Nature-Based Solutions Collaborative Learning Initiative and Community of Practice

Final Report, November 2022

Collaborative cross-organizational learning, to understand the value of an NbS approach for achieving cost effective benefits for biodiversity, climate, and society, and to drive conservation actions.

Prepared for the Conservation Measures Partnership

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Acknowledgments

We acknowledge the Traditional Custodians upon whose ancestral lands we live and work. We pay respect to their Elders, past, present, and emerging, and acknowledge the continuing connection that Aboriginal and Torres Strait Islander peoples have to the land, sea, sky, and waterways.

Thank you to all those Conservation Measurement Partnership (CMP) members and Nature-based Solutions experts who graciously participated in the interviews, giving up their valuable time and sharing their wisdom and knowledge. Their participation is evidence of the high regard all hold for the Conservation Measures Partnership and the value of collaborative cross-organisational learning. Experts interviewed are listed in Appendix 4. Thanks to Steve Cranwell (Birdlife Pacific) and Stacy Jupiter (WCS) for allowing us to use their projects in our analysis. Thanks also to the Foundations of Success team, particularly Caroline Stem and the CMP board for their guidance and support during the consultation process.

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About this report

This report seeks to address the recommendation made in *Framing Nature-based Solutions* (November 2021)[1]. These were as follows:

Recommendation 1: There is a need for ongoing learning within the conservation sector to process NbS developments.

Recommendation 2: There is an urgent need for coordination and collaboration between practitioners and between donors.

Recommendation 3: A consistent approach to complex, place-based projects.

The 2021 report Framing Nature-based Solutions (NbS) produced three recommendations that form the basis for this report:

Recommendation 1: There is a need for ongoing learning within the conservation sector to process NbS developments.

This was achieved through an ongoing literature search with emphasis on synthetic research analysis specifically on the topics of:

- Definition and characteristics of NbS and lessons learned
- The role of NbS in climate change adaptation and disaster risk management
- Finance and economics of NbS
- Biodiversity outcome from NbS
- Scaling-up NbS

Summaries of key papers on these subjects are included in this report and their main findings were presented at the NbS CoP meetings. The outcomes of a conference on NbS hosted by the University of Oxford are also briefly presented.

Recommendation 2: There is an urgent need for coordination and collaboration between practitioners and between donors.

This issue was discussed in detail in an interview with the Program Development Coordinator for the Kiwa Initiative (a multilateral donor group established specifically to fund NbS projects in the Pacific region). A key finding is that both donors and recipients need to be cognisant of the complexity of the extensive "systems-based approach" needed to undertake NbS.

Recommendation 3: A consistent approach to complex, place-based projects.

This was addressed by reviewing and comparing the Conservation Standards approach with the NbS Criteria and how they relate conceptually. As a result of this analysis, we present guidance on how to consistently align both approaches. Despite some concerns among some members of the NbS CoP that NbS might possibly require a substantial "re-think" of the Open Standards for the Practice of Conservation, in fact we find that the guidance already provided in Version 4.0, along with the work being done through the CMP Learning Initiative, is leading toward a common goal, namely *"actions*

[1] Refer https://sites.google.com/a/fosonline.org/cmp-workspace/initiatives/nature-based-solutions?pli=1

to protect, sustainably manage and restore natural and modified ecosystems in ways that address societal challenges effectively and adaptively, to provide both human wellbeing and biodiversity benefits."

A NbS Community of Practice (CoP)

A NbS Community of Practice (CoP) for CMP/CCNET members was formed in 2022. The CoP was used as a forum to explore the issues and questions around NbS that concerned CMP members, and to build a dialogue around emerging and pressing topics. Three meetings were held in each of two time zones (Europe/Asia and USA/Pacific) in which recent developments in NbS thinking were presented, updates on the state of evolution of the NbS were given, and the thoughts and opinions of CoP members recorded to inform future meetings. Two concerns emerged most strongly, 1) Is NbS different to what we already do, and if so, how, and 2) What are the implications of the NbS approach to the Open Standards for Conservation? We also conducted interviews with NbS practitioners and theorists to inform the CoP and the "state of play" of NbS within the Conservation, Development and Finance sectors.

With a focus on expanding learning and responding to the recommendations of the 2021 Nature-based Solutions (NbS) Learning Initiative findings, the 2022 report presents some key emerging literature and activities on NbS from conservation and other sectors. People with a range of experience with NbS approaches were interviewed in fields including the development of the NbS Standard, working with Indigenous people on landscape-scale restoration, developing NbS projects, cross-sectoral approaches and the funding of NbS projects. We looked for lessons and implications from the rapidly growing range of organisations and institutions developing and implementing NbS. We also looked for potential alignment and complementarity of the NbS Standard and the Conservation Standards.

Our approach involved desk-top reviews of recent literature on NbS and semi-structured interviews with NbS practitioners and theorists. Given that hundreds of project case-studies have now been published on-line (e.g., in the IUCN portal: https://www.iucn.org/our-work/nature-based-solutions) we focussed our interviews on those experts that had a wide knowledge of NbS and how it is being implemented (see Appendix 4), together with analysis of two projects that had been designed and funded specifically as conservation-oriented NbS.

Two surveys of CoP members were conducted; in the first meeting to establish the key questions for the CoP and in the third meeting to ask for feedback on the process and future questions if the CoP should extend to 2023 (see Meeting Summaries for details).

While it was originally intended for guest speakers to present at the meetings it was instead decided to conduct interviews with experts separately, as planned in Activity 2 and to summarise the findings and discuss with CoP attendees. Some experts approached were unavailable or unresponsive to requests to address the community of practice, and the time difference added to this difficulty. The more informal structure did allow time for introductions and discussions between attendees and with short summaries of recent NbS developments and selected case studies, the allocated 1-hour meeting time was quickly taken up. Considering the meetings are regular (every 2-3 months), keeping the meetings under 1 hour is recommended if the CoP is continued next year.

Three meetings (in July, September and November 2022) were held with Conservation Measurement Partnership (CMP) and Conservation Coaches Network (CCNet) members, with each meeting occurring twice to cover all time zones (Europe/Asia and USA/Pacific) to relay progress, refine the objectives of the Learning Initiative and respond to feedback on an ongoing basis. The authors of this report also attended several sessions of the NbS Conference: *Ensuring that NbS support thriving human & ecological communities* 5-7th July 2022 Natural History Museum, University of Oxford, and later reviewed recorded sessions.

Executive Summary

In March 2022, the United Nations Environment Assembly expanded on the IUCN definition of NbS as *'actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems, which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human wellbeing, ecosystem services and resilience and biodiversity benefits.'*

Development of the NbS concept and Standard by IUCN continued in 2022, including work to refine the 8 Criteria for NbS, develop training and accreditation programs, and the exploration of certification systems for NbS projects. A major international conference on NbS was hosted by Oxford University in 2022. A scientific journal dedicated to NbS ("Nature-based Solutions") was launched in late 2021.

Evidence of increasing regional donor coordination around NbS was seen in 2022. This included the Kiwa Initiative launched in the Pacific region and funded by Australian, French, New Zealand and Canadian development agencies. This led to the development and funding of large-scale projects specifically designed to address nature conservation in the Pacific using NbS. We looked at two of these in detail (one developed by Wildlife Conservation Society (WCS) and one by Birdlife International) to see how they had addressed the IUCN Criteria for NbS and developed Theories of Change (ToC) consistent with NbS and the Conservation Standards. In addition, countries such as New Zealand and Australia began major bilateral programs on climate change adaptation in the Pacific based on NbS.

The implications of NbS for the public and private financial sector was also investigated through literature and reports, as well as interviews with some key experts. The speed and rapid rollout of NbS across the world is posing challenges to these sectors, and the organisations wishing to access traditional and/or novel forms of financing for NbS. For example, many NGOs are challenged by the need for new skills, expertise, and partnerships, as well as the greater complexity of designing projects that meet the criteria for NbS. Added to this, many donors still focus on narrow sectors (e.g., climate mitigation, nature conservation, human development) separately, rather than an integrated NbS approach. Donors may also have unrealistic expectations about the scale and complexity of developing and implementing NbS projects. Within the private finance sector, NbS for nature conservation (as opposed to that designed specifically around climate/carbon) is seen as ill-defined and not yet "bankable".

We investigated the relationship between NbS and the Open Standards for the Practice of Conservation (the "Conservation Standards"). We concluded that NbS and the Conservation Standards are entirely compatible with each other and, in fact, complementary. Indeed, as progress continues to develop within the Conservation Standards community on defining evidence-based targets, incorporating explicit climate change outcomes, and through increasing emphasis on ecosystem services and human wellbeing goals, any difference between the two approaches will become minor.

However, it is still worth asking the question "how do we incorporate the NbS Standard into our project design?" We provide some simple suggestions for how to align projects developed using the Conservation Standards with NbS, and how to test the rigour of the resulting project in meeting the IUCN NbS Standard's 8 Criteria for NbS (including using methods that are still in the development phase).

We also looked at how ToC were described for NbS projects, and whether this was different to those recommended in the Open Standards for the Practice of Conservation version 4.0. We conclude that 1) by incorporating Conservation, Ecosystem Service and Human Wellbeing Targets, together with the addition of Climate Change adaptation and/or mitigation Targets and 2) following the guidance presented in Appendix 2, any project developed using the Conservation Standards could be made compliant with the IUCN NbS Standard.

We conclude from our research and interviews that:

- Nature-based Solutions continues to be a rapidly expanding field of study and practical application across the world, but major challenges remain. Specifically in addressing the complexity of NbS in dealing with societal challenges at scale.
- In order to achieve successful NbS outcomes, Conservation-based NGOs will need to adopt a multi-sector, "systems approach" framed around a thorough understanding of human and environmental forces that operate at scale. This will require new partnerships with experts and organisation outside of the traditional conservation sector.
- The Open Standards for the Practice of Nature Conservation 4.0 provide a robust framework for developing NbS projects, when guided by the IUCN Criteria for NbS.

We therefore recommend that:

1.1. The NbS CoP be combined with one or more of the other Learning Initiative Working Groups for greater efficiency.

Participants in the NBS Community of Practice (COP) felt that the work done was valuable and should continue. The scale, speed and rapid development of the NbS concept across the world suggest that a mechanism is still required for the CMP/CCNET to keep up-to-date with emerging issues. However, participant numbers in the NbS CoP meetings were usually low (typically below 10 people). Consideration might therefore be given to combining the NbS CoP with one or more of the other Learning Initiatives (e.g., those relating to human wellbeing and/or climate change) in order to achieve a "critical mass" of participants.

1.2. A number of simple guidance products could be created to assist CMP members in development of NbS

In this report we provide information on various aspects of NbS and key developments and literature on NbS. We also provide some basic guidance on how to incorporate NbS into the Conservation Standards. Further work could be done to produce simple guides and/or facts sheets based on this material.

1.3. CMP should consider establishing an ongoing dialogue with IUCN about the further development of NbS

There is still considerable work required to refine the IUCN Criteria and Indicators – specifically in relation to the Self-Assessment Tool**.** While it is highly likely that some CMP members are already engaged with IUCN and the development of NbS products, it might be useful for CMP to seek a dialogue with IUCN to identify specific areas of collaboration**.** As an example, one such idea already mentioned by IUCN has been the refinement of Criteria 3 (NbS result in a net gain to biodiversity and ecosystem integrity).

Key Findings

The Community of Practice

One of the recommendations of the NbS Learning Initiative Report (2021) was the establishment of a Community of Practice for CMP and CCNet members with a focus on building dialogue on emerging and pressing topics. Three meetings were held on 21st July 2022, 29th September 2022, and 10th November 2022.

A Terms of Reference (ToR) for the Community of Practice was drafted and presented at the first meeting for feedback and confirmation. No changes were requested to the document and it remains available on the NbS Workspace. The objective for the CoP as identified in the ToR is "To provide an opportunity for collaborative and constructive dialogue on Nature-based Solutions, with a focus on emerging and pressing topics that impact the work of CMP members."

CoP Member Registration:

CMP and CCNet members were contacted via email to register for the meetings using Google Sheets (link here). Also, members who registered for the CoP were contacted directly to register for subsequent CoP meetings. The registration page is accessible from the NbS Workspace and remains active for new members to join.

A 2:1 ratio was noted generally for CoP registrations from the America/pacific time zone meeting and the Europe/Asia time zone. Meeting 1 received 13 Americas and 7 Europe registrations. Meeting 2 received 14 Americas and 5 Europe registrations. Meeting 3 received 16 Americas and 7 Europe registrations. The CMP booth at the CCNet Rally in October also collected 3 additional members.

CoP members came from over 26 organisations (as well as some individual consultants, see Table 1). As expected, not all those who registered were available to attend the meetings, and meeting recordings were made available on the NbS Workspace. Further engagement with Europe based CMP/CCNet members in particular should be considered if the CoP is to be continued in 2023.

Meeting results:

Meeting reports were produced in the form of 2-page summaries of the discussion, and links to the latest NbS updates/reports and resources relevant to the CoP key question areas. The summaries were distributed to the CoP members directly and through the CMP and CCNet email list.

Two surveys of CoP members were conducted; in the first meeting to establish the key questions for the CoP and in the third meeting to ask for feedback on the process and future questions if the CoP should extend to 2023 (see Meeting Summaries for details).

While it was originally intended for guest speakers to it was decided to conduct interviews with experts separately, as planned in Activity 2 and to summarise the findings and discuss with CoP attendees. Some experts approached were unavailable or unresponsive to requests to address the community of practice, and the time difference added to this difficulty. The more informal structure did allow time for introductions and discussions between attendees and with short summaries of recent NbS developments and selected case studies, the allocated 1-hour meeting time was quickly taken up. Considering the meetings are regular (every 2-3 months), keeping the meetings under 1 hour is recommended if the CoP is continued next year.

Recommendation for continuing the Community of Practice:

The feedback from the CoP members was generally good, while the attendance to the meetings varied. In particular, some members were either new to engaging with CMP/CCNet or had a period of recent low engagement and saw the meetings as a chance to reengage. Aside from some members seeking basic information about NbS theory and practice, most members were already highly involved with NbS projects and were concerned with the potential for NbS to change or conflict with their existing practice or ways of planning/doing conservation. While these concerns were discussed in the meetings and addressed in the learning initiative report, the other learning initiative that focus on human wellbeing and addressing climate change are relevant and going forward the NbS CoP may benefit from integration or cooperation with these initiatives.

Progress on the development and application of NbS

From the consultations and review and analysis of NbS activities and progress made in the last year, this section provides a summary of key findings of relevance to the CMP and CCNet members, as well as references for further reading and information. This overview of progress in the development of NbS is not meant to be comprehensive, but a guide to some of the key development and research we felt was most relevant to the NbS Learning Initiative. For summaries of key reports and papers produced in 2022 se Appendix 1.

Recent developments in NbS

The Fifth Session of the United Nations Environment Assembly (UNEA-5) made a resolution to adopt a multilaterally agreed definition of NbS; recognising the important role this approach plays in the global response to climate change and its social, economic and environmental effects. The UNEA-5 resolution formally adopted the definition of NbS as *'actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems, which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human wellbeing, ecosystem services and resilience and biodiversity benefits.*'

The UNEA Resolution March 2022 is the first agreed definition of NbS within the UN Multilateral system and was adopted by the UN General Assembly in September 2022. Box 1 compares the IUCN definition with the one agreed to by the UN.

The UNEA identified that social and environmental safeguards are critical to NbS and this will help address concerns raised by some countries and non-government organisations. UNEP will also lead intergovernmental consultations on the definition, criteria, guidelines and financing to be completed by end of 2023, with an objective to reach global consensus.

<table>
<tr><th colspan="2">Box 1. Guidance - A shared definition is the foundation of a consistent understanding</th></tr>
<tr><th>United Nations Environment Assembly NbS definition</th><th>IUCN Global Standard for NbS definition</th></tr>
<tr><td>Nature-based Solutions are “actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems, which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human wellbeing, ecosystem services and resilience and biodiversity benefits.”

Learn more: https://www.unep.org/news-and-stories/press-release/un-environment-assembly-concludes-14-resolutions-curb-pollution</td><td>Nature-based solutions are “actions to protect, sustainably manage and restore natural and modified ecosystems in ways that address societal challenges effectively and adaptively, to provide both human wellbeing and biodiversity benefits.”

Learn more: https://portals.iucn.org/library/node/49070</td></tr>
<tr><td colspan="2">Further reading:

Analysis published in Nature-based Solutions, vol 2, December 2022, comparing 20 definitions of NbS to clarify core ideas and formulate “inclusion and exclusion criteria”. That is, what the authors understand to be or not to be a Nature-based Solution. https://doi.org/10.1016/j.nbsj.2022.100009</td></tr>
</table>

Ongoing development of NbS Standard and Criteria

Work by IUCN and others to refine the concept of NbS and the NbS Standard continued in 2022.

NbS is not a new concept but an attempt to “bring different approaches together”. A deliberate shift to put human wellbeing on the same footing as conservation, not just an ancillary benefit. A more holistic, cross-sectoral NbS approach requires broad expertise often outside the experience of conservation agencies. NbS is an attempt to move away from short-term regulation of outputs to long-term systemic and sustainable transformational change. Box 2 provides guidance on incorporating indicators for societal challenges into NbS activity planning.

The “solution” however, is only as good as the definition of the problem. Identifying the actual societal challenge that needs to be addressed is fundamental but can be difficult. The second major challenge is the scale – for example, what are the risks and opportunities beyond a site, move beyond human based boundaries to ecosystem and landscape approaches, shift from site to systems thinking? NbS thinking can bring unexpected and even novel approaches to light.

NbS is being strongly supported by many institutions including the private sector. However, there is great concern over simple re-branding of existing Environment, Social, Governance (ESG) programs as NbS and “greenwashing”. One observer stated that “the development of NbS cannot keep up with the speed at which the private sector and others are moving.” In order to try and guard against greenwashing, IUCN is developing criteria on what constitutes carbon mitigation in the context of NbS.

In order to test how closely and how well a given project meets the IUCN Standard and Criteria, a self-assessment tool has been developed by IUCN. Over 1,000 current users are helping to adapt, refine and modify the tool which should be widely available soon. IUCN also launched its online NbS portal in mid-2022.[2]

Certification of NbS is also in development. The aim is to plug into other certification systems such as Forest Stewardship Council (FSC), Gold Standard for Carbon, Free Trade etc., rather than establish a separate certification system.

Box 2. Guidance: incorporating indicators for societal challenges into NbS activity planning

Nature-based solutions place equal importance on social, environmental, and economic domains. The developers of the IUCN Global Standard envision experts from multiple sectors coming together to create an integrated solution, like the Watershed Interventions for Systems Health (WISH) project example (Appendix 2, Case study 2) in which Wildlife Conservation Society (WCS) partnered with human health researchers from University of Sydney and University of Queensland to address the problem of water-borne disease in Melanesia through integrated catchment management. Many organisations may be seeking to expand their technical capacity into the social science and economic fields, and the CMP have been moving in this direction in recent years with guidance on incorporating human wellbeing from the CMP Human Wellbeing Learning Initiative: https://sites.google.com/a/fosonline.org/cmp-workspace/initiatives/human-wellbeing

The European Commission has also published a handbook of indicators and methodologies to assess impacts of NbS across 12 societal challenge areas. https://data.europa.eu/doi/10.2777/11361

Example indicators for resilience to climate change	• Heatwave incidence • Soil temperature • Thermal Comfort Score (TCS) • Urban heat islands incidence • Tree shade for local heat reduction
Example indicators for social justice and social cohesion	• Availability and equitable distribution of blue-green space • Trust within the community • Area easily accessible for people with a disability • Perceived safety
Example indicators for health and wellbeing	• Level of outdoor physical activity • Quality of life • Cardiovascular diseases (prevalence, incidence, morbidity) • Heat related discomfort or mortality

[2] https://www.iucn.org/our-work/nature-based-solutions

Example indicators for new economic opportunities or green jobs	• Economic valuation of NbS • Number of new jobs created • Number of new businesses or gross value added to local economy • Social Return on Investment (SROI) • Private finance attracted to the NbS site • Gross profit from nature-based tourism • Jobs created in NbS construction/maintenance • Value of food/energy produced • New areas made available for traditional productive uses

Academic and practitioner developments

Information on selected research and analysis related to NbS produced in 2022 is provided in Appendix 1 and summarised below.

A major international conference on NbS was held Oxford University in July 2022[3] (see Box 3). The university also offers an academic study course on NbS.[4]

Box 3: NbS Conference: Ensuring that NbS support thriving human & ecological communities 5-7th July 2022 Natural History Museum, University of Oxford (+remote)

The University stated the overall conference takeaways as follows:

- There is widespread and growing enthusiasm for NbS across large and varied range of stakeholders.
- There is a robust and growing evidence base showing ecological, economic, social benefits of NbS.
- The NbS concept is ready for and useful at the multilateral policy level but there are still challenges to overcome.
- Equity is an essential consideration in the design, implementation, and monitoring and evaluation of NbS.
- We must recognise biophysical limits and potential trade-offs involved with NbS, and plan for those.
- We urgently need to move beyond narrow economic valuations to better reflect externalities and broader benefits and values.
- The knowledge and worldviews of Indigenous People and Local Communities are key to fully recognise the value of and achieve fair, sustainable NbS.

[3] NbS Conference: Ensuring that NbS support thriving human & ecological communities 5-7th July 2022 Natural History Museum, University of Oxford (+remote). Report and recorded sessions available: https://www.naturebasedsolutionsoxford.org/programme/

[4] https://www.naturebasedsolutionsinitiative.org/nature-based-solutions-to-global-challenges-foundation-course/

"Nature-based solutions need to be understood as ways of working with, and as part of, nature and framed to ensure that multiple values of nature are respected." **- Professor Nathalie Seddon, University of Oxford.**

Source: https://www.naturebasedsolutionsoxford.org/wp-content/uploads/2022/08/NbS_Conference_Report_2020.pdf

A new academic journal was launched in Dec 2021 called "Nature-based Solutions".[5] The stated aim of the Journal is:

"Nature-Based Solutions is a home to research of nature-based solutions (NbS), to both broaden and deepen scientific knowledge on NbS and advance its adoption, synthesis, and application to address critical societal challenges at multiple scales. NbS utilize nature and/or ecological processes to strengthen a system's capacity to deal with multiple and interconnected challenges. NbS represent a holistic approach to climate change adaptation and resilience building, with equal reliance upon social, environmental, and economic pillars."

Regional donor programs

In our previous report we identified the urgent need for regional coordination between NbS donors and practitioners. Valid concerns were raised about the risk of duplication due to rapid expansion in supply of funding, particularly around the UNFCCC COP26. New grant facilities, investment opportunities and projects will continue, and potentially accelerate, as the economic case for NbS is strengthened and both countries and the private sector increase their climate ambitions. From those consulted, the greatest concern was for developing countries with high mitigation potential and low government capacity, particularly at the subnational and local level. Exploration on how to best coordinate funding into regions such as the Pacific, Caribbean, and other areas with small island developing states is needed to determine how best to manage the interest and priorities of donors with local capacity to reduce duplication, improve collaboration and minimise capacity burdens on governments and local communities. Fortunately, there has been some further progress in this area in 2022 (see Box 4).

[5] https://www.sciencedirect.com/journal/nature-based-solutions/vol/1/suppl/C

Box 4: Promoting Pacific Island Nature-based Solutions

The recently commenced Promoting Pacific Island Nature-based Solutions (PPIN) project seeks to support the development of policy and legislation for Nature-based Solutions (NbS), build awareness and capacity, and strengthen regional cooperation amongst Pacific Islands Countries and Territories (PICTs) on NbS. This 4-year project will be a key component of New Zealand's Ministry of Foreign Affairs and Trade (MFAT) "Resilient Ecosystems for Climate Change Adaptation" (RECCA) Activity. The project will seek to build regional awareness and capacity for NbS and embed NbS into regional and national policy and regulatory frameworks for key sectors in the demonstration countries of Fiji, Tonga, and Vanuatu. Regional and national awareness and capacity in relation to NbS will be strengthened through targeted capacity building programmes for those designing and implementing NbS. Communities of practice will be established to support peer-to-peer and continued learning. The project will also build economic and policy positions for strengthening the case for NbS in the region and in the target countries across sectors, as well as develop a sustainable financing strategy for scaling of NbS across the region.

NbS and the finance sector

From our review of new literature, and in discussion with experts, it is clear that NbS has a long way to go before it is widely accepted as a "bankable" product by the financial sector, including some major donors and international agencies. It was suggested by some consulted, that private sector financial actors involved in NbS were "reluctant" to talk about their work at the present. There is a reluctance to get "ahead of the curve" in case there are unforeseen problems with NbS or lack of acceptance that might cause these organisations "reputation damage". It is therefore important that the definition of NbS and the rigour to which the IUCN Standard is developed and applied will be critical in order to achieve widespread acceptability of NbS in the financial sector. It is encouraging to see that groups such as WWF and the UNFCCC are conducting rigorous analysis of the financial barries to uptake of NbS (see Appendix 1 for summaries).

Jim Stephenson, Director, Terranomics Limited, and co-author of the report **WWF/Terranomics report on financing NbS**[6] stressed how differently people are interpreting NbS across the sector. There was a definitive split between a group that understand NbS to be about carbon and climate, and a group that understand NbS in its broadest manifestation that goes into green infrastructure and adaptation. In general, the finance sector is "on board" for NbS for carbon as the economic fundamentals are much more attractive and there is a single metric they can use (tonnes of carbon dioxide). In terms of creating greater acceptance of more "conservation-oriented NbS" within the financial sector it was suggested that a "taxonomy" of NbS is required (perhaps defined by their approach and intended outcomes). The taxonomy would need to be "fit for purpose" for the finance sector and would need to be developed in partnership with people who understand the financial sector and the type of taxonomies and classification systems that the finance sector uses. A cross-

[6] Refer https://www.wwf.org.uk/sites/default/files/2022-06/WWF-NBS-Public-Report-Final-270622.pdf

sector approach is required similar to what has been done by the Task Force on Nature-related Financial Disclosures (TNFD) [7].

In terms of public sector finance, the Kiwa Initiative[8] was formed specifically to support NbS projects in the Pacific region. In discussion with Ludovic Branlant (Kiwa Program Development Coordinator/Secretariat for the Pacific Community) it was clear that similar challenges were being faced as with the private sector. Donor agencies need to see well-constructed projects that engage all relevant stakeholders and address underlying causes of problems, and not simply treat the symptoms. It was recognised by Kiwa that cross-sectoral projects that produce multiple co-benefits for climate, people and biodiversity can be complex and often beyond all but the best-resourced civil-society organisations. For this reason, the Kiwa Initiative invests in the capacity of applicants in development of their project concepts, including by providing access to subject experts. In our own experience with the Kiwa Initiative and Green Climate Fund, for complex, large-scale, multi-sector projects, other donors will also need to consider investing in helping recipients in project design and development to be successful. Put simply, if major public sector donors want NbS projects to succeed they will need to provide assistance to develop the necessary skills and resources required, beyond acting simply as a source of funds. NGOs also have a duty to educate donors in the complex realities of NbS projects in the real world.

The issues faced by countries are also challenging. For example, the UNFCCC Forum of the Standing Committee on Finance for Nature-based Solutions Synthesis paper[9] found *"Evidence suggests that NbS can be economical and more cost-effective than 'grey' alternatives. However, investors face high transaction costs, opportunity costs for the natural resource used and additional maintenance costs to realise long-term benefits. Furthermore, investors face a number of additional risks in NbS. To cite a few, some NbS to address climate change can be vulnerable to climate-related disasters and it can be time-consuming for ecosystem-based climate actions to demonstrate their benefits. Furthermore, investors also face the challenges of a lack of data on NbS, due to a lack of systemic monitoring and evaluation and an overall lack of technical capacity to account for and measure the value of NbS benefits."*

NbS and the Conservation Standards

At the commencement of the NbS Community of Practice learning Initiative some of the most frequently asked questions concerned the relationship between NbS and the Conservation Standards. Are NbS and Conservation Standards two competing approaches, what are the similarities and differences, can the Standards be applied to NbS, is there scope for aligning the two concepts? Such questions also came up in discussion with practitioners we interviewed from Bush Heritage (Australia), Nature Conservancy Canada, IUCN International, and Wildlife Conservation Society (Fiji) (see Appendix 4 for a list of experts interviewed).

We have concluded that NbS and the Conservation Standards are entirely compatible with each other and, in fact, complementary. Indeed, as progress continues to develop within the Standards on defining evidence-based targets, incorporating explicit climate change outcomes, and through

[7] Refer https://tnfd.global/about/the-tnfd-forum/

[8] Refer https://kiwainitiative.org/fr/

[9] Refer https://unfccc.int/topics/climate-finance/events-meetings/scf-forum/the-scf-forum-on-finance-for-nature-based-solutions

increasing emphasis on ecosystem services and humanly wellbeing goals, any difference between the two approaches will become trivial. However, it is still worth asking the question "how do we incorporate the NbS Standard into our project design?"

We suggest four things can be done to align projects being designed using the Conservation Standards to NbS from least to most complex (see Box 5).

Box 5 Steps to ensuing compliance with the IUCN NbS Standard	
Level 1.	Continue to develop guidance on defining and incorporating explicit socio-economic, climate change, biodiversity and ecosystem services goals through the CMP Learning initiatives.
Level 2.	Identify the key intersection points between NbS Criteria and Indicators and Conservation Standards. We have developed guidance on this step and received endorsement for our suggested approach through the NbS Community of Practice (see Appendix X) and associated materials (link).
Level 3.	Include a person with a **Professional Certificate on NbS** in the project design team (see: https://iucnacademy.org/catalogue).
Level 4	Measure the strength of the match between the outputs developed in Level 3 and the NbS criteria using the IUCN NbS Criteria Self-assessment tool (in development).
Level 5	If an NbS certification process is developed, submit the project to the certification process (under discussion by IUCN).

Conservation Standards and NbS Theory of Change

Over the last year, as larger NbS projects have commenced and progressed globally, the information available on their Theories of Change (ToC) has become more accessible. Responding to the key challenge raised during the NbS Community of Practice meetings with CMP and CCNet members, an analysis was undertaken to understand where the NbS standard and Conservation Standards align and how both relate.

Two NbS ToC were analysed 1) the BirdLife International (Pacific) Ecosystem Resilience to Climate Change through Invasive Species Management (ERCCISM) project and 2) the WCS project: Watershed Interventions for Systems Health (WISH). These projects were selected because they were both designed specifically as conservation-based NbS projects, align with the Conservation Standards, and were subsequently funded by a multilateral donor program specific developed to support NbS (the Kiwa Initiative). In addition, TierraMar was directly involved in development of the Birdlife project. Presentations of both projects were included in the CoP meetings and can be found at the NbS Learning Initiative workspace: https://sites.google.com/a/fosonline.org/cmp-workspace/initiatives/nature-based-solutions.

The BirdLife International (Pacific) Ecosystem Resilience to Climate Change through Invasive Species Management (ERCCISM) project is a multi-country project designed to reduce the impacts of

invasive alien species on native and agricultural ecosystems, thereby enhancing the climate change resilience of Small Island Developing States in the Pacific. We provide a brief summary of how the project aligns with the IUCN NbS Criteria and the ToC produced for the project in Appendix 2 (Case Study 1).

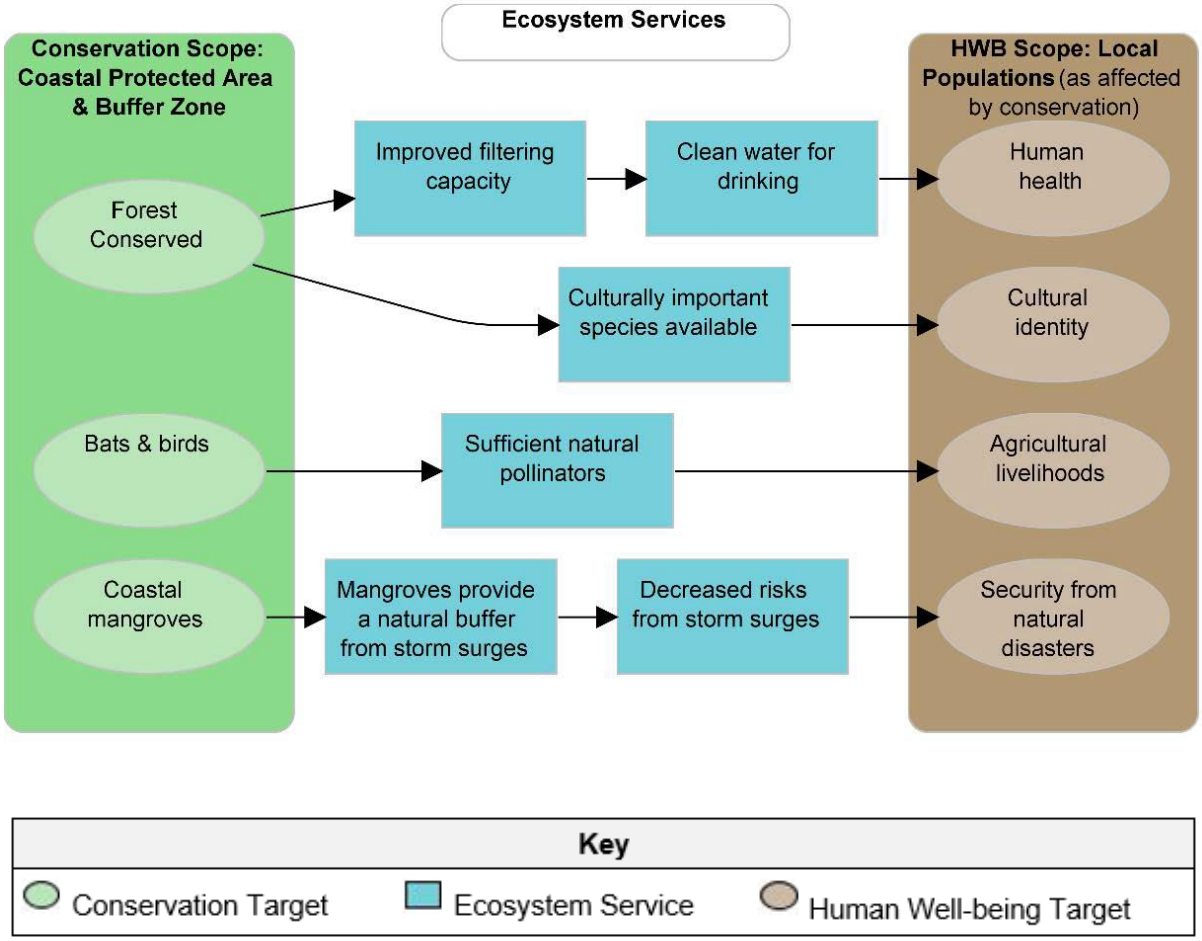
The WCS project, Watershed Interventions for Systems Health (WISH) takes a public health approach to the management of water-borne diseases in Melanesia combined with a whole-of-catchment management approach.

We also compared the two ToC from these projects with the generic Toc we developed in the November 2021 report (shown in Appendix 3) and also the Results Chain Extract with Ecosystem Services and Human Well-being Targets (Fig 13 from Open Standards for the Practice of Conservation Version 4.0) which is shown in Fig 1.

From his we conclude that NbS ToC and the guidance provided in the Open Standards door the Practice of Conservation (Version 4.) are likely to produce similar outcomes. For example, each of the NbS TOCs reviewed include long-term outcomes in relation Biodiversity and Conservation, Ecosystem Services, Climate Change adaptation and/or mitigation Targets, and Human Wellbeing Targets. From this we concluded that 1) by incorporating Biodiversity and Conservation, Ecosystem Services, Climate Change adaptation and/or mitigation Targets[10] and Human Wellbeing Targets, and 2) following the guidance provided by the IUCN Standard (also presented in Appendix 2) any project developed using the Conservation Standards could be made to align with the IUCN NbS Standard.

[10] For example, see: Brown, M.B.; Morrison, J.C.; Schulz, T.T.; Cross, M.S.; Püschel-Hoeneisen, N.; Suresh, V.; Eguren, A. Using the Conservation Standards Framework to Address the Effects of Climate Change on Biodiversity and Ecosystem Services. Climate **2022**, 10, 13. https://doi.org/10.3390/cli10020013 and Constructing theories of change for ecosystem-based adaptation projects A guidance document. Conservation International. The Betty and Gordon Moore Center for Ecosystem Science and Economics https://www.conservation.org/docs/default-source/publication-pdfs/constructing-theories-of-change-for-ecosystem-based-adaptation.pdf?Status=Master&sfvrsn=1fd83348_3

Figure 1. Example Results Chain Extract with Ecosystem Services and Human Well-being Targets (Fig 13 from Open Standards for the Practice of Conservation Version 4.0).



Conclusions

Nature-based Solutions continues to be a rapidly expanding field of study and practical application across the world, but major challenges remain.

NbS are being adopted rapidly by virtually all sectors of society concerned with the societal challenges arising from issues such as climate change and biodiversity loss and their impact on human health and wellbeing. Many developed and developing countries are incorporating NbS into their national polices and development assistance programs. New multilateral funding agencies are providing funding for NbS projects. Major international NGOs are analysing, promoting and implementing NbS programs. However, the speed and rapid roll -out of NbS across the world is also posing challenges. Many NGOs are challenged by the need for new skills, expertise, and partnerships, as well as the greater complexity of designing projects that meet the criteria for NbS. Added to this, many donors still focus on narrow sectors (e.g., climate mitigation, nature conservation, human development) rather than an integrated NbS approach. Donors may also have unrealistic expectations about the scale and complexity of developing and implementing NbS projects. Many countries will continue to have difficulty operating across different sectors of government, or working with different groups of stakeholders, as required by NbS, and will opt for

more simple and narrowly defined objectives. The private financial sector is still largely unaware of the non-carbon aspect of NbS and find the concept too ill-defined to be "bankable" at this stage. One point of view is that the NbS theory and best-practice is barely keeping up with the speed and scale of the roll-out on the concept, and this in itself poses a real risk to the concept.

In order to achieve successful NbS outcomes, conservation-based NGOs will need to adopt a multi-sector, "systems approach" framed around a thorough understanding of human and environmental forces that operate at scale.

Through our research of published literature and interviews with practitioners we have explored in greater detail the emerging concept of NbS, in particular how this relates to the conservation sector. We analysed two case studies that had been specifically designed as conservation-based NbS projects, and subsequently rigorously reviewed and funded by a multilateral funding initiative (the Kiwa Initiative) in some depth. We interviewed key people involved in the projects on their experience and insights in how to achieve biodiversity conservation outcomes using an NbS approach. We found in each case that Conservation-based NbS projects gave roughly equal weighting to 1) Biodiversity Targets, 2) Climate Change Adaptation Targets, 3) Ecosystem Services Targets and 4) Human wellbeing and Community Resilience Targets. Our conclusion from this observation, which is generally backed up by the literature and in our interview with experts and practitioners, is that conservation NGOs will need to invest heavily in developing the internal capacity and external partnerships necessary to explore, interpret, and frame outcomes across a potentially wide-range of biodiversity, ecosystem function, human wellbeing and socio-economic sectors. Indicator 2.1 of the IUCN NbS Standard states this requirement as:

"The success of an NbS will be determined not only by the quality of the technical intervention but, critically, how well the interactions between people, the economy and the ecosystem are understood and responded to. For the solutions to be durable and sustainable, the design of NbS requires a "systems" framing that acknowledges and addresses these types of interactions and builds them into the decision-making process."

The Open Standards for the Practice of Nature Conservation 4.0 provide a robust framework for developing NbS projects, when guided by the IUCN Criteria for NbS.

We note that the most important factors that define NbS such as the incorporation of human wellbeing and climate change outcomes in addition to biodiversity outcomes are either already present, or are in development, within the CMP, specifically through the CMP Learning Initiative. The work being conducted by the CMP Learning Initiative is of considerable value both in its own right as part of the ongoing development of the Open Standards for Conservation, but also a way of "bridging the gap" between Conservation-based projects and NbS.

Guidance is provided in this report on how the incorporate the NbS Criteria and Indicators into the Conservation Standards at each stage of the process (Appendix 2). This is based on the process of asking the question "what are the NbS criteria asking us to do and where in the Conservation Standard do we need to address this? This process is further expanded upon in associated guidance materials.

Once a NbS project is developed through a combination of the Conservation Standards and IUCN NbS Criteria and Indicators, we propose a process for determining how thoroughly the project aligns with the NbS approach. This process is based on increasing levels of complexity/effort form maintaining the work being conducted by the CMP Learning Initiative, especially in relation to

climate and human wellbeing, through to submitting the project to a certification process should one be developed.

Despite some concerns among some members of the NbS CoP that NbS might possibly require a substantial "re-think" of the Open Standards for the Practice of Conservation in fact we find that the guidance already provided in Version 4.0, along with the work being done through the CMP Learning Initiative is leading toward a common goal, namely "*actions to protect, sustainably manage and restore natural and modified ecosystems in ways that address societal challenges effectively and adaptively, to provide both human wellbeing and biodiversity benefits."*

Recommendations

1.1. The NbS CoP be combined with one or more of the other Learning Initiative Working Groups for greater efficiency.

Participants in the NbS Community of Practice (CoP) felt that the work done was valuable and should continue. The scale, speed and rapid development of the NbS concept across the world suggest that a mechanism is still required for the CMP/CCNET to keep up-to-date with emerging issues. However, participant numbers in the NbS CoP meetings were usually low (typically below 10 people). Consideration might therefore be given to combining the NbS CoP with one or more of the other Learning Initiatives (e.g., those relating to human wellbeing and/or climate change) in order to achieve a "critical mass" of participants.

1.2. A number of simple guidance products could be created to assist CMP members in development of NbS

In this report we provide information on various aspects of NbS and key developments and literature on NbS. We also provide some guidance on how to incorporate NbS into the Conservation Standards. Further work could be done to produce simple guides and/or facts sheets based on this material.

1.3. CMP should consider establishing an ongoing dialogue with IUCN about the further development of NbS

There is still considerable work required to refine the IUCN Criteria and Indicators – specifically in relation to the Self-Assessment Tool**.** While it is highly likely that some CMP members are already engaged with IUCN and the development of NbS products, it might be useful for CMP to seek a dialogue with IUCN to identify specific areas of collaboration**.** As an example, one such idea already mentioned by IUCN has been the refinement of Criteria 3 (NbS result in a net gain to biodiversity and ecosystem integrity).

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Appendix 1. Major new reports and papers

The following are some key papers and reports produced in the year following our previous report in November 2021.

Definition and characteristics of NbS and Lessons Learned

Barbara Sowińska-Świerkosz, Joan García. What are Nature-based solutions (NBS)? Setting core ideas for concept clarification. Nature-Based Solutions, Volume 2, 2022, 100009, ISSN 2772-4115, https://doi.org/10.1016/j.nbsj.2022.100009.

ABSTRACT: Although nature-based solutions (NBS) have been promoted as a key tool for solving diverse environmental and societal problems, the concept and its practical applications remain unclear. This ambiguity is linked to the fact that the NBS concept has emerged from the integration of multiple scientific fields. In addition, there has been a delay in establishing clear standards for NBS, hence a number of actions that today would be seen as complementary or related measures, are frequently branded as NBS. Thus, this paper paves the way to clarify NBS by identifying their core features and formulating criteria to exclude certain actions from the set of NBS. After reviewing 20 definitions of NBS, these actions are identified as interventions that: (1) are inspired and powered by nature; (2) address (societal) challenges or resolve problems; (3) provide multiple services/benefits, including biodiversity gain; and (4) are of high effectiveness and economic efficiency. The non-systematic review includes both peer-review research papers and relevant official reports, enabling the formulation of a set of criteria that exclude green/blue interventions from the set of NBS. These are: (1) lack of functioning ecosystems; (2) random actions; (3) post-implementation goal(s); (4) negative/no impact on biodiversity; (5) same benefits as grey infrastructure alone; (6) unfair distribution of benefits; (7) 'copy-paste' implementation approach; (8) top-down model of governance; (9) static management approach; (10) financial expenses disproportionate to benefits; and (11) 'point scale' approach. Ongoing and future practice will contribute to our understanding of the long-term operation of NBS as well as to the detection of synergies and trade-offs, thereby enabling us to better define this concept's boundaries.

Sinha VR, Bimson K (eds.) (2021) Nature-based Solutions in the Ganges Brahmaputra Meghna (GBM) river basin: Case studies and lessons learned. Bangkok, Thailand: IUCN ARO.viii + 69pp.

This report presents seven case studies based on initiatives led by Civil Society Organisations (CSO) and IUCN partners in the GBM river basin, in Bangladesh, India and Nepal. These case studies are analysed to highlight NbS strategies that could be harnessed by natural resource managers and CSOs to address community challenges linked to food security, poverty and water related disasters (floods and riverbank erosion).

Climate Change and Disaster Risk Management

New IPCC Climate report on Impacts, Adaptation and Vulnerability.
https://www.ipcc.ch/report/ar6/wg2/

The latest climate report of the IPCC has been released, highlighting the risk of climate change to human wellbeing & the health of the planet. "Nature-based Solutions" are mentioned 457 times

over the report's 3675 pages, outlining the successes, limitations and recommendations for NbS for adaptation and resilience.

IPCC Climate Change Mitigation report. https://www.ipcc.ch/report/ar6/wg3/

The IPCC WGIII report highlights the potential of the Agriculture, Forestry and Other Land Uses (AFOLU) sector for significant mitigation opportunities while delivering food, wood and other renewable resources as well as biodiversity conservation. It finds that all mitigation pathways require carbon removal approaches, with an urgent need for further research, development and deployment of technological and natural approaches such as carbon sequestration in trees and soil.

New UNCCD report on global land degradation and drought. The second edition of the Global Land Outlook report, GLO2: Land Restoration for Recovery and Resilience, sets out the rationale, enabling factors, and diverse pathways by which countries and communities can reduce and reverse land degradation. https://www.unccd.int/resources/global-land-outlook/glo2#:~:text=Global%20Land%20Outlook%202nd%20edition,reduce%20and%20reverse%20land%20degradation.

Integrating Nature-Based Solutions for Climate Change Adaptation and Disaster Risk Management: A Practitioner's Guide, Creative Commons Attribution 3.0 IGO license (CC BY 3.0 IGO). © 2022 Asian Development Bank. Published in 2022. ISBN 978-92-9269-533-0 (print) 978-92-9269-534-7 (electronic) 978-92-9269-535-4 (ebook). DOI http://dx.doi.org/10.22617/TIM220215-2.

This Practitioner's Guide takes a process-based approach to a longstanding problem: how do we ensure that innovative green and traditional gresy project investments can be compared effectively and fairly? based on cost, performance and longevity?

John Matthews, lead author of the Practitioner's Guide, says the systems we use to 'compare' green versus gray solutions are inaccurate comparisons: "How we analyze costs and benefits are skewed towards pouring concrete and setting rebar. We normally call a project lasting decades, even centuries, successful based on just one or two metrics. We ignore the full environmental and social impacts of the project. Once you look at how green options can help solve complex development problems, they look more cost effective and resilient. The Practitioner's Guide is intended to help finance institutions introduce green investment solutions to clients early and ensure these options stay on the table, for a real discussion about tradeoffs and advantages."

"If we can help investors, banks, and decision makers see the full picture of resilience, we can align the interests of ecosystems with successful economic development."

Harnessing the potential of nature-based solutions for mitigating and adapting to climate change
Seddon, Science 376, 1410–1416 (2022) 24 June 2022

Abstract: Although many governments, financial institutions, and corporations are embracing nature-based solutions as part of their sustainability and net-zero carbon strategies, some nations, Indigenous peoples, local community groups, and grassroots organizations have rejected this term. This pushback is fuelled by (i) critical uncertainties about when, where, how, and for whom nature-based solutions are effective and (ii) controversies surrounding their misuse in greenwashing, violations of human rights, and threats to biodiversity. To clarify how the scientific community can help address these issues, I provide an overview of recent research on the benefits and limits of

nature-based solutions, including how they compare with technological approaches, and highlight critical areas for future research.

Brown, M.B.; Morrison, J.C.; Schulz, T.T.; Cross, M.S.; Püschel-Hoeneisen, N.; Suresh, V.; Eguren, A. Using the Conservation Standards Framework to Address the Effects of Climate Change on Biodiversity and Ecosystem Services. Climate 2022, 10, 13. https://doi.org/10.3390/cli10020013

Abstract: Climate change has challenged biodiversity conservation practitioners and planners. In this paper, we provide scalable guidance on integrating climate change into conservation planning and adaptive management that results in the most appropriate conservation strategies. This integrated "Climate-Smart Conservation Practice" focuses on analyzing the potential impact of climate change on species, ecosystems, and ecosystem services, combined with "conventional" (non-climate) t threats, and incorporating this knowledge into projects. The guidance is based on the already widely-used "Open Standards for the Practice of Conservation", an application of systems thinking and adaptive management, which has been successfully applied to thousands of conservation projects. Our framework emphasizes a methodical analysis of climate change impacts for projects to support more productive goals and strategy development. We provide two case studies showing the applicability and flexibility of this framework. An initial key element is developing "situation models" that document both current and future threats affecting biodiversity while showing the interactions between climate and conventional threats. Guidance is also provided on how to design integrated, climate-smart goals and strategies, and detailed theories of change for selected strategies. The information and suggestions presented are intended to break down the steps to make the process more approachable, provide guidance to teams using climate change information within a systematic conservation planning process, and demonstrate how climate scientists can provide appropriate information to conservation planners.

Friends of Ecosystem-based Adaptation (2022) NATURE-BASED SOLUTIONS AND THE GLOBAL GOAL ON ADAPTATION FEBA. ISSUE BRIEF FOR UNFCCC COP27.
https://www.iucn.org/sites/default/files/2022-11/feba-issue-brief-on-nbs-and-the-gga-for-cop27_0.pdf

The paper explores how to utilise the knowledge from adaptation practitioners working on NbS for both setting and achieving the Global Goal on Adaptation (GGA) – across monitoring and evaluation, capacity building and technology transfer, and increasing finance.

Finance and Economics of NbS

WWF/Terranomics Report on financing NbS: https://www.wwf.org.uk/sites/default/files/2022-06/WWF-NBS-Public-Report-Final-270622.pdf

The findings in this summarised report are based on qualitative interviews with key experts within the NbS finance community. In preparation for interviews, a rapid desk-based review was conducted, the result of which was a null-hypothesis as to what the key barriers were. This was shared in advance with the interviewees and used as a prompt during the interviews themselves. In total 18 interviews were conducted in November-December 2021, across representatives of three broad groups of experts: 1. Mainstream financial institutions, including commercial banks, asset managers and insurance companies. 2. Impact investment funds, including specialised venture capital firms, boutique investment advisors and blended finance or impact investors. 3. NbS-focused

accelerators, incubators, and financiers, including accelerators, technical assistance facilities and development agencies. Follow-up interviews were held in April-May 2022 to validate the final barrier framework and the key findings, as well as looking at how the CSP integrates the findings into its future work programme. A roundtable in June 2022 explored this further, with a focus on potential solutions.

Following the interviews, the notes were collated and analysed by the research team. This information was used to produce the following:

- An update to the 'null hypothesis' to produce a final Barriers to Investment in Nature Based Solutions Framework (see Figure 2) that comprehensively reflects the perspectives of the experts interviewed, as well as the background literature review.
- A simple ranking of the most important barriers.
- Detailed analysis of each barrier, including its subcomponents, and perspectives from different types of actors.
- The priority barriers and initial pointers on potential solutions.

Forum of the Standing Committee on Finance for Nature-based Solutions. Synthesis paper by the secretariat. https://unfccc.int/topics/climate-finance/events-meetings/scf-forum/the-scf-forum-on-finance-for-nature-based-solutions

Findings of a widespread review by the UNFCCC Forum of the Standing Committee on Finance for Nature-based Solutions

Executive Summary (sections headings only)

1. All submissions emphasize the important role of ecosystems in addressing climate risks through NbS.

2. Many international environmental agreements acknowledge the links between climate change, ecosystems and societal vulnerabilities, and the role nature can play in addressing environmental problems.

3. The conceptual framing of NbS has evolved throughout the years.

4. Climate hazards being faced by countries and regions with different ecosystems require different types of NbS.

5. Many successful NbS projects consider the role, knowledge, and traditional cultures of local and indigenous actors in implementing NbS.

6. While NbS hold significant economic potential in addressing climate change, countries are faced with challenges in making the economic case for NbS due to their complex set of characteristics.

7. Countries and investors are faced with additional costs and risks, when considering investments in NbS projects.

8. Many submissions recognise that NbS is insufficiently funded, although monitoring and tracking finance for NbS is at an early stage.

9. Public-sector funding remains the major source of finance for NbS.

10. Multilateral climate funds and other international finance institutions provide financial resources for nature-based climate actions in developing countries, notably in cross-cutting areas, such as forests and oceans.

11. Currently relatively a small portion of NbS financing comes from the private sector and the potential remains to be tapped into.

12. Innovative sources of finance and financial instruments can be developed and applied to scale-up the financing for nature.

13. Public and private financial flow for NbS can be accelerated by putting in place the required regulatory and institutional arrangements and investment environment.

14. Technical assistance is necessary to support countries tap into the potential of NbS for climate actions and help private investors make the business case for nature.

WBCSD (2022) The role of Nature-based Solutions in strategies for Net Zero, Nature Positive and addressing Inequality Insights from the evolution of Natural Climate Solutions as part of corporate action on Climate. https://www.wbcsd.org/contentwbc/download/15116/213973/1

The NbS report, released on November 7th alongside supporting technical papers, presents findings and recommendations for the role of companies' actions on NbS and how this can be leveraged to deliver against climate, nature and equity.

Biodiversity Outcomes from NbS

Key IB, Smith AC, Turner B, Chausson A, Girardin CAJ, Macgillivray M and Seddon N (2022), Biodiversity outcomes of nature-based solutions for climate change adaptation: Characterising the evidence base. Front. Environ. Sci. 10:905767. doi: 10.3389/fenvs.2022.905767

ABSTRACT: Nature-based solutions (NbS) are increasingly recognised for their potential to address both the climate and biodiversity crises. Both these outcomes rely on the capacity of NbS to support and enhance the health of an ecosystem: its biodiversity, the condition of its abiotic and biotic elements, and its capacity to continue to function despite environmental change. However, while understanding of ecosystem health outcomes of NbS for climate change mitigation has developed in recent years, the outcomes of those implemented for adaptation remain poorly understood. To address this, we systematically reviewed the outcomes of 109 nature-based interventions for climate change adaptation using 33 indicators of ecosystem health across eight broad categories (e.g., diversity, biomass, ecosystem composition). We showed that 88% of interventions with reported positive outcomes for climate change adaptation also reported benefits for ecosystem health. We also showed that interventions were associated with a 67% average increase in species richness. All eight studies that reported benefits for both climate change mitigation and adaptation also supported ecosystem health, leading to a "triple win." However, there were also trade-offs, mainly for forest management and creation of novel ecosystems such as monoculture plantations of non-native species. Our review highlights two key limitations in our understanding of the outcomes of NbS for ecosystem health. First, a limited selection of metrics are used and these rarely include key aspects such as functional diversity and habitat connectivity. Second, taxonomic coverage is limited: 50% of interventions only had evidence for effects on plants, and 57% of outcomes did not distinguish between native and non-native species. We make suggestions of how to improve

assessments of the ecosystem health outcomes of NbS, as well as policy recommendations to enable the upscaling of NbS that support flourishing and resilient ecosystems, and are effective in addressing both climate and biodiversity goals.

Scaling-up NbS

Nature-based Solutions: Opportunities and Challenges for Scaling Up. 12 October 2022. UNEP.https://www.unep.org/resources/report/nature-based-solutions-opportunities-and-challenges-scaling

This report:

- Outlines recent developments on NbS, with a focus on global, regional and national commitments, and key issues and concerns
- Builds on the new multilaterally agreed definition of NbS – agreed by the UN Environment Assembly in March 2022 – to set out key elements in the concept, provides examples of NbS, and discusses related approaches
- Provides recommendations for actions by governments, civil society and the private sector to substantially scale up the use of NbS

The report aims to inform NbS-related initiatives and discussions on NbS at global, regional, and national levels, with a focus on how NbS can be scaled up to more effectively address social, economic, and environmental challenges.

Appendix 2. Incorporating NbS into your project design – summary version.

In this summary guidance (Table 2.1) we identify the key intersection points between the eight IUCN NbS criteria and their indicators and the five major steps in the Conservation Standards. At each key intersection point (and most cover several intersection points with the Conservation Standards), we have identified a simple action or outputs required to achieve the criteria. This is a simplified version of the guidance material that is available on the CoP workspace. https://sites.google.com/a/fosonline.org/cmp-workspace/initiatives/nature-based-solutions

Table 2.1 Summary Table: Key intersection points between NbS criteria and Conservation Standards with suggested actions and outputs.

NbS Criteria	Conservation Standards				
	Assess	**Plan**	**Implement**	**Analyze and adapt**	**Share**
Criterion 1: NbS effectively address societal challenges	1.1 Consult with all relevant stakeholders, especially rights holders and beneficiaries of the NbS, and prioritise the challenges.				
	1.2 Document the challenges to be addressed by the NbS and their priority in the assessment and planning stages and ensure that all stakeholders understand and accept the outcome.				

NbS Criteria	Conservation Standards				
	Assess	**Plan**	**Implement**	**Analyze and adapt**	**Share**
	1.3 Develop baselines for human wellbeing outcomes and metrics for measuring changes. Undertake gender-differentiated analysis. Develop a monitoring plan to collate the required data and a process for analysis and adaptive management.				
Criterion 2: Design of NbS is informed by scale	2.1 Develop a model (e.g., Theory of Change) of the system within which the NbS will be introduced. The model needs to reflect how the interactions between people, the economy and the ecosystem function and respond to change.				
	2.2 Engage other sectors operating within the NbS target area that have an impact on social, economic and environmental outcomes (e.g., tourism sector, agriculture, infrastructure, health, etc.). Identify the potential impact of the NbS on these sectors (and vice versa) and seek synergies for positive outcomes.				
	2.3 Identify sources of potential risk that may impact on, or be impacted by the NbS				

NbS Criteria	Conservation Standards				
	Assess	**Plan**	**Implement**	**Analyze and adapt**	**Share**
	outside of the intervention areas. Develop an appropriate risk management plan.				
Criterion 3: NbS result in a net gain to biodiversity and ecosystem integrity	3.1 Ensure that a thorough analysis of baseline ecological conditions and relevant drivers is completed and documented. Conduct research in the absence of information. Use spatial modelling and other tools wherever possible.				
	3.2 Develop, document and share clear and measurable biodiversity conservation outcomes to be achieved through the NbS intervention.				
			3.3 Ensure that the biodiversity monitoring system is sufficiently sensitive and comprehensive to detect unwanted changes as early as possible.		
	3.4 Incorporate increased ecosystem integrity and connectivity as explicit targets within the NbS.				
Criterion 4: NbS are economically viable	4.1 Economic viability and the determination of those sector of society that pay for, and those that benefit from, the intervention is a cornerstone of NbS. The NbS should include an economic assessment of impacts in the Assess and Plan				

NbS Criteria	Conservation Standards				
	Assess	**Plan**	**Implement**	**Analyze and adapt**	**Share**
	stages. Specific indicators should be developed that allow economic impacts to be measured over-time. The indicators should be sensitive to the interventions within the NbS (either positively or negatively). Gender segregated analysis should be a major consideration in many situations. Lessons learned should be shared with other practitioners and stakeholders.				
	4.2 Develop a cost-effectiveness study to assess upfront and recurring costs against the anticipated longer-term benefits of the proposed intervention(s) over time that also allows key (or hidden) assumptions to be made explicit, tested and verified.				
	4.3 Determine the cost-effectiveness of the NbS in comparison with other interventions Including non-NbS interventions) that could achieve the same results.				
	4.4 Develop a sustainable finance strategy for the NbS intervention.				

NbS Criteria	Conservation Standards				
	Assess	**Plan**	**Implement**	**Analyze and adapt**	**Share**
Criterion 5: NbS are based on inclusive, transparent and empowering governance processes	5.1 Develop formal mechanisms for engagement with stakeholders. In some cases, it may be necessary to establish a feedback and grievance resolution forum independent of the NbS manager.				
	5.2 Compile detailed knowledge of the social structure and organisation of the community impacted by the NbS through experts, stakeholders and those close to the community.				
	5.3 Undertake stakeholder mapping with close reference to Indicator 5.2. Use stakeholder mapping analysis to involve stakeholders at all stages of the intervention though relevant mechanisms.				
	5.4 Establish and maintain formal stakeholder consultation processes throughout the NbS interventions (e.g., national, regional and local project Steering Committees and issue/target group Working Groups as required). Ensure regular interaction between project managers and stakeholders in a manner/style/location that suits the stakeholders.				
	5.5 Establish agreements (e.g., MoUs) with neighboring authorities that may also be impacted by the NbS				

NbS Criteria	Conservation Standards				
	Assess	**Plan**	**Implement**	**Analyze and adapt**	**Share**
Criterion 6: NbS equitably balance trade-offs between achievement of their primary goal(s) and the continued provision of multiple benefits	6.1 Conduct a cost-benefit analysis of trade-offs at the NbS site and across the wider landscape to inform the development of safeguards and corrective actions.				
	6.2 Ensure that the legal and customary rights to access, use and control management over land and natural resources, particularly of vulnerable and marginalised groups, is understood, documented and communicated to all participants in the NbS.				
				6.3 Conduct periodic reviews of safeguards to anticipate and avoid adverse consequences of interventions	
Criterion 7: NbS are managed adaptively, based on evidence	7.1 Develop a strategy for the project (e.g., Logical Framework, Results Chain etc.) that identifies actions, outcomes, and assumptions intended for socio-economic conditions and regularly review, analyze and adapt the NbS intervention accordingly.				

NbS Criteria	Conservation Standards				
	Assess	**Plan**	**Implement**	**Analyze and adapt**	**Share**
	7.2 Develop and implement a monitoring and evaluation plan.				
		7.3 Develop an iterative learning process to inform NbS management.			
Criterion 8: NbS are sustainable and mainstreamed within an appropriate jurisdictional context					8.1 Develop a mechanism for capturing, documenting and disseminating lessons learnt to individuals and stakeholders.
	8.2 Develop mechanisms to inform and engage with local and national decision-makers and stakeholders that can significantly impact the NbS.				
		8.3 Develop the NbS in a way that key lessons can be communicated to higher levels of policy development including national policies and strategies, regional and international agreements.			

Case Study 1 BirdLife International (Pacific) Ecosystem Resilience to Climate Change though Invasive Species management (ERCCISM).

The following Table 2.2 is a simple analysis of how the Birdlife Pacific project aligns with the 8 NbS Criteria.

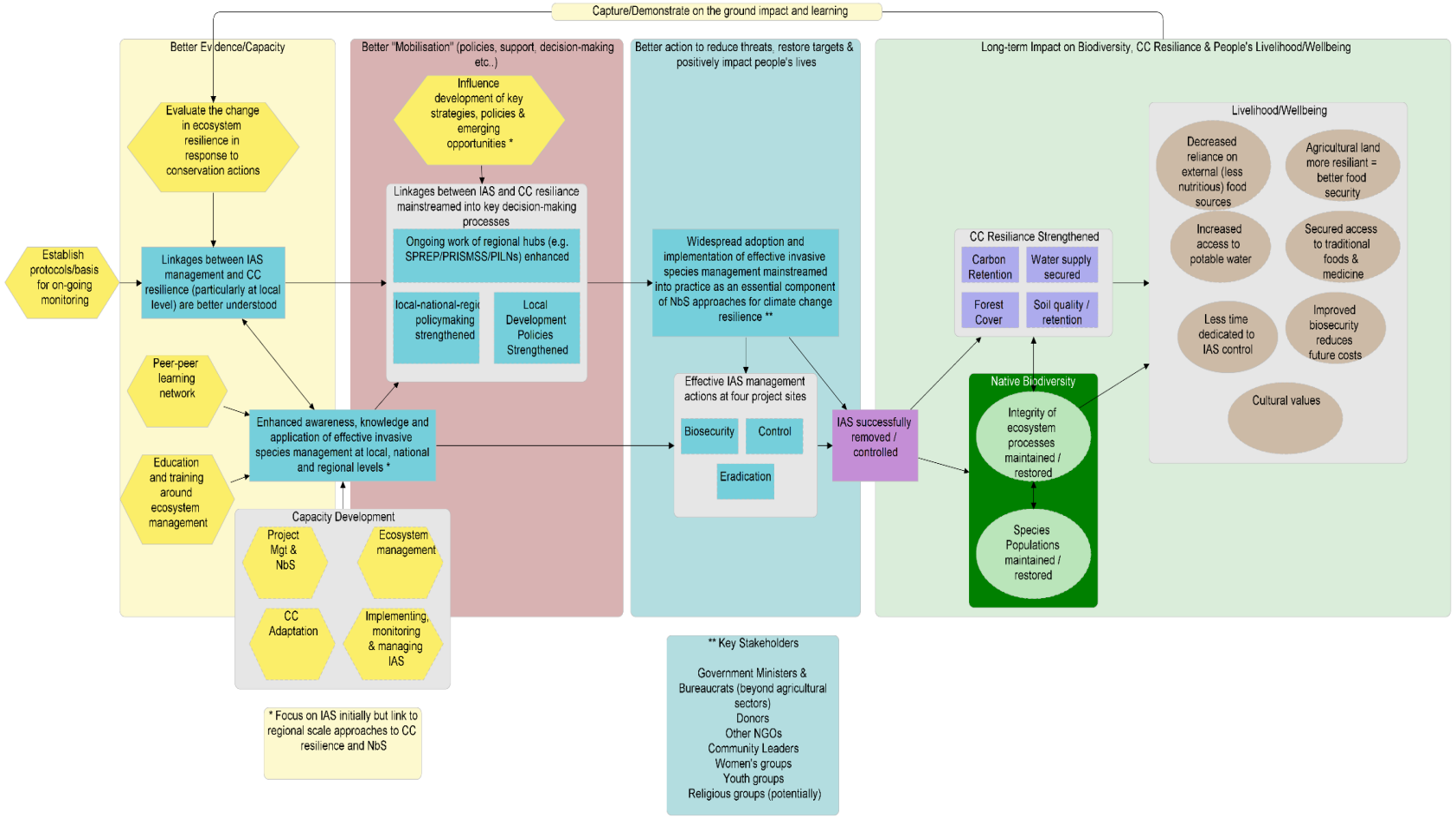
Table 2.2. The Birdlife International (Pacific) project Ecosystem Resilience to Climate Change though Invasive Species management (ERCCISM) mapped against the 8 IUCN NbS Criteria

chNbS Criteria	Project Focus
Criterion 1: NbS effectively address societal challenges	The project directly addresses key societal challenges in Pacific Small Island Developing States including climate change, food security, health and socio-economic development through a focus on invasive alien species (IAS)
Criterion 2: Design of NbS is informed by scale	The project is designed to operate at an appropriate scale e.g., at the whole of catchment level, forest ecosystem level, or coral reef lagoon scale.
Criterion 3: NbS result in a net gain to biodiversity and ecosystem integrity	The project is designed to have major biodiversity benefits and enhance ecosystem integrity by managing one of the most important threats to biodiversity on small tropical islands.
Criterion 4: NbS are economically viable	The project will seek to identify economically viable outcomes that will ensure the maintenance of IAS management efforts. Payments for Environmental Services (PES) will be trialled at several sites.
Criterion 5: NbS are based on inclusive, transparent and empowering governance processes	Birdlife partners are well connected to each of the communities in the project and have a deep understanding of how to engage communities with inclusive, transparent and empowering governance processes.

Criterion 6: NbS equitably balance trade-offs between achievement of their primary goal(s) and the continued provision of multiple benefits	The project will operate according to the principles of sustainable development, ensuring benefits are maximised for people and the environment.
Criterion 7: NbS are managed adaptively, based on evidence	The project will be managed regionally by the BLI Secretariat and nationally by Birdlife Partners using standardised adaptive management processes.
Criterion 8: NbS are sustainable and mainstreamed within an appropriate jurisdictional context	The project outcomes are designed to be sustainable through mainstreaming into local, provincial and national plans and are directly relevant to many policies and strategies adopted by each country (e.g., National Biodiversity Strategic Action Plans, National Invasive Species Action Plans, Climate change adaptation plans).

The following Figure 2.1 is the Theory of Change developed for the Birdlife Pacific project.

Fig. 2.1 Theory of Change developed for the Birdlife Pacific project Ecosystem Resilience to Climate Change though Invasive Species management (ERCCISM) (source Birdlife International Pacific Secretariat).



Case Study 2: WCS project: WISH. Watershed Interventions for Systems Health (Fiji with plans for Melanesia).

The following Table 2.2 is a simple analysis of how the WCS project aligns with the 8 NbS Criteria.

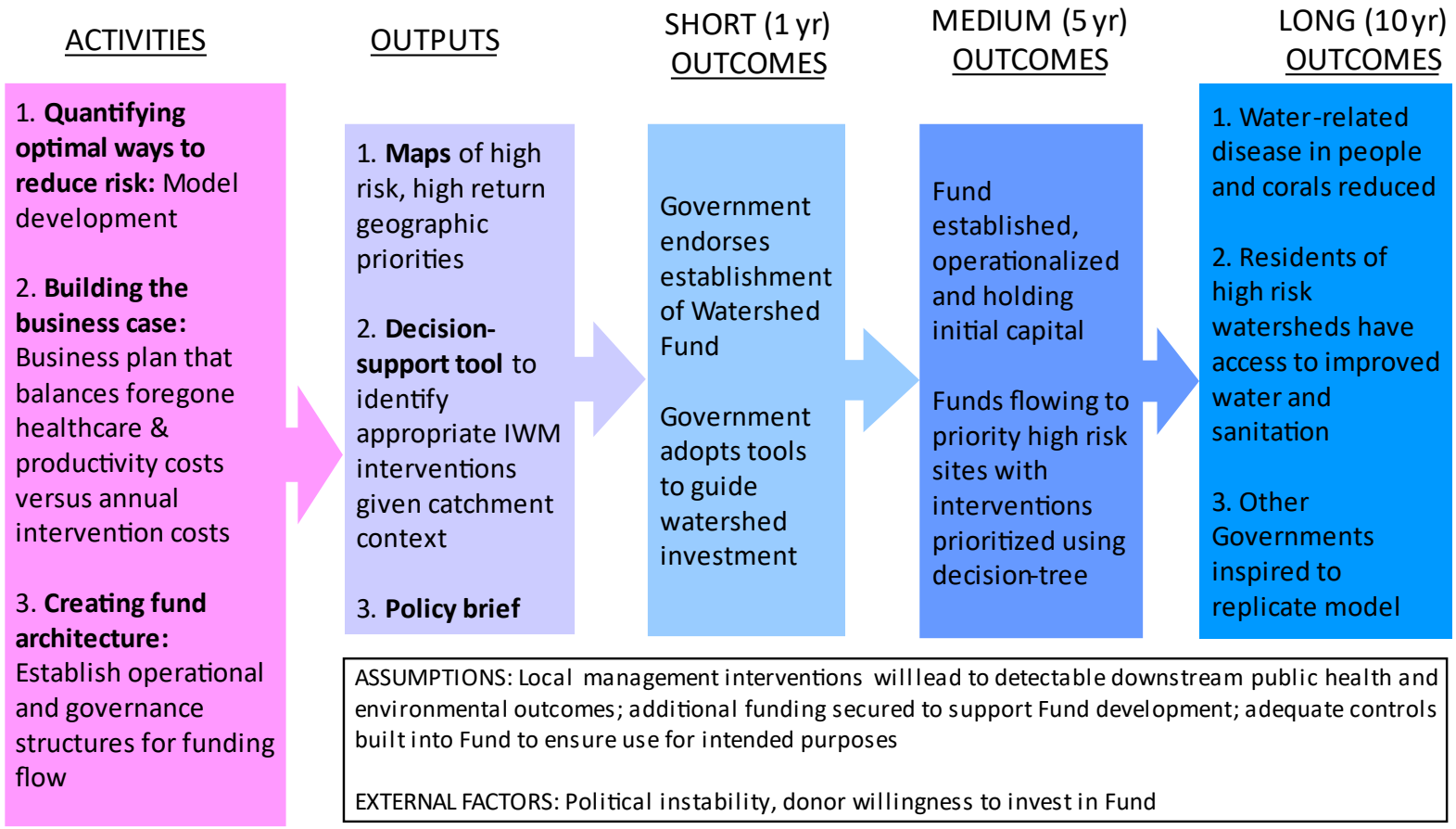
Table 2.2. the WCS WISH Project mapped against the 8 IUCN NbS Criteria (source: WCS Melanesia).

NbS Criteria	Project Focus
Criterion 1: NbS effectively address societal challenges	The project directly addresses key societal challenges in Pacific Small Island Developing States including climate change, food security, health and socio-economic development. The combination of cyclones and heavy rains combined with catchment modification leads to pollution of water supplies and major health problems.
Criterion 2: Design of NbS is informed by scale.	The project is designed to operate at the whole of catchment level.
Criterion 3: NbS result in a net gain to biodiversity and ecosystem integrity	The project is designed to have major biodiversity benefits and enhance forest, freshwater and marine ecosystem integrity through improved catchment management.
Criterion 4: NbS are economically viable	The project will seek to reduce negative economic outputs arising from poor nutrition and disease. The project will seek to establish an ongoing Watershed Management Fund.
Criterion 5: NbS are based on inclusive, transparent and empowering governance processes	The project will provide capacity building, resources and guidance to communities and Government agencies to empower them to prevent and respond to water-related disease and health security risks.
Criterion 6: NbS equitably balance trade-offs between achievement of their primary goal(s) and the continued provision of multiple benefits	The project will operate according to the principles of sustainable development, ensuring benefits are maximised for people and the environment.

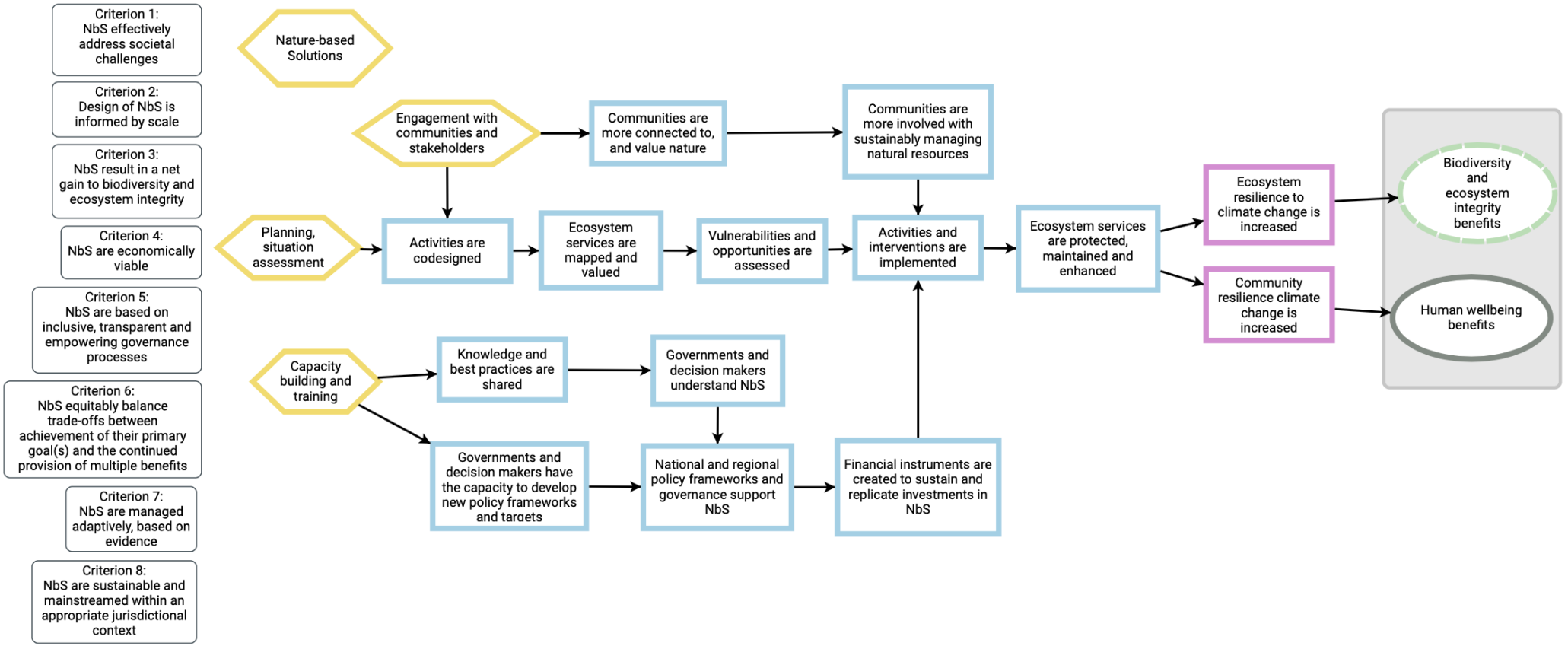
Criterion 7: NbS are managed adaptively, based on evidence	The project will establish sophisticated monitoring and evaluation programs across environmental and social parameters impacted by the project.
Criterion 8: NbS are sustainable and mainstreamed within an appropriate jurisdictional context	The project outcomes are designed to be sustainable through mainstreaming into local, provincial and national plans and policy.

The following Figure 2.2 is the Theory of Change developed for the WCS project.

Fig. 2.2 Theory of Change developed for the WCS project WISH (source WCS Melanesia).


ACTIVITIES
OUTPUTS
SHORT (1 yr) OUTCOMES
MEDIUM (5 yr) OUTCOMES
LONG (10 yr) OUTCOMES
1. Quantifying optimal ways to reduce risk: Model development
2. Building the business case: Business plan that balances foregone healthcare & productivity costs versus annual intervention costs
3. Creating fund architecture: Establish operational and governance structures for funding flow
1. Maps of high risk, high return geographic priorities
2. Decision-support tool to identify appropriate IWM interventions given catchment context
3. Policy brief
Government endorses establishment of Watershed Fund
Government adopts tools to guide watershed investment
Fund established, operationalized and holding initial capital
Funds flowing to priority high risk sites with interventions prioritized using decision-tree
1. Water-related disease in people and corals reduced
2. Residents of high risk watersheds have access to improved water and sanitation
3. Other Governments inspired to replicate model
ASSUMPTIONS: Local management interventions willlead to detectable downstream public health and environmental outcomes; additional funding secured to support Fund development; adequate controls built into Fund to ensure use for intended purposes
EXTERNAL FACTORS: Political instability, donor willingness to invest in Fund

Appendix 3. A High-level Generic NbS Theory of Change



Appendix 4. CoP members and experts interviewed

CoP members represented the following organisations:

Asian Development Bank (ADB)
African Wildlife Foundation (AWF)
Bush Heritage Australia
Durrell Wildlife Conservation Trust
Environment and Climate Change Canada (ECCC)
Environmental Incentives
Foundations of Success (FOS)
International Fund of Animal Welfare (IFAW)
Jane Goodall Institute
National Audubon Society
Nature Conservancy Canada
Nemours Wildlife
NZ Department of Conservation
Palau Conservation Society
Parks Canada
Pew Charitable Trusts
Resilience Advice
Saving Cranes
San Diego Zoo Wildlife Alliance (SDZWA)
Secretariat of the Pacific Regional Environment Programme (SPREP)
The Nature Conservancy

TierraMar
USAID
Walton Family Foundation
Wildlife Conservation Society (Chile)
WWF (International)
WWF (Laos)
WWF (Mongolia)
WWF (US)

The following people were interviewed about their experience with NbS for this report

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