



ISSUE BRIEF

Upscaling Nature-Based Solutions for Climate Change Adaptation

A New Financing and Governance Framework

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Investing in nature-based solutions: needs, obstacles, and opportunities

There is a growing recognition of the benefits of nature-based solutions (NBS), a term that refers to projects and actions where natural ecosystems and their services are used in a sustainable and effective way in order to help tackle environmental and social challenges. Under the right circumstances, these solutions can provide alternatives that, compared with traditional infrastructure and engineering projects, are both cost-effective and capable of providing multiple benefits, while at the same time delivering conservation objectives. NBS can help society better adapt to climate change by, for example, addressing the risks of adverse impacts from extreme weather events, including droughts and floods, as well as food security issues. One example of NBS is use of the buffering capacity of riparian ecosystems, which act as a time and intensity buffer in the event of floods, but also as a filter for runoff waters. Nevertheless, it is essential to frame NBS within the right conditions; recent developments in ecological science and modelling have just started to provide a better understanding of what a “good operating space”—in other words, one that efficiently delivers these services—looks like for NBS.

A lack of detailed understanding of the opportunities NBS provide and ways to harness their full potential have limited the management of natural areas in the past to traditional conservation methods. While the public sector has traditionally played an important role in financing the nature conservation and ecosystems restoration that underpin NBS, with the current constraints on public expenditures in most major economies it is now widely acknowledged that there is a significant funding gap in delivering such objectives solely by the use of public funds—as evidenced, for instance, by the lack of sufficient European Union (EU) funds to deliver the objectives of the EU’s Biodiversity Strategy.¹

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¹ M. Kettunen, A. Illes, M. Rayment, E. Primmer, Y. Verstraeten, A. Rekola, I. Ring, G. Tucker, D. Baldock, N. Droste, R. Santos, S. Rantala, N. Ebrahim, and P. ten Brink, *Integration Approach to EU Biodiversity Financing: Evaluation of Results and Analysis of Options for the Future*, Institute for European Environmental Policy, 2017, Final report for the

The recognition that public funds are insufficient has led to an appreciation of the urgent need to explore new funding sources. In particular, the private sector and its financial resources must be involved, and it is necessary to establish a private sector business case for biodiversity and NBS investment. As reported by Forest Trends in 2016, if investment in watershed protection and green water projects is taken as a valid proxy for investment in natural capital,² public funds still represent the lion's share of global investment with nearly 95 percent of spending (out of a global total of \$25 billion).³

While various actors have acknowledged the need for private funding for natural capital conservation- or enhancement-related activities, unlocking these private investments is a gradual process. The reason behind this is at least twofold. First, investment actors are highly specialized with regards to volumes of capital, expected return, and risk aversion. Consequently, in the framework of capital investment in nature, which until recently has primarily focused on conservation objectives, the public sector is in a very specific position. By integrating wealth at the national scale, a state does not have the same requirements to generate direct financial return, both in terms of volumes and dynamic, as a private entity. As such, a state is by definition a front-runner in considering broader societal costs and benefits, such as the ones related to the conservation or enhancement of natural ecosystems. Moreover, and this raises the second obstacle to mobilizing alternative sources of investment, this intrinsic internalization of both potential success and failure in the public sector leads to a low level of reporting needs, and furthermore to an exceptionally low financial risk aversion. This ability of the public sector, in contrast to the private sector, to overtake long-term and financially risky investments has been well described in the case of information technologies and green technologies by economist Mariana Mazzucato.⁴

Investments that seek not only to create a financial return but also to deliver environmental and social objectives are commonly referred to as impact investments.⁵ Impact investing in nature has started to provide funding for conservation finance,⁶ and impact investors now represent the required link between public and private financing for large-scale NBS projects. In recent years, a shift has begun to more classical financial institutions, and impact investing in NBS is now being increasingly researched by leading financial service companies and management consultants, such as Credit Suisse and McKinsey & Company. The support of JPMorgan Chase for conservation investing through the NatureVest initiative⁷ is an example of this trend. As such, the increasing need to prove bankability alongside wider impacts walks hand in hand with this shift in investor profiles.

How to create bankable NBS projects? Improve measuring and increase capacity

Partly as a result of the challenges in developing bankable natural capital projects under the current economic system, there is a lack of experience and track record of conservation actions in the form of financial investments. Realizing this gap, the European Commission together with the European Investment Bank (EIB) launched a new financial instrument in 2014, the Natural Capital Financing Facility (NCFF),⁸ which focuses on NBS, including green infrastructure, payments for ecosystem services, offsetting, pro-biodiversity businesses, and ecosystem-based

vs. *Private Sector Myths* (London: Demos, 2011), <https://mariana-mazzucato.com/entrepreneurial-state/>.

5 The Global Impact Investing Network, <https://thegiin.org/>, defines impact investments as “investments made into companies, organizations, and funds with the intention to generate social and environmental impact alongside a financial return.” This issue brief does not make the distinction between investment in companies and investment in projects following the general practice in conventional infrastructure to invest in special purpose vehicles as fully autonomous entities.

6 Conservation finance is defined as “investment mechanisms that activate one or more cash flows generated by the sustainable management of an ecosystem, which in part remain with the ecosystem to enable its conservation, and which in part are returned to investors.” See Credit Suisse Group AG and McKinsey Center for Business, *Conservation Finance—From Niche to Mainstream: The Building of an Institutional Asset Class*, 2016, <https://assets.rockefellerfoundation.org/app/uploads/20160121144045/conservation-finance-en.pdf>.

7 Naturevest, <http://www.naturevesttnc.org/>, is the conservation investing unit of the Nature Conservancy, preselecting and packaging conservation deals able to deliver financial returns.

8 “Natural Capital Financing Facility,” European Investment Bank, <http://www.eib.europa.eu/products/blending/ncff/index.htm>.

European Commission, http://ec.europa.eu/environment/nature/natura2000/financing/docs/Kettunen_2017_financing_biodiversity.pdf.

2 Natural capital is most commonly defined as the world's stock of natural assets, including all living creatures, water, soil, air, and geology; as such, it is the building block of nature-based solutions.

3 Genevieve Bennett and Franziska Ruef, *Alliances for Green Infrastructure, State of Watershed Investment 2016*, Ecosystem Marketplace, a Forest Trends initiative, December 2016, http://www.forest-trends.org/documents/files/doc_5463.pdf.

4 Mariana Mazzucato, *The Entrepreneurial State: Debunking Public*



A photo of recent flooding of a riparian buffer, the natural infrastructure active in floodwater management as well as water quality enhancement and stream and shoreline stabilization. Photo credit: Benjamin Denjean.

approaches to climate change adaptation. The NCFF blends EIB funding with EU grants, with the aim of reducing the risks to private actors of investing in nature via direct lending or intermediated investments. In total, for the first three years of the NCFF's pilot phase, €125 million was made available together with €10 million for technical assistance.

While the initial pilot phase is reaching its end, only one project, Rewilding Europe Capital,⁹ was signed off on in April 2017 for which a €6 million loan will be provided. While there were many project applications, the projects turned out to be financially immature with very high credit risks, meaning that the guarantee provided by the NCFF would not have been sufficient. Projects also seem to be much smaller than expected. The NCFF foresaw supporting projects within a range of €10-25 million, but most applications required

investments of around €3-5 million. The loan tenor arrangement of the NCFF is also proving to be difficult. While the requirement would be to deliver financial returns in ten years, most of the projects would have been able to do this only in twenty to twenty-five years.¹⁰

The bankability of projects is the focal point of this financing framework, which up until now, due to the nature of NBS projects, has proved to be the main barrier in upscaling NBS investments. Nevertheless, the question arises whether the bankability of climate adaptation projects using NBS is an issue only of the projects' performance and investors' readiness. It is

9 For more see “What Is Rewilding Europe Capital?” Rewilding Europe, <https://www.rewildingeurope.com/rewilding-europe-capital/>.

10 A. Illes, D. Russi, M. Kettunen, and M. Robertson, *Innovative Mechanisms for Financing Biodiversity Conservation: Experiences from Europe*, Institute for European Environmental Policy, 2017, https://ieep.eu/uploads/articles/attachments/dcc74b53-6750-4ccd-99b9-dc9e9d659dd4/IFMs_for_biodiversity_EU-ROPE_Illes_et_al_2017.pdf?v=63664510044. The final report in the context of the project Innovative Financing Mechanisms for Biodiversity in Mexico / N°2015/368378.

not only the capacity to create value that needs to be demonstrated, but the ability to harvest this monetary flow and to create ventures to promote innovative solutions. For these to take place, the measuring of NBS benefits must be improved (affordability and speed of assessment) and capacity built among stakeholders (ability to assess).

The first step is to highlight existing natural capital assets to assess the incremental changes delivered by all projects. The second is to value these changes¹¹ by means of a better understanding of the dynamics of the natural systems involved. As stated recently by the Association of Chartered Certified Accountants, the accounting profession is only starting to be actively engaged in natural accounting.¹² Being a key player in any financial transaction, professional accountants must be able to use a set of standards to improve the bankability of projects through better financial monitoring and project-to-project comparison. With regards to corporate awareness on natural capital assets, Citi reported in 2014 that the interlinkages between climate change threats and the loss of natural capital and its associated risks were understood by corporate leaders.¹³ Nevertheless, two years later, the Task Force on Climate-Related Financial Disclosure reported that only 30 to 40 percent of financial reporting was informed by climate risk assessment. This shows, again, that even if risk awareness is claimed to be present, the basic building blocks for action are still frequently missing.

Third, on a practical level, in order to provide immediately implementable and bankable solutions, natural capital project developers need to reach out to infrastructure managers and civil engineers to co-design and provide truly holistic and therefore potentially optimized solutions. The foundations for providing standard training and delivery have been laid in the United States with the creation of the national green infrastructure certification program.¹⁴ At the international level, in 2017, the Society for Ecological Restoration (SER) started a certified ecological

11 Not necessarily in monetary terms.

12 Brian McEnery, "The Growing Value of Accounting for Natural Capital," Association of Chartered Certified Accountants, March 1, 2017, <http://www.accaglobal.com/hk/en/member/member/accounting-business/2017/03/in-focus/natural-capital.html>.

13 Citi, *Environmental Policy Framework*, August 2014.

14 "Home," National Green Infrastructure Certification Programme, <http://ngicp.org/>.

restoration practitioner program.¹⁵ The upstream need to define common characteristics for the comparison of projects has already been understood by innovative banks like Credit Suisse, nongovernmental organizations (NGOs) like the International Union for Conservation of Nature, and foundations like The Rockefeller Foundation, which already advocate for the creation of a new asset class to channel funding for conservation.¹⁶

However, even if the number of investment funds, such as the German state development bank KfW's eco. business Fund or Mirova's pilot LDN Fund, is growing, each trying to channel funds for conservation, this system still lacks the involvement of local banks.¹⁷ Interestingly, this obstacle is being tackled by Finance in Motion, a consulting group in impact finance, illustrating once again how new actors are key to mobilizing conventional players. Furthermore, it should be noted that the climate adaptation community has been very effective in acting as a bottom-up channel to raise awareness of the appraisal of climate challenges and the power of nature-based solutions. The new challenge is therefore to increase inter-sectoral permeability.¹⁸

The final step in the process from the developers' point of view: the role of public procurement

The final step is to look at natural capital enhancement through the lens of the "product development cycle." Researchers have developed various assessment tools, which are often based on calls for tender and grants, sometimes running in parallel.¹⁹ Investors benefit

15 "Introducing the New SER Certified Ecological Restoration Practitioner Program," Society for Ecological Restoration, 2017, <http://www.ser.org/page/SERNews3052>.

16 Credit Suisse Group AG and McKinsey Center for Business, *Conservation Finance—From Niche to Mainstream*.

17 Mark Nicholls, Gautier Queru, Agustin Silvani, Ricardo Bayon, Christian del Valle, Chandler Van Voorhis, Clément Chenost, Sylvia Wisniowski, Vikram Widge, and Fabian Huwyler, "The Growing Case for Conservation Finance," Environmental Finance, 2017, <https://www.environmental-finance.com/content/market-insight/the-growing-case-for-conservation-finance.html>.

18 Benjamin Denjean, "The Needs of the Adaptation Community," AGWA, June 13, 2016, http://alliance4water.org/blog/files/2016_vi_13a.php.

19 As the European Union's FP7 and H2020 projects: "Welcome to OPERAs," OPERAs, <http://operas-project.eu/>; "Home," Openness, <http://www.openness-project.eu/>; "Mapping and Assessment of Ecosystems and Their Services (MAES)," Biodiversity Information System for Europe, <http://biodiversity.europa.eu/maes/>; "Home," Invaluable, <http://invaluable.fr/language/en/>; and "Home," Eclipse, <http://www.eclipse-mechanism.eu/>.

from this toolbox; nevertheless, its complexity still means that they are accessible only to highly trained professionals. This unfortunately corresponds to a pattern where an innovator—in this case a research institute or an NGO—is convinced in its capacity to deliver a new technology, but does it before a market exists.²⁰

The drivers for investment in natural capital can arise by regulatory change, which is both key and core to environmental innovation in this area. A number of analogies for this can be found in the environmental sphere. Renewable energy power plants needed decades of support from feed-in tariffs to prove they could be cost effective; circular economy loops appeared in industry when fees were applied to discarding waste; and the energy efficiency market emerged when building codes and mandatory labels (e.g., for appliances) transferred pockets of front-runners into mainstream approaches. These analogies can be divided into two main branches, both of which apply to natural capital. The first one relies on paying for a previously free action (e.g., in the case of the circular economy for discarding), which is the principle of ecosystem services valuation and the aim of creating new markets by allowing an internalization of this value into economic activities. The second one relies on the public demand for a new kind of asset (e.g., in the case of renewable energy sources).

As such, the development of a public procurement process for natural capital seems to be a missing link in expressing a demand that could open the door for bankable natural capital enhancement projects. Public innovators are already leading the way. For example, in September 2016 Lima decided to reallocate \$112 million from water fees to natural watersheds in order to tackle water storage issues.²¹ Nevertheless, this can become mainstreamed only once public accounts

20 Interestingly, it is a reverse approach compared with carbon offsetting where monitoring, reporting, and verification method provisions were agreed upon in the Copenhagen Accord. Adoption of these provisions remained elusive for developing countries, adding to the reversed development pattern. This led to a case where the Clean Development Mechanism (the first piece of carbon pricing) existed before the final standards of practice were put in place. This second approach is much closer to a "lean" process where the "pain points" of the market are driving development of the solution.

21 Dan Collins, "Peru Harnesses Ancient Canal System to Tackle Lima Water Shortage," the *Guardian*, June 22, 2015, <https://www.theguardian.com/global-development/2015/jun/22/peru-harnesses-ancient-canal-system-to-tackle-lima-water-shortage>.

treat natural capital as assets, which is the basis of natural capital accounting. Great leverage can, without a doubt, be gained through its application within the private sector, as pledged, for example, both by the

Wealth Accounting and the Valuation of Ecosystem Services partnership²² and the Natural Capital Coalition.²³ Meanwhile, even if the public accounting initiative is reported to be gaining momentum in Europe,²⁴ it remains widely underused in policy decisions.²⁵

Nevertheless, while this new approach will potentially deliver multidimensional benefits, the complexity and possible unintended consequences of regulating its development could lead to distortions in the early application of new regulations (opportunistic market behavior focusing on highest return of investments, such as planting monocultures to yield more, rather than genuinely maximizing the value of ecosystem services). On the other hand, community-led or consumer-pushed projects (for design and implementation and for corporate social responsibility, respectively) may deliver a holistic view and a compelling business case simultaneously.

Conclusions

This issue brief highlighted the benefits of NBS and their role in climate change adaptation. While NBS, under the right conditions, offer multiple opportunities, a new governance and financing framework is needed in order to upscale the private sector's involvement in this field. As such, NBS as an implementation mechanism for natural capital enhancement projects is at a crossroads. The future of NBS investments will likely be determined more by the choices made in developing this new framework (including both the stakeholder community involved in it and the need

22 "Private Sector's Role in Recognizing the Value of Natural Capital in Focus," Wealth Accounting and the Valuation of Ecosystem Services, 2017, <https://www.wavespartnership.org/en/private-sector-role-recognizing-value-natural-capital-focus>.

23 "Protocol," Natural Capital Coalition, 2016, <http://naturalcapital-coalition.org/protocol/>.

24 Patrick ten Brink, *Natural Capital Discussion Paper*, OPERAs, February 9, 2017, <http://operas-project.eu/d34-nat-cap-accounting-discussion-paper>.

25 M. Jeantil, L. R. Virto, and J. L. Weber, *Natural Capital Accounts and Public Policy Decisions: Findings from a Survey*, French Association of Environmental and Resources Economists, 2016, http://faere.fr/pub/PolicyPapers/Jeantil_Recuero%20Virto_Weber_FAERE_PP2016.04.pdf.

to create a sound financing structure) rather than the progress of the scientific predicting power. For this to take place, the impact investing platform must be enhanced to create the missing link between the public and private sector, to better monitor and measure the value of natural capital, to increase the capacity and understanding of stakeholders, and to scale up the role of public procurement in the field of NBS.

There is now a window of opportunity to stop and consider what nature's true role will be in the future. In the coming decades, as infrastructure planning is increasingly complemented and expanded by NBS, various obstacles will inevitably arise, but so will ways to overcome them. Nevertheless, as natural capital is an integral part of an increasingly decentralized man-made and natural ecosystem, the exact design of this new framework still needs to be understood and studied in more detail without forgetting the highly

political and ideological dimensions of the choices that will need to be made.

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