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Finance and biodiversity conservation: insights from rhino conservation and the world's first Wildlife Conservation Bond

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Abstract

The 'Rhino Bond' is the world's first financial instrument dedicated to protecting a species. The bond allows investors to invest in the conservation of black rhinoceros (*Diceros bicornis*) with the amount of money returned by the investment depending on whether rhino numbers increase (and by how much). In this paper we focus on how the Rhino Bond was brought into being. We draw on an analysis of organisational reports, along with data collected from interviews with key informants, to investigate: (i) the roles of the different stakeholders in the Rhino Bond; (ii) how species and sites were selected; (iii) the motivations and experiences of the different stakeholders; and (iv) the involvement of different stakeholders in decision-making. We found that while conservation actors are attracted by the potential for new funding, they have experienced challenges navigating complex financial instruments. The needs of financial actors often dictated decision making, with implications for the species and sites chosen for the bond. As profits are tied to an increase in population size of a specific species (which needs to be monitored), the project has favoured large and easily counted species and populations. Only some sites were able to meet the stringent conditions of financial instruments, including metrics on financial sustainability. We argue that the dominance of financial principles and motives means that not all species or sites will be viable candidates for investment, and that conservation finance should not be seen as a panacea.

Keywords

Conservation finance, innovative finance, outcome-based instruments, incentives, impact investing

Introduction

On 23rd March 2022 the World Bank launched the 'Rhino Bond', the world's first Wildlife Conservation Bond (WCB) and first financial instrument dedicated to protecting a species. Over 80% of the global rhino population of approximately 29,000 is found in protected areas in Africa (Emslie et al., 2016). The main threats to rhino populations are habitat loss and hunting for rhino horns (Amin et al., 2006). The Rhino Bond allows investors to invest in the conservation of black rhinoceros (*Diceros bicornis*), with the amount of money returned by the investment depending on whether rhino numbers increase (and by how much). The bond's "innovative pay-for-results impact investment" model (Roe et al., 2020 p.23) offers a new source of funds for conservation and represents the latest development in an increasingly close relationship between finance, business, and biodiversity conservation.

Currently, most conservation finance comes from governments and international donors (Meyers et al., 2020; Pascal et al., 2018). However, the funds available are insufficient to meet conservation needs (Balmford & Witten, 2003; Bos et al., 2015; Cumming et al., 2021). The challenge is particularly acute in tropical low-income countries, where governments often struggle to allocate sufficient financing to conservation due to a lack of financial resources and the additional challenges of tackling poverty (Balmford & Whitten, 2003). It is estimated that protected areas in Africa receive only 10-20% of the funding needed to manage them (IUCN, 2020). There have also been calls for conservation to be more effective and efficient with the funding it already receives (Rands et al., 2010). Critics have argued for improved performance management

and measurement, as well as a stronger evidence base to guide policy decisions (Bruner et al., 2004; Meyers, 2020; Sutherland et al., 2004).

The combination of funding shortfalls, the frequent failures of traditional conservation approaches, and the lack of evidence guiding conservation action have led to calls for alternative ways to fund biodiversity conservation (Bos et al., 2015; Bruner et al., 2004; Withers & Zoltani, 2020). In this context, the last decade has seen a growing emphasis on the potential for the financial sector to provide funds for conservation (Bos et al., 2015; Pascal et al., 2018). Biodiversity conservation has undergone increasing financialization (Scales, 2015; Sullivan, 2012), defined as 'the increasing importance of financial motives, financial actors, financial markets, and financial institutions' (Epstein, 2005, p. 3).

Impact investing is one of the most rapidly growing sectors of conservation finance, as investors look for products which demonstrate environmental benefits and a competitive rate of return on financial investments (Huwyler et al., 2016; Roe et al., 2020). Impact investments are defined as investments made into companies, organizations, and funds with the intention to generate a measurable, beneficial social or environmental impact alongside a financial return (GIIN, 2017). The 2008 global financial crisis, and subsequent criticism of the financial sector, has led some investors to look to make investments with a broader social purpose (Bugg-Levine & Goldstein, 2009; Watts & Scales, 2020). Impact investing has also been welcomed by the United Nations (UN), who consider it an opportunity to achieve the Sustainable Development Goals (Sales et al., 2015). While conservation represents only two percent of the current impact

investment market, the potential market is estimated at between USD 200-400 billion (Huwyler et al., 2016; Deutz et al., 2020; Roe et al., 2020).

Although demand for investment products that deliver positive social and environmental impacts has grown, the availability of impact investment products in conservation has not kept up with demand. A key challenge is the difficulty of finding viable projects that match the requirements of both investors and conservation organisations (Lee, 2017; Huwyler et al., 2014; Withers & Zoltani, 2020). To date, impact investments have tended to be "small, complex, and high-risk" (Lee, 2017 p.11).

While there is growing demand for conservation-related investment products, concerns have been raised about the implications of bringing finance into biodiversity conservation (e.g. Sullivan, 2012; Kay 2018). These are part of a broader critique of the increasingly close relationship between global conservation policy and global capitalism under what has been labelled neoliberal conservation (Brockington and Duffy, 2010; Igoe et al., 2010). This relationship has manifested itself in diverse ways, from projects that attempt to reduce or offset the environmental impacts of extractive industries (Seagle, 2012), to the expansion of ecotourism (Duffy, 2006; Duffy, 2008; Ojeda, 2012) and the proliferation of payments for ecosystem services schemes (Fletcher & Büscher, 2017).

Much of the critical literature has drawn on ideas from political economy to question the power imbalances that result from the increasingly close relationships between capitalism and conservation (for reviews of this literature and syntheses of its main concepts and arguments see Büscher et al., 2012; Scales, 2015; and Holmes & Cavanagh, 2016). Critics argue that policies and practices will inevitably be dominated by

the interests of investors and firms, while any costs (for example loss of access to natural resources) will be experienced by local communities (Fairhead et al., 2012; Holmes and Cavanagh, 2016; Scales, 2015). While the research we present here does not draw or build on this literature, it shares its empirical focus on the way in which policy and practice are being transformed through growing ties between finance and conservation.

In this paper we focus on the Rhino Bond and the process by which it was brought into being. We focus on four questions: (i) who are the stakeholders and what role do they play in the bond; (ii) how were species and sites selected; (iii) what are the motivations of the stakeholders for becoming involved and what have their experiences been; and (iv) how have decisions been made (and what is the influence of different stakeholders)? We finish by considering the broader implications of our findings and making recommendations for future policy and practice. We argue that while impact investing has the potential to bring new sources of funding and a results-focused approach to conservation, there are important issues that need to be considered. The interests and needs of financial actors mean that conservation bonds are easier to create around certain species. Furthermore, due to financial considerations (such as perceptions around risk to returns on investment) some sites and countries are more likely to attract investment than others. This has implications for which species, habitats, and countries are likely to attract funding and benefit from novel financial tools.

Methods

The initial focus of the research was a review of all the publicly available organisational reports on the Rhino Bond, such as Credit Suisse et al. (2021), GEF (2014), GEF (2019), and World Bank (2021). The first author complemented this with semi-structured interviews with key informants from the stakeholders involved in the Rhino Bond to explore elements of design in greater depth. Interviewees were identified and purposively selected by drawing on the information available in the public documents. 'Snowball' sampling was used to identify further key informants. Interviewees were drawn from intergovernmental organisations; non-governmental organisations (NGOs); private sector firms; protected area management; and government departments. All 15 interviewees were involved in either the Rhino Impact Investment (RII) project or the Rhino Bond creation. A further breakdown of respondents has not been provided to protect their anonymity.

Interviewees were contacted by email and informed of the aims of the research. Interviewees consented to participate in the research and were free to withdraw at any point, including after the research was completed. The information from interviews is reported anonymously. Interviews were conducted remotely via videocall between January and October 2021, with each interview lasting approximately 60 minutes. Interview questions focussed on two main themes: stakeholder motivations and the design of the bond (with a focus on financing, metrics, species protection, decision-making and stakeholder engagement). The interview guide was piloted prior to

interviews to refine questions. A full list of interview questions can be found in the supplementary table.

Results

Rhino Bond: key stakeholders and their roles

Initial discussions on the possibility of rhino impact investment began in 2013. The Global Environment Facility (GEF) funded Rhino Impact Investment (RII) was approved in 2015 to demonstrate a "scalable outcomes-based financing mechanism that directs additional private and public sector funds to improve priority rhino populations" (GEF, 2019 p.4). The RII concentrated on five protected areas (three in Kenya and two South Africa), while the Rhino Bond itself is linked to conservation performance only in the protected areas in South Africa. The Rhino Bond was launched in 2022. Figure 1 provides a timeline of key events in the establishment of the Rhino Bond.

<FIGURE 1>

The Rhino Bond distinguishes between the principal (the money invested by investors) and yearly interest payments (called 'coupon payments'). Investors buy the Rhino Bond, forgoing fixed yearly coupon payments, which are invested into the management of protected areas and rhino conservation activities. If rhino populations achieve a growth rate of at least 4% over five years (when the bond matures), the World Bank will repay the principal to investors while the GEF, as the outcome payer, will pay a

success payment higher than the foregone coupon payments. However, if expected rhino population levels do not reach 4%, the success payment is reduced in line with the actual rhino percentage increase. Rhino numbers are independently calculated by the Calculation Agent (Conservation Alpha) and verified by the Zoological Society of London.

The management and monitoring element of the bond is relatively straightforward, involving what one protected area manager described as "run of the mill conservation work" (i14, protected area). It draws on national conservation plans, using the same techniques used in most African Black Rhinoceros reserves (i8, private sector). These aim to maximise biological growth by managing habitat and rhino population density, while minimising mortality (due to poaching for example) (Balfour et al, 2019). Standard monitoring involves capturing rhinoceros before they reach three years old and notching an ear in a unique identifying pattern, which enables future monitors to identify the animal through aerial or ground surveillance and confirm that it is still alive (i8, private sector).

The ability to easily verify rhino numbers and attribute any increase to activities directly funded by the Rhino Bond is critical because it determines the success payments. There is therefore a strong focus on ensuring evidence is available to demonstrate that the money going to the protected area is being spent according to an agreed Theory of Change, and that any increase in rhino numbers occurs because of the investment made (rather than other funding sources). This makes the verifier role paramount, acting as "an honesty broker" (i9, private sector). A methodology is used that audits a part of the

population, extrapolated to the whole using a statistical model to estimate the abundance of rhinoceros. The model makes an estimation based on populations at the baseline (Year 0) and Year 5, while making assumptions accounting for uncertainty in detection rates and the probability of rhino being alive based on sightings over the five years (i11, private sector).

Although the bond is modelled on financial instruments familiar to investors, there are some important differences. Financial investments carry a risk that investors will lose money. Investors normally gauge investments by looking at the risk/return ratio. Investments with a high risk of failure need to offer investors high potential returns to justify the risk. On the opposite end of the spectrum, low risk investments offer lower returns. Rhino conservation is considered a high-risk investment, as disease or poaching may decimate an entire population and put at risk the principal while relatively low reproductive rates put a biological cap on population growth (and therefore an upper limit on coupon payments). Normally, investors would demand high interest rates in return for exposure to these risks. However, this would take money out of conservation activities and would thus undermine the desired positive environmental impact of the investments. To address this issue the Rhino Bond is linked to a 'Triple-A' rated investment grade bond issued by the World Bank, which guarantees that while investors may receive less (or even no) success payment, their principal will not be lost. The World Bank and GEF thus play a key role in 'de-risking' investment to make the bond more attractive to investors.

As well as the World Bank and GEF, the Rhino Bond involves a wide range of stakeholders, from those traditionally involved in rhino conservation projects (e.g. protected area managers, scientists, governments, NGOs) to those newer to conservation, such as financial services companies and auditors. One report noted that "bridging the gap between financial markets and species conservation demands an entirely new set of intermediaries" (UNDP, 2020 p.61). Impact investment also means that the role of traditional conservation stakeholders changes, with the World Bank changing from donor to guarantor. Table 1 provides an overview of the key organisations involved in the Rhino Bond and their roles.

<TABLE 1>

With regards to engagement with local communities, the Rhino Bond builds on both World Bank and national policies and practices. For example, a Stakeholder Engagement Plan outlines community engagement to be undertaken throughout the project. The bond also includes job creation at both conservation sites in South Africa as a key indicator. One interviewee noted that this was due to the involvement of the World Bank, which focusses primarily on poverty alleviation and promoting prosperity, rather than conserving rhinos: "[they are] very adamant about the social investment in the project and there is responsibility with the local community that we have to fulfil" (i12, protected area). Another interviewee remarked that "[the bond] must translate into improvements in people's livelihoods. In some ways, it's just incorporating principles of

best practice in conservation" (i4, intergovernmental organisation). A World Bank (2021b) document includes an increase in the number of direct beneficiaries as an expected outcome of the project, including through job creation at both conservation sites in South Africa. The document notes that "sites will work with the target communities to engage them in project activities through the established Parks Forum. Community engagement will include benefits to staff currently employed … SANParks [South Africa National Parks] will also employ temporary staff that works on an ad hoc basis and for maintenance functions… and appoint staff to work as rangers, monitors, gate guards, joint operations center staff and a project manager.'

While the protected areas containing rhinos have ongoing community engagement initiatives, and communities around protected areas were consulted during the development of the RII, they were not explicitly included in shaping the goals or the metrics of the RII. One interviewee working in a protected area, explained their reservations about community involvement in decision-making on rhino protection and security: "community members at internal meetings of a critically endangered animal… that is a no-no. Any poacher is either coming from that community or needs to traverse that community to enter the rhino area," (i13, protected area).

Species and site selection for the Wildlife Conservation Bond

In the early discussion of the WCB the initial intention was to design a product for a larger habitat or ecosystem. However, the idea was postponed because "financial payments for more ambitious outcomes would be more complicated in terms of

monitoring and evaluation" (i2, intergovernmental organisation). The choice of rhinos for the first WCB was almost universally agreed by interviewees to have been a good one, largely because of ease of monitoring. One interviewee commented that rhinos "are big, they're easy to track" (i2, intergovernmental organisation), while another stated that it was "a fantastic species to choose because they're quite easily measurable. We could design verifiable metric systems for them" (i8, private sector). One interviewee remarked that rhinos suited investors' needs because "you can tell your investors this is when you're going to get paid out because the population has increased by this much" and "there are not a lot of species we can do that with" (i4, intergovernmental organisation). As well as noting the importance of size and measurability, interviewees also commented on the fact that some species are more likely to attract investment than others: "for some obscure chameleon living in the depths of the Congo rainforest, it would have been far more difficult to find significant money" (i14, protected area).

Some interviewees suggested that focusing on rhinos not only made the bond more straightforward to design and implement, it also had the potential to deliver broader conservation benefits due to rhinos acting as an 'umbrella species': "if you can conserve rhino in a landscape, then basically everything else is fine underneath" (i15, protected area). However, while most interviewees thought that focusing on rhinos was a good idea, others highlighted possible tensions with the conservation of other species: "if you don't remove that pride of lions that are specialized in killing rhinos you start to miss your rhino targets, which compromises the investment" (i14, protected area).

When it came to selecting countries and specific rhino populations in the early stages of preparation for the bond, sites needed to have Key 1 populations, meaning those classified by the International Union for the Conservation of Nature (IUCN) African Rhino Specialist Group as being of significance for Africa. From an investment perspective, sites needed to fulfil certain biological requirements, with a minimum number of rhinoceroses. As one interviewee described it: "you have over one hundred and forty sites with rhinos, but 18 of those sites have 90% of the rhinos. The economics tells you, what are we doing, putting money into those other sites? This is a waste" (i5, NGO). A report (Credit Suisse et al., 2021) notes that although the RII initially aimed to include Indonesian Javan and Sumatran Rhinoceroses (which are critically endangered), their populations are small, fragmented, and problematic to count, hence not suitable for the kind of measurement required for the bond.

As well as having sufficient rhinos, sites also needed to fulfil criteria relating to effective management, so that stakeholders had confidence that the Rhino Bond could deliver results. It was important that sites were managed effectively, which included metrics such as financial sustainability, leadership, and procurement (UNDP, 2020). One interviewee described it as "this private equity approach of saying, find us the best assets in terms of biodiversity value and find us the best managers" (i3, intergovernmental organisation).

Only the South African sites were deemed ready for investment. An interviewee noted the Kenyan sites have been slower at achieving investment readiness and highlighted the challenges of financial reporting requirements: "they are very unfamiliar

with this kind of financial instrument." (i14, protected area). The Kenya Wildlife Service have also struggled to meet some of the necessary criteria, such as: "credible mechanisms to demonstrate the achievement of results" (i14, protected area).

The World Bank (2021 p.13) notes that the three sites in Kenya are "currently finalising their Investment Readiness status, which would enable fast scaling of the Wildlife Conservation Bond." The delay has been frustrating to some conservationists involved in the early stages of the project, who had intended to focus on Tsavo West National Park in Kenya and which, according to one interviewee, is "certainly in terms of potential for recovery, the most important Black Rhino population on the continent" (i8, private sector). It also created tension because "not everyone appreciated that we have to pick the best sites for investors, not for our organisation… the product is the priority" (i5, NGO).

This shows that it was not solely conservation importance that dictated site selection and that the designers of the bond paid close attention to conditions beyond the sites themselves, such as the capacities and willingness of the governments involved to deal with new financial instruments. As governments often lead rhino conservation, one interviewee commented that there is a need for "effective switched-on people" in government with buy in at all levels (i7, NGO). However, some interviewees noted that not all governments may be able to support the development of a Rhino bond. One interviewee noted that "in my experience, Asian governments work slowly; there's not the same sense of urgency that you see in some African rhino range states" (i7, NGO).

The lack of capacity to deal with complex new mechanisms was also noted in relation to other institutions. An evaluation stated that sites in Asia were not included in the bond in part due to the lack of active engagement from the Asian Rhino Specialists Group (UNDP, 2020). One interviewee commented that countries differ in their risk profiles: "I think that the risk profile is always going to favour countries like South Africa and Kenya" (i10, private sector). This is due to private investors' perceptions regarding maximising returns at minimum risk, with South Africa and Kenya already being large and established impact investment markets. The risk that only successful sites attract funding, while "less successful reserves slip into obscurity and continue to lose rhinoceros" was highlighted by the GEF (2014 p.14) and Credit Suisse et al. (2021). To mitigate this risk, the GEF noted that the bond (or alternatives) could pay a higher return to encourage investment in riskier places. However, given challenges in the design and development of the Rhino Bond, this is unlikely at this stage.

Stakeholder motivations for involvement in the Rhino Bond

All interviewees broadly supported the concept of bringing financial markets into conservation. Some referred to finance as the last hope for conservation given the urgency for large-scale funding: "we're pinning a lot of hope on the Rhino Bond. I believe it might be the only way in this very self-centred world to save the day. There are not enough people out there that value nature" (i13, protected area). Protected area managers often talked in emotive terms of the intrinsic value of nature: "the biggest drive is our

passion for rhino conservation and to ensure that the rhinos are there for our grandchildren to see one day… in the wild open spaces" (i12, protected area).

At the same time, protected area managers were attracted by the large sums of money to enable them to build financially resilient reserves: "when people come carrying fistfuls of dollars, you want to try and get as many of those dollars as possible" (i14, protected area). They see the bond, particularly with the impact of Covid-19 on tourism revenue, as an opportunity to build "financial resilience which is critical to [our] survival" (i15, protected area). They also see it as giving them greater independence over the current conservation funding model, since currently "what happens is often driven by NGOs and donors…and you can end up in a situation where you can have someone sitting in an office in Cambridge who is making decisions on what happens on the ground in the heart of Africa" (i15, protected area).

While the possibility of finding new sources of funding was a strong motivation, there were other reasons for becoming involved. Intergovernmental organisations see the bond as a test case with the potential to be scaled to other species and landscapes, given the increasing interest in the market for 'green' finance. They described it as a "really valuable experiment" (i1, intergovernmental organisation) and "a proof-of-concept investment" (i2, intergovernmental organisation). This meant that the process has value beyond increasing rhino numbers: "it's going to provide an enormous amount of information that can be used for further structured investments" (i2, intergovernmental organisation). The same organisations were also motivated by the kudos of being involved in an innovative scheme: "I want it to be successful from a pure conservation biology

perspective… and we also want to be associated with the success and be seen as willing to invest in new approaches" (i2, intergovernmental organisation).

Interviewees from the private sector were interested in being involved from the perspective of a generating future income for the company: "we are at the forefront of an innovative financing proposition and it's the first in the market. It is like investing in a possible future business line" (i10, private sector). They noted the increasing demand from investors and asked, "how can we get into that market?" (i11, private sector). As the bond has only recently launched, there were no investors at the time the research was carried out, but interviewees thought investors would be motivated by the low-risk/high-return ratio and their wish to 'green' portfolios. Some interviewees thought the bond would be appealing to high net-worth individuals with a "social conscience" wanting to invest in something "cool" (i4, intergovernmental organisation; i15, protected area).

Conservationists' experiences of the Rhino Bond

The main theme that emerged in discussions with conservation practitioners about the design of the bond was the issue of financial complexity. The involvement of financial companies, and the target audience of commercial investors, brought complexities in new terminology and design. During interviews, interviewees with a financial background working in intergovernmental organisations, conservation organisations and the private sector used technical terms with fluidity. These included terms such as 'net present value' (a method to calculate whether an investment will be profitable), 'liquidity' (assets that are easily converted into money), and 'maturity' (the date at which the principal on a

bond is repaid). In contrast, almost all protected area managers expressed frustration at the complexity of the language: "I got a bit lost in the technical jargon. I pretend I know and understand it, but I must be honest, I don't understand it at all" (i13, protected area). They also implied a hierarchy based on the ability to grasp the concepts, for example "I'm not a financier, I'm not an accountant … I'm just a field conservationist" (i13, protected area). This was also seen within intergovernmental organisations when interviewees referred to their financial colleagues, "I don't know that stuff. I am just a conservationist" (i4, intergovernmental organisation).

The complexity of the Rhino Bond results from designing a financial product around existing conservation practices and hinges on risk management and effective attribution. As one interviewee described, "it went into the mechanics of the financing, it wasn't so much about the biology of the rhinos anymore, it was about how do we structure it as a financial instrument" (i2, intergovernmental organisation). In terms of risk management, the bond design transfers some of the risk of financing rhino conservation to private investors, as they do not receive the success payment at the end of the five years if rhino numbers do not meet the target. One interviewee noted that the structure of the product also presents risks to the World Bank, as it acts as the guarantor of the principal yet does not control the money, which is transferred directly from investors to protected areas. Neither the World Bank nor the investor is responsible for delivering rhino population growth, which "makes all kinds of complications … it gets to be outside the comfort zone of most people" (i4, intergovernmental organisation).

Another interviewee noted that "investors do not usually have this kind of guarantee, so the World Bank is in a precarious position as it is accepting liability" (i10, private sector).

The complexity in language and design meant that not all stakeholders fully understood the bond, and some were not able to communicate it effectively, nor fulfil the various requirements. Almost all protected area managers raised the challenges of communicating complexity: "if I'm honest, there was quite a long period of time where, quite frankly, even now, I wasn't entirely sure how I would explain [the Rhino Bond] and get someone to understand what it was" (i15, protected area). Another described struggling to communicate the concept to his board, "they couldn't understand the mechanism behind it - how the investment would be made and how it would be underwritten. On the face of it, it sounds very neat. But when you start digging into the modalities of making it work, it's quite complicated" (i14, protected area). In contrast, intergovernmental organisations had their own finance experts, which enabled them to be more effective: "what was key was to have someone who could understand finance and financial structuring on the donor side" (i3, intergovernmental organisation) and to bridge the "conservation and finance worlds," (UNDP, 2020 p.43).

Decision-making and the dominance of financial motives

While the RII has involved a range of stakeholders, financial motives determined decisions on several key points, and decision-making related to the financial design of the Rhino Bond was restricted to financial experts. As one interview put it, "first and foremost, when you issue a bond, it needs to make sense in financial terms" (i3,

intergovernmental organisation). Financial needs and motives determined the length of the bond, which had originally been envisaged as ten-years, to provide more predictable financing to conservation. However, "the feedback from the market was to test with a five-year bond first" (i8, private sector).

Making sense in financial terms also meant thinking about what would be attractive to investors. For example, while an expert from Save the Rhino International sat on the Investment Committee, one interviewee (i7, NGO) remarked that Credit Suisse did not think that Save the Rhino's support of managed trophy hunting would be palatable to European investors and insisted that it be reviewed. The same interviewee noted that "knowing a little information—particularly about controversial issues, such as trophy hunting—can be dangerous, in that new players can be over-confident about their expertise in a given area and make ill-informed decisions" (i7, NGO). The expert from Save the Rhino resigned from the Committee as a result.

The need to reassure investors and meet their needs and expectations was a recurring theme in interviews. One interviewee, remarking on the importance of audit and verification to investors, stated that 'You must have a known entity. If that's what [finance] people say, we have to listen to that" (i4, intergovernmental organisation). Another interviewee commented that "they want to build confidence with investors… they want to go with the big names" (i11, private sector).

In the design of the bond, decision making was limited to the World Bank, GEF and Credit Suisse, with one interviewee commenting that "it's just that in the cooking, there are very few people because … it follows rules of market confidentiality"' (i3,

intergovernmental organisation). Sometimes, there was tension inside conservation organisations, as barriers were created between different departments to avoid information about the design of the financial product being shared: "we had to create a Chinese wall with our actual conservation implementation team" (i5, NGO). This was to ensure that the conservation teams were not able to influence site selection at that stage, maintaining the focus on the sites that were best for investment.

Discussion

Given the global shortfall in conservation funding, the financial sector is appealing as a potential source of funds. The Rhino Bond is the world's first WCB, but it is likely that impact investment in conservation will grow rapidly over the next decade (Deutz et al., 2020; Huwyler et al., 2016; Withers & Zoltani, 2020). It is therefore important to consider the initial experiences of the bond and their broader implications. There are three key points to take away. First, the complexity of financial instruments means that while conservation actors are attracted by the potential for new funding streams, they have found navigating financial instruments challenging. WCBs rely heavily on the technical expertise of financial actors and bonds must be tailored to those who might buy them. This can result in an imbalance in the influence of different stakeholders with financial actors making key decisions. It is also important to note that the Rhino Bond, while creating new sources of funding, largely built on the current model of rhino conservation and has not fundamentally changed practices that have been criticised for their lack of engagement with local communities (Annecke & Masubelele, 2016; Duffy et al., 2015).

The push from the World Bank towards job creation for local communities, and wider stakeholder engagement, could be considered an improvement of the model, but does not alter the balance of power that has historically underpinned biodiversity conservation in low-income countries (Adams & Hutton, 2007; Sandbrook, 2017).

The second point is that the motivations and needs of financial actors have important implications for the types of species that are likely to attract investment, as the need to measure performance favours large and easily counted species. Our research also suggests that investors, much like the broader public (Feldhamer et al., 2002), are drawn to charismatic megafauna. There is therefore a risk that some sites and some species will receive disproportionate financing and a danger of a narrowing of vision of conservation. While conservation has a long history of focusing efforts on certain species, especially charismatic megafauna and those seen to act as 'flagship species' (Bowen-Jones & Entwistle, 2002), the outcomes-based approach of finance (with profits tied to growth in numbers of a specific species) may lead to actions to limit other species (e.g. lion populations that threaten rhinos).

The third point is that the needs of financial actors also have implications for the sites and countries that are likely to attract investment. Only some sites, in some countries, will be able to adapt to the numerous and stringent requirements of financial actors and mechanisms. These sites are likely to already be successful, both biologically and financially, with governments or conservation organisations that have the capacities to be able to support the process of financialization.

Overall, the dominance of financial principles and motives in financialised conservation means that not all species or protected areas will be viable candidates for investment. Those that are suitable may not necessarily be the most critical from a conservation perspective but rather fit the requirements of financial instruments and investors. Highly uneven geographies of investment have already been noted in relation to impact investment in agricultural development, with money flowing to a small number of countries deemed suitable for investment (Watts & Scales 2020). The growing financialization of conservation thus has implications for what sort of species, habitats, and places might attract conservation finance (and which might not). While the financial sector is likely to become an increasingly important part of the conservation funding landscape, conservation finance should not be seen as a panacea.

With this in mind, we make the following recommendations: (i) institutions and organisations working on biodiversity conservation must be clear-sighted about the sites and species that cannot be the basis of viable financial instruments and consider how to best fund and support these; (ii) for species and sites that are able to attract conservation finance, projects should consider potential power imbalances, both between financial actors and conservation organisations, and between biodiversity conservation and local communities; (iii) conservation organisations engaging in conservation finance will need to adapt to new ways of working and new relationships by building (or recruiting) the necessary financial expertise and accommodating a stronger focus on monitoring and evaluation.

Author contributions

Study design: CM, IRS; fieldwork: CM; data analysis: CM, writing: CM, IRS

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Conflicts of interest

The first author is an employee of the United Nations Development Programme, one of the stakeholders involved in the RII project, but has not been involved in the Rhino Impact Investment or the Rhino Bond and is writing in a personal capacity. The views expressed herein are those of the author and do not necessarily reflect the views of the United Nations Development Programme. The authors confirm that they have no financial, professional, or personal relationships with the potential to bias the work.

Ethical standards

The research received ethical approval from the University of Cambridge and complies with Oryx's ethical standards.

References

ADAMS, W. M. & HUTTON, J. (2007) People, parks and poverty: political ecology and biodiversity conservation. *Conservation and Society*, 5, 147-183.

AMIN, R., THOMAS, K., EMSLIE, R.H., FOOSE, T.J. & VAN STRIEN, N. (2006) An overview of the conservation status and threats to rhinoceros species in the wild. *International Zoo Yearbook*, 40, 96-117

ANNECKE, A. W. & MASUBELELE, M. (2016) A Review of the Impact of Militarisation: The Case of Rhino Poaching in Kruger National Park, South Africa. *Conservation and Society,* 14, 195-204

BALFOUR, D., BARICHIEVY, C., GORDON, C. & BRETT, R. (2019) A Theory of Change to grow numbers of African rhino at a conservation site. *Conservation Science and Practice*, 1, e40

BALMFORD, A. & WHITTEN, T. (2003) Who should pay for tropical conservation, and how could the costs be met? *Oryx,* 37, 238–250.

BOS, M., PRESSEY, R. L. & STOECKL, N. (2015) Ocean & Coastal Management Marine conservation finance: The need for and scope of an emerging field. *Ocean and Coastal Management*, 114, 116–128.

BOWEN-JONES, E. & ENTWISTLE, A. (2002) Identifying appropriate flagship species: the importance of culture and local contexts. *Oryx*, 36, 189-195.

BROCKINGTON, D.& DUFFY, R. (2010) Capitalism and conservation: The production and reproduction of biodiversity conservation. *Antipode*, 42, 469–484.

BRUNER, A. G., GULLISON, R. E. & BALMFORD, A. (2004) Financial costs and shortfalls of managing and expanding protected-area systems in developing countries. *BioScience*, 54, 1119–1126.

BUGG-LEVINE, A. & GOLDSTEIN, J. (2009) Impact investing: harnessing capital markets to solve problems at scale. *Community Development Innovation Review*, 2, 30-41.

BUSCHER, B., SULLIVAN, S., NEVES, K., IGOE, J. & BROCKINGTON, D. (2012) Towards a Synthesized Critique of Neoliberal Biodiversity Conservation. *Capitalism Nature Socialism,* 23, 4-30.

CREDIT SUISSE, GEF, UNDP, ROYAL FOUNDATION, UKAID, ZSL (2021) The Wildlife Conservation Bond: A new blueprint for the way natural capital is financed and an enabling tool for the delivery of the post-2020 global biodiversity framework. *Credit Suisse Group AG and McKinsey Center for Business and Environment*: Zürich, Switzerland

CUMMING, T., SEIDL, A., EMERTON, L., SPENCELEY, A., KRONER, R.G., UWINEZA, Y., & VAN ZYL, H. (2021) Building sustainable finance for resilient protected and conserved areas: Lessons from COVID-19. *Parks*, 27, 149-160.

DEUTZ, A., HEAL, G. M., NIU, R., SWANSON, E., TOWNSHEND, T., ZHU, L., DELMAR, A., MEGHJI, A., SETHI, S. A. & TOBIN-DE LA PUENTE, J. (2020) Financing Nature: Closing the global biodiversity financing gap. *The Paulson Institute, The Nature Conservancy, and the Cornell Atkinson Center for Sustainability*.

DUFFY, R. (2006) Global environmental governance and the politics of ecotourism in Madagascar. *Journal of Ecotourism*, 5, 128–144.

DUFFY, R. (2008) Neoliberalising nature: Global networks and ecotourism development in Madagasgar. *Journal of Sustainable Tourism*, *16*, 327-344.

DUFFY, R., ST JOHN, F. V., BUSCHER, B. & BROCKINGTON, D. (2015) The militarization of anti-poaching: undermining long term goals? *Environmental Conservation*, 42, 345–348.

EMSLIE, R., MILLIKEN, T., TALUKDAR, B., ELLIS, S., ADCOCK, K. & KNIGHT, M. (2016) African and Asian rhinoceroses – Status, conservation and trade: A report from the IUCN Species Survival Commission (IUCN SSC) African and Asian rhino specialist groups and TRAFFIC to the CITES secretariat pursuant to resolution Conf. 9.14 (Rev. CoP15).

EPSTEIN, G. (2005). Financialization and the World Economy. Cheltenham: *Edward Elgar Publishing Limited*.

FAIRHEAD, J., LEACH, M. & SCOONES, I. (2012) Green Grabbing: a new appropriation of nature? *The Journal of Peasant Studies*, 39, 237-261.

FELDHAMER, G., WHITTAKER, J., MONTY, A.M., & WEICKERT, C. (2002) Charismatic mammalian megafauna: Public empathy and marketing strategy. *Journal of Popular Culture*, 36, 160–168.

FLETCHER, R. & BUSCHER, B. (2017) The PES conceit: revisiting the relationship between payments for environmental services and neoliberal conservation. *Ecological Economics*, *132*, 224-231.

GEF (2014) Rhino Impact Bonds: An Innovative Financing Mechanism for Site-Based Rhinoceros Conservation, Project ID5721. *Global Environment Facility*, Washington DC.

GEF (2019) Rhino Impact Investment (RII): An Innovative Financing Mechanism for Site-Based Rhinoceros Conservation, Project ID5721. *Global Environment Facility*, Washington DC.

GIIN (2017) Annual impact investor survey 2017. New York: *Global Impact Investing Network*.

GPRBA (2021) Impact Bonds Primer. *Global Partnership for Results-Based Approaches*, https://www.gprba.org/impact-bonds-primer (accessed 16/10/2021).

HOLMES, G. & CAVANAGH, C.J. (2016) A review of the social impacts of neoliberal conservation: Formations, inequalities, contestations. *Geoforum*, *75*, pp.199-209.

HUWYLER, F., KÄPPELI, J. & TOBIN, J. (2016). Conservation finance from niche to mainstream: The building of an institutional asset class. *Credit Suisse Group AG and McKinsey Center for Business and Environment*: Zürich, Switzerland.

IGOE, J., NEVES, K. & BROCKINGTON, D. (2010) A spectacular eco-tour around the historic bloc: theorising the convergence of biodiversity conservation and capitalist expansion. *Antipode*, 42, 486–512.

IUCN ESARO (2020) Closing the gap. The financing and resourcing of protected and conserved areas in Eastern and Southern Africa. Nairobi, Kenya: IUCN ESARO; BIOPAMA.

KAY, K. (2018) A hostile takeover of nature? Placing value in conservation finance. *Antipode*, *50*, 164-183.

LEE, N. (2017) Billions to Trillions? Issues on the Role of Development Banks in Mobilizing Private Finance. *Centre for Global Development*, 17.

MCAFEE, K. (1999) Selling nature to save it? Biodiversity and green developmentalism. *Environment and Planning D: Society and Space,* 17, 133–154.

MEYERS, D., BOHORQUEZ, J., CUMMING, T., EMERTON, L., HEUVEL, O., RIVA, M., & VICTURINE, R. (2020) Conservation Finance: A Framework. *Conservation Finance Alliance*, 1-45.

OJEDA, D. (2012) Green pretexts: Ecotourism, neoliberal conservation and land grabbing in Tayrona National Natural Park, Colombia. *Journal of Peasant Studies*, 39, 357-375.

PASCAL, N., BRATHWAITE, A., PHILIP, M. & WALSH, M. (2018) Impact investment in marine conservation. *Duke Environmental Law and Policy Forum*, 28, 199–220.

RANDS, M. R. W. *et al.* (2010) 'Biodiversity conservation: Challenges beyond 2010', *Science*, 329, 1298–1303.

REDFORD, K.H., PADOCH, C. & SUNDERLAND, T. (2013) Fads, funding, and forgetting in three decades of conservation. *Conservation Biology*, 27, 437-438.

ROE, D., BOOKER, F., WILSON-HOLT, O. & COONEY, R. (2020) Diversifying Local Livelihoods While Sustaining Livelihoods: Exploring Incentives for Community Based Tourism' *Luc Hoffman Institute*.

SALES, T., CHIMWELE, P., BONZOM, P., KIMMEL, K. M., BERHANU, G., BONFANTI, M., & WELSH, K. (2015) Impact investment in Africa: Trends, constraints and opportunities. *United Nations Development Programme*, New York.

SANDBROOK, C. (2017) Weak yet strong: The uneven power relations of conservation. *Oryx*, 51, 379-380.

SCALES, I.R. (2015) Paying for nature: what every conservationist should know about political economy. *Oryx,* 49, 226–231.

SEAGLE , C. (2012) Inverting the impacts: mining, conservation and sustainability claims near the Rio Tinto/QMM ilmenite mine in Southeast Madagascar. *Journal of Peasant Studies*, 39, 447–477.

SULLIVAN, S. (2012) Banking Nature? The Spectacular Financialisation of Environmental Conservation. *Antipode*, 45, 198–217.

SUTHERLAND, W. J., PULLIN, A., DOLMAN, P.M. & KNIGHT, T.M. (2004) The need for evidence-based conservation. *Trends in Ecology and Evolution*, 19, 305–308.

UNDP (2020) Terminal Evaluation of the Project 'Rhino Impact Bonds: An Innovative Financing Mechanism for Site-Based Rhinoceros Conservation'. *United Nations Development Programme*, New York.

WATTS, N. & SCALES, I. R. (2020) Social impact investing, agriculture, and the financialisation of development: Insights from sub-Saharan Africa. *World Development,* 130, 104918.

WITHERS, O. & ZOLTANI, T. (2020) Leveraging support for pangolin conservation and the potential of innovative finance. In *Pangolins: Science, Society and Conservation* (eds. D.W.S. Challender, H.C. Nash & C. Waterman) pp. 579-595. Academic Press, Cambridge, USA.

WORLD BANK (2021) South Africa: Wildlife Conservation Bond (P174097). World Bank, Washington DC.

WORLD BANK (2021b) Project Appraisal Document Wildlife Conservation Bond Operation (P174097). Report No: PAD4055 World Bank, Washington DC.

Tables and table captions

TABLE 1. Stakeholders involved in the design of the Rhino Bond

	Organisation	Description	Role in the Rhino Impact Investment	Role in the Rhino Bond
Intergovernmental organisations	Global Environment Facility (GEF)	Multilateral Trust Fund providing funds to low-income countries to invest in nature	Co-funder	Outcome payer
	United Nations Development Program (UNDP)	The UN's development agency	Developed GEF project	N/A
	World Bank	Provides loans, credit, and grants to low-income countries		Issues and implements bond
Non-governmental organisations	Zoological Society of London	International conservation charity	Implementing agency	Verifies rhino numbers
Scientific groups	African Rhino Specialist Group (AfRSG)	Network of volunteer experts providing scientific advice to reduce biodiversity loss	Technical guidance and endorsement	N/A
Private sector	Conservation Alpha	Company providing auditing, consulting, and conservation science	Performance manager: developed Theory of Change and monitoring tool	Calculates rhino numbers
	PricewaterhouseCoopers (PwC)	Multinational company focussing on audit and assurance, consulting, and tax	Auditor	N/A
	Credit Suisse	Multinational financial services	Lead financial coordinator	Sole structurer

		company and investment bank	(joined late 2019)	& joint underwriter with Citibank
	Conservation Capital	Consulting company developing new business and finance mechanisms for conservation	Finance manager: design of financing mechanism and fundraising	N/A
Protected area managers	Addo Elephant National Park; Great Fish River Nature Reserve; Lewa-Borana Conservancy; Ol Pejeta Conservancy; Tsavo West National Park.	Manage protected areas	Developed the Theories of Change	Implementers (South African sites only)
Government agencies / departments	Kenya Wildlife Service		Approved the investment metrics	N/A
	South African National Parks; Eastern Cape Parks and Tourism Agency		Endorsed site selection	Implementers

Figures and figure captions

FIGURE 1. Timeline of key events in the establishment of the Rhino Bond

- **2013:** Initial discussions between the Zoological Society of London (ZSL) and the Global Environment Facility (GEF) on the importance of Tsavo West National Park in Kenya
- **March 2014:** "Rhino Impact Investment (RII): An Innovative Financing Mechanism for Site-Based Rhinoceros Conservation" concept approved by the GEF Council
- **October 2015:** RII signed by the GEF
- **March 2016 to March 2018:** Tsavo West established as pilot site to test investment performance metrics and payment triggers. Target growth rate of 5% at a 90% confidence interval established (GEF, 2019 p.12)
- **August 2017:** Five sites selected to be part of an investment readiness phase (three in Kenya, two in South Africa)
- **2018:** Investment Committee determine that all five sites achieved investment readiness, having assessed financial management, theory of change (budgeted rhinoceros conservation and intervention strategy) and monitoring capability
- **December 2019:** South African sites prioritised for the Wildlife Conservation Bond
- **June 2020:** Bond concept approved by the GEF Council
- **July 2021:** South Africa: "Wildlife Conservation Bond" approved by the World Bank Board.
- **March 2022:** 'Rhino Bond' launched