions then become, to what extent are these commensurabilities real or illusory? And to what extent is aggregated 'no net loss' or 'net gain' in nature measures genuine or spurious? These questions are considered further in the next section.

Aggregating natures

Applying tradable scores to natures in different spaces and moments that can be exchanged in service to conservation is connected with a perception that these numbered natures can be managed in terms of aggregated or total quantities. A now familiar example is the use of capped totals in the management of carbon emissions. Caps in this case affirm a logic of trading between sites of emission and sites of sequestration that demonstrate reduced total carbon emissions beyond a counterfactual scenario without a carbon trade or offset.

In the UK this logic is being extended into what is termed a 'natural capital aggregate rule', as proposed by the Natural Capital Committee (NCC), which since 2012 has advised the UK Government on the sustainable use of natural capital (Helm, 2015). The NCC advocates a target of incorporating natural capital losses and gains into national gross domestic product accounts by 2020, so as to establish "a set of properly maintained and enhanced natural assets" that are quantified. This set of natural assets is also associated with the attribution of monetary value for these assets (Office of National Statistics [ONS], 2016). For example, in 2015 the UK's ONS, in partnership with DEFRA, produced an initial estimate of the 'aggregate' (*i.e.* 'total') value of natural capital in the UK as approximately £1.6 trillion (ONS, 2015).

The natural capital aggregate rule states that it is the aggregate or total value of natural capital assets – as expressed through numbered and priced indicators – that should be maintained over time. Echoing calculations for biodiversity offsetting, as per the metric above, the rule thereby permits substitutabilities between different natural capital assets as long as 'no net loss' occurs in the overall balance sheet of indicators. In other words, the aggregate natural capital rule is consistent with a weak sustainability perspective through which aggregate quantities can appear to be maintained, even though losses in specific 'natural capital assets' have occurred.

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Figure 1 depicts the NCC's schematic representation of natural capital trends in the UK, leading up to 2015 and thinking forwards towards 2040. It indicates a framing of natural capital in aggregate terms, which here can be equivalently signalled through either monetary or physical quantities, as suggested on the y-axis. An improvement in aggregate natural capital values from 2015 is desired – at least to reach no net loss, and preferably a net gain in values over time – above a counterfactual scenario of continuous decline in natural capital values.

One issue here is that the socio-economic causes of decline in 'natural capital', combined with the implications of considerable time-lags in the ecological impacts of past actions, are little addressed in such representations and associated policy recommendations. Instead, marketized reward structures such as biodiversity offsetting tend to be proposed to incentivize developers and existing land-owners to shift their practices into green economic renderings. Little attention is paid to the ecological debt experienced by broader society that at least in part has been generated by the historical production and appropriation practices often associated with these same actors. Significant environmental justice issues thereby remain in the conception and application of biodiversity offsetting and aggregate natural capital rules.

But, further, there are conceptual and calculative problems with conceiving of capital in terms of aggregate or total values. When extended into biophysical domains (*i.e.* to so-called 'natural capital'), these systemic issues generate a conceptual and measurement minefield. Economist Alejandro Nadal has worked this through in some detail, arguing that the natural capital "metaphor does not have rigorous foundations in economic theory and that it cannot provide adequate economic measurements of what are supposed to be 'nature's assets'" (Nadal, 2016: 79). Clive Spash (with Anthony Clayton) and Molly Scott Cato (with Rupert Read) are other prominent economists who have made similar arguments through drawing on disciplinary debates within economics itself (Spash and Clayton, 1997; Read and Scott Cato, 2014).

As these authors assert, a reason for why the metaphor nature-is-as-capital-is breaks down in economic terms is because the category 'capital', like the category 'nature', is incommensurably plural. This is even when restricting consideration of

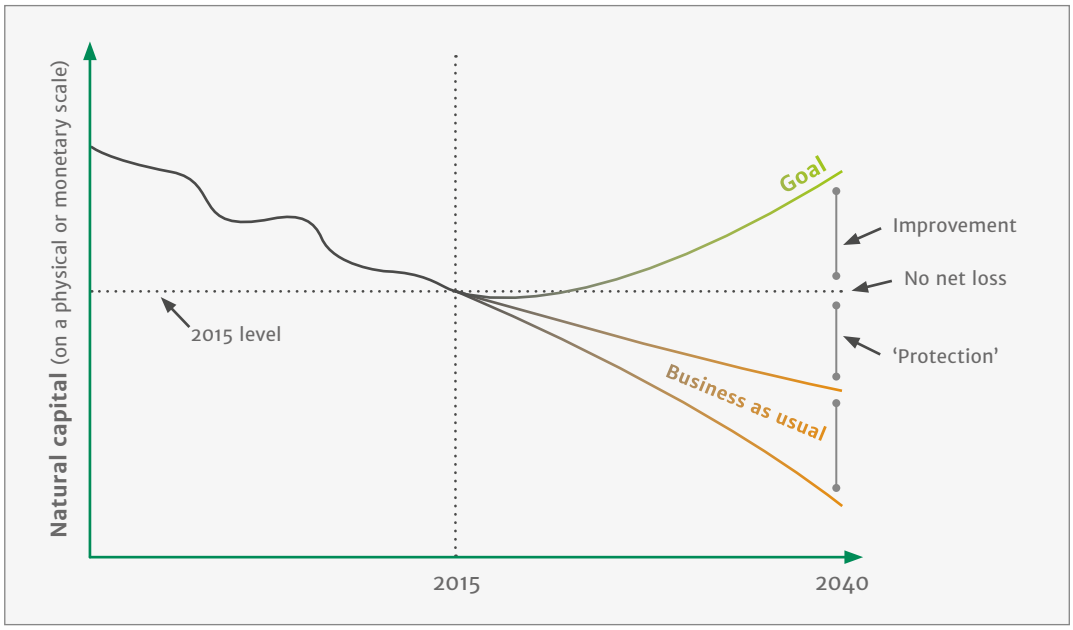

Figure 1. Schematic representation of 'natural capital' trends in the UK leading up to 2015 and thinking forwards towards 2040 (based on NCC, 2015).

capital to physical and economic capital only. Capital exists variously as:

1 heterogeneous and not fully substitutable or commensurable physical factors of production, such as machinery and fixed assets like land, that on balance sheets also constitute liabilities with maintenance costs;
2 the medium (*i.e.* money), through which factors of production might be valued, bought and sold and thus fabricated as substitutable through markets;
3 interest-bearing assets that can accumulate financial value so as to generate flows of money dividends that can also be leveraged through credit–debt mechanisms.

To put it simply, often it is not clear whether the nature-as-capital metaphor is being invoked to affirm the maintenance costs of a natural capital asset, the possibilities of substitutabilities between assets (as in biodiversity offsetting) or the possibility of generating dividends from an asset. These dimensions of capital have different implications for how capital is valued, and thereby treated, and by whom.

To add complexity, prices for monetized assets are themselves not fixed: they shift relative to each other as well as to other conditions. This means that it is almost impossible ever to assert a stable value of an asset, and in turn means that any aggregated or total value is itself continually changing. In other words, any quantified or monetized aggregate or total value for 'natural capital', whilst perhaps instructive in a heuristic sense, begs understanding as constructed on a series of flawed assumptions that may generate wildly misleading measures.

Capitalizing natures

Consideration of 'natural capital' as a potentially dividend-bearing asset that can be leveraged through credit–debt mechanisms does, however, appear to be attractive. A nascent interest in scaling-up debt-based conservation finance from institutional investors and ultra-high-net-worth individuals (*i.e.* the super-super-rich) is currently linked with the design of financial products based on the putative value of dividends (*i.e.* payments) arising through conservation markets associated with natural capital assets. Led by financial services company Credit Suisse, with the backing of international environmental organizations WWF and the IUCN, a series of reports proposes capitalizing conserved natures *in situ* – or what might be thought of as 'standing natures' – in exactly this way.

In 2016, and following a 2014 report called *Conservation finance: Moving beyond donor funding to an investor-driven approach* (Credit Suisse *et al.*, 2014), Credit Suisse and collaborators published two documents outlining proposals for debt-based conservation finance. The most recent is called *Levering ecosystems: A business-focused perspective on how debt supports investments in ecosystem services*. It opens with a 2015 quote from Mark Tercek, CEO of the environmental NGO The Nature Conservancy (Credit Suisse *et al.*, 2016: 1), who observes of emerging conservation finance deals that:

> This reminds me of my Wall Street days. I mean, all the new markets—the high yield markets, different convertible markets, this is how they all start. First they start with one-off project financings, you do them one-by-one, you demonstrate how these products work, deals work, and then it grows into a much more liquid market where many people can participate in it at smaller dollar sizes. That's what I think lies ahead for us.

This statement is followed quickly by the CEO of Credit Suisse stating that not only is saving ecosystems affordable, but it is also profitable, if turned "into an asset treasured by the mainstream investment market" (Credit Suisse *et al.*, 2016: 3). The report proposes a number of mechanisms whereby "businesses can utilize debt as a tool to restore, rehabilitate, and conserve the environment while creating financial value". The idea is that as "environmental footprints move closer to being recognized as assets and liabilities by companies, debt

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can be used to fund specific investments in ecosystems that lead to net-positive financial outcomes." Debt-based financing – for example, through tradable securities such as bonds, or debt-instruments that finance a portfolio of aggregated conservation-oriented loans – is framed as attractive because interest received by investors is "usually tax-deductible" (Credit Suisse *et al.*, 2016: 8).

The Levering Ecosystems report followed quickly from *Conservation finance: From niche to mainstream – the building of an institutional asset class*, steered by a small group including the Director of the IUCN's Global Business and Biodiversity Programme (Credit Suisse and McKinsey Center for Business and Environment, 2016). This report estimates the investment potential for conservation finance to be roughly US$200–400 billion by 2020.

As noted above, a major focus here is the design of scaled-up conservation investments that attract institutional investors and (ultra-)high-net-worth individuals through financial products linked with emerging or predicted conservation markets. Of course, such investors loaning finance to projects associated with conservation also expect market-rate returns to compensate for investments considered to conserve, restore or rehabilitate ecosystems and associated 'services'. As the Chair of UK's Natural Capital Committee, Dieter Helm (2016: 3), states in a text offering cautious support for such debt-based financing for natural capital assets:

> any investor in equity or debt is going to want an answer to the question: where is the money coming from to make the public environmental dimension into a defined revenue stream and hence make the project privately investable?

In the documents referenced above, returns are projected to materialize in part from new markets in the potentially monetizable 'dividends' of 'standing natural capitals' represented, for example, by billable ecosystem services and carbon. Investor risk is proposed to be reduced through mobilizing such newly legible and leverageable assets, as well as the 'land or usage rights' from which they derive, as underlying collateral.

What these financing proposals imply, then, is that countries of the global south with remaining high levels of 'standing natural capital' may become indebted to ultra-high-net-worth investors, who will access returns on their investments from new income streams arising from these conserved natures. The charts in present two schematic diagrams redrawn from texts referenced above to indicate how these flows of value are envisaged to be 'leveraged' from natures capitalized as investable natural capital. These possibilities are perceived to be boosted through recent support from the United Nations Framework Convention on Climate Change for international compensation mechanisms that "balance anthropogenic emissions by sources and removals by sinks of greenhouse gases" (see https://is.gd/s5nFV6 Article 4.1). Such mechanisms are expected to release new long-term sources of additional funding.

It seems worth mentioning a few potential concerns here. One is that it is unclear what safeguards will be in place to prevent debt-financing structures for natural capital conservation from exacerbating existing processes whereby people, especially in tropical landscapes, may be forced from land and livelihoods as standing 'natural capital assets' become able to generate monetizable dividends (*e.g.* Cavanagh and Benjaminsen, 2014). For these contexts, some of which may be perceived by those living there as managed under common property arrangements, it is also unclear who or what the 'firm' is that would be able to sell bonds representing natural capital value for the receipt of private investment. And, further, laudable claims of concern for environmental sustainability seem awkward when set against other dimensions of company practice. In the case of Credit Suisse these have led to recent fines of more than US$80 million for violating securities law

and gaming markets through 'dark pool' trading practices (BBC News, 2016).

As with other processes of asset creation and enclosure, these proposals for making investable natural capital assets out of conserved natures *in situ* open possibilities for profit generation by high-net-worth individuals and institutional investors. In doing so, investors may become able to assert 'virtual ownership' (*i.e.* ownership from a distance) of large blocks of newly investable stocks. Such moves, nascent and clunky as they may be (Dempsey and Suarez, 2016), generate concern that natural capital thinking may simply sustain capitalist trajectories that entrench highly inequitable relationships in both social and environmental arenas.

Is conserving 'natural capital' the same as conserving 'nature'?

In the text above I have sought to elaborate some key mechanisms through which nature is being fabricated as natural capital. I have raised some concerns that a burgeoning 'natural capitalism' and its supportive calculative techniques may fail on distributive, procedural and recognition justice grounds (Martin *et al.*, 2013). This is both through creating new pathways for asset creation and concentration, as well as through manipulating human relationships with beyond-human nature into those that are instrumentally calculable only (Sullivan, 2017).

Naming and thereby framing nature as natural capital is an important part of this process. We can see the significance of naming nature through the actions of another prominent environmental organization. In 1986 the central secretariat of WWF decided to change the name of the organization from the World Wildlife Fund to the World Wide Fund for Nature (WWF, 2017). The thinking was that an emphasis on 'wildlife', borne of a concern for endangered

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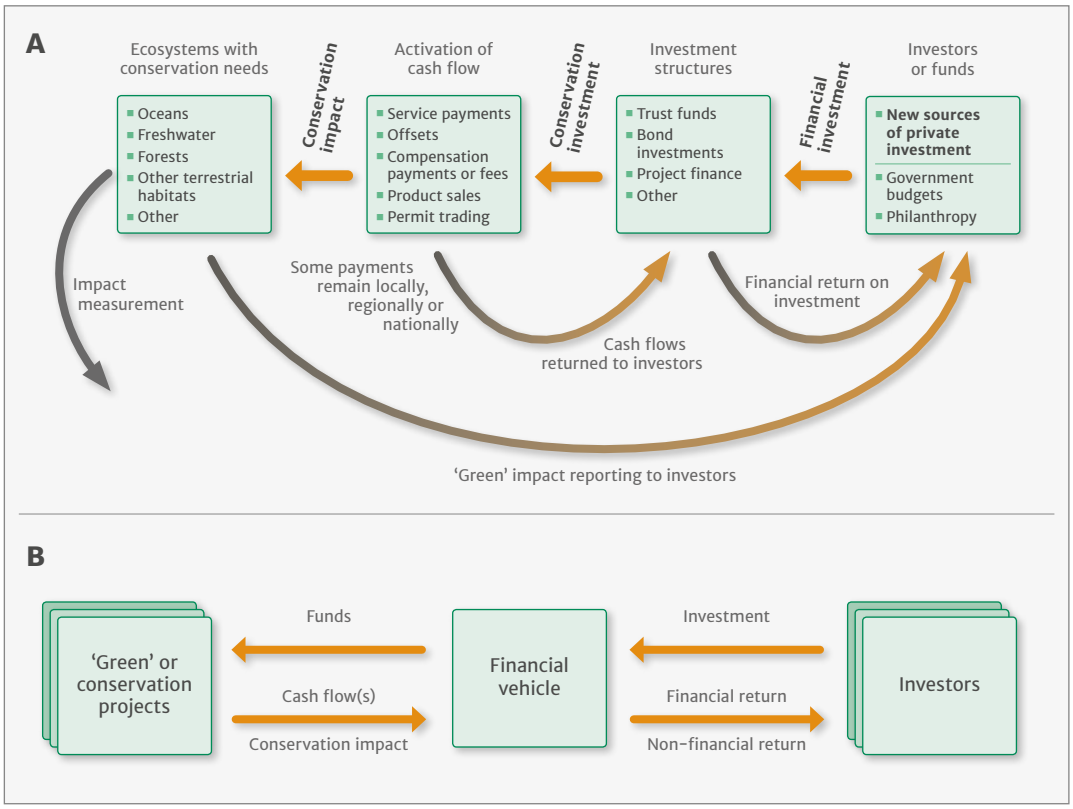

. Schematic representations of new forms of private sector conservation finance proposed by Credit Suisse and collaborators to be leveraged in association with increasingly legible natural capital value flows: [A] Conservation Finance Framework (based on Credit Suisse *et al.*, 2014); [B] 'Demand and Supply Side of Conservation (based on Credit Suisse and McKinsey Center for Business and Environment, 2016). (Also, see Sullivan, 2017: 414.)

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species, no longer reflected the organization's scope of work for the conservation of the diversity of life on Earth. It was considered that overall the organization would be better served by the term 'nature' as opposed to the term 'wildlife'. In other words, it seems that naming and framing 'nature' matters (Lakoff, 2010; Sullivan, 2016), and that the term 'natural capital' is far from neutral in its connotations as far as the 'natural world' is concerned.

This article is intended to add to debate regarding the current and consolidating naming of nature as 'natural capital'. What does this renaming do to how natures are conceptualized and approached, and whose interests does this remaking of nature as capital serve? And how is our ability to encounter other-than-human natures in their multiplicitous and wonderful differences affected by a tendency to see everything through the lens of capital? Importantly, given the debates at the IUCN's World Conservation Congress with which this article opened, to what extent does the conservation of natural capital equate with the conservation of nature? If these terms in fact invoke different things, then it seems worth clarifying whether the conservation of natural capital is indeed good for the conservation of nature. ■

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Notes

1 For detail and discussion see Hannis and Sullivan (2012), Sullivan and Hannis (2015), Carver and Sullivan (2017) and references therein.

2 See also Benabou (2014) and Carver (2015).

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