SMITH SCHOOL OF ENTERPRISE AND THE ENVIRONMENT

UNIVERSITY OF OXFORD

Towards a framework for Protected Area asset management

Discussion Paper

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About the Project for Protected Area Resilience

The Project for Protected Area Resilience (PPAR) is seeking to reinvigorate the discourse about protected area (PA) conservation by examining the value (broadly defined) PAs generate and how more value can be realised through new investment. The project is also concerned with how to safeguard PAs in light of current and emerging risks threatening their ability to generate value sustainably – in other words we want to avoid PAs becoming 'stranded assets'. The project is also looking at how to prioritise different types of PA funding and how to achieve the most impact with limited funds. The first phase of the project began in spring 2014 and will be completed in mid-2015, with subsequent phases beginning thereafter.

The project is led by Ben Caldecott and Paul Jepson at the University of Oxford. The project advisory board includes: André Abadie (Managing Director/Head of Global Environmental & Social Risk Management, J.P. Morgan), Professor Jonathan Baillie (Conservation Programmes Director, ZSL), Robin Bidwell (Chairman, Green Alliance), Glyn Davies (Director of Programmes, WWF-UK), Christian del Valle (Managing Partner, Althelia Ecosphere), Rupert Edwards (Senior Adviser, Forest Trends), Professor Marc Hockings (Program Director of Environmental Management, University of Queensland), Naomi Kingston (Head of Protected Area Programme, UNEP-WCMC), Kathy MacKinnon (World Commission on Protected Areas), Stephanie Maier (Head of Corporate Responsibility, Aviva Investors), Therese Niklasson (Head of ESG Research, Investec Asset Management), Sue Stolton (Director, Equilibrium Research), Joshua Tewksbury (Director, Luc Hoffmann Institute), Francis Vorhies (Director, Earthmind), and Sir Graham Wynne (former CEO, RSPB).

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Discussion Paper

This Discussion Paper is intended to stimulate discussion within the research community and among users of research. The views expressed in this paper represent those of the author(s) and do not necessarily represent those of the host institutions or funders.

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Executive Summary

- This short discussion paper provides an update on the development of a new asset framework for protected areas (PAs), that involves five typologies, namely for investment, situated assets, forms of value, value capture, and risk factors. Our working typologies can be viewed here[1] and we are actively seeking input and comment from interested parties.

- At the 2003 World Parks Congress, WWF CEO Claude Martin commented that PAs represent, 'the largest conscious land use change in history'. The total terrestrial land area with some form of protection tripled between 1985 and 2000 and a key goal of the 2014 World Parks Congress has been on how to meet Aichi Target 11 – that by 2020 effective conservation will cover 17% of terrestrial and 10% of marine areas.

- Competing claims for land resources are undermining PAs as a policy and cultural ideal. As a result they are becoming less resilient to threats. PA downgrading, downsizing, and degazettement (PADDD) has recently emerged as a topic of academic and policy concern[2]: the 'go/no-go'[3] question by extractive industries is another manifestation of this.

- In order to assure the future of PAs in increasingly risky and volatile contexts three things need to happen simultaneously: i) we need demonstrate the value generate by PAs in ways that are meaningful for citizens, politicians, and markets in a rapidly changing world; ii) we need to better understand the forms of value generated by PAs to enable enhanced risk management, and iii) we need to attract new investment into PAs from old and new funding sources.

- Our new asset framework responds to these needs. We present PAs as a spatial asset class created through a variety of different types of investment in a range of asset types. It is designed to formalise the relationship between investments in PAs and the diverse forms of value that accrue to nations, society, people, and economies. It restates and reveals values, many of which cannot be monetized, and by doing so could help to attract new investment into PAs by the groups that benefit from the values they generate.

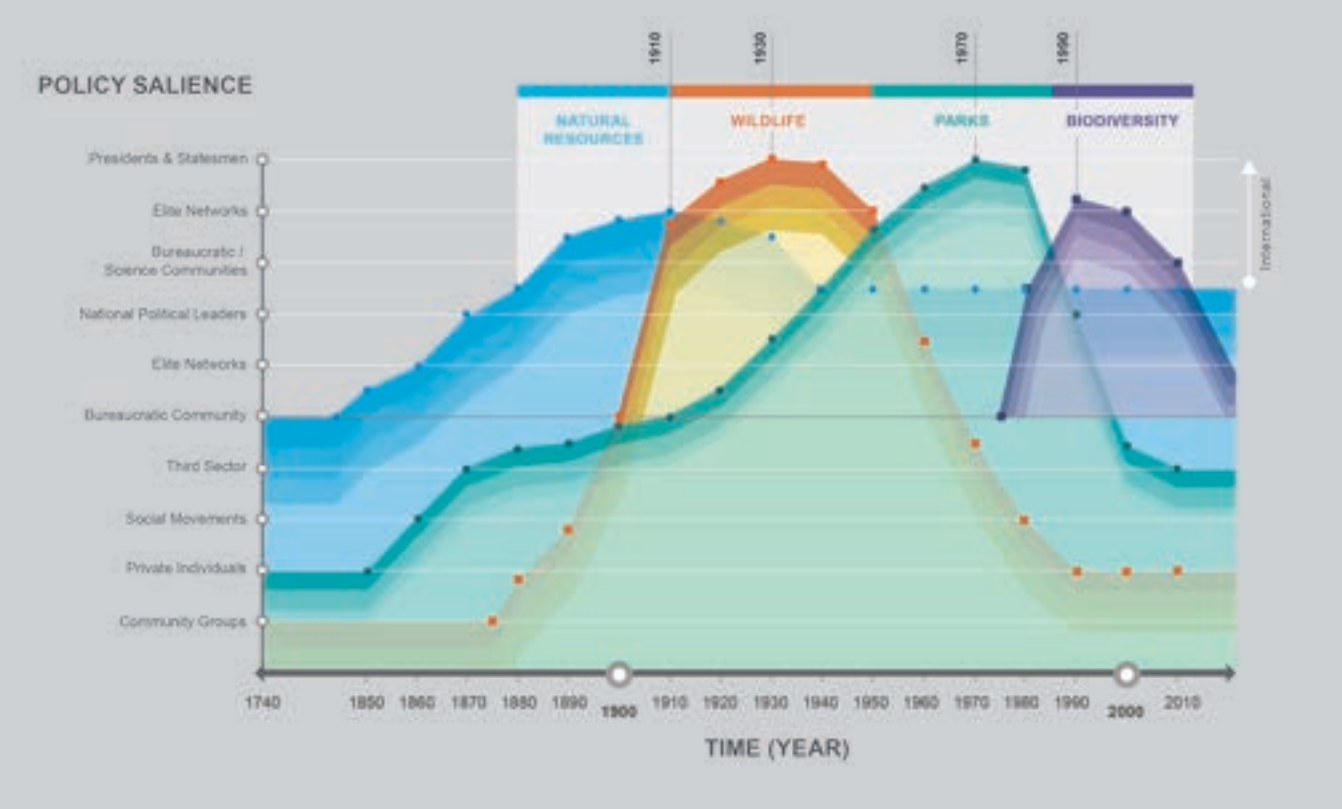
- Our asset framework can guide and inspire work on the development of a new generation of PA metrics afforded by 'big data' and new computational techniques. These metrics are intended to support improved decision making - protected area asset management – that effectively values, maintains, operates, and defends PA assets; attracts and properly deploys the right mix of private, public, and philanthropic capital into PA assets; and also identifies assets that are under-performing or poorly utilised.

[1] See: http://research.ouce.ox.ac.uk/limesurvey/admin/admin.php?sid=73695
[2] Mascia, M. B. & Pailler, S. (2011). Protected area downgrading, downsizing, and degazettement (PADDD) and its conservation implications. Conservation Letters, 4(1), 9-20.
[3] See: e.g. http://www.iucn.org/?uNewsID=14376

The Challenge

The creation of Protected Areas (PAs) for conserving nature over the long term is one of the defining features of the 20th century: the total terrestrial land area with some form of protection rose from <2% in 1900 to 12.5% as of now[4]. PAs in their various forms have shaped culture and society and are a cornerstone of efforts to sustain the Earth's biodiversity and ecosystems.

Figure 1: Waves of protected area policy



PAs are at increasing risk on a number of fronts. A combination of population growth, competing claims for land resources, growing demands for natural resources, and the expansion of infrastructure has resulted in diminished political, policy, and public support for PAs. Increasingly PAs are seen as a luxury that struggling economies can ill afford and/or are in conflict with other policy priorities, such as economic development. This is at a time when many PAs are facing enhanced risks from climate change, invasive species, and managers are struggling to be effective in the face of significant funding shortfalls estimated at between $1 billion and $1.7 billion per year in developing countries[5].

> *"Framing protected areas as an asset class restates the case for them in a fresh and holistic way for decision makers and publics alike."*

[4] Watson, J. E., Dudley, N., Segan, D. B. & Hockings, M. (2014). The performance and potential of protected areas. Nature, 515(7525), 67-73.
[5] 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(12), 1119-1126.

In some parts of the world such risks are acute and are resulting in moves to downgrade, downsize, or degazette protected areas (PADDD). The conservation community is struggling to know how to respond. For example, the legitimate request from the extractive sector and investment markets for clear guidance on which PAs should be 'no-go' exposes two difficult questions - who should decide and on what basis? Political and economic pressures on PAs are exacerbating old tensions within conservation policy between those who believe we need PAs to be flexible and accommodate new imperatives and those who argue that PAs have been hard fought for and should be inviolate - that if we give ground we could lose momentum and never regain the initiative. Such internal tensions compound the risk: we need a framework for PAs that generates unity of purpose within conservation and with other sectors acting to shape planetary futures.

In order to assure the future of PAs in increasingly risky and volatile contexts three things need to happen simultaneously:

i) we need demonstrate the value generate by PAs in ways that are meaningful for citizens, politicians, and markets in a rapidly changing world;
ii) we need to better understand the forms of value generated by PAs to enable enhanced risk management; and
iii) we need to attract new investment into PAs from old and new funding sources.

The impetus for establishing PAs is centuries old. Motivations vary over time and place but all have been concerned with protecting and developing biophysical assets to generate forms of individual and societal value. PA histories identify four waves of PA policy – periods when PAs assumed policy salience across multiple domains of society (see Figure 1 above). The policy frames associated with each wave offer a rich source of insight for restating the case for PAs in 21st century terms. They also provide a reminder that the imperatives of international policy are mostly utility – natural resources, natural disaster mitigation, ecosystem services, livelihoods, and jobs. Contemporary PA discourse, metrics, and models reflect this. International policy just doesn't 'do' national beautification, our-door recreation, and wildlife conservation, or at least, in any meaningful way. Yet these are frames that are most rooted in society, that initiated the middle two waves, and that manifest in campaigns and other forms of reputational risk to politicians, business, and markets.

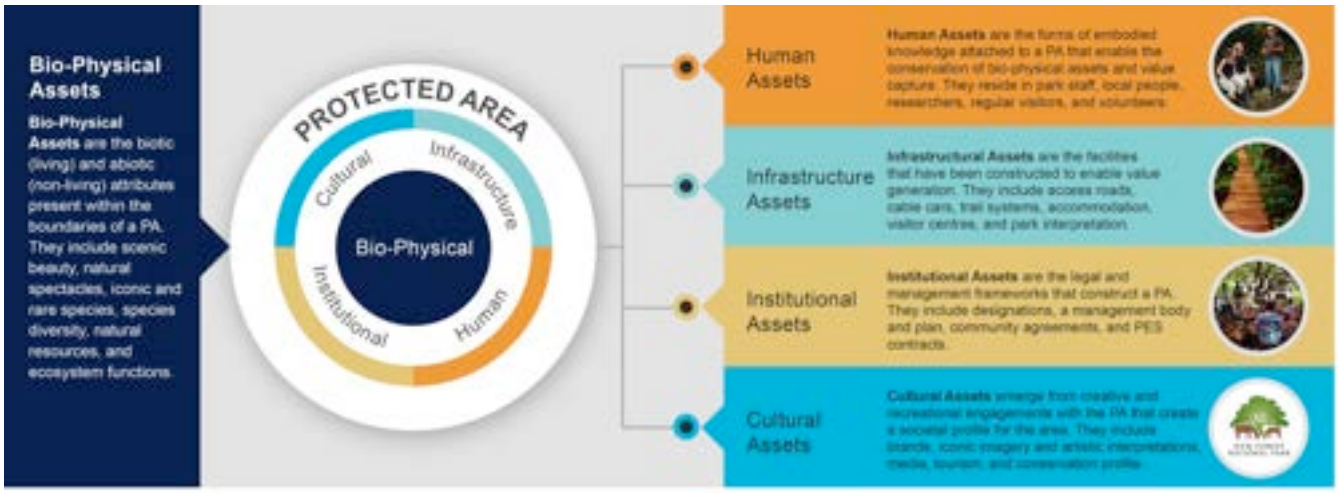
Towards a framework for Protected Area asset management

Our asset framework captures and formalises the types of value generated by investments in PAs in different places over time. PAs are a spatial asset class created through investments in a range of asset types (see Figure 2 below). The 'package' of assets types embodied in a PA will differ between bioregion, country, and era of establishment.

The interaction of different assets types linked to a PA generates different combinations of value that accrue to, or can be captured by, different groups in society. Crucially key assets types and the forms of value they produce are co-produced by practices of the people engaging with PAs. For example the Slovenian Alpine club invested in trail infrastructure and maintaining cultural traditions during the Soviet era. Following independence from Yugoslavia, Mont Triglav became a powerful national icon and climbing the mountain a symbolic act of expressing Slovenian identity. Value in the form of unity and identity is immense, recognisable, but non-monetizable. Another famous example is the individual investments by early landscape photographers in capturing evocative, artistic images of the Yosemite valley, California. These cultural assets interacted with other forces to generate diverse forms of value over time: wilderness as part of an American cultural identity distinct from Europe, out-door recreation, and tourism economies. Apple have named their latest operating system 'Yosemite' illustrating the point that forms of value accrued from PAs are free cultural assets that can be captured by societal actors who were unimagined at the time of initial investment.

Since the early 1990s the dominant policy framing for PAs has been biodiversity conservation[6]. For many this is an end in itself: yet after more than 25 years the forms of value that biodiversity assets generate for people, economy, and ecosystems has yet to be articulated in a sufficiently compelling way. In our asset framework biodiversity is one type of bio-physical asset. By foregrounding other forms of biophysical assets our framework represents a more holistic and comprehensive summary of the forms of value captured by four key inter-locking domains of society: i) nations and polity – the process and conventions through which society is organised; ii) economy and enterprise – the production and supply of goods and services that generate money and jobs, iii) organisations – the groups with a particular purpose that do things, and, perhaps most importantly, iv) citizens – inhabitants of a nation who aspire to quality lives.

Figure 2: Protected Area Assets



The list of values that each of these domain captures, or could capture, from PAs is large, diverse, and significant and accrues over long-time scales. Importantly, our proposed framework restates the value PAs generate for urban citizens and for nations and regions. These were explicit in the 'wildlife' and 'parks' waves of protected area policy (see Figure 1) but are overshadowed in contemporary biodiversity and ecosystem services discourse.

Our framework strengthens accountability in the international protected area regime. This is because it makes explicit the relationship between PA investments, the forms of value they generate, and who or what captures this value (see Figure 3). This will help assure that organisations advocating and managing PAs are doing this for the wider public good. Different PAs and the 'package' of assets they embody will generate different sets of value that accrue to different domains in society. Once formalised our framework will create the capacity for politicians and publics to ask two key questions: First, are PAs (as a single site or a network) assets/investments optimal in terms of their spatial location, investment profile, and the forms of value they generate over time? Second, what forms of value generated by PAs are at risk from which threats and are they performing as well as they should in terms of value generation?

[6] Haila, Y. & Kouki, J. (1994). The phenomenon of biodiversity in conservation biology. Annales Zoologici Fennici Vol. 31, pp. 5-18.

Figure 3: Value creation

Attracting and assuring investment in protected areas

By revealing the range of value generated by PAs our framework has the potential to attract a wider array of investments, from old, current, and new sources. Traditional sources of operational and capital funding, particularly from governments and conservation organisations, have been insufficient to assure PA assets and are unlikely to increase at the scale or pace required going forward. Revealing the forms of value that accrue to different domains of society reinvigorates the case for investment to a broad range of actors. For instance, outdoor recreation and natural beatification represent a sound and cost-effective investment for municipalities concerned with improving public health and well-being and attracting knowledge–based industries. The values of artistic and intellectual expression that accrue from PAs offer long-term returns for philanthropic funders interested in the arts and science, and the values PAs generate in terms of identity and rural-economic flows accrue as enhanced societal unity, tolerance, vision, and flexibility – i.e. societal resilience – that is of interest to governments and universal asset owners (for example, large pension funds).

> *"revealing the range of value generated by PAs…has the potential to attract a wider array of investments, from old, current, and new sources."*

Through the development of an asset framework we are identifying and specifying types of investment that can develop and assure types of PA asset and which contribute to dynamic value creation in the long term (see Figure 4 below). Articulating a case for broader investment in PA is one side of the coin. The other is assuring

and reporting on the performance of such investment. By creating a model that formalises the asset-value-risk-investment relationship our asset framework supports and interacts with new work on PA verification standards and markets, specifically the VCA registry[7] and the IUCN Green list of Protected Areas.

Figure 4: Investments in protected areas

Value-at-Risk

Protected areas are coming under increasing pressure due to a number of threats, and these risk factors are impairing their ability to create value (see Figure 5 below). Contemporary policy discourse focuses on threats to PAs arising from climate change, poaching, unsustainable exploitation, encroachment, fragmentation, breached ecological thresholds and so-forth. Our framework extends this focus by revealing the importance of institutional, infrastructural, cultural, and human assets in protected area value generation. Risks to these include changes in land designation, regulatory change, jurisdictional tensions between ministries (e.g. mining and forestry), conflict between communities and authorities, shifts in visitor preferences, changing brand value, declining budgets and morale, corruption, and excessive rent-seeking.

Further our framework posits that forms of engagement with PAs are integral to value creation and that this can also be at risk. Examples would be commercial and policy barriers constraining recreational access, bureaucratic

[7] Verified Conservation Areas, see: http://v-c-a.org/

and funding barriers to scientific research, and to cite a very current example in Kenya, perceptions of health or other risks that undermine tourism. This broader and more holistic conception of value supports the development of a new generation of tools and procedures to identify, forecast, and manage risks to PA assets and investments.

Figure 5: Value-at-Risk and risk management options

What next?

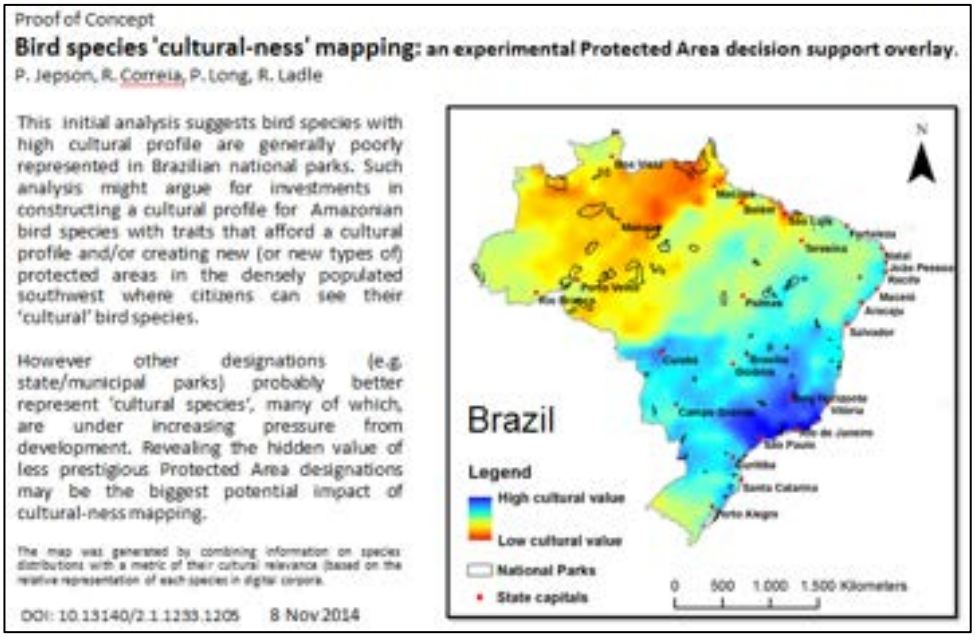
Our typology of assets, values, and risks (each with two sub-category levels) is being completed. To complete the framework design we will be adding and consulting on a typology of who (or what) captures value and mapping networks links between the components. The next step is to test the utility of the framework through four inter-linked processes: i) presenting the framework for review, critique, and adoption by protected area policy communities; ii) conducting network analysis to model links between the typology architecture so as to model PA resilience and return on investment pathways; iii) developing next generation metrics for the forms of value in our framework that are not yet quantified and that can be translated into spatial and site specific decision-support tools; and iv) developing new research around the novel applied questions application of the research inspires.

> *"By identifying and weighting links between nodes we can model the resilience of a PA, its value generation profile, and potential returns on investment based on network properties."*

A full-scale developmental test of the framework is already underway in Brazil under a Brazilian National Council for Scientific and Technological Development CNPq-PVE Grant (No: 400325/201) involving a partnership between the University of Oxford and the Federal University of Alagoas, Maceio. Brazil is an ideal country to test and develop our framework as a decision support tool. This is because Brazil has rich and varied biophysical assets, an extensive protected area system, but a growing population and large economy are leading for calls for PADDD particular at lower administrative levels. However, Brazil is also investing strategically in its science capacity and has the most complete and accessible social, economic, and ecological data sources of any mega-diverse country.

Our asset framework involves five typologies, namely investment, situated assets, forms of value, value capture, and risks. These represent clusters of nodes in a network. By identifying and weighting links between nodes we can model the resilience of a PA, its value generation profile, and potential returns on investment based on network properties. We are preparing to do this for a set of case study PAs in Brazil and elsewhere. The aim (and hope) is that we will identify a set of key PA asset network characteristics that can be readily assessed and converted into an open access tool – that can be used by PA managers, advocates, and potential investors.

Figure 6: An experimental PA decision support overlay



Conservationists have long known that quantification is required if they are to engage effectively with development interests. So called 'intangible' forms of value accrued from PAs may have lost traction in decision making because of difficulties in their metricization. Until recently available technology, standards, and data have afforded a relatively narrow set of PA planning and assessment tools. For instance the widely used Marxan protected area planning software operationalises systematic conservation planning principles that were first introduced at the 1972 World Parks Congress and that emphasise the species (or phylogeny) as the unit of analysis. The advent of 'big data' and new computational and information engineering techniques creates the opportunity and imperative to develop a new generation of PA merics – metrics that will make visible the suite of assets embodied in PAs and the forms of value they generate across society and scale.

A prototype of one such metric is shown in Figure 6 above. This is a heat map of species culturalness – the distribution of species with cultural profile by virtue of their 'iconicness' and/or familiarity. Such species generate value in the form of moral and artistic expression, brands, and emblems and as visitor attractions at protected areas. It seems obvious that PAs policy should include conservation of these natural assets in their planning and this is now becoming possible.

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